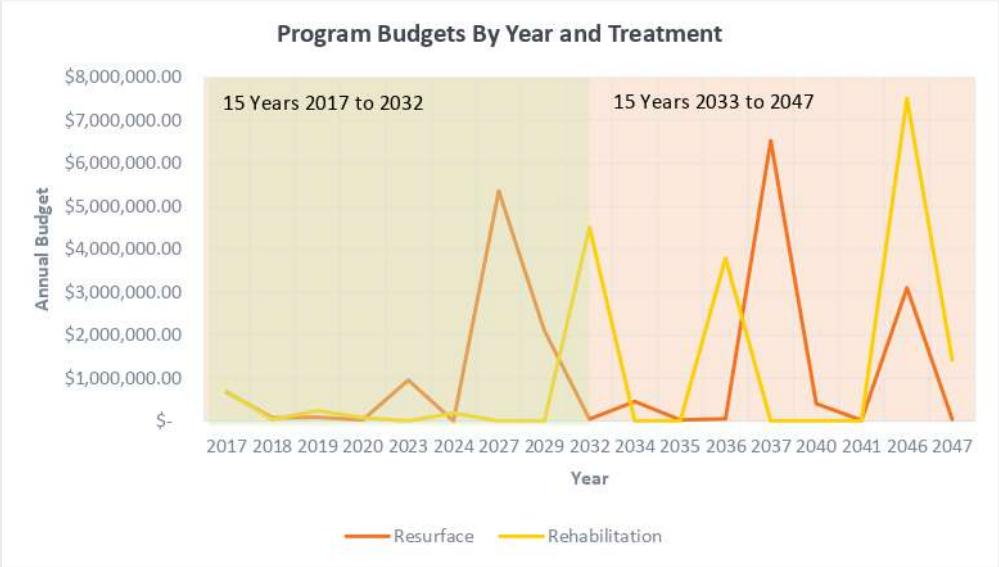


**Figure 17 – Program Budgets by Year and Treatment**

#### 3.6.1.1 Resultant Conditions

The resultant conditions based on the effect of the treatment reset values for specific condition attributes defined in Table 3-8. The level of service can be considered the intervention levels set for each condition attributes as an appropriate treatment will be triggered once these are exceeded.

To better ascertain on overall condition that considered multiple attributes, a pavement and surface condition index was used. As defined below in Table 3-11

**Table 3-11 Condition Indexes**

| Index | Attribute | Weighting |
|---|---|---|
| Pavement | Load Cracking | 40% |
| | Roughness | 30% |
| | Load Defects | 30% |
| Surface | Environmental Cracking | 60% |
| | Ravelling (asphalt) | 40% |
| | Flushing (spray seal) | 20% |
| | Stripping (spray seal) | 20% |
| Road | Pavement CI + Surface CI | 50% + 50% |

The resultant conditions are shown in Figure 18 to Figure 21.

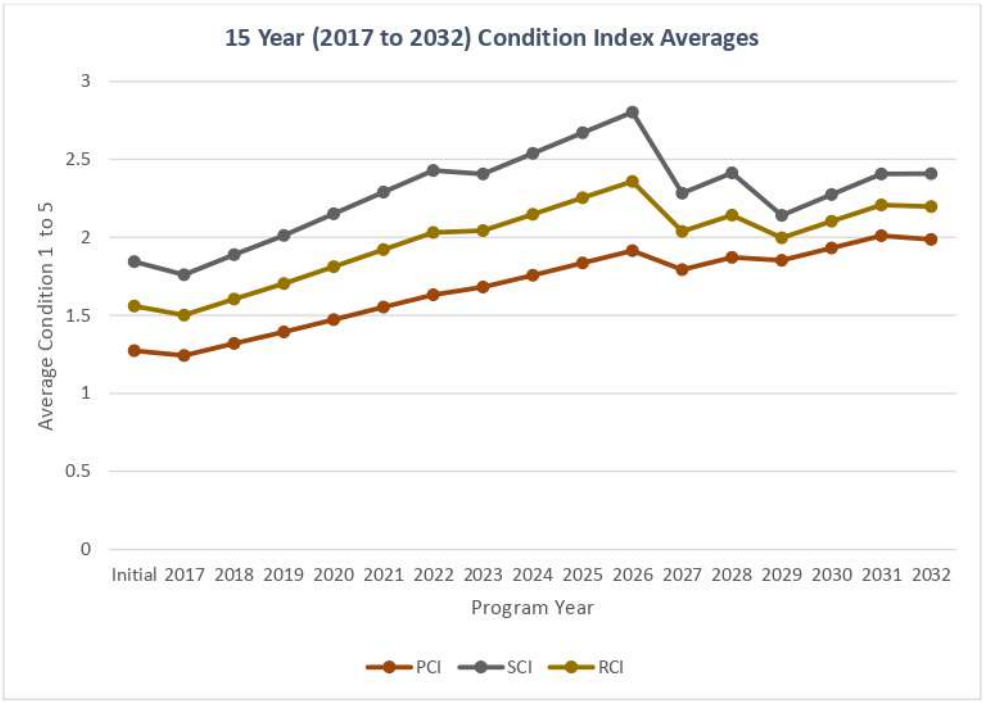


**Figure 18 – Condition Indexes 2017 - 2032**

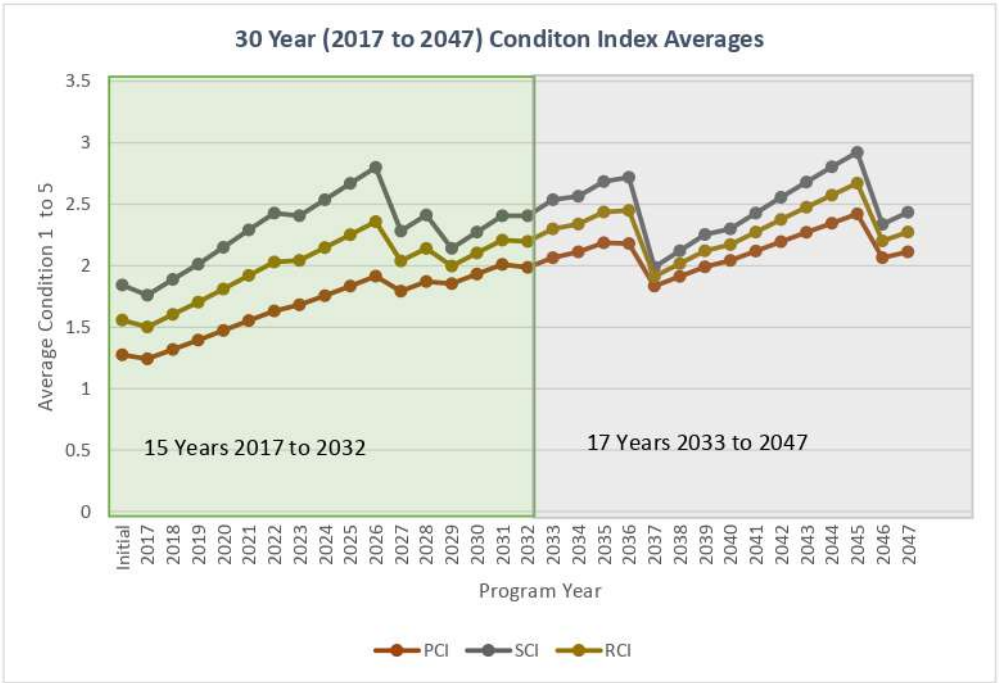


**Figure 22 – Condition Indexes 2017 - 2047**


**Figure 23 – Condition Attributes 2017 - 2032**

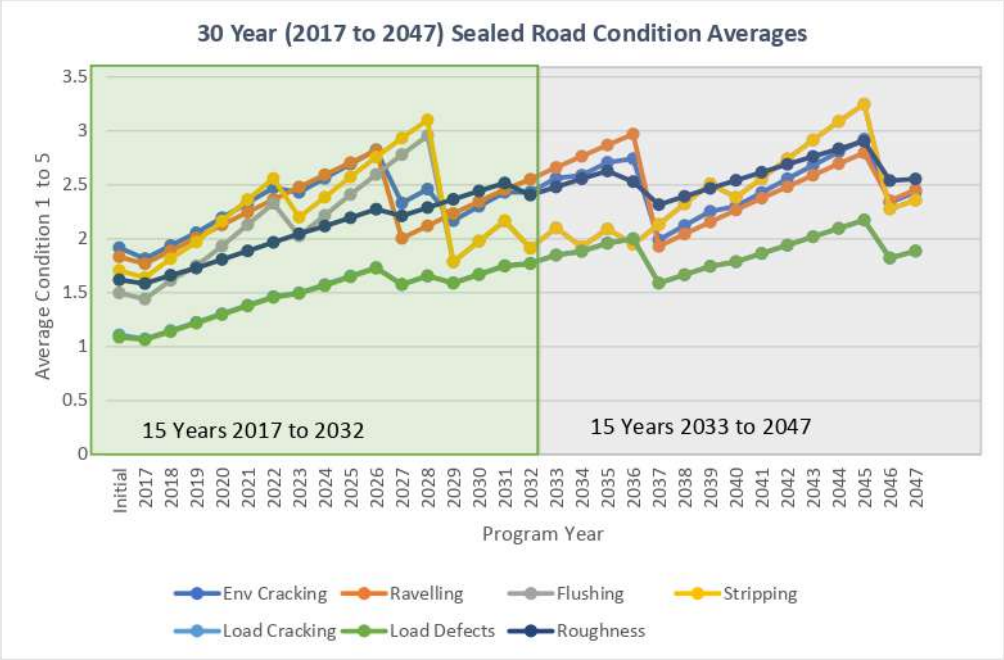


**Figure 21 – Condition Attributes 2017 - 2047**

### 3.6.2 Kerb and Channel

The kerb and channel program was based on the intervention level of 4 for kerb condition. The program will later consider what roads are being treated to decide program timing. The resultant program is summarised below in Table 3-12.

**Table 3-12 Kerb and Channel Program Summary**

| Year | Budget |
|---|---|
| 1 | $ 213,462.00 |
| 2 | $ 522,936.00 |
| 3 | $ 230,544.00 |
| 4 | $ 216,675.00 |
| 5 | $ 217,296.00 |
| 6 | $ 262,575.00 |
| 7 | $ 200,236.50 |
| 8 | $ 207,027.00 |
| 9 | $ 196,866.00 |
| 10 | $ 161,743.50 |
| 11 | $ 219,717.00 |
| 12 | $ 186,498.00 |
| 13 | $ 166,599.00 |
| 14 | $ 222,075.00 |
| 15 | $ 105,858.00 |

### 3.6.3 Footpaths

The path program was based on intervention level of 4 for condition and considered if it was under the minimum design width of 1m. The path would then be costed to be upgraded to the minimum width of 1.5m. The resultant program is summarised below in Table 3-13.

**Table 3-13 Footpath Program Summary**

| Year | Budget |
|---|---|
| 1 | $1,668,338.90 |
| 2 | $ - |
| 3 | $ - |
| 4 | $84,456.00 |
| 5 | $ - |
| 6 | $ - |
| 7 | $1,410,448.64 |
| 8 | $ - |
| 9 | $ - |
| 10 | $ - |
| 11 | $35,626.77 |
| 12 | $ - |

| Year | Budget |
|---|---|
| **13** | $ - |
| **14** | $ 1,066,947.58 |
| **15** | $ 84,456.00 |

## 1.1 Field Validation

The program was validated in the field to ensure the treatments and general timing were appropriate.

Field validation findings:

- Network extensively crack sealed – 28%;
- Treatment selections were appropriate;
- Minor segmentation issues for longer road sections
- Short sections (<50m) need to be considered independently

# 4 Phase 3

Phase 3 is the refinement of the 15 year network program into a more specifically costed 5 year program. This will be based on the confidence following the field validation that the treatments being selected by the program developed during phase 2 are appropriate in terms of type and timing of treatment. Although the program is to cover the 5 year period, the program has been developed in the context of a whole of life program and consolidated to an extended 15 year detailed program. This will give a more comprehensive understanding of the network requirements past the relatively short 5 year period.

It should be understood that this is a purely condition based assessment and that political influences have not been considered.

## 4.1 Alternate Treatments

Alternate treatments such as the use of different asphalt types will be considered during the development of the 5 year program. The performance of these treatments are based on experience and estimated inputs such as traffic loadings based on hierarchy.

## 4.2 Traffic Loading Based Hierarchy

The various influences on the performance of road pavements includes environment, construction materials including subgrade composition, design and traffic loadings. These factors amongst others would ideally provide the basis for categorising the road network for modelling purposes. Given the significant variation in these factors and the limited availability of supporting information, traffic loading was used as the primary factor to categorise the road network.

This would ideally be established through classified traffic count data however there was only a very limited amount of data available. The loadings had to be assumed by reference to the DPTI classification descriptions with each road categorised into four loading based classifications.

**Table 4-1 Load Based Classification Descriptions**

| Loading Classification | DPTI Classifications Included |
|---|---|
| 1 | 2/7/3H |
| 2 | 3 |
| 3 | 3L |
| 4 | 4/5/8 |

The DPTI classification number 3 was the most dominant within the road network data which required further classification based on likely traffic volumes and subsequent loadings. This was based on network connectivity and if the road was a known bus route.

- DPTI Classification 3H – Considered to have higher loadings given they are known bus routes
- DPTI Classification 3 – As per DPTI classification but allowing through traffic which infers likely higher traffic
- DPTI Classification 3L – no through roads such as cul-de-sacs etc which would likely limit traffic outside of local traffic

It would appear some roads assigned the DPTI classification 3 may not fit the definition as described in Table 3-2. Without any further advice, these classifications have been assumed to be as assigned.

## 4.3 Treatment Costs

In contrast to the previous phase, this phase requires a higher resolution of detail in terms of the specific treatment and costing. The treatments will consider the size of the candidate project site as there is significant costing difference when undertaking works on projects of varying size and this needs to be considered when finalising the program. It will also need to be considered when profiling is required on a single or both sides or not at all. Note that there are considerably more unit rate definitions and as such the treatments defined are as below in Table 4-2

**Table 4-2 Detailed Treatment Cost**

| Treatment | Area (m²) | Rates | | |
|---|---|---|---|---|
| | | 2 Kerbs | 1 Kerb | No Kerb |
| Rehab30DGA | >=1000<2000 | $ 53.40 | $ 53.40 | $ 53.40 |
| Rehab30DGA | >=2000 | $ 35.29 | $ 35.29 | $ 35.29 |
| Rehab30DGA | >=250<500 | $ 60.06 | $ 60.06 | $ 60.06 |
| Rehab30DGA | >=500<1000 | $ 44.55 | $ 44.55 | $ 44.55 |
| Rehab30DGA | >0<250 | $ 52.33 | $ 52.33 | $ 52.33 |
| Rehab30SMA | >=1000<2000 | $ 55.65 | $ 55.65 | $ 55.65 |
| Rehab30SMA | >=2000 | $ 37.50 | $ 37.50 | $ 37.50 |
| Rehab30SMA | >=250<500 | $ 62.27 | $ 62.27 | $ 62.27 |
| Rehab30SMA | >=500<1000 | $ 46.81 | $ 46.81 | $ 46.81 |
| Rehab30SMA | >0<250 | $ 54.55 | $ 54.55 | $ 54.55 |
| Rehab40DGA | >=1000<2000 | $ 57.79 | $ 57.79 | $ 57.79 |
| Rehab40DGA | >=2000 | $ 39.53 | $ 39.53 | $ 39.53 |
| Rehab40DGA | >=250<500 | $ 65.50 | $ 65.50 | $ 65.50 |
| Rehab40DGA | >=500<1000 | $ 49.32 | $ 49.32 | $ 49.32 |
| Rehab40DGA | >0<250 | $ 59.70 | $ 59.70 | $ 59.70 |
| Rehab40SMA | >=1000<2000 | $ 60.78 | $ 60.78 | $ 60.78 |
| Rehab40SMA | >=2000 | $ 42.48 | $ 42.48 | $ 42.48 |
| Rehab40SMA | >=250<500 | $ 68.45 | $ 68.45 | $ 68.45 |
| Rehab40SMA | >=500<1000 | $ 52.33 | $ 52.33 | $ 52.33 |
| Rehab40SMA | >0<250 | $ 62.65 | $ 62.65 | $ 62.65 |
| RehabSprayDouble | >=1000<2000 | $ 62.17 | $ 62.17 | $ 62.17 |
| RehabSprayDouble | >=2000 | $ 43.77 | $ 43.77 | $ 43.77 |
| RehabSprayDouble | >=250<500 | $ 70.94 | $ 70.94 | $ 70.94 |
| RehabSprayDouble | >=500<1000 | $ 54.09 | $ 54.09 | $ 54.09 |
| RehabSprayDouble | >0<250 | $ 67.06 | $ 67.06 | $ 67.06 |
| RS30DGA | >=1000<2000 | $ 13.67 | $ 11.67 | $ 9.66 |
| RS30DGA | >=2000 | $ 12.31 | $ 10.77 | $ 9.23 |
| RS30DGA | >=250<500 | $ 22.07 | $ 17.45 | $ 12.83 |
| RS30DGA | >=500<1000 | $ 16.08 | $ 13.44 | $ 10.81 |
| RS30DGA | >0<250 | $ 24.18 | $ 18.59 | $ 18.59 |

| | | | | |
|---|---|---|---|---|
| RS30SMA | >=1000<2000 | $ 15.92 | $ 13.91 | $ 11.91 |
| RS30SMA | >=2000 | $ 14.52 | $ 12.98 | $ 11.44 |
| RS30SMA | >=250<500 | $ 24.29 | $ 19.66 | $ 15.04 |
| RS30SMA | >=500<1000 | $ 18.33 | $ 15.70 | $ 13.06 |
| RS30SMA | >0<250 | $ 26.39 | $ 20.80 | $ 20.80 |
| RS40DGA | >=1000<2000 | $ 18.06 | $ 16.05 | $ 14.05 |
| RS40DGA | >=2000 | $ 16.55 | $ 15.01 | $ 13.47 |
| RS40DGA | >=250<500 | $ 27.52 | $ 22.89 | $ 18.27 |
| RS40DGA | >=500<1000 | $ 20.85 | $ 18.21 | $ 15.58 |
| RS40DGA | >0<250 | $ 31.54 | $ 25.95 | $ 25.95 |
| RS40SMA | >=1000<2000 | $ 21.06 | $ 19.05 | $ 17.04 |
| RS40SMA | >=2000 | $ 19.50 | $ 17.96 | $ 16.42 |
| RS40SMA | >=250<500 | $ 30.47 | $ 25.84 | $ 21.22 |
| RS40SMA | >=500<1000 | $ 23.85 | $ 21.22 | $ 18.58 |
| RS40SMA | >0<250 | $ 34.49 | $ 28.90 | $ 28.90 |
| RS50DGA | >=1000<2000 | $ 22.45 | $ 20.44 | $ 18.43 |
| RS50DGA | >=2000 | $ 20.79 | $ 19.25 | $ 17.71 |
| RS50DGA | >=250<500 | $ 32.96 | $ 28.34 | $ 23.71 |
| RS50DGA | >=500<1000 | $ 25.62 | $ 22.98 | $ 20.34 |
| RS50DGA | >0<250 | $ 38.91 | $ 33.31 | $ 33.31 |
| RSSpraySingle | >=1000<2000 | $ 6.75 | $ 6.75 | $ 6.75 |
| RSSpraySingle | >=2000 | $ 6.05 | $ 6.05 | $ 6.05 |
| RSSpraySingle | >=250<500 | $ 17.25 | $ 17.25 | $ 17.25 |
| RSSpraySingle | >0<250 | $ 31.25 | $ 31.25 | $ 31.25 |
| RSSpraySingle | >0<250 | $ 10.25 | $ 10.25 | $ 10.25 |

## 4.4 Treatment Selection Business Rules

The business rules shown in Figure 25 demonstrate how the major treatment type is selected i.e resurfacing or rehabilitation. Then a more specific treatment is selected based on the condition variables and traffic loadings is selected using the secondary process detailed in Figure 26.

### 4.4.1 Unsealed Roads

It should be noted that the ToG have only in the last 3 years adopted the use of recycled asphalt pavement material for its unsealed road network. The unsealed road network is only 14kms total in length and not all the unsealed roads have this pavement type as yet. Given there is a lack of historical understanding as to the performance of this material, assumptions have needed to be made regarding the management of this road type. It is also the intention that all unsealed roads will have this treatment going forward.

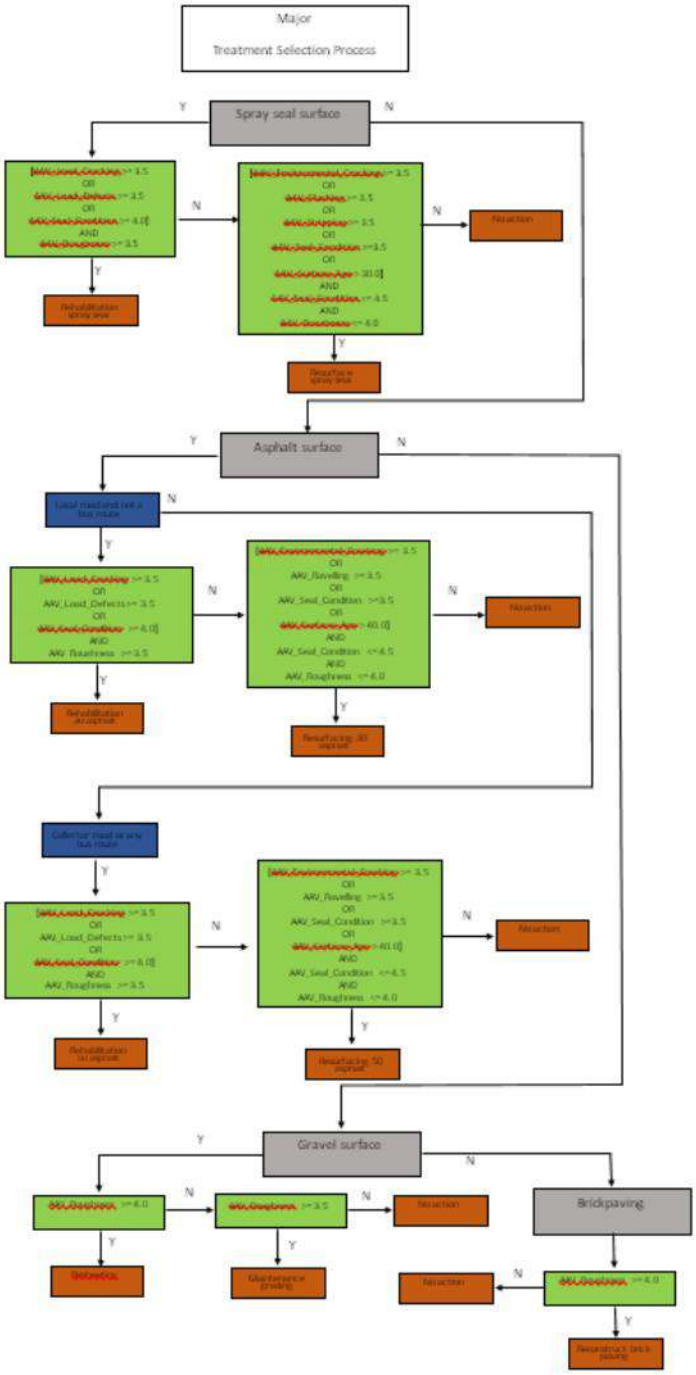


Figure 25 – Major Treatment Selection Process

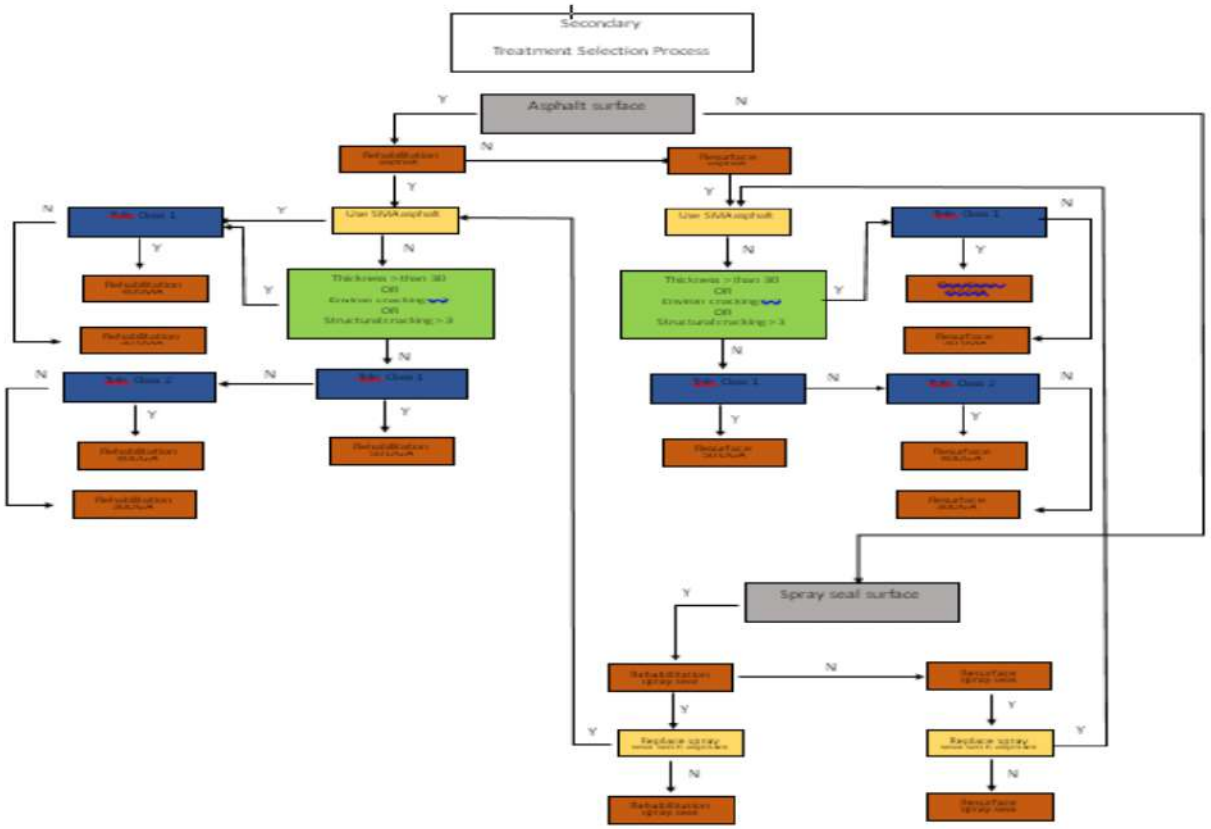


Figure 26 – Secondary Treatment Selection Process

## 4.5 Analysis Period

Although the objective is to produce a more specific 5 year program, the analysis period was extended to ascertain the 100 year whole of life cost. This will assist in understanding the long term implications of the treatment selection options. It is the nature of road network management that the funding requirements indicated within the period may significantly increase outside of that defined period as significant portions of the network come to the time of needing treatment.

This is particularly pertinent when considering areas of recent development where they are likely to all start ending the end of their surface lives at around the same time. It is prudent to extend the analysis period so as not to set an expectation of required investment only to have that increase significantly following the end of the period leaving Council with a funding gap that is likely to large to close.

## 4.6 Scenarios

A variety of options were modelled to understand the most cost efficient.

- Maintain existing surface and pavement type
- Use only DGA
- Use only SMA
- Use DGA and SMA
- Pavement stabilisation

## 4.7 Program Summaries

The programs are summarised in Table 4-3 over page. Note the program indicates the year in which the condition intervention level threshold is breached. This is the nature of a trigger based prioritised program and will see some years where there are no treatments being triggered. Table 4-4 shows a budget that has been distributed to demonstrate an indicative annual expenditure.

**Table 4-3 Treatment Options – Whole of Life Cost Summary**

| | Use DGA or SMA Asphalt | | Use DGA Asphalt Only | | Maintain Existing Surfaces - Use SMA | | Maintain Existing | |
|---|---|---|---|---|---|---|---|---|
| Year | Budget | 100 yr WOLC | Budget | 100 yr WOLC | Budget | 100 yr WOLC | Budget | 100 yr WOLC |
| 1 | $1,578,275.19 | $6,452,827.58 | $1,450,187.30 | $7,252,442.51 | $ 1,578,275.19 | $6,452,827.58 | $1,762,516.81 | $8,947,029.52 |
| 2 | $186,214.87 | $ 1,096,272.00 | $173,565.64 | $1,176,548.75 | $ 233,902.27 | $1,104,722.92 | $252,238.96 | $1,465,661.97 |
| 3 | $644,673.01 | $ 2,929,131.63 | $634,867.37 | $2,896,355.98 | $ 812,509.91 | $ 3,097,591.52 | $848,308.14 | $3,774,515.88 |
| 4 | $ 183,939.55 | $931,397.33 | $183,939.55 | $ 931,397.33 | $ 255,708.73 | $ 974,321.06 | $255,708.73 | $1,224,281.26 |
| 5 | $ - | $ - | $ - | $- | $ - | $ - | $ - | $ - |
| 6 | $ - | $ - | $ - | $- | $ - | $ - | $ - | $ - |
| 7 | $ 2,021,148.65 | $ 12,897,148.73 | $1,804,812.40 | $ 13,764,754.14 | $ 2,505,124.55 | $ 13,022,069.03 | $ 3,359,254.94 | $19,958,137.20 |
| 8 | $ 98,467.32 | $218,465.16 | $95,944.97 | $ 208,375.79 | $ 98,467.32 | $ 218,465.16 | $ 95,944.97 | $208,375.79 |
| 9 | $ 156,929.90 | $ 470,123.70 | $ 156,929.90 | $ 470,123.70 | $ 156,929.90 | $ 470,123.70 | $156,929.90 | $470,123.70 |
| 10 | $ - | $ - | $ - | $- | $ - | $ - | $ - | $ - |
| 11 | $ 6,327,026.08 | $33,042,711.69 | $ 5,931,098.82 | $ 35,918,679.86 | $ 6,327,026.08 | $ 33,042,711.69 | $ 5,931,098.82 | $35,918,679.86 |
| 12 | $ - | $ - | $ - | $- | $ - | $ - | $ - | $ - |
| 13 | $ 5,233,316.96 | $ 38,483,721.61 | $ 5,220,257.89 | $ 38,606,521.93 | $9,555,515.86 | $ 41,064,192.45 | $ 9,610,778.86 | $54,117,784.18 |
| 14 | $ - | $ - | $ - | $- | $ - | $ - | $ - | $ - |
| 15 | $ - | $ - | $ - | $- | $ - | $ - | $ - | $ - |
| **Total** | **$ 16,429,991.53** | **$ 96,521,799.44** | **$ 15,651,603.84** | **$ 101,225,200.00** | **$21,523,459.80** | **$ 99,447,025.12** | **$ 22,272,780.12** | **$126,084,589.36** |

The whole of life cost analysis sees the DGA and SMA option being the most cost efficient overall however the DGA only option is cheaper within the 15 year period. This demonstrates a lower upfront cost for DGA however given the inherent pavement movement and subsequent cracking on the ToG network, the SMA will give a better lifecycle cost. All program budgets are summarised in Table 4-4 and shown graphically in Figure 27.

**Table 4-4 15 Year Prioritised Program Summaries**

| Year | Footpath 15 Distributed | Kerb 15 Distributed | Unsealed 15 Year Distributed | Preferred 15 Year Sealed Road Program | Total Annual Budget |
|---|---|---|---|---|---|
| 1 | $345,558.81 | $229,500.00 | $115,567.24 | $1,095,108.44 | $1,785,734.49 |
| 2 | $270,744.47 | $214,200.00 | $123,783.41 | $1,095,057.52 | $1,703,785.40 |
| 3 | $292,843.94 | $228,600.00 | $104,058.90 | $1,094,103.68 | $1,719,606.52 |
| 4 | $372,257.30 | $241,200.00 | $120,225.60 | $1,094,237.44 | $1,827,920.34 |
| 5 | $275,912.20 | $225,000.00 | $129,447.45 | $1,095,227.81 | $1,725,587.46 |
| 6 | $314,500.59 | $243,720.00 | $119,876.46 | $1,091,950.65 | $1,770,047.70 |
| 7 | $291,639.71 | $225,360.00 | $118,212.35 | $1,090,916.34 | $1,726,128.40 |
| 8 | $280,348.44 | $228,240.00 | $121,895.40 | $1,091,541.90 | $1,722,025.74 |
| 9 | $279,230.93 | $229,320.00 | $135,071.64 | $1,101,026.73 | $1,744,649.30 |
| 10 | $ 284,401.76 | $233,640.00 | $128,100.23 | $1,107,067.89 | $1,753,209.88 |
| 11 | $286,557.29 | $220,680.00 | $139,139.88 | $1,098,773.66 | $1,745,150.83 |
| 12 | $273,326.19 | $235,980.00 | $189,417.94 | $1,099,910.40 | $1,798,634.53 |
| 13 | $269,730.00 | $229,680.00 | $208,886.29 | $1,091,248.17 | $1,799,544.46 |
| 14 | $209,112.35 | $226,440.00 | $137,758.50 | $1,083,378.40 | $1,656,689.25 |
| 15 | $304,109.91 | $223,051.50 | $235,851.66 | $1,100,442.50 | $1,863,455.57 |
| **Total** | **$4,350,273.88** | $3,434,611.50 | **$2,127,292.94** | **$16,429,991.53** | $26,342,169.87 |

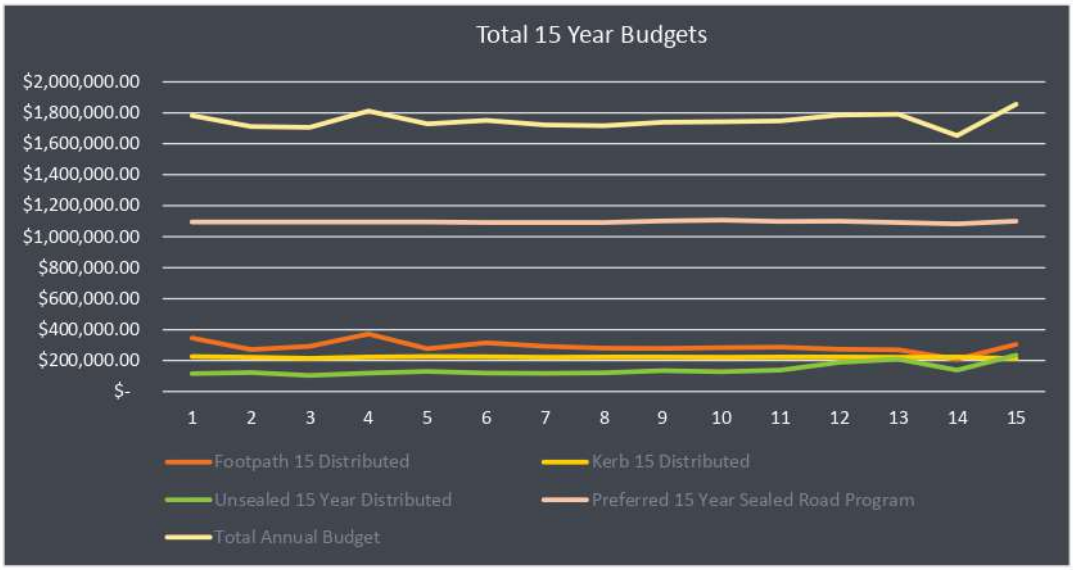

**Figure 27 – 15 Year Program Summary**

# 5 Phase 4 – Optimised Programs

Following the generation of the 5 and 15 year programs, the ToG needed to determine the effect of current funding allocations within the latest revision of the Long Term Financial Plan (LTFP) and the resultant asset conditions. As an extension to the original scope, Talis generated optimised programs using the same deterioration curves and treatment selection process to determine the effect of the funding allocations.

## 5.1 Optimisation

Optimisation compares multiple strategies over all road sections and calculates the benefit and cost of each treatment strategy. Costs are established using the unit rates for treatments that are applied as part of a treatment strategy. Benefit is calculated by comparing the difference in condition of a "do nothing" strategy and an appropriate calculated strategy.

The objective measurement function(s) can be established for the individual components of a road such as the surface or pavement or consider both as one asset. The objective measurement function is developed specifically for the subject road network and can comprise a number of appropriately weighted condition attributes.

It should be understood that optimisation will not necessarily treat road segments in worse condition first, as they may not deliver the best cost benefit depending on the budget and management strategy for the road network. Each treatment strategy selected shall have an effect on the condition of that treatment length based on nominated reset values for individual conditions. For example, an asphalt overlay will reset the cracking, asphalt and local surface conditions to "as new" but may have little to no effect on the rutting of the pavement structure. The overall effect of each of the works strategies on the entire network will be summarised to give an optimised objective measurement function for the budget available.

The program will optimise to give the best result over the defined analysis period. Should the analysis period be extended significantly then the optimisation process will re optimise to give the best cost benefit over the new period which would likely see a change in roads to be treated and potentially the treatment type. Although the output required is for a 15 year period, it is prudent to extend the analysis period significantly beyond this to understand if there is an imminent backlog of renewal requirements outside of the 15 year period.

It should be noted and understood that an optimised program will not necessarily treat the roads that are in worse condition first. It may result in a higher cost benefit to undertake treatments of a lesser cost such as resurfacing over a greater area of the road network rather than an expensive reconstruction treatment over a smaller portion of the network. Other influences such as political agendas or over-arching strategies may supersede the candidate sites selected.

### 5.1.1 Objective Measurement Function – Condition Indices

The objective measurement function is the basis to which the ToG desires to optimise investment in the road network. It represents how the outcomes of each investment and management strategy are measured in terms of benefit. The measures may be varied and include variables such as age however it is common to use the condition of the road to quantify and prioritise the benefit realised by an individual strategy. Condition indices (CI) can be defined in varying ways, often represented as multiple condition attributes being used in the form of a composite index.

CI are developed for each road component or the road as a whole to factor multiple weighted condition attributes to reflect their effect on the on the overall condition of the road. Usually multiple condition attributes

will be considered when and which treatment shall be selected. Rather than attempting to improve or maintain a single condition variable, for example surface structure cracking, it can be combined with multiple attributes which are weighted to develop a single indexed condition score.

The attributes used and subsequent weightings of the CI should be representative of the strategic objective of the ToG and have a direct relationship with the maintenance and renewal strategy implemented. Achieving the highest outcome of the CIs will determine the optimal strategies that are applied to the network under a constrained budget.

The condition indices defined in 3.2 will be used as the objective functions to which the programs will be optimised to.

## 5.2 Optimised Program Funding Scenarios

The following funding scenarios modelled and outputs compared:

- Current Budget– the allocated funding within the latest revision of the Long Term Financial Plan (LTFP). This is a constrained funding scenario and the optimisation process will determine the best renewal strategy for the funding levels available.
- Maintain Current Condition – the unconstrained funding that is required to maintain the current condition of the network.
- Unlimited – unconstrained funding which will undertake the works as required without consideration of cost
- Do Nothing – modelled to demonstrate the deterioration of the network should no rehabilitation works be undertaken.

### 5.2.1 ToG LTFP Funding Allocations

The current budget is considered the allocation of funding as included in the latest revision of the ToG LTFP.

**Table 5-1 LTFP Funding Allocation**

| Financial Year | Sealed Roads Renewal Program ($,000) | Unsealed Roads Re-sheeting Program ($,000) | Kerb & Gutter Renewal Program ($,000) | Footpath renewal Program ($,000) |
|---|---|---|---|---|
| 2017/2018 | $710 | $61 | $230 | $184 |
| 2018/2019 | $535 | $116 | $80 | $150 |
| 2019/2020 | $838 | $124 | $260 | $200 |
| 2020/2021 | $877 | $104 | $270 | $250 |
| 2021/2022 | $918 | $120 | $270 | $300 |
| 2022/2023 | $961 | $130 | $260 | $350 |
| 2023/2024 | $1,007 | $120 | $260 | $350 |
| 2024/2025 | $1,055 | $118 | $260 | $350 |
| 2025/2026 | $1,105 | $122 | $260 | $350 |
| 2026/2027 | $1,158 | $135 | $260 | $350 |
| 2027/2028 | $1,113 | $128 | $260 | $358 |
| 2028/2029 | $1,272 | $128 | $260 | $358 |
| 2029/2030 | $1,272 | $128 | $260 | $358 |
| 2030/2031 | $1,272 | $128 | $260 | $358 |
| 2031/2032 | $1,272 | $128 | $260 | $358 |
| 2032/2033 | $1,272 | $128 | $260 | $358 |

## 5.3 Program Outputs

For clarity the program outputs have been separated to consider the sealed roads separately from the unsealed roads, kerb and channel and the footpaths.

### 5.3.1 Budget Summary

The budget summary for the modelled funding scenarios are detailed in Table 5-2. The programs will optimise to give the highest resultant objective measure being the road condition index, the kerb and channel condition and the footpath condition.

#### 5.3.1.1 Sealed Roads

The optimised program considers both strategies of treating the roads with the same existing surface type (like for like) as well as alternate surface types (DGA and SMA).

It is noted that there has been a desire to maintain the heritage area close to the Town centre as spray seal for reasons of being more in accordance with the aesthetics of the precent. It is very much acknowledged by Talis and supported by ToG technical staff that this is not the most desirable surfacing type within an urban area and will result in a lower life expectancy and higher maintenance costs when compared to either DGA or SMA. For the purposes of this optimisation exercise both have been considered however this will need to be a specific decision made by Council as to what is most appropriate outside of engineering considerations.

#### 5.3.1.2 Unsealed Roads

The program considers the current practice of using recycled asphalt material for the unsealed roads. Eventually all existing loose gravel material will be replaced using this material.

#### 5.3.1.3 Kerb and Channel

The program where possible considers the condition of the kerb and channel and the timing for the timing of the road network. Where the conditions do not reasonably align the kerb and channel may be treated independently.

#### 5.3.1.4 Footpaths

The footpaths are considered to be all replaced at time of treatment to a minimum width of 1.5m and to be either insitu-concrete to replace any slabs or otherwise like for like.

**Table 5-2 Sealed Road Program Budget Summary**

| Replacing Existing Surfacing with Like for Like | | | Alternate DGA/SMA Surfacing | | |
|---|---|---|---|---|---|
| Current Budget CI Like for Like | Unlimited Budget CI Like for Like | Maintain CI Like for Like | Current Budget CI SMA DGA Option (Preferred) | Unlimited Budget CI SMA DGA Option | Maintain CI SMA DGA Option |
| $ 534,292.40 | $7,457,315.53 | $ 1,672,581.49 | $532,820.59 | $ 9,802,632.54 | $1,445,954.90 |
| $ 836,864.22 | $309,406.61 | $ 1,671,484.42 | $837,579.16 | $- | $1,437,878.50 |
| $ 874,190.50 | $ 97,488.20 | $ 1,672,288.54 | $874,850.36 | $- | $1,442,667.29 |
| $ 917,312.87 | $358,228.81 | $ 1,671,824.61 | $915,369.35 | $ 725,018.71 | $1,438,518.82 |
| $ 958,145.65 | $587,820.68 | $ 1,660,223.71 | $959,225.55 | $ 1,116,206.57 | $1,440,721.84 |
| $1,006,009.48 | $- | $ 1,654,681.30 | $1,006,704.84 | $- | $1,435,872.78 |
| $1,054,890.96 | $548,216.18 | $ 890,308.73 | $1,054,037.71 | $ 1,371,324.39 | $1,445,750.91 |
| $1,104,726.46 | $951,514.86 | $ 1,077,708.36 | $1,104,846.88 | $ 1,077,708.36 | $1,445,539.36 |
| $1,153,923.62 | $ 2,468,045.68 | $ 1,667,556.67 | $1,157,865.10 | $ 4,342,035.24 | $1,440,568.68 |
| $1,112,548.85 | $334,579.79 | $ 1,194,011.26 | $1,107,696.95 | $ 104,307.83 | $1,442,669.56 |
| $1,262,542.65 | $- | $ 56,542.90 | $1,268,152.72 | $- | $1,434,192.25 |
| $1,271,715.58 | $ 2,743,158.85 | $ 1,655,747.99 | $1,271,262.75 | $ 661,570.53 | $1,435,614.23 |
| $1,252,422.28 | $150,169.56 | $ 1,638,032.93 | $1,265,254.29 | $- | $1,423,962.81 |
| $1,248,715.97 | $ 2,595,845.01 | $ 1,671,684.31 | $1,266,863.67 | $ 858,911.68 | $1,445,359.86 |
| $1,271,134.80 | $- | $ 848,441.47 | $1,271,415.83 | $- | $1,099,647.17 |
| $1,265,476.14 | $962,864.71 | $ 999,193.08 | $1,270,810.00 | $ 7,588.11 | $1,434,612.30 |
| $1,263,075.32 | $ 6,003,757.04 | $ 1,672,618.36 | $1,266,098.77 | $ 2,506,455.17 | $1,081,847.07 |
| $1,263,722.09 | $- | $ 1,658,316.29 | $1,271,830.52 | $- | $ - |
| $1,268,922.70 | $ 1,883,841.81 | $ 1,665,617.69 | $1,230,236.53 | $- | $1,440,700.78 |
| $1,268,147.15 | $ 4,030,385.94 | $ 1,667,447.10 | $1,253,012.52 | $ 1,622,876.07 | $411,393.51 |

| Replacing Existing Surfacing with Like for Like | | | Alternate DGA/SMA Surfacing | | |
|---|---|---|---|---|---|
| $1,251,025.89 | $527,111.20 | $ 1,672,777.35 | $1,269,185.18 | $ 70,913.12 | $199,049.30 |
| $1,268,752.23 | $110,662.75 | $ 1,672,533.37 | $1,251,999.81 | $- | $674,600.35 |
| $1,234,408.22 | $3,621,640.55 | $ 1,671,014.98 | $1,190,472.15 | $- | $345,602.22 |
| $1,217,107.01 | $88,289.33 | $ 1,649,740.43 | $1,205,154.81 | $ 14,546.40 | $1,439,559.88 |
| $1,268,469.33 | $ 5,766,777.69 | $ 1,665,376.84 | $1,252,190.10 | $ 6,797,209.41 | $1,433,980.31 |
| $1,256,155.16 | $- | $ 1,665,946.17 | $1,068,284.65 | $- | $1,436,020.78 |
| $1,245,853.83 | $ 1,200,357.72 | $ 1,668,266.29 | $1,224,249.25 | $ 449,299.64 | $1,440,287.49 |
| $1,240,511.86 | $687,959.55 | $ 1,668,968.06 | $726,414.49 | $- | $1,445,290.22 |
| $1,265,587.35 | $- | $ 1,664,645.06 | $294,263.99 | $- | $1,445,622.54 |
| $1,259,614.23 | $738,416.84 | $ 1,634,038.61 | $723,525.44 | $156,012.13 | $1,413,022.49 |
| **$35,967,924.26** | **$44,223,854.90** | **$44,999,618.36** | **$32,391,673.97** | **$31,684,615.90** | **$38,337,425.42** |

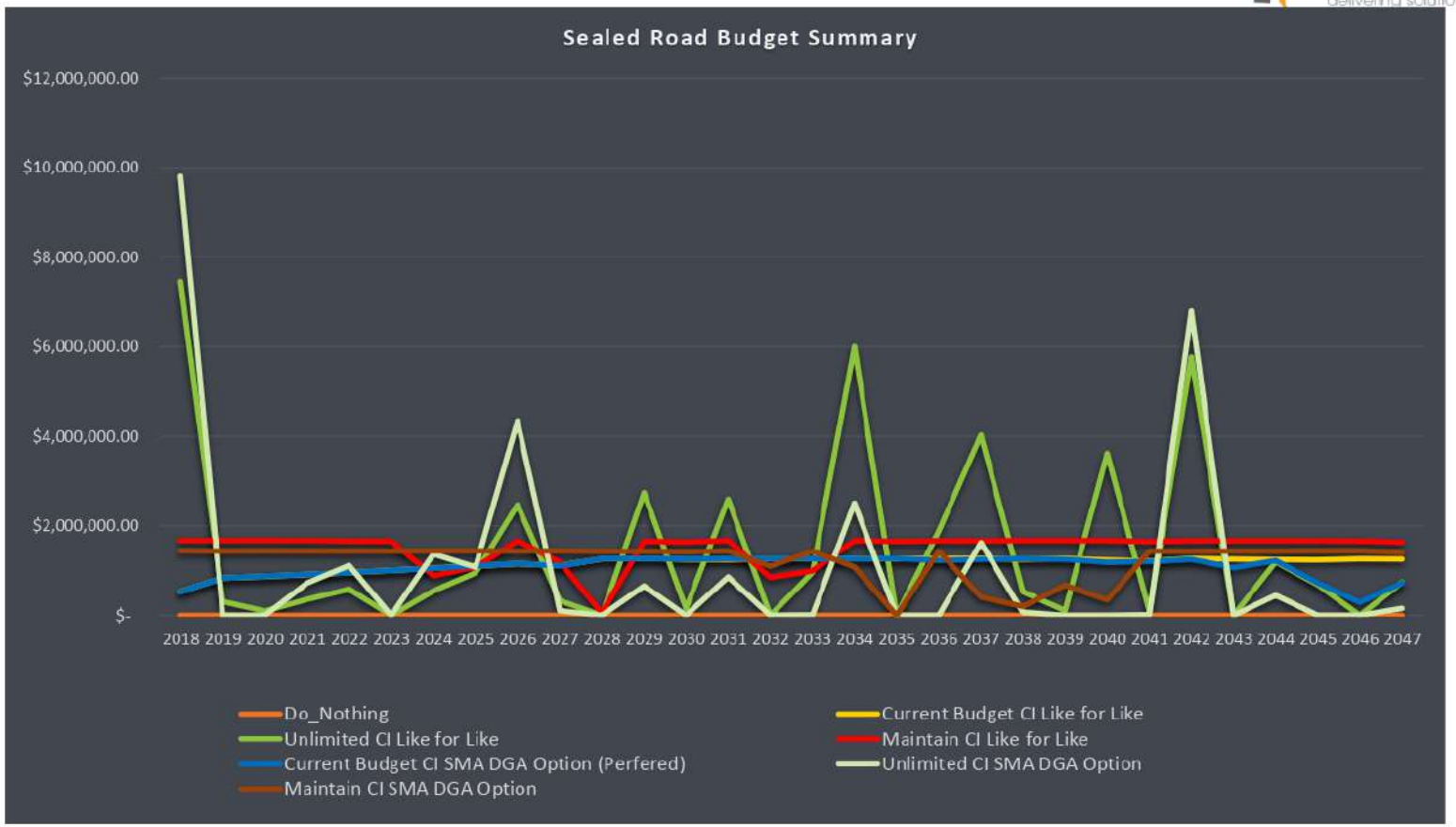


**Figure 5-1 Sealed Road Program Budget Summary**

**Table 5-3 Unsealed Road, Footpath, Kerb & Chanel Program Budget Summary**

| Year | Current Budget Kerb & Chanel | Current Budget Footpath | Current Budget Unsealed Roads |
|---|---|---|---|
| **2018** | $75,951.00 | $149,004.30 | $117,810.00 |
| **2019** | $258,669.00 | $199,198.00 | $ 70,300.80 |
| **2020** | $258,840.00 | $248,235.10 | $101,095.20 |
| **2021** | $255,960.00 | $295,622.40 | $116,692.50 |
| **2022** | $249,120.00 | $341,519.20 | $98,298.00 |
| **2023** | $246,960.00 | $314,704.10 | $115,247.40 |
| **2024** | $241,920.00 | $292,440.00 | $ 25,080.00 |
| **2025** | $253,800.00 | $290,810.00 | $ 11,716.80 |
| **2026** | $257,760.00 | $192,515.80 | $127,567.20 |
| **2027** | $253,764.00 | $352,443.00 | $72,409.50 |
| **2028** | $253,800.00 | $298,378.60 | $111,946.20 |
| **2029** | $252,360.00 | $355,237.80 | $124,417.20 |
| **2030** | $259,200.00 | $357,492.50 | $ 87,208.80 |
| **2031** | $255,600.00 | $351,817.50 | $101,095.20 |
| **2032** | $249,840.00 | $355,461.00 | $99,129.00 |
| Total | $3,623,544.00 | $4,394,879.30 | $1,380,013.80 |

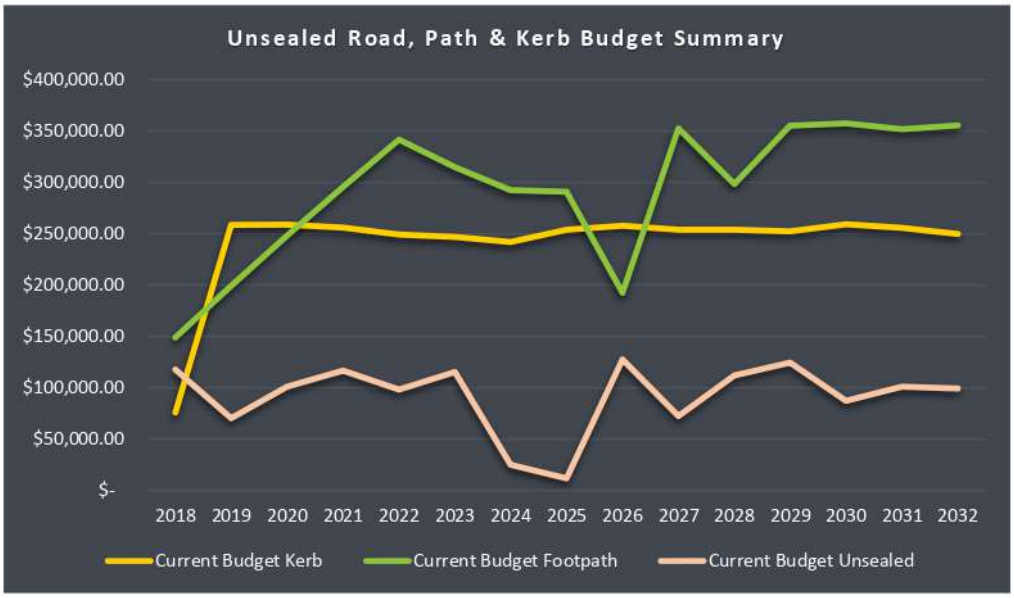


**Figure 5-2 Unsealed Road, Footpath and Kerb Program Budget Summary**

### 5.3.2 Budget Scenario Network Condition Averages

The resultant network condition averages for each year are considered in terms of the average condition index for each year of the analysis period but also the condition distribution that the averages are comprised.

#### 5.3.2.1 Average Network Conditions

Each budget scenario will have a resultant average network condition based on the rules built into the model and the objective function that it is trying to optimise to, in this case the road condition index, the kerb and channel condition index and the footpath condition index detailed in Section 3.2.

It is to be understood that the network averages will fluctuate throughout the analysis period and is the nature of any strategy given the limitations of options based on the resolution of network segmentation and other program inputs such as unit rates. In any given year an individual funding scenario may deliver the highest network average however the average over the entire period should be considered instead.

With respect to the sealed roads, the road condition index comprises the surface condition index and the pavement condition index both equally weighted. Given the limitations of determining the precise condition of the sealed road pavement via a visual survey, it is common for the pavement to be rated quite highly if defects are not presenting but the pavement may still be quite aged and potentially weakened. When the pavement condition index is considered as part of the road condition index potential issues with the surface structure may not be evident as it is favourably masked by the influence of the pavement condition.

As the surface structure is able to be more precisely assessed for condition given its accessibility, the surface condition index should be considered independently as preserving the integrity of the surface to maximise the life of the pavement structure is critical and fundamental to any road network management strategy.

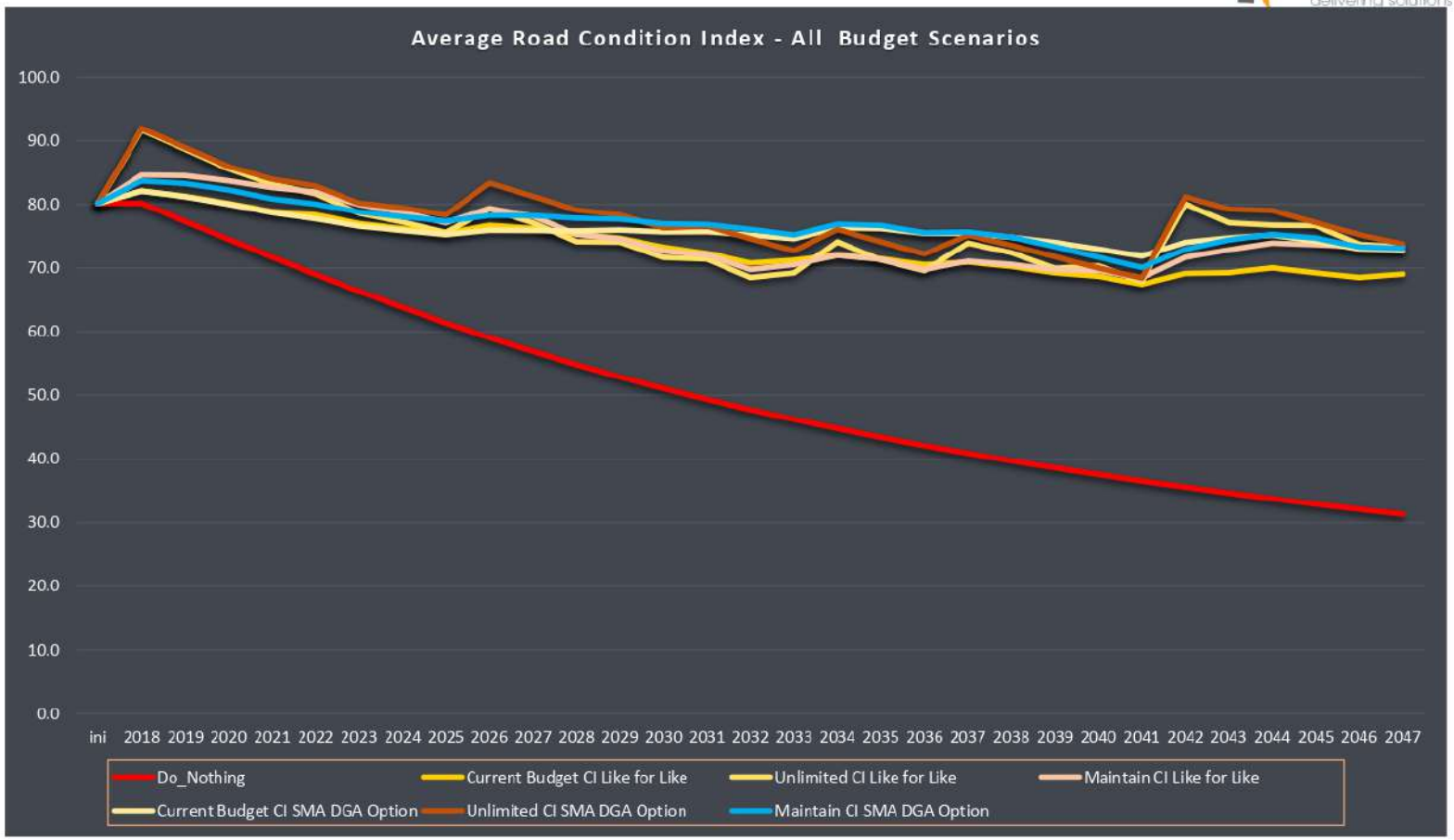


**Figure 5-3 Sealed Road Average Road Condition Index**

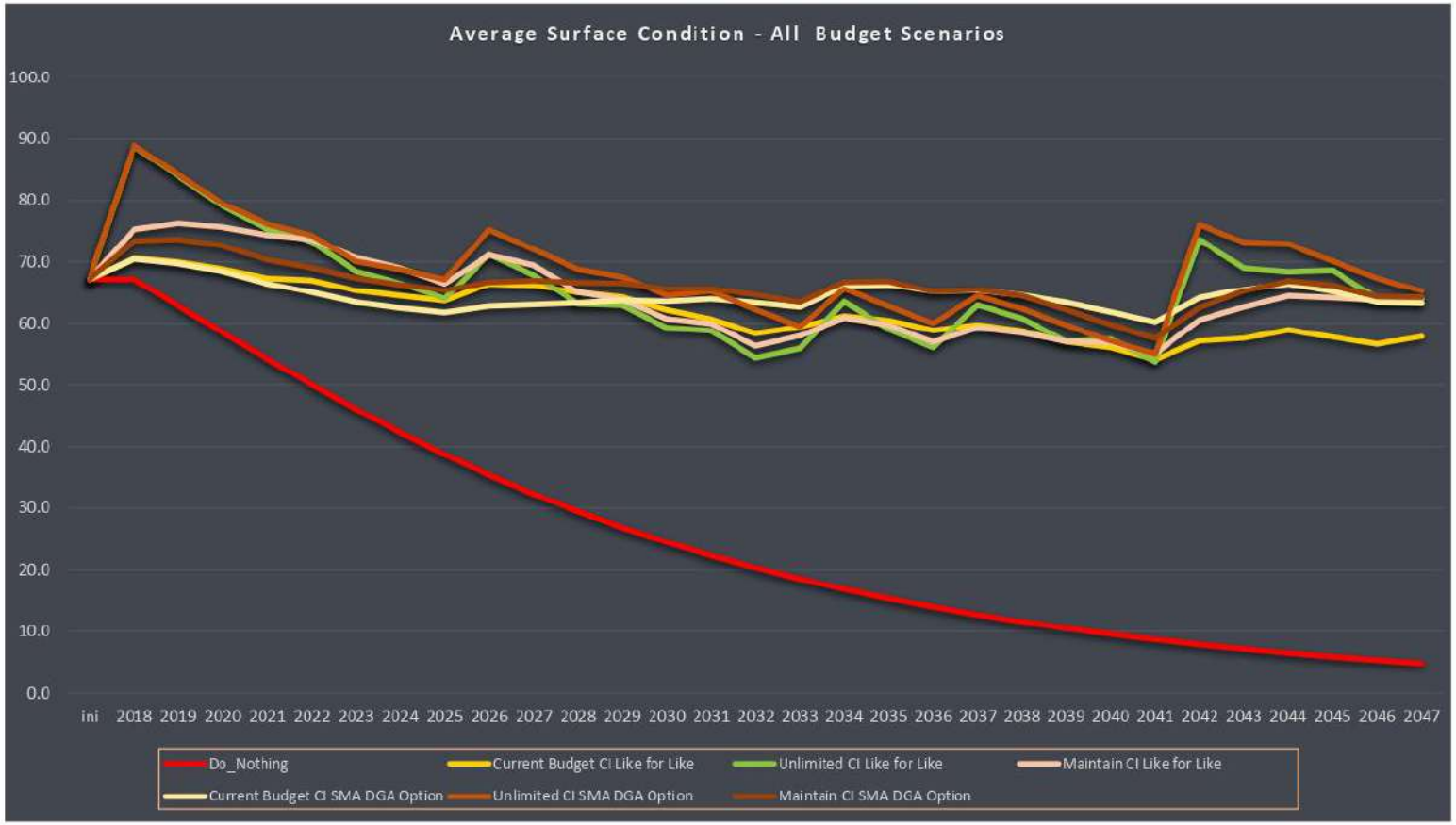


**Figure 5-4 Sealed Road Average Surface Condition**

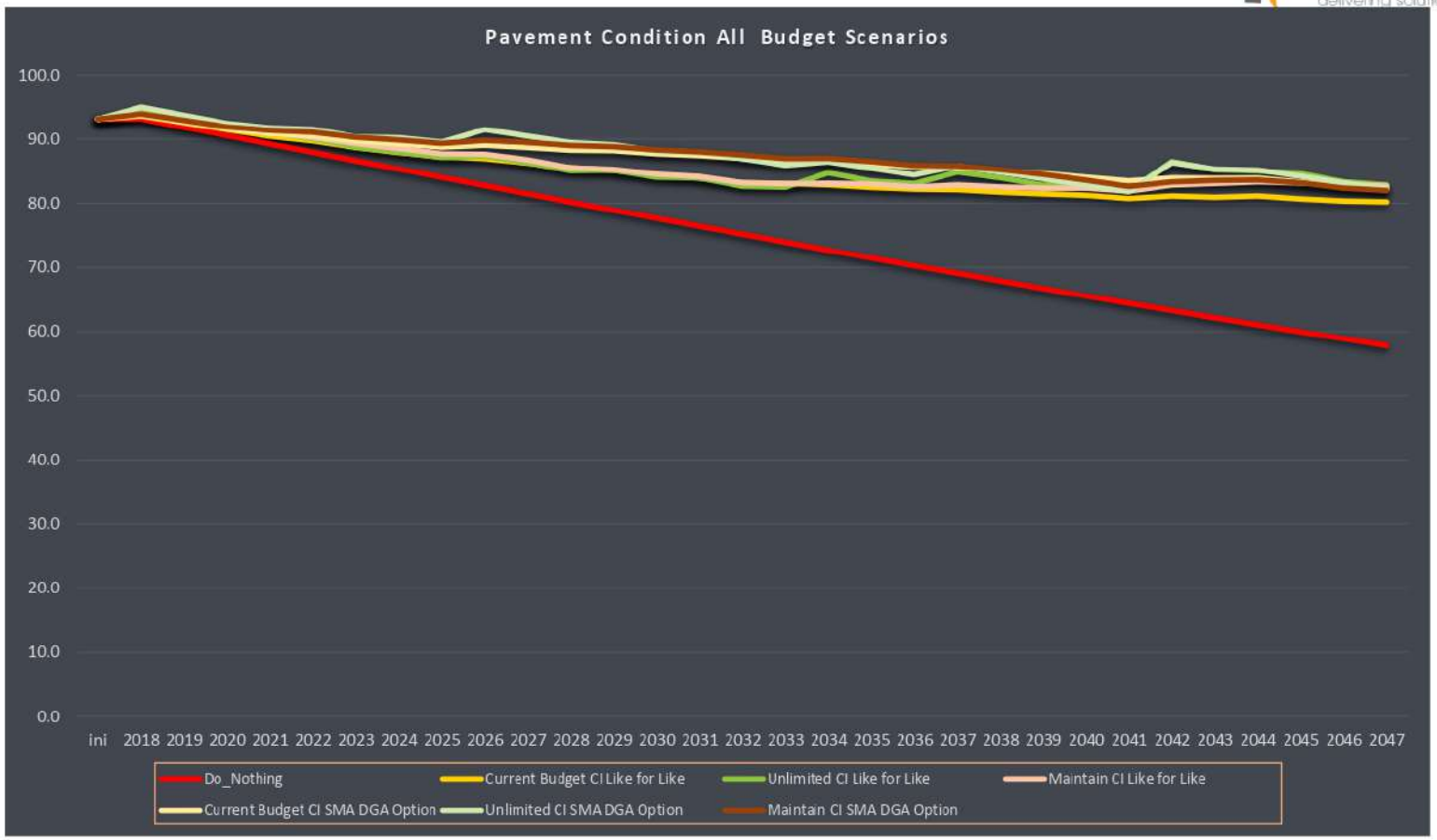


**Figure 5-5 Sealed Road Average Pavement Condition**

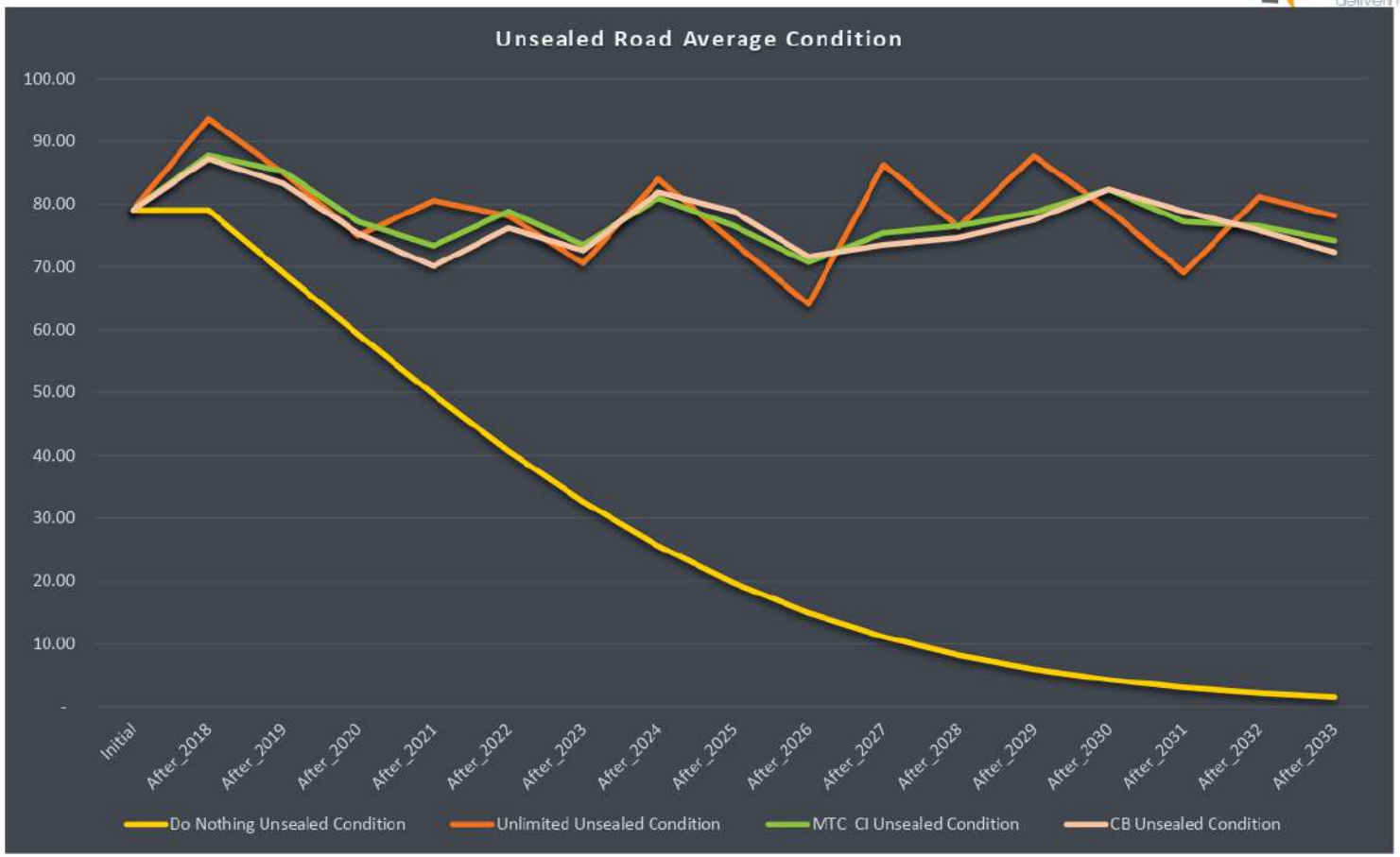


**Figure 5-6 Unsealed Road Average Condition**

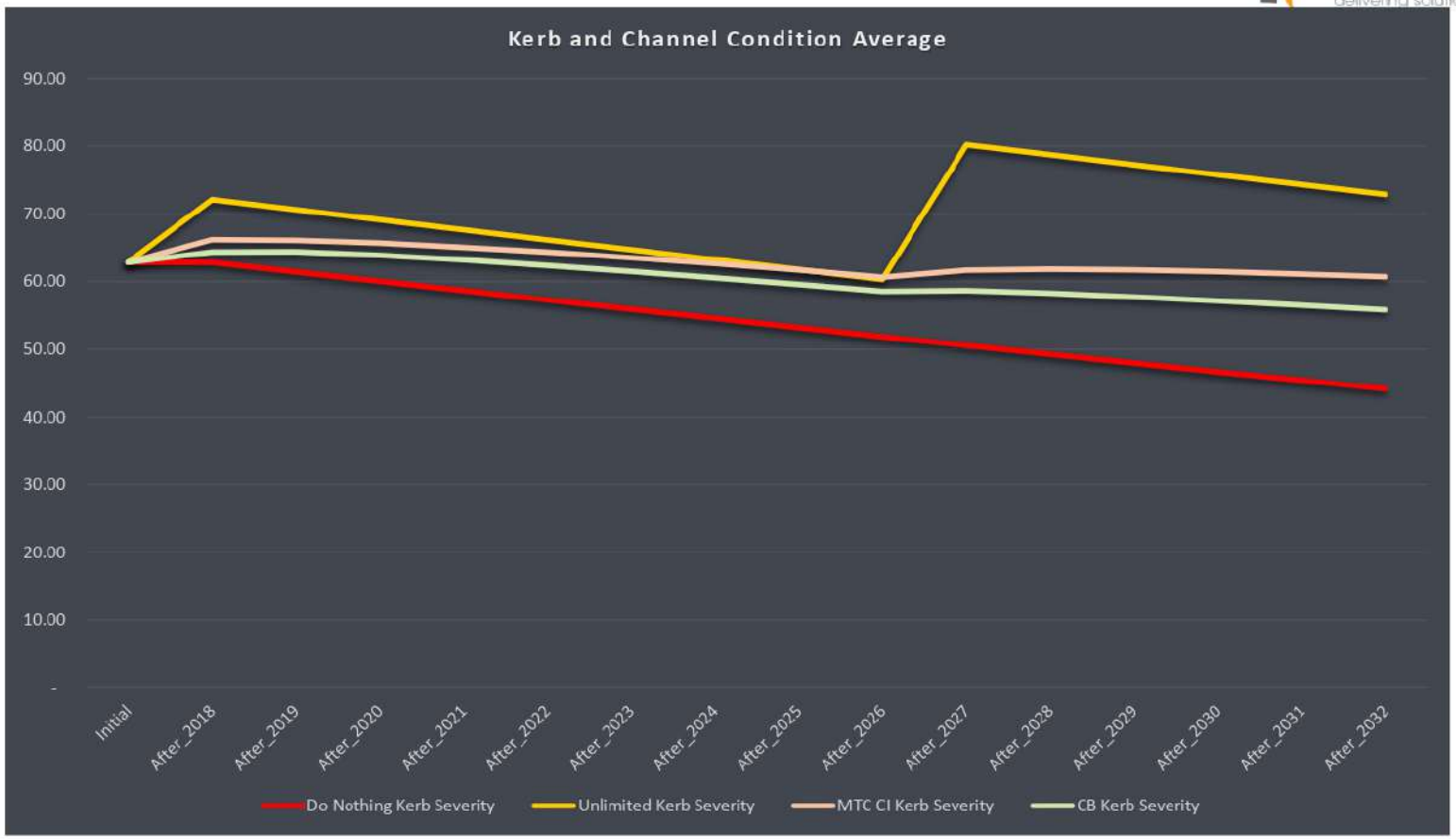


Figure 5-7 Kerb and Channel Average Condition

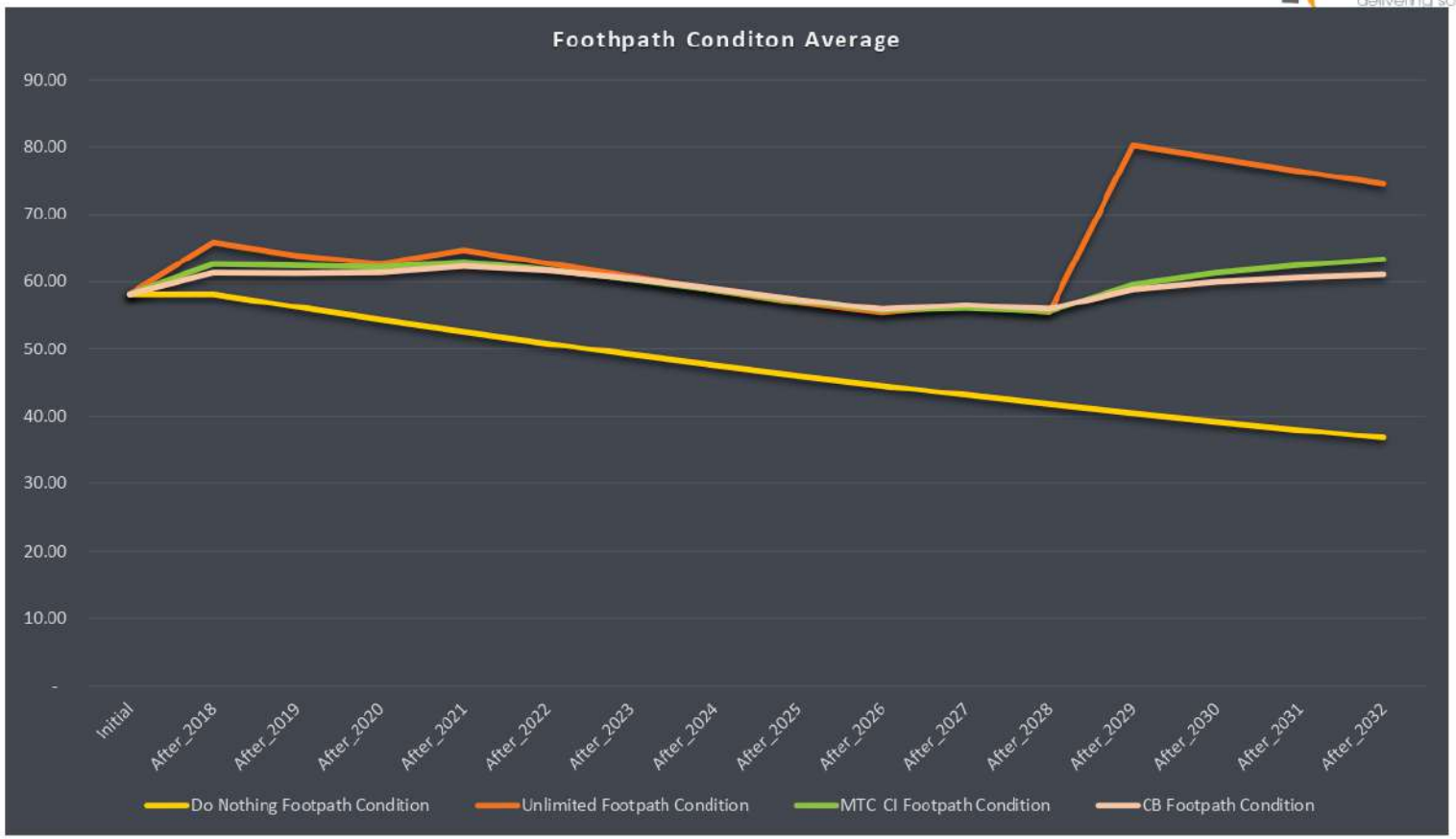


**Figure 5-8 Footpath Average Condition**

#### 5.3.2.2 Condition Distribution

It is desirable to achieve a balanced condition distribution that sees portions of network in each of the generic condition states of excellent, good, average, poor and very poor. For the sealed roads, this refers to the road condition index.

An acceptable network average may consist of a significant portion of the asset base being in excellent condition but then counteracted by a similar portion being in very poor condition. Such imbalance will deliver a disparate level of service and mask underlying flaws in the management strategy. This is often seen in high growth Councils where an aged portion of the asset base is offset by new assets to give an acceptable network average but an inevitable poor average condition for future generations as renewals are not adequately funded.

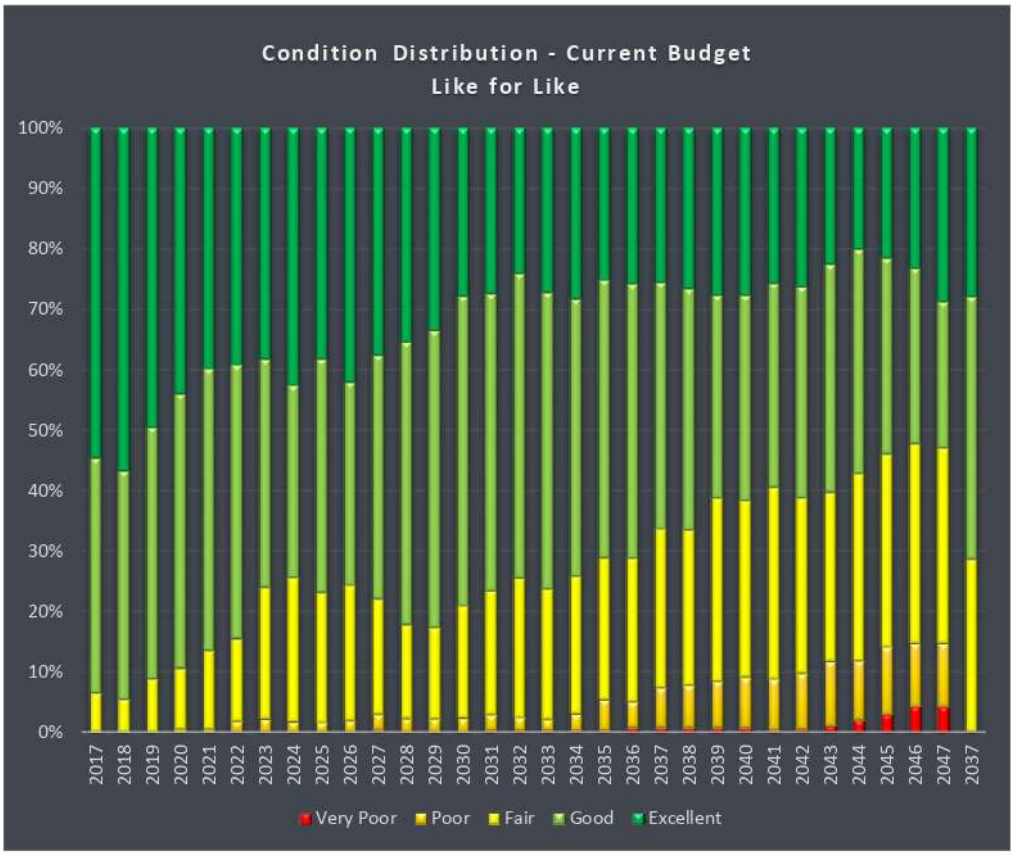


**Figure 5-9 Sealed Road Current Budget Like for Like Condition Distribution**

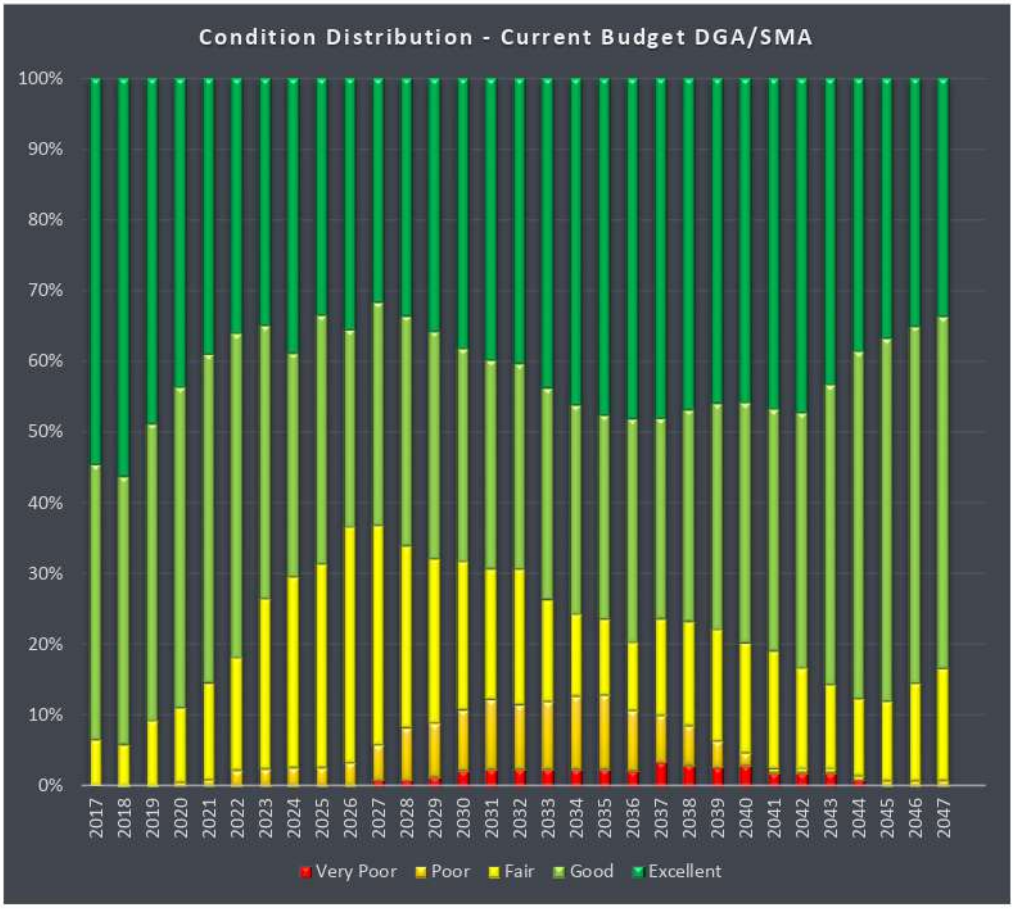


**Figure 5-10 Sealed Road Current Budget DGA/SMA Condition Distribution**

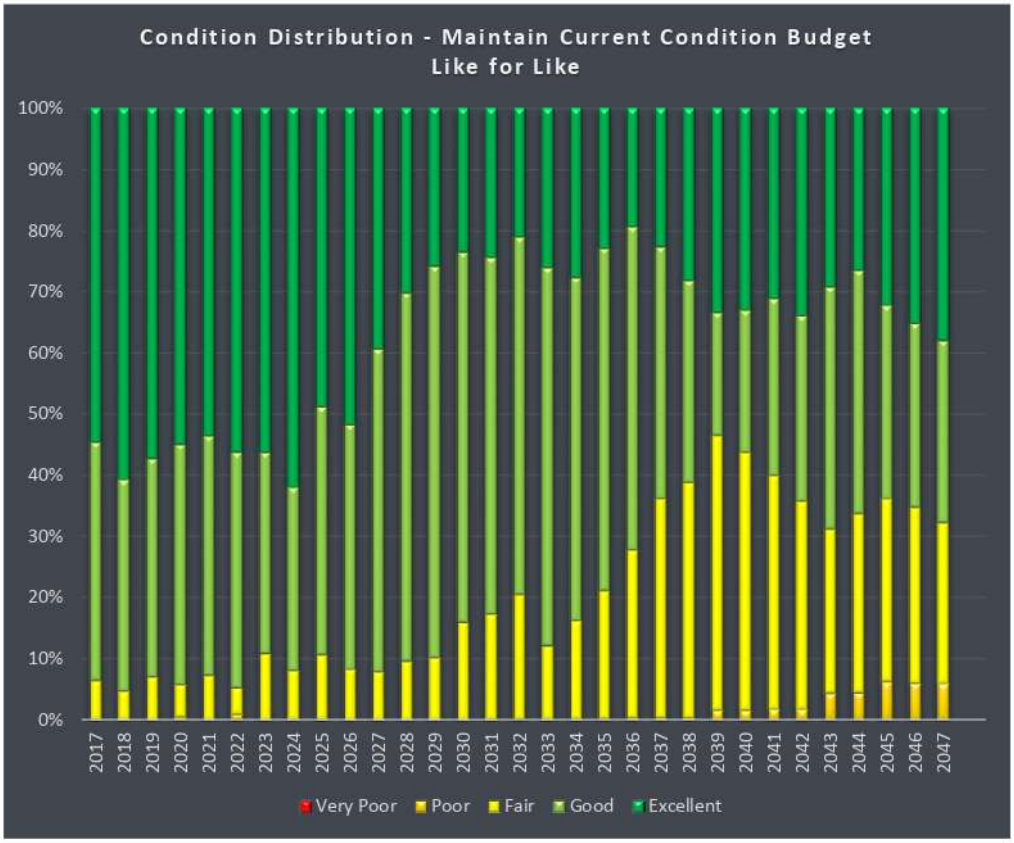


**Figure 5-11 Sealed Road Maintain Current Condition Like for Like Condition Distribution**

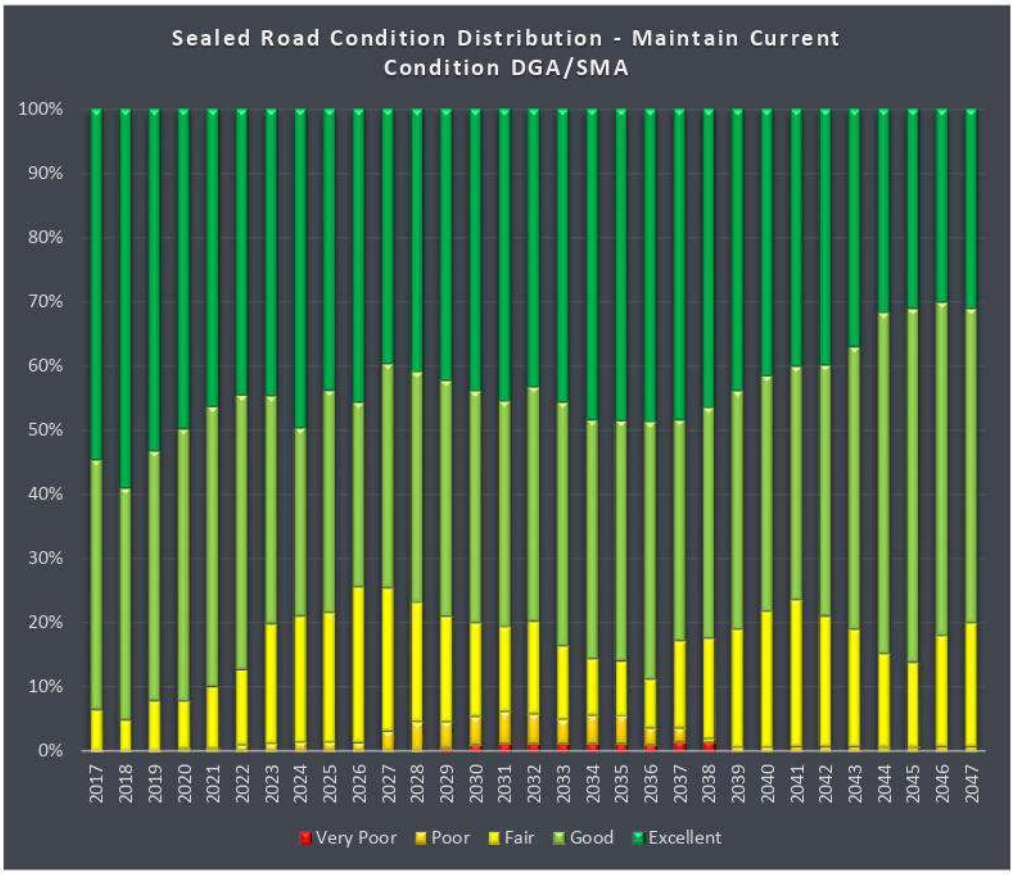


**Figure 5-12 Sealed Road Maintain Current Condition DGA/SMA Condition Distribution**

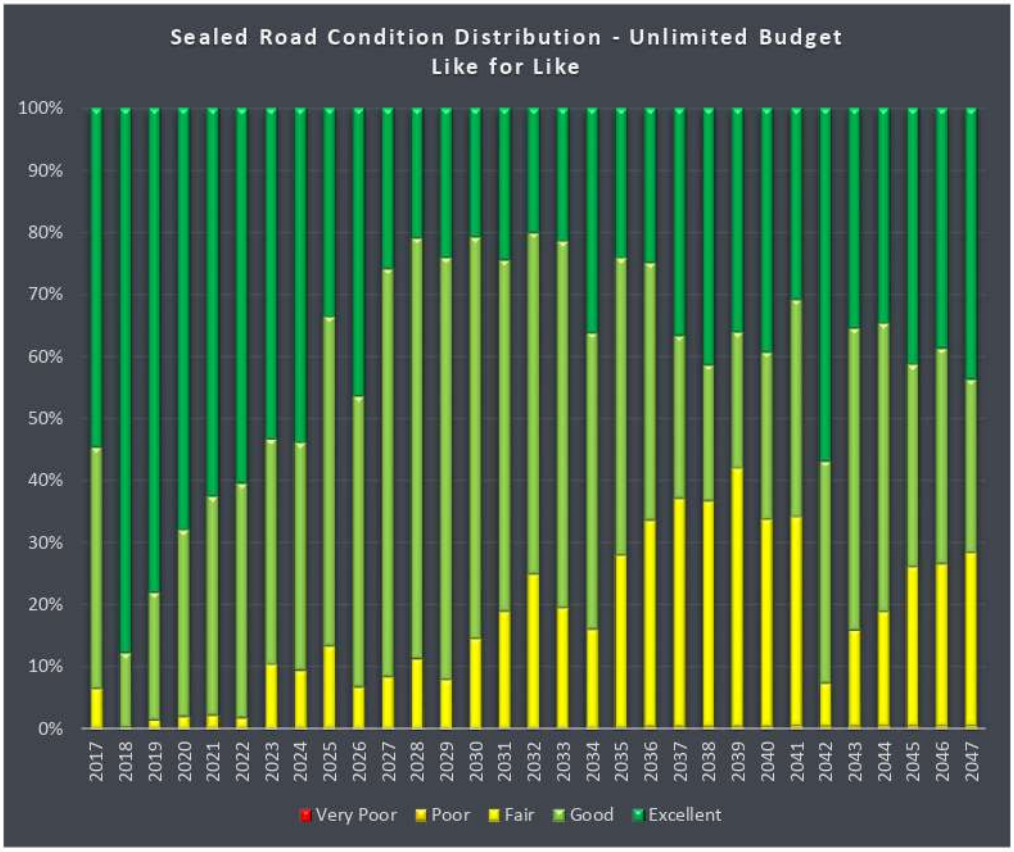


**Figure 5-13 Sealed Road Unlimited Budget Like for Like Condition Distribution**

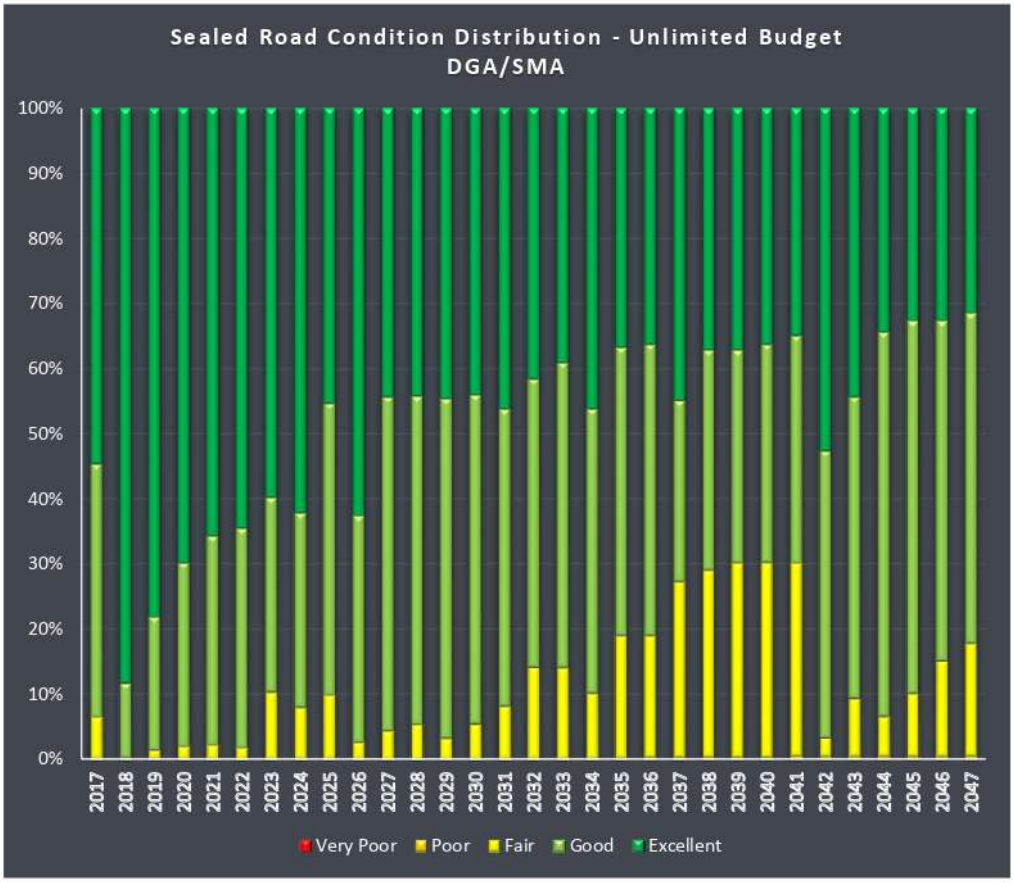


**Figure 5-14 Sealed Road Unlimited Budget DGA/SMA Condition Distribution**

## 5.4 Recommended Strategy

Following review of the optimised programs based on the current budget allocations from the LTFP, it is recommended that the best whole of life cost benefit delivered would be returned by the DGA/SMA option. The average road, surface and pavement condition delivered at the end of the analysis period is 72.4, 61.1 and 83.8 respectively. Although the average conditions are not significantly different when compared across the varying funding scenarios there will also be likely cost benefits in reduced maintenance costs with the use of DGA/SMA.

**Figure 5-15** shows the resultant conditions across the varying funding and treatment scenarios.

The unsealed roads, kerb and channel and footpaths are far less complex assets and represent few options in terms of optimisation. They have only been considered in terms of the budget allocation in the LTFP.

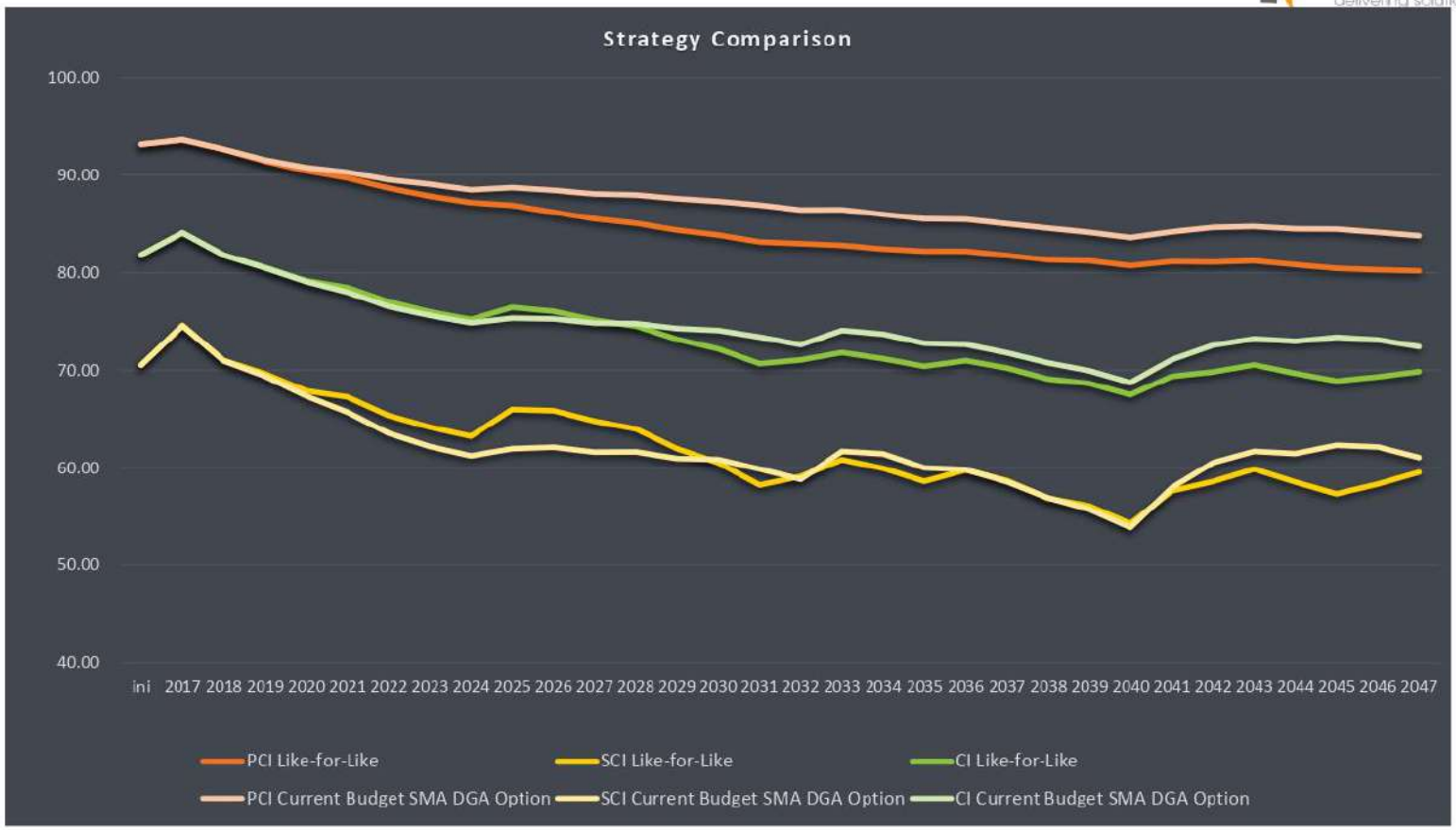


**Figure 5-15 Sealed Road Strategy Comparison**

# Appendix A – Prioritised Initial 15 Year Programs

# Appendix B– Final Prioritised 15 Year Programs

# Appendix C– Valuation Condition Indexes

# Appendix D– Recommended Optimised Program (Current Budget DGA & SMA)

# Appendix E – Unsealed Road Program

# Appendix F– Kerb & Chanel Program

# Appendix G – Footpath Program

**For Official Use Only**

Wasantha,

It would appear that an alternative surface finish for roads and footpaths in the Gawler State Heritage Area would be appropriate and would last much better.

However I would recommend that Stone Mastic Asphalt (SMA) would be preferred to retain the gravel textured appearance of the older Chip Seal process.

Please call me if you wish to discuss this further.

Regards,

**Margaret Heathcote** B Sc Arch, Dip Arch, M CH | Reg'd SA | M ICOMOS
Senior Conservation Architect
*(Please note that my working days are Tuesday, Wednesday & Thursday)*

**Heritage South Australia**
ESDG | Department of Environment, Water and Natural Resources
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Level 8, 81-91 Waymouth Street, ADELAIDE SA 5000
GPO Box 1047, Adelaide, SA 5001, AUSTRALIA
**environment.sa.gov.au** | **naturalresources.sa.gov.au** | **waterconnect.sa.gov.au**
**Twitter** | **YouTube** | **Good Living**



**From:** Wasantha Kaludewa [mailto:Wasantha.Kaludewa@gawler.sa.gov.au]
**Sent:** Thursday, 11 January, 2018 11:50 AM
**To:** Heathcote, Margaret (DEWNR) <Margaret.Heathcote@sa.gov.au>
**Cc:** Douglas Alexander <Douglas.Alexander@gawler.sa.gov.au>
**Subject:** Proposal to resurface Road and Footpath pavements with asphalt concrete treatment in Church Hill State Heritage Area Gawler

Dear Ms M. Heathcote

The Church Hill State Heritage Area Management Plan (Feb 1998) states that the resurfacing of roads and footpaths in the Church Hill State Heritage Area, Gawler 5118 should be undertaken using chip sealed coat which is bitumen spray sealed. Council has been following this policy for last 20 years. Recently Council engaged a consultant to undertake a Council wide condition audit of transport assets which included Road, footpaths and Kerb & Gutter assets and prepare a 15 year assets renewal program. According to the assets condition audit reporting, conditions of the transport assets in the heritage area have been ranked as in poor condition and are proposed to renew even though most of the roads and footpaths have been renewed within last 10-12 year period.
Surface quality of chip sealed roads and footpaths is rough, uneven and with loose aggregates. Therefore they do not provide a smooth riding or walking surface. These defects have contributed to rank the road and footpath conditions as poor and suggesting for renewal. Chip seal treatment is cheaper than other treatments. The maintenance cost for a chip sealed surfaces is more expensive than for other surface types. Service life of chip sealed surface is about 50% lower than of the Asphalt concrete surface.

In the proposed 15 year asset renewal program, the consultant is recommending to renew these chip seal roads with asphalt concrete treatments which provide smooth ridability and longer service lives for the roads & footpaths. There two asphalt concrete treatment options. They are Dense Grade Asphalt (DGA) which is common for road resurfacing and cheaper and Stone Mastic Asphalt (SMA) of which appearance is somewhat similar to chip seal surface but is 25% expensive than DGA. It is understood that there are other SA Heritage areas where roads and footpaths are resurfaced with common asphalt concrete (DGA).

I seek your views and comment on the proposal for using asphalt concrete options instead of chip sealed when resurfacing roads and footpaths in this State Heritage area.

The heritage area has bluestone kerbing which will be retained.

Regards

**Wasantha Kaludewa** I Senior Assets and Infrastructure Engineer
Town of Gawler | PO Box 130 I Gawler SA 5118
Phone 8522 9284 | Fax 8522 9292
www.gawler.sa.gov.au

**From:** Douglas Alexander
**Sent:** Wednesday, 10 January 2018 3:24 PM
**To:** 'Margaret.Heathcote@sa.gov.au' <Margaret.Heathcote@sa.gov.au>
**Cc:** Wasantha Kaludewa <Wasantha.Kaludewa@gawler.sa.gov.au>
**Subject:** Road and Footpath pavements: Church Hill State Heritage Area

Margaret

Council Engineering staff are preparing a report for Council elected members, exploring the use of an alternative pavement and footpath material to the spray seal, recommended in the Church Hill Management plan. Bluestone kerbing will be retained.

This will be a staged 15 year replacement program. The alternative material will have a similar appearance to spray seal but will have a longer service life and be less prone to slippage through loose aggregate.

Wasantha is preparing a report and will provide you with the details of the proposed alternative material.

He is seeking your comment on whether the new product would be appropriate.

Are you able to liaise with Wasantha?

# Town of Gawler

# Infrastructure Asset Valuation

## Roads, Kerb & Gutter, Footpaths, Stormwater Drainage Assets, Bridges & Culverts and Roundabouts

## Asset Valuation Summary Report, 30 June 2018

Document Control

| Infrastructure Asset Valuation Summary Report, 30 June 2018 | | | |
|---|---|---|---|
| Description | Name | Title | Date |
| Prepared by | Wasantha Kaludewa | Senior Assets & Infrastructure Engineer - TOG | 28/08/2018 |
| Reviewed by | Ben DeGilio | Team Leader Asset Planning - TOG | 17/09/2018 |
| Approved by | Sam Dilena | Manager Infrastructure & Engineering Services TOG | 18/09/2018 |

# Table of Contents

## Contents

# Tables

# 1 Introduction

Council is required to undertake Infrastructure Asset Valuation to meet auditing requirements. It is acknowledged that this report was prepared by the Council's Senior Assets & Infrastructure Engineer.

This report contains an overview of the AASB 116 requirements, the methodology used for valuations and a summary of the replacement rates and useful lives adopted for each of the infrastructure asset type.

This report details the valuation of following infrastructure asset classes.

- Road Surface
- Road Pavement Base
- Road Pavement Sub Base
- Kerb and Gutter
- Footpath
- Stormwater Pipe
- Stormwater Pit
- Stormwater Box Culvert
- Stormwater Channel
- Roundabout and
- Bridge & Culvert

The Council has an Asset Management Information System, 'AssetMaster' for managing asset data and information. Currently the first nine (9) asset classes of the above list are registered in AssetMaster. The Bridge & Culvert and Roundabout asset classes are in two MS excel format registers.

A condition assessment of the transport assets (roads, kerbing and footpaths) was undertaken by Talis Consultants in April 2017 and the asset condition information subsequently updated in AssetMaster. New assets created under Council's capital work programs and contributed assets from new land developments and donated assets from external parties in the 2017-18 financial year have been taken up at cost into the asset registers. Asset replacement costs have been updated to 30 June 2018 using current asset replacement rates. These rates have been audited by a third party: Asset Engineering.

Valuation has been undertaken in accordance with Australian Accounting Standard AASB 116 using AssetMaster software.

The asset valuation 2018 was completed by the Council's Senior Assets & Infrastructure Engineer. The valuation is a snapshot in time as at 30 June 2018. The general methodology used in valuing infrastructure assets is outlined in Chapter 3 of this report. The following chapters then document the specific methodology used in valuing each of Gawler infrastructure asset classes, namely:

- Road Surfaces
- Road Pavement Bases
- Road Pavement Sub Bases
- Kerb and gutter
- Footpaths
- Stormwater Pipes
- Stormwater Pits
- Stormwater Box Culverts
- Stormwater Channels
- Roundabouts and
- Bridges & Culverts

These chapters will detail the replacement rates and useful lives for individual asset types within the class and provide a breakdown of how these rates and lives were determined. The final four chapters provide a summary of the valuations as at 30 June 2018.

# 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. Paragraph 16 of AASB 116 defines fair value as "The amount for which an asset could be exchanged between knowledgeable, willing parties in an arms length transaction". 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.

## 2.2 Terminology

### 2.2.1 Current Replacement Cost (CRC)

The CRC of an asset is the cost that would be incurred by acquiring that asset at the time of reporting. For infrastructure assets this will be calculated based on the expected costs that will be incurred by council at the end of an assets useful life in order to maintain the service provided by that asset.

### 2.2.2 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 corresponds to the "Written Down Value (WDV)".

### 2.2.3 Depreciable Amount (DA)

The depreciable amount is the cost of an asset less its residual value.

### 2.2.4 Depreciation (Dep)

Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life.

### 2.2.5 Residual Value (RV)

The amount an entity would obtain from the disposal of the asset in the condition expected at the end of its useful life.

### 2.2.6 Accumulated Depreciation (AD)

The cumulative depreciation of an asset up to a single point in its life

# 3 Valuation and Depreciation Methodology

## 3.1 Valuation Overview

A revaluation of assets is typically performed a minimum of once every five years (ideally yearly) and involves assigning CRC for all assets as well as calculating their carrying amount. In addition to this a valuation of each asset group is performed regularly (typically annually). At this time all capital works, Assets received free of charge, disposals and impairments are updated in the asset register and the carrying amount of assets adjusted to reflect the depreciation charge for the period.
Assets created under capital work programs have been registered in AssetMaster at cost. Assets received free of charge from new developments and others have been registered at replacement cost applicable on the acquisition date. This revaluation has been based on an assessment of the database of Council's assets all recognised at current unit rates. Through this revaluation all assets originally recognised at cost have been revalued based on unit rates revised annually based on the information getting from Council's work contracts, product suppliers in the market, Department of Planning Transport and Infrastructure (DPTI) and Rawlinsons Australian Construction Handbook.

This chapter will explain the methods used 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 infrastructure asset will be given by the Current Replacement Cost minus the accumulated depreciation.

*Carrying Amount = CRC - Accumulated Depreciation*

**Equation 3-1 Carrying Amount**

## 3.3 Depreciation

The accumulated depreciation will be calculated using one of two methods:

1. Condition based (the condition of the asset via inspection will estimate the remaining life of the asset).
   At the Town of Gawler, condition is measured on a 1 to 5 scale where condition index 1 is excellent and 5 is unserviceable.

2. Age based. The consumption of the economic benefit of an asset will be proportional to its age.

### 3.3.1 Condition based calculation of accumulated depreciation

For condition based depreciation 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 being calculated by:

$$\textit{Accumulated Depreciation} = (\textit{CRC} - \textit{Residual Value}) \times \frac{(\textit{ConditionScore})}{(\textit{EndOfLifeConditionIScore})}$$

**Equation 3-2 Accumulated Depreciation at Revaluation (Condition Based)**

For many infrastructure assets there will be no residual value (residual value will be covered in Section 3.4) and the accumulated depreciation is simply given by:

$$Accumulated\ Depreciation = CRC \times \frac{(ConditionScore)}{(EndOfLifeConditionScore)}$$

**Equation 3-3 Accumulated Depreciation at Revaluation (Condition Based)**

When an asset is new it will have a condition score of 1 and its accumulated depreciation will be 0. As it 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 (CRC – Residual Value).

In order to perform condition based assessment of accumulated depreciation, assets will require regular condition assessment. For the periods between surveys, which is normally 5 years, it is assumed that the consumption of the economic benefits of the asset are appropriately modelled using straight line depreciation. In the years between surveys the accumulated depreciation would be calculated by:

$$Accumulated\ Depreciation = PreviousAcumulatedDepreciation + (CRC - ResidualValue) \times \left( \frac{1}{Useful\ Life} \right)$$

**Equation 3-4 Accumulated Depreciation between Valuations (Condition Based)**

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.

### 3.3.2 Age Based Depreciation

For age based depreciation, 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 will be given by:

$$Accumulated\ Depreciation = (CRC - Residual\ Value) \times \frac{Age}{Useful\ Life}$$

**Equation 3-5 Accumulated Depreciation (Age Based Depreciation)**

For assets with no residual value this equation can be simplified to:

$$Accumulated\ Depreciation = CRC \times \frac{Age}{Useful\ Life}$$

**Equation 3-6 Accumulated Depreciation (Age Based Depreciation)**

### 3.4 Asset Disposal and Residual Value

When most infrastructure 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 into the Asset Register 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.

If an asset has a residual value, the residual value will be entered in Equation 3-2 and will not be depreciated. Council previously recognized a residual for road pavement.
In complying with Accounting Standards effective from 2016 and in recognition of the fact that Council does not receive a financial gain through infrastructure asset disposal Council worked with Asset Engineering and removed asset residuals, in 2016, by componentizing complex assets.
Accordingly, Road pavement Asset was componentized into two sub asset categories with different useful lives. They are Road Pavement Base category with a shorter useful life and Road Pavement Sub Base category with a longer useful life. Asset residual value was removed by creating the Road Pavement Sub Base category with a longer useful life.

Therefore, Gawler infrastructure assets do not have residual values.

### 3.5 Asset Impairments

Impairment loss of an infrastructure asset is where the carrying amount of the asset exceeds its recoverable amount due typically to damage, obsolescence etc. Asset impairments are recognised in accordance with AASB 136.

# 4 Road Surfaces

## 4.1 Road Surfaces

The Town of Gawler owns 209.7km of sealed, unsealed and formed roads. Table 4-1 provides a breakdown of the surfaces contained in the network.

**Table 4-1 – Breakdown of Road Network Surfaces**

| Surface Type | Length (km) | Percentage of Network |
|---|---|---|
| Hot Mix Asphalt (AC) | 125.9 | 60.0 |
| Spray Seal (SS) | 63.3 | 30.2 |
| Pavers (P) | 0.3 | <1 |
| Unsealed (US) | 17.7 | 8.5 |
| Formed | 2.5 | 1.2 |
| Total | 209.7 | 100 |

The carrying value for surfaces has been calculated using condition. A breakdown of the rates, lives and assumptions used in the valuation are provided in this chapter.

## 4.2 Sealed Surface Replacement Costs

In 2010 Council has worked with Tonkin Consulting to develop a methodology to determine unit rates that are appropriate for each surface type. In 2016 Council worked with Asset Engineering to review and revise the unit rate development methodology appropriately. Table 4-2 provides a list of the replacement rates used for each surface.

**Table 4-2 – Replacement Rates and Useful Lives for Road Surfaces**

| Surface Type | Replacement Rate/m² | Useful Life (yrs.) |
|---|---|---|
| Surface Local Roads – Asphalt Concrete 30AC10 | $17.31 | 25 |
| Surface Collector Roads - Asphalt Concrete 40AC10 | $21.10 | 25 |
| Surface Connector Roads - Asphalt Concrete 50AC10 | $25.49 | 25 |
| Surface Local Roads – Spray Seal SS10 | $ 7.84 | 15 |
| Surface Collector Roads - Spray Seal SS14/7 | $ 9.90 | 17 |
| Surface Roads Pavers | $97.17 | 50 |
| Surface Local Roads Unsealed – Recycled Asphalt/Rubble (1:1) | $17.33 | 12 |
| Surface Local Roads Unsealed – Recycled Pavement Material | $18.77 | 12 |
| Surface Local Unformed Non-Built Up Dirt/Nature Strip | $ 0.00 | *NA* |

Note: In the determination of the unit rates a comprehensive spreadsheet has been developed using prices from Councils current contracts, product suppliers and/or Rawlinsons Australian Construction Handbook 2018. Reference: CR18/46651 – Schedule of Infrastructure Asset Replacement Unit Rates 2018 audited by Asset Engineering. A summary of the costs included in the formulation of these rates follows.

### 4.2.1 Asphalt Concrete

Three separate rates have been calculated for asphalt concrete:

- Local Road Surface
- Collector Road Surface and
- Connector Road Surface

The replacement rate for a local road surface makes allowance for:

- Sweeping of pavement prior to seal
- Tack coat
- Profiling against the kerb
- Top stone adjustment
- Supply and placement of 30mm of dense grade Asphalt Concrete AC10
- Traffic control at 2.5% of the project costs.
- Council 'overheads' or costs associated with directly bringing the asset into service at 9.3% of the project cost.

The replacement rate for collector road surface surfaces makes allowance for:

- Sweeping of pavement prior to seal
- Tack coat
- Profiling against the kerb
- Top stone adjustment
- Supply and placement of 40mm of dense grade Asphalt Concrete AC10
- Traffic control at 5% of the project costs.
- Council 'overheads' or costs associated with directly bringing the asset into service at 9.3% of the project cost.

The replacement rate for connector road surface surfaces makes allowance for:

- Sweeping of pavement prior to seal
- Tack coat
- Profiling against the kerb
- Top stone adjustment
- Supply and placement of 50mm of dense grade Asphalt Concrete AC10
- Traffic control at 5% of the project costs.
- Council 'overheads' or costs associated with directly bringing the asset into service at 9.3% of the project cost.

Unit rates used for the Asphalt Concrete (AC) surface have been developed using the rates effective from 01 April 2018 under the Council's on-going road resealing contract with Downer EDI together along with rates from Rawlinsons Australian Construction Handbook 2018.

### 4.2.2 Spray Seal

Two separate rates have been developed for spray seals, the first for collector roads incorporating a 2 coat seal and the second for local roads assuming a single coat seal. The rates adopted make allowance for:

- Minor preparation of the existing surface
- Supply and application of the spray seal
- Traffic control at 5% and 2.5% of the project cost for Connector/ collector roads and local roads respectively.
- Council 'overheads' or costs associated with directly bringing the asset into service at 9.3% of the project cost.

#### 4.2.3 Unsealed Road Surface (rubble/ recycle asphalt mixture)

For the purpose of this valuation document unsealed road sheeting material (RAP- recycled asphalt material) has been considered as a surfacing treatment. The assumed depth of this material is 150mm and the unit rate adopted has been derived from the re-sheeting work undertaken internally by Council staff together with an allowance of 2.5% for traffic control and 9.3% for Council 'overheads' or costs associated with directly bringing the asset into service.

### 4.3 Sealed Surface Useful Lives

The Town of Gawler value 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 reseal 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.

The useful life of a surface will be influenced by the type of surface and volume of traffic and the quality of the underlying subgrade and pavement. Useful lives that are assigned to different surface types have been provided in Table 4-2 and have been based on Councils history of seal ages and the knowledge of industry standard/ applications.

### 4.4 Road Surface Condition Rating

The consumption of road surfaces has been measured using a condition index derived from the asset visual condition assessment undertaken in April 2017 by Talis Consultants. The condition data (SCI) comprises individual defect condition attributes that have been combined and weighted (in the case of road seals) to calculate an overall score for the segment.

### 4.5 Surface Service Level

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 the case of sealed surfaces). In order to protect the underlying pavement it will be necessary to maintain a waterproofsurface.
Council has undertaken a condition assessment survey in the field on roads in 2017 and has determined (for the purpose of this valuation) an end of life condition for the surfaces. This end of life condition has been translated into a condition based age of the asset for valuation purposes.

### 4.6 Sealed Surfaces – Acquisition, Valuation and Disposal

Road Surface Asset Register in AssetMaster has been updated in June 2018 with new additions, renewals and disposals to have the actual asset stock prior to revaluation with current replacement rates.
Assets created under capital work programs have been recorded in AssetMaster at cost on the acquisition date. Assets received free of charge from new developments and others have been recorded at replacement cost applicable on the acquisition date.
This revaluation has been based on an assessment of all assets recognised at current unit rates. Through this revaluation all assets originally recognised at cost have been revalued based on unit rates.

## 5 Road Pavements

Before 2016, Road Pavements was considered as one asset class with a commensurate residual value. In 2016 the Asset valuation methodology was reviewed by Asset Engineering to remove the residual values. As a result, Road Pavement assets (in some cases) were divided into two asset classes: Road Pavement Base and Road Pavement Sub Base. This creation removed the asset residuals component which used to be in the past in financial records.

(Reference: CR16/31408 – Gawler Valuation Review V8 dated 29-06-2016 by Asset Engineering)

Also under this review, a road pavement depth investigation was undertaken by FMG Engineering in 2015, it was concluded that there is no pavement sub base for the road built before 1980.

As a result of road pavement compositions, the roads were separated into two groups: 'Old Roads' constructed pre 1980 which have no sub bases and New Roads being constructed 1980 and after which have a sub base.

The Town of Gawler has 187.72km of road pavements. Table 5-1 provides a breakdown of the road pavements contained in the network.

**Table 5-1 – Breakdown of Road Pavements in Network**

| Pavement Type | Length (km) | Percentage of Network % |
|---|---|---|
| Access Roads | 0.80 | 0.4 |
| Local Road | 130.96 | 70.0 |
| Collector Road | 54.77 | 29.0 |
| Connector Road | 1.19 | 0.6 |
| Total | 187.72 | 100 |

The accumulated depreciation for road pavements has been calculated using condition for pavement base and age for pavement sub base. A breakdown of the rates lives and assumptions used in the valuation are provided in this chapter.

## 5.1 Road Pavement Designs

It was also revealed under the review that the roads constructed before 1980 do not have a pavement sub base as they had not been constructed to modern engineering design standards. Therefore some road pavements have only a Pavement Base Asset and do not have a Pavement Sub Base Asset. Some of the road pavements in the Gawler Town Center and surrounding will be 'Macadam'. This method of construction is no longer economical since in many cases these pavements were placed by hand. It has been assumed that these pavements will be replaced with either graded granular material (unbound) or deep lift asphalt (bound). A modern pavement design has been considered for each road type using the Austroads pavement design guide. The assumptions have been made in the pavement designs as listed in the Table 5-2.

**Table 5-2 - Road Pavement Replacement Designs**

| Pavement Type | Seal Depth mm | Pavement Base Depth mm | Pavement Sub Base Depth mm | Bound / Unbound |
|---|---|---|---|---|
| Access Road | 30 | 150 | 100 | Unbound |
| Local Road | 30 | 150 | 150 | Unbound |
| Collector Road | 40 | 150 | 230 | Unbound |
| Connector Road | 50 | 150 | 270 | Unbound |
| Local Road | 30 | 100 | 150 | Bound |
| Collector Road | 40 | 150 | 150 | Bound |
| Connector Road | 50 | 200 | 150 | Bound |

All dimensions in the above table are in mm. It should be noted that the above pavement depths may be considered nominal only and in some cases a detailed project level pavement design (including an analysis of local issues such as traffic volume and strength of the existing subgrade) will require a pavement with a greater structural capacity.

## 5.2 Road Pavement - Replacement Costs

Unit rates for each road pavement base type and road pavement sub base type have been determined using the depths assumed in table 5-2 which are the common pavement depths (Reference: CR16/40252 – Review of June 2016 Unit rates Derivations – pavement confirmation by Asset Engineering) and based on the findings that old roads constructed pre 1980 do not have an engineered design pavement and therefore no sub base. These rates for pavement base and sub base replacement are shown in Table 5-3 and 5-4 respectively.

**Table 5-3 - Road Pavement Base Replacement Rates**

| Pavement Base Type | CRC/$m^2$ | Residual | DA/$m^2$ | Useful Life (yrs.) |
|---|---|---|---|---|
| New Access/ Local Road - unbound | $27.38 | 0 | $27.38 | 75 |
| New Collector/ Connector Road - unbound | $28.05 | 0 | $28.05 | 50 |
| Old Access/ Local Road - unbound | $32.59 | 0 | $32.59 | 80 |
| Old Collector/ Connector Road - unbound | $33.39 | 0 | $33.39 | 60 |
| Local Road -bound | $41.01 | 0 | $41.01 | 50 |
| Collector Road - bound | $42.30 | 0 | $42.30 | 50 |
| Connector Road - bound | $42.30 | 0 | $42.30 | 50 |

The accumulated depreciation for the road pavement base has been calculated using condition in accordance with equation 3.3.

**Table 5-4 - Road Pavement Sub Base Replacement Rates**

| Pavement Sub Base Type | CRC/$m^2$ | Residual | DA/$m^2$ | Useful Life (yrs.) |
|---|---|---|---|---|
| New Access Road - unbound | $22.36 | 0 | $22.36 | 150 |
| New Local Road - unbound | $29.52 | 0 | $29.52 | 150 |
| New Collector Road - unbound | $44.02 | 0 | $44.02 | 100 |
| New Connector Road - unbound | $51.21 | 0 | $51.21 | 100 |
| Local Road -bound | $22.64 | 0 | $22.64 | 100 |
| Collector Road - bound | $38.63 | 0 | $38.63 | 100 |
| Connector Road - bound | $54.62 | 0 | $54.62 | 100 |

The accumulated depreciation for the road pavement sub base has been calculated using age in accordance with equation 3.6.

Pavement replacement costs make allowance for:

Unbound Pavements:

- Excavation and disposal of existing road pavement
- Trimming and compaction of existing subgrade
- Pavement construction using conventional quarry materials
- Primer seal to receive new surface (new surface not included in costs)
- Traffic control at 2.5% for minor roads and 5% for major roads.
- Council 'overheads' or costs associated with directly bringing the asset into service at 9.3%.

Bound Pavements:

- Excavation (via profiler) and disposal of existing road pavement
- Preparation of 150mm quarry rubble working platform (sub base) to receive AC base/ sub base courses.
- AC base/ sub base courses using a mixture of AC14 & AC 20 layers.
- Traffic control at 5% of the project costs
- Council 'overheads' or costs associated with directly bringing the asset into service at 9.3%.

There is no residual value for road pavements.

Unit rates for pavement reconstruction have been established mainly from rates in Rawlinsons Australian Construction Handbook 2018 and the Council's asphaltic concrete contract.

### 5.3 Road Pavement - Useful Lives

The Town of Gawler value 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 able to 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 a complete reconstruction is required.

The useful life of a pavement will be influenced by the volume of traffic carried by the pavement, particularly the number and type of commercial vehicles. This has been reflected by adopting different useful lives for the different pavement classes.

In 2016, asset useful lives were reviewed and revised by Asset Engineering as a part of asset valuation methodology review. Accordingly, the useful lives are documented in Table 5.3 and 5.4 (reference: CR16/31408 – Gawler Valuation Review V8 dated 29-06-2016 by Asset Engineering).

### 5.4 Road Pavement - Measuring Consumption/Condition Rating

Council engaged Talis Consultants and undertook a road assets visual condition assessment in April 2017.

The consumption of road pavement base has been measured using a condition index (PCI) derived from the asset visual condition assessment undertaken in April 2017 by Talis Consultants. The condition Index (PCI) comprises individual defect condition attributes that have been combined and weighted to calculate an overall score for the road segment.

Council has the construction date of new road pavements (built 1980 or after) and an approximated record of the construction date of the old road pavements.

The consumption of the newer roads (post 1980) pavement sub base has been measured using age of the pavement. Based on a road pavement depth investigation undertaken by FMG Engineering in 2015, it was concluded that there is no pavement sub base for a road built before 1980.

This condition data for pavement base or age data for pavement sub base has been used to estimate how far the asset is through its useful life and therefore calculate the depreciated replacement cost using straight line principles.

### 5.5 Road Pavement – Acquisition, Valuation and Disposal

Road pavement base and sub base asset registers in AssetMaster have been updated with new additions, renewals and disposals to have the actual asset stock in June 2018 prior to revaluation with current replacement rates.

Assets created under capital work programs have been registered in AssetMaster at cost. Assets received free of charge from new developments and others have been registered at replacement cost applicable on the acquisition date.
This revaluation has been based on an assessment of all assets recognised at current unit rates. Through this revaluation all assets originally recognised at cost have been revalued based on unit rates.

# 6 Kerb and Gutter

## 6.1 Kerb and Gutter (K&G)

The Town of Gawler is responsible for maintaining the kerb and gutter on council roads as well as DPTI roads. This results in 224km of kerb and gutter assets. Table 6-1 provides a breakdown of the kerb and gutter contained in the network.

**Table 6-1 – Breakdown of Kerb and Gutter Network**

| K&G Type | Length (km) | Percentage of network |
|---|---|---|
| Barrier K&G | 145.9 | 65.1 |
| Mountable K&G | 15.3 | 6.9 |
| Barrier Kerb | 4.7 | 2.1 |
| Mountable Kerb | 36.5 | 16.3 |
| Median Kerb | 3.3 | 1.4 |
| Spoon Drain | 8.3 | 3.7 |
| Slate Kerb | 10.2 | 4.5 |
| Total | 224.2 | 100 |

The carrying value for kerb and gutter has been calculated using depreciated replacement cost methodology. A breakdown of the rates, useful lives and assumptions used in the valuation are provided in this chapter.

## 6.2 Kerb and Gutter - Replacement Costs

In 2010, Tonkin Consulting worked with council to develop a methodology and template to determine unit rates that are appropriate for the various assets including kerbing types. Table 6-2 provides a list of the replacement rates used for each type.

**Table 6-2 – Replacement Rates and Useful Lives for Kerb and Gutter**

| K&G Type | CRC (per m) | Useful Life (yrs.) |
|---|---|---|
| Barrier K&G | $179.81 | 80 |
| Mountable K&G | $179.81 | 80 |
| Barrier Kerb | $107.88 | 80 |
| Mountable Kerb | $ 89.90 | 80 |
| Median Kerb | $120.47 | 80 |
| Spoon Drain | $211.16 | 80 |
| Slate Kerb | $396.97 | 80 |

The unit rates have been developed from rates contained within Rawlinsons Australian Construction Handbook 2018 and Council's contracts in 2017-18. The rates include:

- Excavation of existing kerb and verge together with disposal ofdebris.
- A quarry rubble base for the kerb.
- Laying of kerb and gutter and vehicular invert / spoondrain

- Back filling and reinstatement of road verge.
- An allowance of 2.5% of the project costs for traffic management except for spoon drains which is 5%
- Allowance for Council 'overheads' or costs associated with directly bringing the asset into service at 9.3%.

### 6.3 Kerb and Gutter - Useful Lives

The Town of Gawler value their kerb and gutter at a road segment level. It is therefore necessary to determine the average useful life for kerbing a road segment.

Whilst sections of kerbing may be damaged by vehicular impacts or tree roots, these sections can usually be patched in isolation without requiring the entire kerb to be replaced. The useful life of kerb will therefore be defined as the period when the majority of the kerb will be due for replacement. Based on discussions with Tonkin Consulting in 2010, a useful life as documented in table 6-2 has been adopted for all types of kerb and gutter.

### 6.4 Kerb and Gutter - Condition Rating

The consumption of kerb and gutter has been measured using its condition.

Council engaged a consultant; Talis Consultants to undertake a Kerb & Gutter Assets condition assessment in April 2017. The condition data comprises individual defect condition attributes that have been combined and weighted to calculate an overall score for the kerb & gutter asset at the road segment level.
The Kerb & Gutter Asset Register in AssetMaster was updated with the current condition data. The data comprises a 1: good – 5: poor condition score against each kerbing asset.

### 6.5 Kerb & Gutter - Level of Service

The service level provided by kerb and gutter is determined mainly on its ability to remove stormwater, however, certain types of kerbing (i.e. median kerb) will also be required to provide other functions such as road delineation and the provision or prevention of vehicular access. For this reason, provided that isolated areas of damage that create ponding are replaced, kerb and gutter can provide an acceptable level of service even once its physical condition has deteriorated significantly.

### 6.6 Kerb & Gutter – Acquisition, Valuation and Disposal

The Kerb and gutter Asset Register in AssetMaster has been updated with new additions, renewals and disposals to have the actual asset stock in June 2018 for revaluation with current replacement rates.
Assets created under capital work programs have been registered in AssetMaster at cost. Assets received free of charge from new developments and others have been registered at replacement cost applicable on the acquisition date.
This revaluation has been based on an assessment of all assets recognised at current unit rates. Through this revaluation all assets originally recognised at cost have been revalued based on unit rates.

# 7 Footpaths

## 7.1 Footpaths

The Town of Gawler is responsible for maintaining the footpaths on council roads, off-roads as well as DPTI roads totalling 162km of footpath assets. Table 7-1 provides a breakdown of the footpaths contained in the network.

**Table 7-1 – Breakdown of Footpaths**

| Footpath Type | Length (km) | Percentage of network |
|---|---|---|
| Concrete | 124.20 | 76.7 |
| Asphalt | 24.72 | 15.3 |
| Rubble | 5.26 | 3.2 |
| Spray Seal-Two coats | 2.08 | 1.3 |
| Spray Seal-Single coat | 3.42 | 2.1 |
| Pavers | 2.35 | 1.4 |
| Total | 162.03 | 100 |

The carrying value for footpaths has been calculated using the depreciated replacement cost methodology. A breakdown of the rates, useful lives and assumptions used in the valuation are provided in this chapter.

## 7.2 Footpath – Replacement Costs

In 2010, Council worked with Tonkin Consulting to develop a methodology and template to determine unit rates that are appropriate for various assets including different footpath types. Table 7-2 provides a list of the replacement rates used for each type.

**Table 7-2 - Replacement Rates and Useful lives for Footpaths**

| Footpath Type | CRC (per $m^2$) | Useful Life (yrs.) |
|---|---|---|
| Concrete | $124.14 | 70 |
| Asphalt | $72.18 | 25 |
| Rubble | $19.18 | 10 |
| Spray Seal Two coats | $47.15 | 15 |
| Spray Seal Single coat | $40.19 | 10 |
| Pavers | $113.12 | 50 |

The rates include the following works for footpaths:

Paved Footpaths:

- Removal & disposal of existing footpath
- Preparation of 50mm quarry rubble base for domestic crossing places
- Preparation of 100mm quarry rubble base for commercial crossing places
- Laying of 60mm pavers for footpath / domestic crossing place and 80mm pavers for commercial crossing place
- Adjustment to residence stormwater outlets
- Backfilling of the verge
- Reconstruction of adjacent pram ramps
- An allowance of 2.5% of the project costs for traffic control

- Allowance for Council 'overheads' or costs associated with directly bringing the asset into service at 9.3%.

Concrete Footpaths:
- Removal & disposal of existing concrete footpath
- Supply & lay reinforced or non-reinforced concrete footpath in different depths (75, 125 and 150mm)
- Supply and lay 100mm concrete paving to crossing places
- Preparation of 50mm quarry rubble base for commercial crossing places
- Adjustment to residence stormwater outlets
- Backfilling of the verge
- Reconstruction of adjacent pram ramps
- An allowance of 2.5% of the project costs for traffic control
- Allowance for Council 'overheads' or costs associated with directly bringing the asset into service at 9.3%.

Asphalt Concrete (AC) Footpaths:
- Removal & disposal of existing AC footpath
- Preparation of 100mm quarry rubble base
- Supply & lay 25mm AC7 footpath
- Backfilling of the verge
- Reconstruction of adjacent pram ramps
- Allowance for Council 'overheads' or costs associated with directly bringing the asset into service at 9.3%.

Off-road Rubble Footpaths:
- Removal of loose materials and spread nearby
- Preparation for 100mm quarry rubble base
- Supply, lay, compact and build up 100mm thick rubble footpath
- An allowance of 50% of the project costs for off-road work due to site access, safety and remoteness conditions
- Allowance for Council 'overheads' or costs associated with directly bringing the asset into service at 9.3%.

The rates have been developed by considering the total project cost against a 1000m section of typical footpath with crossing places, pram ramps & stormwater outlets. The average linear metre and square metre rate has then been calculated by dividing the total project cost by the constructed length and area.
The rate for spray sealed footpath has been based on the assumption that the renewal of the existing spray sealed footpath will involve an overlay only and not a complete removal of the existing surface and base and replacement with new base and surface. The rate for spray sealed paving has been taken from Rawlinsons Australian Construction Handbook 2018.

## 7.3 Footpath – Useful Lives

The Town of Gawler value their footpaths at a road segment level. It is therefore necessary to determine the average useful life for a footpath at this level.

Whilst sections of footpath may be damaged by vehicular impacts or tree roots, these sections can usually be patched in isolation without requiring the entire footpath to be replaced. The useful life of a footpath will therefore be defined as the period when the majority of the path will be due for replacement. Based on discussions with council staff useful lives as documented in table 7-2 have been adopted for footpaths.

## 7.4 Footpaths – Condition Rating

The consumption of footpaths has been measured using condition.

Council engaged a consultant; Talis Consultants to undertake a footpath assets condition assessment in April 2017. The condition data comprises individual defect condition attributes that have been combined and weighted to calculate an overall score for the footpath asset at the road segment level.
The Footpath Asset Register in AssetMaster was updated with the current condition data. The data comprises a 1: good – 5: poor condition score against each footpath asset.

## 7.5 Footpaths – Level of Service

The service level provided is determined mainly on its ability to provide a safe access for pedestrians. For this reason provided that isolated areas of damage that create 'trip steps' by example are repaired footpaths can provide an acceptable level of service even once its physical condition has deteriorated significantly.

## 7.6 Footpath – Acquisition, Valuation and Disposal

The Footpath asset register in AssetMaster has been updated with new additions, renewals and disposals to have the actual asset stock in June 2018 for revaluation with current replacement rates.
Assets created under capital work programs have been registered in AssetMaster at cost. Assets received free of charge from new developments and others have been registered at replacement cost applicable on the acquisition date.
This revaluation has been based on an assessment of all assets in AssetMaster recognised at current unit rates. Through this revaluation all assets originally recognised at cost have been revalued based on unit rates.

# 8 Stormwater Drains

## 8.1 Pipes, Culverts and Open Channels

The Town of Gawler contains approximately 127km of drains. Table 8-1 provides a breakdown of the drains contained in the network.

**Table 8-1 - Breakdown of Drain Network**

| Drain Type | Length (km) | Percentage of Network |
|---|---|---|
| Pipes | 118.91 | 93.5 |
| Box Culverts | 2.82 | 2.2 |
| Concrete Open Channel | 1.07 | 0.8 |
| Earth Open Channel | 4.43 | 3.5 |
| Total | 127.23 | 100 |

It should be noted that open earth channels have not be valued and are included for completeness only.

The carrying value for drains has been calculated using the age of the asset. A breakdown of the rates, lives and assumptions used in the valuation are provided in this chapter.

## 8.2 Pipe and Culvert Replacement Costs

In 2010 Council has worked with Tonkin Consulting to develop a methodology to determine unit rates that are appropriate for each pipe and culvert size. Table 8-2, Table 8-3 and Table 8-4 provide a list of the replacement rates used for each type.

**Table 8-2 - Replacement Rates and Useful Lives for Pipes**

| Pipe Diameter (mm) | Replacement Rate /m | Useful Life (yrs.) |
|---|---|---|
| 225 | $287.20 | 100 |
| 300 | $260.31 | 100 |
| 375 | $287.56 | 100 |
| 450 | $345.82 | 100 |
| 525 | $407.34 | 100 |
| 600 | $468.79 | 100 |
| 675 | $538.74 | 100 |
| 750 | $624.08 | 100 |
| 825 | $728.25 | 100 |
| 900 | $827.18 | 100 |
| 1050 | $1,023.09 | 100 |
| 1200 | $1,249.62 | 100 |
| 1350 | $1,453.49 | 100 |
| 1500 | $1,749.85 | 100 |
| 1650 | $2,023.55 | 100 |
| 1800 | $2,370.83 | 100 |
| 1950 | $2,807.15 | 100 |
| 2100 | $3,335.95 | 100 |

**Table 8-3 - Replacement Rates and Useful Lives for Box Culverts**

| Culvert Width (mm) | Culvert Height (mm) | Replacement Rate /m | Useful Life (yrs.) |
|---|---|---|---|
| 300 | 100 | $509.57 | 70 |
| 300 | 150 | $526.07 | 70 |
| 300 | 225 | $626.59 | 70 |
| 375 | 150 | $624.04 | 70 |
| 375 | 225 | $684.33 | 70 |
| 375 | 300 | $741.72 | 70 |
| 450 | 150 | $751.17 | 70 |
| 450 | 225 | $823.69 | 70 |
| 450 | 300 | $887.46 | 70 |
| 600 | 150 | $964.65 | 70 |
| 600 | 225 | $1,035.36 | 70 |
| 600 | 300 | $1,106.08 | 70 |
| 600 | 375 | $1,173.92 | 70 |
| 600 | 450 | $1,241.73 | 70 |
| 600 | 600 | $1,377.38 | 70 |
| 750 | 150 | $1,151.84 | 70 |
| 750 | 225 | $1,223.72 | 70 |
| 750 | 300 | $1,295.60 | 70 |
| 750 | 375 | $1,367.46 | 70 |
| 750 | 450 | $1,439.34 | 70 |
| 750 | 600 | $1,577.25 | 70 |
| 750 | 750 | $1,709.33 | 70 |
| 900 | 225 | $1,479.12 | 70 |
| 900 | 300 | $1,549.19 | 70 |
| 900 | 375 | $1,619.27 | 70 |
| 900 | 450 | $1,692.29 | 70 |
| 900 | 600 | $1,832.47 | 70 |
| 900 | 750 | $1,966.82 | 70 |
| 900 | 900 | $2,104.07 | 70 |
| 1200 | 300 | $1,884.48 | 70 |
| 1200 | 375 | $1,959.74 | 70 |
| 1200 | 450 | $2,032.11 | 70 |
| 1200 | 600 | $2,176.84 | 70 |
| 1200 | 750 | $2,318.62 | 70 |
| 1200 | 900 | $2,460.44 | 70 |
| 1200 | 1200 | $2,726.54 | 70 |
| 1500 | 750 | $2,617.43 | 70 |
| 2000 | 1000 | $3,412.47 | 70 |
| 2400 | 1500 | $6,465.74 | 70 |
| 3600 | 1800 | $4,474.55 | 70 |
| 4000 | 2000 | $5,867.19 | 70 |
| 4600 | 1500 | $6,039.53 | 70 |

**Table 8-4 - Replacement Rates and Useful Lives for Concrete Lined Channels**

| Channel Type | Replacement Rate /m | Useful Life (yrs.) |
|---|---|---|

| | | |
|---|---|---|
| 1.22m base x 2.23m depth concrete lined trapezoidal channel | $2,967.64 | 70 |

In the determination of the unit rates a comprehensive spreadsheet has been developed to develop these rates from Council's current contracts and/or Rawlinsons Australian Construction Handbook 2018. A summary of the costs included in the formulation of these rates follows.

- **Reinforced Concrete Pipes (RCPs)**

The following are the key assumptions used in the preparation of these rates:

The estimated cost for supply of the pipes is taken from Humes products price effective from 1 April 2018. Humes is a leading provider of stormwater drainage concrete products in Australia.

Rates used in addition to the pipe supply have been sourced from Rawlinsons Australian Construction Handbook 2018 and Council contracts in the recent past.

The assigned replacement rates make allowance for:

- New pipe supply
- Trench excavation including:
  - an over excavation in width of 0.6m to allow for placement and backfill of pipe
  - an over excavation in depth of 50mm to allow for bedding of pipe
  - an assumption that the top of the pipe has a cover of 0.6m.
- Removal and disposal of old pipe via recycling.
- Bedding & laying of new conduit at 25% of the new pipe price
- Trench backfill with 'light soil'
- Services adjustment of 10% of total project.
- Traffic control at 2.5% of the project costs for traffic control.
- Council 'overheads' or costs associated with directly bringing the asset into service at 9.3%.
- All pipes are Rubber Ring Joint (RRJ).
- All pipes are class 2.
- Allowance for excavation, removal, disposal and reinstatement of the overlying road pavement is not included.

- **Reinforced Concrete Box Culvert (RCBC)**

The following are the key assumptions used in the preparation of these rates:
The estimated cost for supply of the pipes is taken from Humes products price effective from 1 April 2018. Humes is a leading provider of stormwater drainage concrete products in Australia.

Rates used in addition to the pipe supply have been sourced from Rawlinsons Australian Construction Handbook 2018 and Council contracts in the recent past.

The replacement rate for reinforced box culvert makes allowance for:

- Trench excavation including:
- An over excavation in width of 1.0m to allow for placement and backfill of conduit
- An over excavation in depth of 50mm to allow for bedding of conduit
- An assumption that the top of the crown of the box culvert is at the bottom of the road base
- Removal and disposal of old conduit via recycling
- An allowance for bedding & laying of new conduit at 100% of the new conduit price

- Trench backfill with self-compacting material
- Services adjustment at 10% of total project.
- Traffic control at 2.5% of the project costs.
- Council 'overheads' or costs associated with directly bringing the asset into service at 9.3% of the project cost.
- Allowance for excavation, removal, disposal and reinstatement of the overlying road pavement is not included.

- **Concrete Channel**

  The rate for concrete lined channels assumes that all channels are trapezoidal channels with the following dimensions:

  Base Width 1.22m
  Top Width 5.79m
  Depth 2.23m

  The rates adopted make allowance for:

  - Removal of existing concrete
  - Minor preparation of the existing earthworks
  - Supply and placement of new in-situ concrete channellining

## 8.3 Pipes, Culverts and Channels - Useful Lives

The Town of Gawler value their drains at a pipe segment/drain unit level. It is therefore necessary to determine the average useful life for a pipe segment/drain unit.

The useful life of stormwater infrastructure is assumed to be the time that the particular asset is expected to last before renewal of the whole segment is required. It is likely that during its useful life an asset may undergo some maintenance such as concrete patching.

Table 8-2, Table 8-3 and Table 8-4 show the useful life used for each asset type.

## 8.4 Measuring Drain Consumption

The consumption of drains is assumed to be proportional to the age of the drain. Most of the drainage assets constructed since the 1970's have the constructed date recorded. Council has an approximated construction date or reconstruction date for the remainder of the drainage assets. This age data has been used to estimate how far the asset is through its useful life and therefore calculate the depreciated replacement cost using the straight line consumption principle.

## 8.5 Stormwater Drain - Level of Service

The service level of a stormwater asset is measured by the ability of the asset to collect and channel stormwater runoff effectively in rainfall events of its design ARI. The level of service of the asset will be determined by the structural condition and also by capacity. It may be necessary to replace assets in good physical condition in order to upgrade capacity.

As no data on capacity is available this valuation has assumed that the service level of stormwater assets is simply determined by the age of the asset.

### 8.6 Stormwater Drains, Acquisition, Valuation and Disposal

Assets created under capital work programs have been recorded in AssetMaster at cost. Assets received free of charge from new developments and others have been registered at replacement cost applicable on the acquisition date.
This revaluation has been based on an assessment of all assets in AssetMaster recognised at current unit rates. Through this revaluation all assets originally recognised at cost have been revalued based on unit rates.

# 9 Stormwater Drainage Pits

## 9.1 Stormwater Pits

The Town of Gawler contains 4623 stormwater "pits". The term "pit" has been used generically to describe a number of drainage structures including Side Entry Pits (SEPs), Junction Boxes (JBs), Headwalls, Outlet Structures and Gross Pollutant Traps (GPTs). Table 9-1 provides a breakdown of the stormwater pits contained in the network.

**Table 9-1 - Breakdown of Drainage Pits in the Network**

| Pit Type | Number | Percentage of Network |
|---|---|---|
| SEP | 1997 | 42.5 |
| JB | 1047 | 22.3 |
| Grated Pit | 422 | 9.0 |
| Lot Drain Unit | 625 | 13.3 |
| Grated SEP | 103 | 2.2 |
| Headwall | 422 | 9.0 |
| Outlet Structure | 26 | 0.6 |
| GPT/ Trash barriers | 44 | 0.9 |
| Piped Entrance | 18 | 0.4 |
| Total | 4623 | 100 |

The accumulated depreciation for stormwater pits has been calculated using age. A breakdown of the rates lives and assumptions used in the valuation are provided in this chapter.

## 9.2 Stormwater Pit - Replacement Costs

Unit rates for each stormwater pit type have been determined allowing for removal of the old pit and replacement with a new pit. The rates for pit replacement have been derived from Rawlinsons Australian Construction Handbook 2018 rates and recent Council's contracts. Table 9-2 provides a summary of the rates used.

**Table 9-2 - Replacement Rates and Useful Lives for Drainage Pits**

| Pit Type | Replacement Rate ($/Unit) | Useful Life |
|---|---|---|
| SEP Single | $2,505.53 | 70 |
| SEP Double | $4,257.86 | 70 |
| SEP Triple | $6,010.19 | 70 |
| SEP Quadruple | $7,762.52 | 70 |
| Small JB | $2,023.69 | 70 |
| Medium JB | $3,611.44 | 70 |
| Large JB | $4,634.52 | 70 |
| Grated Inlet Pit (GIP) | $2,023.69 | 70 |
| Lot Drain | $558.24 | 70 |
| Outlet Structure Large | $52,883.29 | 70 |
| Outlet Structure Medium | $41,229.25 | 70 |
| Outlet Structure Small | $32,759.93 | 70 |
| Headwall Large | $3,533.61 | 70 |
| Headwall Medium | $2,394.00 | 70 |
| Headwall Small | $1,834.63 | 70 |
| Piped Entranceway Large | $3,684.47 | 70 |
| Piped Entranceway Medium | $3,684.47 | 70 |
| Piped Entranceway Small | $3,362.62 | 70 |
| GPT Ecosol Extra Large | $78,015.63 | 50 |
| GPT Ecosol Large | $55,143.58 | 50 |
| GPT Ecosol medium | $34,673.61 | 50 |
| GPT Ecosol Small | $21,201.04 | 50 |
| GPT HumeCeptor Small | $15,605.48 | 50 |
| GPT CleansAll Extra Large | $94,675.45 | 50 |
| GPT CleansAll Large | $60,057.51 | 50 |
| Trash Rack with Bags Large | $14,702.55 | 50 |
| Trash Rack with Bags Medium | $12,540.64 | 50 |
| Trash Rack with Bags Small | $9,473.88 | 50 |
| Trash Rack Large | $14,085.24 | 50 |
| Trash Rack Medium | $12,129.10 | 50 |
| Trash Rack Small | $9,268.12 | 50 |
| Submersible Pump 15kw | $15,000.00 | 20 |

Pit replacement costs make allowance for:

- Excavation and removal of existing pit.
- Disposal of existing pit.
- Supply and installation of a new pit and lid.
- Traffic control at 2.5% of the project costs.
- Council 'overheads' or costs associated with directly bringing the asset into service at 9.3% of the project cost.

### 9.3 Stormwater Pit - Useful Lives

The useful life of stormwater infrastructure is assumed to be the time that the particular asset is expected to last before renewal of the whole pit is required. It is likely that during its useful life an asset may undergo some maintenance such as the replacement of a pit lid.

Table 9-2 shows the useful life used for each asset type.

### 9.4 Stormwater Pits - Measuring Consumption

The consumption of a pit is assumed to proportional to the age of the pit. Most of the drainage assets constructed since 1970's have constructed date recorded. Council has an approximated record of the original construction date or reconstruction date for the rest of the drainage assets. This date data has been used to estimate how far the asset is through its useful life and therefore calculate the depreciated replacement cost using straight line consumption principle.

### 9.5 Stormwater Pits, Acquisition, Valuation and Disposal

Assets created under capital work programs have been recorded in AssetMaster at cost. Assets received free of charge from new developments and others have been registered at replacement cost applicable on the acquisition date.
This revaluation has been based on an assessment of all assets in AssetMaster recognised at current unit rates. Through this revaluation all assets originally recognised at cost have been revalued based on unit rates.

## 10 Roundabouts

### 10.1 Roundabouts

There are 27 roundabouts in the Council area, but has care and control on 23. The rest are under the care and control of Transport SA. Table 10-1 provides a breakdown of the roundabouts owned by Council.

**Table 10-1 - Breakdown of Roundabouts**

| Type | Quantity | Percentage |
|---|---|---|
| Roundabout Medium | 19 | 83 |
| Roundabout Small | 4 | 17 |
| Total | 23 | 100 |

It should be noted that roundabouts not owned by Council will not be valued.

The carrying value for roundabouts has been calculated using the age of the asset. A breakdown of the rates, lives and assumptions used in the valuation are provided in this chapter.

The rate for concrete roundabouts assumes that all roundabouts are 4-way roundabouts. Standard dimensions are as given in Table 10-2

**Table 10-2 – Roundabout Types and Dimensions**

| Type | Medium | Small |
|---|---|---|
| Diameter of Inscribed Circle (m) | 26 | 16 |
| Diameter of Truck Apron (m) | 14 | 8 |
| Diameter of Central Island (m) | 10 | 4 |

## 10.2 Roundabout Replacement Costs

Adopting the Tonkin Consulting's methodology developed in 2010 for deriving asset replacement unit rates, Council has prepared a template to determine unit rates that are appropriate for each roundabout type. Table 10-3 provides a list of the replacement rates used for each type. This template has been audited annually by an independent consultant.

**Table 10-3 - Replacement Rates and Useful Lives for Roundabouts**

| Type | Replacement Rate/ each | Useful Life (yrs.) |
|---|---|---|
| Roundabout Medium | $77,235 | 50 |
| Roundabout Small | $41,743 | 50 |

In the determination of the unit rates a comprehensive spreadsheet has been developed to develop these rates from Councils current contracts and Rawlinsons Australian Construction Handbook 2018. A summary of the costs included in the formulation of these rates follows.

The rates adopted make allowance for:

- Removal and disposal of existing roundabout, splitter islands, kerbing at curvatures and signs
- Replace above items with new items and line marking
- Traffic control at 5% of project cost.
- Council 'overheads' or costs associated with directly bringing the asset into service at 9.3% of the project cost.
- Renewal of roadway at the roundabout is excluded.

## 10.3 Roundabouts - Useful Lives

The Town of Gawler value their roundabouts at unit level. It is therefore necessary to determine the average useful life for a Roundabout.

The useful life of roundabout is assumed to be the time that the particular asset is expected to last before renewal of the whole segment is required. It is likely that during its useful life an asset may undergo some repair and maintenance work.
Table 10-3 shows the useful lives used for each type.

## 10.4 Measuring Roundabout Consumption

The consumption of roundabout is assumed to proportional to the age of the roundabout. Council has the record of the original construction date or reconstruction date of the roundabouts. This date data has been used to estimate how far the asset is through its useful life and therefore calculate the depreciated replacement cost using the straight line consumption principle.

### 10.5 Roundabouts - Level of Service

The service level of a roundabout asset is measured by the ability of the asset to control traffic safely. The level of service of the asset will be determined by the structural condition and also by capacity. It may be necessary to replace assets in good physical condition in order to upgrade capacity.

As there is no capacity issues have been experienced on roundabouts this valuation has assumed that the service level of roundabout assets is simply determined by the age of the asset.

### 10.6 Roundabouts, Acquisition, Valuation and Disposal

Roundabout asset data is recorded in a MS Excel format database. Assets created under capital work programs have been registered at cost. Assets received free of charge from new developments and others have been registered at replacement cost applicable on the acquisition date.
There are no roundabouts constructed or received free of charge or disposed during the financial year.
This revaluation has been based on an assessment of all assets in Council's database recognised at current unit rates. Through this revaluation all assets originally recognised at cost have been revalued based on unit rates.

## 11 Bridges and Culverts

### 11.1 Bridges and culverts

The Town of Gawler contains 34 bridges and culverts but only 30 come under the care and control of the Council. The Transport SA has the care and control of the rest. Table 11-1 provides a breakdown of the bridges and culverts owned by Council.

**Table 11-1 - Breakdown of Bridges and Culverts**

| Type | Quantity | Percentage |
|---|---|---|
| Vehicular bridge | 6 | 20 |
| Pedestrian Bridge | 11 | 37 |
| Road culvert | 7 | 23 |
| Off-road culvert | 6 | 20 |
| Total | 30 | 100 |

It should be noted that bridges and culverts not owned by Council will not be valued.

The carrying value for bridges and culverts has been calculated using the age of the asset. A breakdown of the rates, lives and assumptions used in the valuation are provided in this chapter.

## 11.2 Bridges and Culverts Replacement Costs

Council has been using the Department of Planning Transport and Infrastructure (DPTI) bridge and culvert replacement rates for asset valuation except for foot bridges. DPTI rates do not consist of a cost component for demolition and disposal of the existing asset at the time of renewal. Therefore an allowance for demolition and disposal of an existing bridge or culvert asset has been added to DPTI rates and then used for asset valuation. The costs for demolition and disposal were sourced from Rawlinsons Australian Construction Handbook 2018. A rate for foot bridges has been derived from the council contract prices for construction and installation of six steel pedestrian bridges across the Gawler Rivers in 2014.
Table 11-2 provides a list of the replacement rates used for each type.

**Table 11-2 - Replacement Rates and Useful lives for Bridges & Culverts**

| Bridge & Culvert Type | CRC per $m^2$ | Useful Life (yrs) |
|---|---|---|
| Concrete Bridge – Span<15m | $6,124.45 | 60 |
| Concrete Bridge – Span>15m | $6,990.45 | 60 |
| Steel Bridge – Span<15m | $6,503.45 | 60 |
| Steel Bridge – Span>15m | $9,407.45 | 100 |
| Arches | $3,192.45 | 100 |
| Small Culverts – 1 or 2 runs | $2,437.45 | 75 |
| Large Culverts – 3 or more runs | $1,879.45 | 75 |
| Pipes > 1800mm dia. | $8,618.45 | 75 |
| Footbridge | $3,792.40 | 50 |

In the determination of the unit rates a comprehensive spreadsheet has been developed to derive the above rates using DPTI rates, Council's recent contracts and Rawlinsons Australian Construction Handbook 2018. A summary of the costs included in the formulation of these rates follows.

The rates adopted make allowance for:

- Demolition and disposal of existing bridge or culvert
- Supply and installation of a new bridge or culvert

## 11.3 Bridge and Culvert - Useful Lives

The Town of Gawler values their bridges and culvers at unit level. It is therefore necessary to determine the average useful life for a bridge or a culvert.

The useful life of bridge and culvert assets is assumed to be the time that the particular asset is expected to last before renewal of the whole segment is required. It is likely that during its useful life an asset may undergo some repair and maintenance work.
DPTI inspected the Gawler Mill Inn Bridge in 2013 and has estimated the remaining life of the bridge. Accordingly, the estimated useful life is 126 years which was used for the valuation.

In 2018, a field investigation identified that two additional structures which could be categorised as bridge and culvert structures. Those two were added to the Asset Register accordingly.
In 2018, Level 2 Bridge Inspection was undertaken on 29 bridge and culvert structures excluding the Gawler Mill Inn Bridge by WSP Australia. Following the structural inspection, WSP Australia submitted a comprehensive inspection report (CR18/25217) which indicates asset condition, estimated design life and the remaining life which were applied in the bridge asset valuation.

Table 11-2 also provides the typical useful life used for each structure type.

## 11.4 Measuring Bridge and Culvert Consumption

The consumption of bridge and culvert assets is assumed to be proportional to the condition of the bridge or culvert structures. Based on the Level 2 Bridge Inspection 2018 outcomes, the condition and estimated remaining life data has been used to estimate how far the asset is through its useful life and therefore calculate the depreciated replacement cost using the straight line consumption principle. Council also has a record of the original construction date or approximate reconstruction date of the bridge and culvert structures.

## 11.5 Bridge and Culvert - Level of Service

The service level of a bridge or culvert asset is measured by the ability of the asset to provide a safe passage for traffic. The level of service of the asset will be determined by the structural condition and also by capacity. It may be necessary to replace assets in good physical condition in order to upgrade capacity.

As there is no capacity issues have been experienced on bridge and culvert assets this valuation has assumed that the service level of bridge and culvert assets is simply determined by the structural condition of the asset.

## 11.6 Bridge and culvert, Acquisition, Valuation and Disposal

Bridge and culvert assets data is recorded in a MS Excel format database. Assets created under capital work programs have been recorded at cost. Assets received free of charge from new developments and others have been registered at replacement cost applicable on the acquisition date.
There are no bridges or culverts constructed or received free of charge or disposed during the financial year.
This revaluation has been based on an assessment of all assets in Council's database recognised at current unit rates. Through this revaluation all assets originally recognised at cost have been revalued based on unit rates.

# 12 Asset Disposal

When an asset is renewed or replaced, the Depreciated Replacement Cost (DRC) of the 'old' asset (assuming it is >0) forms a loss on disposal. The disposal of assets involves eliminating assets from the accounting records. This is needed to completely remove all traces of an asset from the balance sheet (known as de-recognition). Table 12-1 provides a summary of loss on disposal for assets in the 2017/18 financial year.

**Table 12-1 – Asset Disposal in 2017/18**

| Asset Type | Asset Disposal |
|---|---|
| Road Surface | $ 224,007.30 |
| Unsealed Roads | $ 3,255.76 |
| Footpaths | $ 4,312.57 |
| SW Pipes | $ 15,896.15 |
| SW Pits | $ 9,883.17 |
| **Total** | **$ 257,354.95** |

For Road Surface Asset Category total Written Down Value is $10,379,158.21 and asset disposal is $224,007.30 which is 2.16% of the Written Down Value and not significant variation.

# 13 Asset Renewals, New Assets and Capital Expenditure on Existing Assets

When an asset is renewed (part or in full) or replaced or new assets are created under capital works programs and the Council receives assets free of charge from developments or external parties, those assets have been recorded in the asset register at cost during the financial year. Also capital expenditure has been allocated for part renewal or repairs of existing assets (above Council's capital threshold). The renewed assets have been revalued at replacement rates as of 30 June 2018. Table 13-1 and 13-2 detail the cost of assets addition, asset renewal and capital expenditure during the 2017/18 financial year.

**Table 13-1 – Assets Additions Renewals and Capital Expenditure in 2017/18**

| Asset Type | at Cost |
|---|---|
| Road Surface - renewal | $747,693.89 |
| Road Surface - new | $221,667.40 |
| Unsealed Roads - renewal | $44,105.45 |
| Road Pavement Base - renewal | $46,022.40 |
| Road Pavement Base - new | $39,126.07 |
| Kerb & Gutter - new | $99,298.73 |
| Kerb & Gutter – Repairs (capital expenditure) | $ 219,593.58 |
| Footpaths Renewal | $123,985.25 |
| Footpaths - New | $502,023.79 |
| SW Pipes - New | $1,054,142.29 |
| SW Pits - New | $500,533.07 |
| **Total** | **$3,598,191.92** |

**Table 13-2 – Assets Received Free of Charge (donated) in 2017/18**

| Asset Type | Replacement Cost |
|---|---|
| Road Surface | $22,752.44 |
| Road Pavement Base | $40,751.57 |
| Road Pavement Sub Base | $43,936.68 |
| Kerb & Gutter | $69,047.04 |
| Footpaths | $86,679.62 |
| SW Pipes | $14,107.38 |

| | |
|---|---|
| SW Pits | $82,366.84 |
| **Total** | **$359,641.57** |

# 14 Infrastructure Assets Valuation, 30 June 2018

Table 14-1 details a summary of the valuation as of 30 June 2018 for the various assets categories of the Infrastructure Assets. A more detailed breakdown up to each category and asset level can be found in the following documents in electronic version spreadsheets.

1. CR18/55688 – AssetMaster Asset Movement Report for the period from 01-07-2017 to 30-06-2018-Actual-Final
2. CR18/35031 – Roundabout Asset valuation as of 30-06-2018
3. CR18/23475 – Bridge Asset valuation as of 30-06-2018

**Table 14-1 – Asset Valuation at 30 June 2018**

| Asset Type | CRC | RV | DA | AD | WDV |
|---|---|---|---|---|---|
| Road Surface | $20,738,184.02 | 0 | $20,738,184.02 | $10,359,025.81 | $10,379,158.21 |
| Pavements Base | $39,669,987.70 | 0 | $39,669,987.70 | $13,184,218.59 | $26,485,769.11 |
| Pavements Sub Base | $28,259,696.11 | 0 | $28,259,696.11 | $4,573,764.64 | $23,685,931.47 |
| Unsealed Roads | $1,943,792.47 | 0 | $1,943,792.47 | $1,102,834.64 | $840,957.83 |
| Kerb & Gutter | $56,952,175.71 | 0 | $56,952,175.71 | $19,988,550.28 | $36,963,625.43 |
| Footpaths | $23,833,028.57 | 0 | $23,833,028.57 | $6,878,768.22 | $16,954,260.35 |
| SW Pipes | $50,246,152.11 | 0 | $50,246,152.11 | $16,117,007.50 | $34,129,144.61 |
| SW Box Culverts | $6,245,473.10 | 0 | $6,245,473.10 | $1,927,860.92 | $4,317,612.18 |
| SW Channels | $3,169,439.52 | 0 | $3,169,439.52 | $2,173,205.99 | $996,233.53 |
| SW Pits | $15,260,118.61 | 0 | $15,260,118.61 | $4,655,066.80 | $10,605,051.81 |
| Roundabouts | $1,634,437.00 | 0 | $1,634,437.00 | $456,849.00 | $1,177,588.00 |
| Bridges & Culverts | $11,896,494.00 | 0 | $11,896,494.00 | $7,207,665.00 | $4,688,829.00 |
| **Total** | **$259,848,979.92** | **0** | **$259,848,979.92** | **$88,624,817.47** | **$171,224,162.45** |

The Written Down Value (WDW) is the depreciated replacement cost and is the 'carrying amount' of the assets as of 30 June 2018 as per AASB 116. Together the table illustrates the total fair value of the asset (CRC), the residual amount (RV), the depreciable amount (DA) and the accumulated depreciation/ amount consumed (AD) for each asset group.

# 15 Depreciation Forecast

A forecast of infrastructure asset depreciation for the 2018/19 financial year has been calculated. This forecast is suitable for budgeting purposes only and the actual depreciation will be calculated at the end of the 2018/19 financial year. Table 15-1 details the forecast deprecation for the 2018/19 financial year. A more detailed breakdown up to each category and asset level can be found in the electronic version document: CR18/55694 - AssetMaster Asset Movement Report for the Period from 01-07-2018 to 30-06-2019-Predicted-Final.

**Table 15-1 – Depreciation forecast at 30 June 2019**

| Asset Type | Annual Depreciation Forecast |
|---|---|
| Road Seals | $892,939.99 |
| Pavements Base | $587,155.34 |
| Pavements Sub Base | $221,613.92 |
| Unsealed Roads | $152,507.99 |
| Kerb & Gutter | $669,607.78 |
| Footpaths | $481,844.76 |
| SW Pipes | $502,410.24 |
| SW Box Culverts | $89,225.25 |
| SW Channels | $45,283.34 |
| SW Pits | $217,895.15 |
| Roundabouts | $32,695.00 |
| Bridges & Culverts | $137,689.00 |
| **Total** | **$4,030,867.76** |

This table provides a predicated depreciation expense for each asset type for the 2018/19 financial year. A more detailed breakdown is provided in the electronic spreadsheet listed as item 2 under References in Section 16 of this Report.

## 16 References


1. CR18/55688 - AssetMaster Asset Movement Report for the Period from 01-07-2017 to 30-06-2018-Actual-Final
2. CR18/55694 - AssetMaster Asset Movement Report for the Period from 01-07-2018 to 30-06-2019-Predicted-Final
3. CR18/55778 - 1 - AssetMaster Asset Movement Report as at 31-07-2018
4. CR18/55784 - 2 - AssetMaster Asset Movement Report as at 31-08-2018
5. CR18/46651 – Schedule of Infrastructure Asset Replacement unit Rates 2018 audited by Asset Engineering
6. CR18/46822 - Gawler Infrastructure Asset Unit Rates 2018 - Audit Report Version 1 by Asset Engineering
7. CR18/53800 - Infrastructure Asset Replacement Unit rates comparison 2017 to 2018
8. CR18/23475 – Bridge Assets valuation 30-06-2018
9. CR18/35031 – Roundabout Assets Valuation 30-06-2018
10. CR16/40252 - Gawler Unit Rates 2016 Report - Confirmation of applicable unit rates for Road Pavement Assets
11. CR18/53939 - Contributed Assets 2017– 2018 Financial Summary and
12. CR18/55613 - Capital Works Assets 2017– 2018 Financial Summary.
13. CR18/37870 - Transport Assets Condition Audit Project Summary Report Final as at 28-06-2018 by Talis Consultants


**PREPARED FOR TOWN OF GAWLER**
**5/07/2017**
**17-401-001-R-CL-MS**
ORIGINAL
BUILDINGS & STRUCTURES

# Open Space Assets Audit
## Summary Report

## COMMERCIAL IN CONFIDENCE



**Calibre Consulting**
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**ADELAIDE SA 5000**

**Ph: (08) 9265 4151**


DOCUMENT CONTROL

17-401-001-R-CL-MS

| Issue | Date | Issue Details | Author | Checked | Approved |
|---|---|---|---|---|---|
| 1 | 3/7/17 | Draft Issued | MS | TY | TY |
| 2 | 5/7/17 | Minor Amendments and Posted as Final Report | MS | TY | TY |

# TABLE OF CONTENTS

# 1 EXECUTIVE SUMMARY

Calibre Consulting (Adel) Pty Ltd performed a series of inspections of various open space assets owned by the Town of Gawler, in the months of April to May 2017. The purpose of these inspections was to provide a streamlined inventory restructure, asset inventory and condition assessment of all open space assets to keep up to date with the Councils asset renewal program. Using the asset unit rates provided by Council, this project also served as a method of formulating a current replacement cost for the entire asset portfolio for the end of financial year valuation of assets.

Included in this audit of all open space assets, any deficiencies recorded, along with suggested remedial actions and comments.

This summary report is based on data collected during the inspections by a team of two Calibre Consulting representatives. This report shall assist in the management and reintegration of the collected data by Council.

# 2 PROJECT SCOPE VARIATION & ASSET TALLY

This asset audit project originally was for the visual condition assessment of 1287 open space assets, recorded spatially in asset groups as 42 different GIS layers. The following major changes and exclusions were made to this original scope to undertake the audits in the most appropriate manner:

- All 42 asset group point and line layers were merged into a single point layer and a single line layer.
- Irrigation assets were excluded from the inspection program, as these subterranean assets are not suitable for visual inspection. The irrigation data was never merged into the data and remains separate at this time.
- Due to the higher than expected number of assets being collected on site during the initial stages of the audit, those assets at sporting grounds which have been leased to sporting clubs were excluded from the audit. Some sporting assets had been audited before this decision to exclude leased assets was made.
- Once the allocated budget for the collection of new assets was reached, a variation was made to allow for the collection of up to 1000 new Open Space Assets.

The result of these changes and variations is summarised in the asset tally table below.

| Asset Status | # Points | # Lines | # Total |
|---|---|---|---|
| Existing Assets | 612 | 353 | **965** |
| New Assets | 769 | 289 | **1058** |
| Removed Assets* | 90 | 32 | **122** |
| Leased Sporting Facility - Audited | 62 | 5 | **67** |
| Leased Sporting Facility - Excluded From Audit | 134 | 18 | **152** |

* The data collection of Removed Assets was offered at a discounted collection rate of 75%.

| Asset Tally | # Total |
|---|---|
| Original Quoted Amount | **1287** |
| Updated Database (Including all leased assets) | **2242** |
| Increase in Assets | **955** |

Excluding assets flagged for removal from the database, 2242 open space assets are now present. This equates to a 42% increase in total asset numbers since the last audit undertaken, indicating a significant increase in database comprehensiveness and capital works undertaken since the last audit.

The assets flagged for removal from the database are to be deleted upon validation from Council. These assets consisted of old assets that have been removed from site since the last audit undertaken. In the case where an old asset has been replaced with a modern equivalent, the old point has been discarded and a new asset point has been recorded. This will ensure no historical data (regarding financial or maintenance) from old assets is recorded against the new asset.

Due to the exclusion of Leased sporting facilities from the audits, some assets may still be unrecorded on these sites, and Calibre is unable to make comment on these excluded assets.

# 3 PROJECT DELIVERABLES

The following items will be provided to Council as final deliverables for the audits undertaken.

## GIS ASSET POINT & LINE LAYERS

A GIS point layer and a line layer forming a database of all open space assets with associated attribute data will be provided. These layers are built upon the originally supplied open space asset layers, which had been historically separated into 42 independent spatial layers based on asset type. These 42 layers were merged into a single layer for both points and lines to simplify the management of the Open Space Asset portfolio.

All new and existing assets audited onsite have been recorded within the database layers, with all required data attributes and schemas completed as specified in the project brief. Further attribute fields outside of the initial scope were also included for easier data management:

- "Asset_Status" – Flags all asset data entries into Existing, New, Removed and Not Audited categories. Entries flagged as Removed can be permanently deleted from the asset database once validated by Council.
- "Duplicate_ID" – Flags those assets which share Council ID's. These assets therefore have identical attributes. Only approximately 15 groups of duplicates exist within the point layer. Some "duplicates" may be flagged as "Yes" in the line layer, but these have been merged, so only one line in the attribute per ID number exists.
- "Asset_Group" – To account for the merge of 42 asset layer into a grouped point and line layer, this field has been included in the data to differentiate between the different asset groups.
- "Install_Year" – The year taken from either the install date or estimated install date field, depending on which of these fields is populated.
- "Percentage_Life_Remaining" $= \frac{Remaining\ Life}{Total\ Useful\ Life}$
- "Unit" – Included as a means to separate the unit quantity from the unit prefixes, which annotates which unit of measure is used in the Unit Rates and Replacement Costs fields.

## DATA SPREADSHEETS

An asset summary spreadsheet will be provided, derived from an export of the GIS attribute data.

One further field was included within the excel spreadsheet export of the spatial layer for valuation purposes as requested by the client:

"Remaining_Life_Based_Condition" is a 1-5 rating to two decimal places for the purpose of asset valuations. This rating was calculated independently to the 1-5 condition rating recorded onsite by the assessors (which takes into account other external factors such as environmental conditions and level of use).

$$Residual\ Life\ Based\ Condition = 1 + 4.00\ x\ (\frac{Useful\ Life - Remaining\ Life}{Useful\ Life})$$

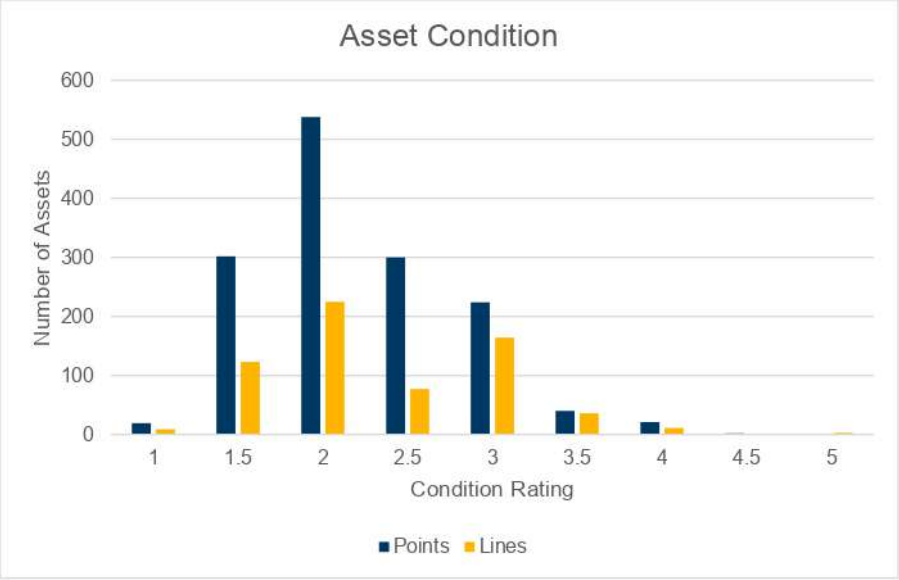
## PHOTOGRAPHIC CATALOGUE

A photographic catalogue of all assets, referenced by filename to the corresponding unique Asset ID in the GIS point layer will be provided. Asset ID numbers for Point Assets have been designated from 1-4999, and Line Asset ID's are 5000+.

## 3.1 ASSET CONDITION RATING

With the high numbers of replaced and new assets, coupled with necessary ongoing maintenance of existing assets, there is a general trend on the asset condition scale toward Good and Very Good ratings. This indicates an asset portfolio fulfilling the level of service requirements on an overall level. The low numbers of Poor and Very Poor rated assets can now be addressed specifically with the recommended remedial actions, resulting in a raised provided level of service for open space assets.

| Condition Rating | Condition Description | # Lines | # Points | # Total | % |
|---|---|---|---|---|---|
| 1 | Very Good | 19 | 9 | 28 | **1.34%** |
| 1.5 | Very Good / Good | 302 | 123 | 425 | **20.30%** |
| 2 | Good | 538 | 225 | 763 | **36.44%** |
| 2.5 | Good / Fair | 300 | 77 | 377 | **18.00%** |
| 3 | Fair | 224 | 164 | 388 | **18.53%** |
| 3.5 | Fair / Poor | 40 | 36 | 76 | **3.63%** |
| 4 | Poor | 21 | 11 | 32 | **1.53%** |
| 4.5 | Poor / Very Poor | 2 | 0 | 2 | **0.10%** |
| 5 | Very Poor | 0 | 3 | 3 | **0.14%** |




The overall good condition of assets has also resulted in a relatively low risk portfolio. It is suggested that the collected data for assets with a Poor and Very Poor Condition Rating be reviewed as a first priority for public health and safety risk management within the portfolio, followed by onsite maintenance and/or works scoping to be completed as necessary. These Poor and Very Poor condition items have a loose correlation of a higher level of associated risk. It should be noted that there is only a minor correlation between the condition and risk, due to the majority of assets are not causing high risk to the public upon deterioration. Surface and finishes deterioration is a significant attributing factor to the decrease in asset condition, which only equates a minor increased risk for most asset classes.

## 3.2 ASSET USEFUL AND REMAINING LIFE

The useful life and subsequent remaining life values of the various open space assets has a large impact on the future management of the asset portfolio. Through analysing these values, predictions can be made on when a significant bough wave of asset replacement may be necessary.

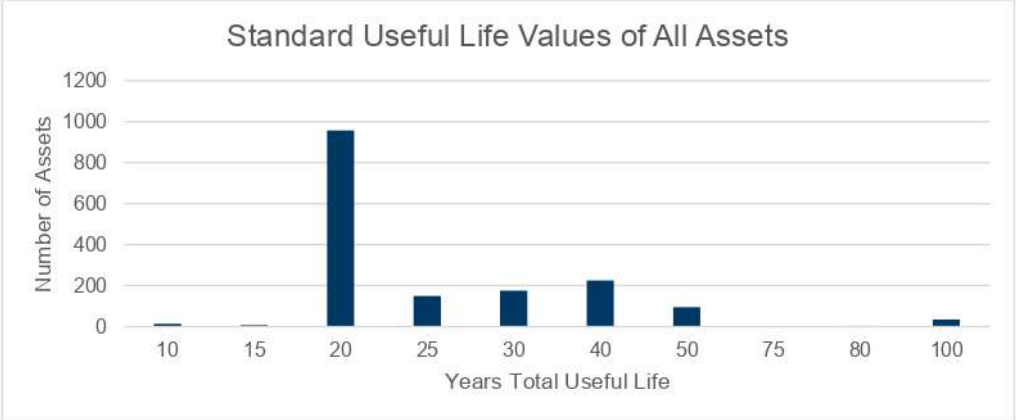
With a modal useful life value of 20 years across the asset portfolio, the majority of assets will be due for replacement within the next 10-15 years. This is to be expected with the current majority of Good and Very Good condition ratings, but only 20 year useful life spans. This bough wave of asset replacements are currently at 50-75% of their remaining life remaining.

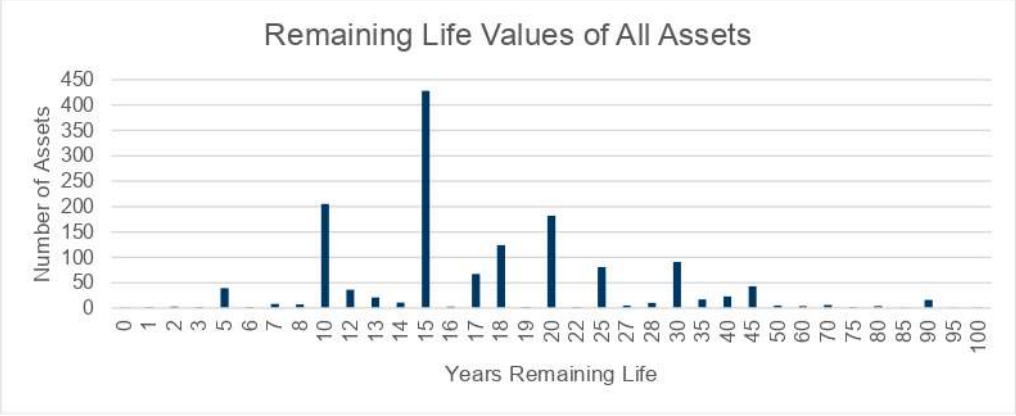
To avoid a bough wave of replacements in the 10-15 year period, it will be important for Council to:

- Maintain their current successful asset replacement/renewal program
- Ensure early prevention maintenance of assets to prolong asset life
- Stagger asset replacement/renewal costs across multiple years to maintain a steady and predictable budget.

It is also suspected that this bough wave will dissapate due to the different rate of asset deterioration based on location, environmental conditions and varying levels of service.

It is suggested that assets within the 0-5 years remaining life time period should begin to be factored into current and upcoming budgets for replacement/renewal using the supplied replacement costs developed from Council unit rates. The majority of these assets with 0-5 years remaining life were found to be of Poor and Very Poor condition.



# 4 UNIT RATES AND REPLACEMENT COSTS

With the streamlining and restructure of the asset database schemas undertaken throughout the project, a full set of current asset replacement costs and modern equivalent replacement costs were able to be developed. This was achieved using the supplied Council unit rates which were validated and multiplied by the standardised asset quantities as recorded on site.

The current replacement cost for the open space asset portfolio was calculated at $17,597,745 (Excluding those assets out of project scope such as irrigation and leased sporting assets). This represents a large value for Council in an asset portfolio traditionally classed a soft asset group.

Further calculations could be undertaken at this stage using the replacement cost data and annual depreciation with respective condition ratings to develop fair value in accordance with Australian Account Standards *AASB13 Fair Value Measurement* and *AASB 116 Property, Plant and Equipment*.

Further value also exists in artwork installations and monuments, as not all have been given a replacement cost due to the uniqueness of the asset and lack of unit rate or available modern equivalents.

# 5 FUTURE RECOMMENDATIONS

Through the undertaking of the audits, Calibre Consulting suggests the following recommendations be taken into consideration in the future management of the Open Space Asset portfolio. These recommendations include also overall strategic and management suggestions, as well as possible desktop audits to target specific data inconsistencies to be undertaken by Council.

## STRATEGIC MANAGEMENT

- Through the audits, the scope of the open space portfolio increased to include streetscape and river path assets, such as path delineators and road crossings. The audits also excluded leased sporting facilities, which may have future implications on the open space portfolio valuation and renewal of facilities. Therefore, it is suggested that Council define what constitutes "Open Space Assets" so inclusive and thorough management of assets can occur.

- As required by the South Australian Local Government Act 1999, an Asset Management Plan should be in place to ensure that this extensive asset class is properly managed according to the desired levels of service. As such, levels of service for these assets should also be determined. Calibre cannot comment on the current status of Asset Management Plans and levels of service in place by the Town of Gawler, as this has not been discussed as the scope of this project.

- A workflow process needs to be identified as a means to update asset inventory for both (spatial databases and financial systems) as assets are replaced or upgraded by Council through maintenance and capital works programs.

## DATA DESKTOP AUDITS

Through the merging of the asset groups into a database of point and line layers, the following desktop audit exercises will be required, which are out of scope for this project:

- "Type Lookup" is no longer an appropriate field and as such the Asset Group Lookup tables will require reconfiguring. Other Lookup tables such as "Open Space Category" and "Open Space Sub Category" have also had additions and will need to be validated by Council. Details have been supplied in Appendix A.

- It is suggested that the purpose of all attribute fields be audited, as the current number of 50+ fields is more detail than required for the effective management of open space assets, and this is adding time and effort to the upkeep of the database and subsequent management of assets. Fields such as "Asset Name" and "Locality" may not be required as this information is captured in other fields and can be viewed spatially as GIS data. Superseded fields from previous audits can also be deleted.

- As part of simplifying the asset database, the merging of some secondary fields is suggested, as many of these different fields are only used for a small amount of the asset groups and are quite similar information. These fields include "Surface Type", "Design", "Border", "Material", "Base Type", "Model", "Use", and "Lamps".

# APPENDIX A OPEN SPACE ASSET PORTFOLIO SCHEMAS ADDED AND AMENDED BY CALIBRE

## OPEN SPACE CATEGORY

| ID | Category | Useful Life | Notes |
|---|---|---|---|
| 20 | Local Park Reserve | 20 | |
| 2 | Natural Area | 100 | |
| 3 | Natural Waterway | 80 | |
| 4 | Recreational Park | 20 | |
| 5 | Specific Purpose | 20 | |
| 6 | Sporting Ground | 50 | |
| 7 | Street Beautification | 20 | |
| **8** | **Streetscape** | **20** | **New addition through Calibre Audit** |

## OPEN SPACE SUB-CATEGORY

| ID | Category | Useful Life | Notes |
|---|---|---|---|
| 1 | Equipment | 20 | |
| 2 | Furniture | 100 | |
| 3 | Infrastructure | 80 | |
| 4 | Irrigation | 20 | |
| 5 | Playground | 20 | |
| **6** | **River Path** | **50** | **New addition through Calibre Audit** |
| **7** | **Bicycle Path** | **20** | **New addition through Calibre Audit** |

## ASSET STATUS

| Asset Status |
|---|
| Existing Asset |
| New Asset |
| Removed Asset |
| Leased Sporting Facility - Audited |
| Leased Sporting Facility - Excluded From Audit |
| Other |

## CONDITION RATING

| Condition Rating | Condition Description |
|---|---|
| 1 | Very Good |
| 1.5 | Very Good / Good |
| 2 | Good |
| 2.5 | Good / Fair |
| 3 | Fair |
| 3.5 | Fair / Poor |
| 4 | Poor |
| 4.5 | Poor / Very Poor |
| 5 | Very Poor |

## ACTION REQUIRED

| Action Required for Deficiencies |
|---|
| Maintenance |
| Prep & Paint |
| Replace / Renew |
| Other |

## ASSET GROUP, TYPE, REVISED USEFUL LIFE, & UNIT

| Shape | Asset Group | Material Type | Revised Useful Life | Unit |
|---|---|---|---|---|
| Line | Bike Rack | Metal | 20 | ITEM |
| Line | Bollard | Pine Post | 30 | ITEM |
| Line | Bollard | Steel Lockable | 40 | ITEM |
| Line | Bollard | Steel Post | 40 | ITEM |
| Line | Bollard | Recycle Rubber | 40 | ITEM |
| Line | Bollard | Recycle Plastic | 40 | ITEM |
| Line | Bollard | Cast Alloy Post | 50 | ITEM |
| Line | Borders & Borders | Concrete | 80 | LM |
| Line | Borders & Borders | Pine Sleeper | 30 | LM |
| Line | Courts & Courts | Tennis Courts | 20 | ITEM |
| Line | Courts & Courts | Tennis / Netball Courts | 20 | ITEM |
| Line | Courts & Courts | Netball Courts | 20 | ITEM |
| Line | Cricket & Pitch | Concrete | 50 | SQM |
| Line | Cricket & Pitch | Turf | 20 | SQM |
| Line | Fence | Chain Mesh | 40 | LM |
| Line | Fence | Cyclone Mesh | 40 | LM |
| Line | Fence | Galvanised Panel Timber Post | 30 | ITEM (PANEL) |
| Line | Fence | Pine Post Rail | 30 | LM |
| Line | Fence | Steel Pipe | 40 | LM |
| Line | Fence | Steel Tubular Panel | 30 | ITEM (PANEL) |
| Line | Fence | Corrugated Iron | 30 | LM |
| Line | Fence | Recycled Plastic Post Rail | 40 | LM |
| Line | Fence | Superdek Steel Rail | 30 | LM |

| Shape | Asset Group | Material Type | Revised Useful Life | Unit |
|---|---|---|---|---|
| Line | Fence | Timber Post Panel | 30 | ITEM (PANEL) |
| Line | Fence | Weld Mesh Panel | 30 | ITEM (PANEL) |
| Line | Fence | Wrought Iron | 50 | ITEM |
| Line | Fence | Colour Bond Rail | 30 | LM |
| Line | Footpaths & Boardwalks | Timber | 20 | SQM |
| Line | Footpaths & Boardwalks | Concrete Paver | 40 | SQM |
| Line | Footpaths & Boardwalks | Rubble | 20 | SQM |
| Line | Footpaths & Boardwalks | Composite Timber & Steel | 50 | SQM |
| Line | Footpaths & Boardwalks | Spray Seal | 20 | SQM |
| Line | Footpaths & Boardwalks | Asphalt | 30 | SQM |
| Line | Garden Bed Edging | Concrete | 80 | LM |
| Line | Garden Bed Edging | Bluestone Slate | 75 | LM |
| Line | Garden Bed Edging | Composite Plastic | 40 | LM |
| Line | Garden Bed Edging | Concrete Kerb & Gutter | 80 | LM |
| Line | Irrigation Components | Weather Station | 10 | ITEM |
| Line | Irrigation Components | Computer | 2 | ITEM |
| Line | Irrigation Components | Controllers | 10 | ITEM |
| Line | Irrigation Systems | Standard Mains System | 15 | ITEM |
| Line | Irrigation Systems | Recycled Water System | 15 | ITEM |
| Line | Paved Area | Concrete Pavers | 40 | SQM |
| Line | Playground Edging | Concrete | 80 | LM |
| Line | Playground Edging | Rubber | 20 | LM |
| Line | Playground Edging | Plastic | 30 | LM |
| Line | Playground Edging | Bollards | 40 | LM |
| Line | Playground Edging | Steel Rails | 40 | LM |
| Line | Playground Edging | Steel rail caps | 40 | ITEM |
| Line | Playground Equipment | Climbing Apparatus | 15 / 20 (New) | ITEM |
| Line | Playground Equipment | Basketball Hoop | 15 / 20 (New) | ITEM |
| Line | Playground Equipment | Swings | 15 / 20 (New) | ITEM |
| Line | Playground Equipment | Slide | 15 / 20 (New) | ITEM |
| Line | Playground Equipment | Disability Access Swing | 15 / 20 (New) | ITEM |
| Line | Playground Equipment | Preschool Equipment | 15 / 20 (New) | ITEM |
| Line | Playground Softfall | Bark Chips | 15 | SQM |
| Line | Playground Softfall | Rubber | 15 | SQM |
| Line | Practice Nets | Chain Mesh | 40 | LM |
| Line | Retaining Walls | Pine Sleeper | 30 | LM |
| Line | Retaining Walls | Concrete Block | 80 | LM |
| Line | Retaining Walls | Concrete Sleeper | 80 | LM |
| Line | Retaining Walls | Concrete | 80 | LM |
| Line | Retaining Walls | Slate | 75 | LM |
| Line | Retaining Walls | Red Gum Sleeper | 25 | LM |
| Line | Retaining Walls | Concrete Sandstone Cladding | 75 | LM |
| Line | Retaining Walls | Stone | 75 | LM |
| Line | Retaining Walls | Stone Brick | 75 | LM |
| Line | Retaining Walls | Retaining wall seats Timber Slats | 25 | LM |
| Line | Roads | Rubble | 20 | SQM |
| Line | Scoreboards | Steel | 30 | ITEM |
| Line | Skate Park | Concrete-1 | 50 | SQM |
| Line | Skate Park | Steel Half Pipe | 20 | SQM |
| Line | Skate Park | Concrete-2 | 50 | SQM |
| Line | Steps | Redgum Railway Sleeper | 25 | LM |
| Line | Steps | Bluestone | 75 | LM |
| Line | Steps | Concrete | 80 | LM |
| Line | Trash Rack Service Stand | Concrete Pad | 80 | SQM |
| Line | Trash Rack Service Stand | Trash Rack-Pad Mounted Nets | 10 | SQM |

| Shape | Asset Group | Material Type | Revised Useful Life | Unit |
|---|---|---|---|---|
| Point | BBQ | Electric Twin Plate | 20 | ITEM |
| Point | BBQ | Gas Single Plate | 20 | ITEM |
| Point | Bin | Timber Slat | 20 | ITEM |
| Point | Bin | Steel | 20 | ITEM |
| Point | Bin | Steel Slat | 20 | ITEM |
| Point | Bin | Concrete Steel | 20 | ITEM |
| Point | Bin | 120L Wheelie Bin With Stand | 20 | ITEM |
| Point | Bin | 120L Wheelie Bin Enclosure | 20 | ITEM |
| Point | Doggie Bin | Steel | 20 | ITEM |
| Point | Drinking | Drinking | 15 | ITEM |
| Point | Flag Pole | Aluminium | 40 | ITEM |
| Point | Flag Pole | Steel | 40 | ITEM |
| Point | Flag Pole | Timber | 20 | ITEM |
| Point | Gate | Chain Mesh | 40 | ITEM |
| Point | Gate | Steel TOG | 40 | ITEM |
| Point | Gate | Steel Tubular | 30 | ITEM |
| Point | Gate | Weld Mesh | 30 | ITEM |
| Point | Gate | Superdek Steel Rail | 40 | ITEM |
| Point | Gate | Wrought Iron | 50 | ITEM |
| Point | Gate | Galvanised Tubular | 40 | ITEM |
| Point | Gate | Pine Rail | 30 | ITEM |
| Point | Gate | Cocky | 30 | ITEM |
| Point | Gate | Steel | 40 | ITEM |
| Point | Light Column | Steel Column | 25 | ITEM |
| Point | Light Column | Steel | 25 | ITEM |
| Point | Light Column | Stobie Pole | 25 | ITEM |
| Point | Light Column | Steel Post | 25 | ITEM |
| Point | Light Column | Small Path Light | 25 | ITEM |
| Point | Monuments & Structures | Memorial | 100 | ITEM |
| Point | Monuments & Structures | Wall | 100 | ITEM |
| Point | Monuments & Structures | Arch | 100 | ITEM |
| Point | Monuments & Structures | Statue | 100 | ITEM |
| Point | Monuments & Structures | Monument | 100 | ITEM |
| Point | Monuments & Structures | Water Fountain | 50 | ITEM |
| Point | Monuments & Structures | Wishing Well | 100 | ITEM |
| Point | Monuments & Structures | Cannon | 80 | ITEM |
| Point | Monuments & Structures | Old Pond | 80 | ITEM |
| Point | Monuments & Structures | Path Arch | 50 | ITEM |
| Point | Monuments & Structures | Pontoon | 50 | ITEM |
| Point | Monuments & Structures | Decorative Post | 20 | ITEM |
| Point | Monuments & Structures | Wrought Iron Fencing | 50 | ITEM |
| Point | Observation Platfrom | Metal Wood | 40 | ITEM |
| Point | Pram Ramp | Concrete | 80 | ITEM |
| Point | Raingarden | Standard | 20 | ITEM |
| Point | Rotunda | Timber Construction with Fibre Glass Roof | 30 | ITEM |
| Point | Seat | Aluminium | 20 | ITEM |
| Point | Seat | Steel Plastic | 20 | ITEM |
| Point | Seat | Steel | 20 | ITEM |
| Point | Seat | Steel Slat | 20 | ITEM |
| Point | Seat | Timber Concrete | 20 | ITEM |
| Point | Seat | Timber Steel | 20 | ITEM |
| Point | Seat | Pine Sleeper | 20 | ITEM |
| Point | Seat | Rock | 50 | ITEM |

| Shape | Asset Group | Material Type | Revised Useful Life | Unit |
|---|---|---|---|---|
| Point | Seat | Timber | 20 | ITEM |
| Point | Seat | Log | 20 | ITEM |
| Point | Seat | Extruded Composite | 20 | ITEM |
| Point | Shades | Shadecloth | 10 | SQM |
| Point | Shades | Shadesales | 10 | SQM |
| Point | Sharps Container | Steel | 20 | ITEM |
| Point | Shelter & Gazebo | Brick Corrugated Iron Roof | 50 | ITEM |
| Point | Shelter & Gazebo | Masonry | 50 | ITEM |
| Point | Shelter & Gazebo | Steel | 50 | ITEM |
| Point | Shelter & Gazebo | Steel Corrugated Iron Roof | 50 | ITEM |
| Point | Shelter & Gazebo | Timber Corrugated Iron Roof | 30 | ITEM |
| Point | Shelter & Gazebo | Timber | 30 | ITEM |
| Point | Shelter & Gazebo | Steel Spandek Roof | 50 | ITEM |
| Point | Signs | Standard | 20 | ITEM |
| Point | Signs | Non Standard | 20 | ITEM |
| Point | Spillways | Concrete | 40 | SQM |
| Point | Table & Seat | Steel Slat | 20 | ITEM |
| Point | Table & Seat | Timber Steel | 20 | ITEM |
| Point | Table & Seat | Steel | 20 | ITEM |
| Point | Table & Seat | Aluminium | 20 | ITEM |
| Point | Table & Seat | Concrete Steel Timber | 20 | ITEM |
| Point | Table & Seat | Extruded Composite | 20 | ITEM |
| Point | Ticket Booths | Steel | 30 | ITEM |
| Point | Tree | Steel | 50 | ITEM |
| Point | Tree | Plastic | 4 | ITEM |
| Point | Other / New Additions | Planter Box | 20 | ITEM |
| Point | Other / New Additions | Path Delineator | 30 | ITEM |
| Point | Other / New Additions | Crossing | 20 | ITEM |

CHRIS SALE consulting

# Elemental Report - DRAFT

**Project:** Gawler Visitors Centre Lift **Building:** Option 1
**Project No:** 181839 **Date:** June 2018
**GFA:** 0

| Code | Description | % B.C. | Cost/m2 | Sub total | Mark Up % | Total |
|---|---|---|---|---|---|---|
| | **Gawler Visitor Centre Lift_Option 1** | | | | | |
| BE | Basis of Estimate | 0.00% | | 0 | | 0 |
| BW | Building Works | 60.69% | | 256,200 | | 256,200 |
| CT | Design Development Contingency | 5.93% | | 25,000 | | 25,000 |
| PR | Builder's Preliminaries and Margin (18%) | 11.85% | | 50,000 | | 50,000 |
| ST | CITB Levy (0.25%) | 0.24% | | 1,000 | | 1,000 |
| | **Total Building Works** | **78.45%** | | **331,200** | | **331,200** |
| CT | Construction Contingency (10%) | 8.29% | | 35,000 | | 35,000 |
| PF | Professional Fees (15%) | 13.03% | | 55,000 | | 55,000 |
| ES | Escalation | 0.00% | | Excl. | | Excl. |
| GST | GST | 0.00% | | Excl. | | Excl. |
| | **Total Cost (Excl. GST)** | **100.00%** | | **422,200** | | **422,200** |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 1 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| | **Total Cost (Excl. GST)** | | | | |
| | **Basis of Estimate** | | | | |
| | **General** | | | | |
| | This Cost Plan provides an Order of Cost for the proposed lift installation at the Gawler Visitors Centre | | | | |
| | This estimate is based on measured quantities from the documentation as listed below to which we have applied rates and conditions we believe applicable based on projects of a similar type and scale. | | | | |
| | | | | | |
| | **This Estimate is based on the following information:** | | | | |
| | - Site visit dated 5th June 2018 | | | | |
| | - Existing drawing provided by Town of Gawler on 15th June 2018 | | | | |
| | | | | | |
| | **This Estimate includes the following items:** | | | | |
| | - Structural support framing where walls / floors removed (scope TBC) | | | | |
| | - Roof alterations | | | | |
| | - Design Development Contingency | | | | |
| | - Builder's Preliminaries and Margin | | | | |
| | - Construction Contingency | | | | |
| | - Professional Fees | | | | |
| | - CITB Levy | | | | |
| | | | | | |
| | **This Estimate specifically excludes the following items:** | | | | |
| | - Upgrade of existing Level 1 toilets | | | | |
| | - Relocation of fire hose reel | | | | |
| | - Fire services alterations | | | | |
| | - Seismic upgrades | | | | |
| | - Staging / phasing | | | | |
| | - Asbestos removal | | | | |
| | - Services infrastructure upgrades, cabling, boards and the like | | | | |
| | - Work outside nominated site boundaries | | | | |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 1 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **BE** | **Basis of Estimate** | | | | |
| | - Escalation in costs | | | | |
| | - Decanting costs | | | | |
| | - Out of hours works | | | | |
| | - GST | | | | |
| | | | | | |
| | **This Estimate is based on the following assumptions:** | | | | |
| | The following assumptions have been adopted in our estimate: | | | | |
| | - The works will be completed during standard operating hours | | | | |
| | - The works will be competitively tendered on a lump sum basis amongst suitable contractors | | | | |
| | - The use of existing facilities for Builder's compound | | | | |
| | | | | **Subtotal Basis of Estimate** | **0** |
| | | | | **Subtotal Basis of Estimate** | **0** |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 1 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **BW** | **Building Works** | | | | |
| **DE** | **Demolition** | | | | |
| | *Substructure* | | | | |
| 1 | Sawcut and remove existing ground slab | | Item | | 2,000 |
| | | | | | |
| | *Upper Floors* | | | | |
| 2 | Carefully demolish existing upper floor to increase existing opening including associated support beams and temporary propping | | Item | | 15,000 |
| | | | | | |
| | *Stairs* | | | | |
| 3 | Remove existing stair and dispose | 1 | No | 1,500.00 | 1,500 |
| | | | | | |
| | *Roof* | | | | |
| 4 | Allowance for demolition work associated with roof alterations | | Item | | 2,000 |
| | | | | | |
| | *External Walls* | | | | |
| 5 | Remove existing window and cut down wall to create new single DDA entry | | Item | | 2,000 |
| | | | | | |
| | *Internal Walls* | | | | |
| 6 | Remove lightweight walls to level 1 | | Item | | 1,000 |
| | | | | | |
| | *Floor Finishes* | | | | |
| 7 | Remove existing floor finishes | | Item | | 500 |
| | | | | | |
| | *Ceiling Finishes* | | | | |
| 8 | Remove existing ceiling and associated framing | | Item | | 500 |
| | | | | | |
| | *Fitments* | | | | |
| 9 | Remove joinery to upper level storage and dispose | | Item | | 1,000 |
| | | | | | |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 1 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **BW** | **Building Works** | | | | |
| | *General* | | | | |
| 10 | Allowance for sundry demolition works | | Item | | 1,000 |
| 11 | No allowance for asbestos removal | | Note | | Excl. |
| 12 | No allowance to remove and reinstate loose FFE, racks, goods and the like in ground floor Visitors Centre (assumed by Council) | | Note | | Excl. |
| | | | | **Subtotal Demolition** | **26,500** |
| **SB** | **Substructure** | | | | |
| 13 | Reinforced concrete lift pit (1000mm deep) including detailed excavation, waterproofing, etc. complete | | Item | | 25,000 |
| | | | | **Subtotal Substructure** | **25,000** |
| **RF** | **Roof** | | | | |
| 14 | Allowance for structural lifting beam incorporated into new roof framing | | Item | | 2,000 |
| 15 | Allowance for roof alterations to facilitate lift installation including modifications of existing structure and the like | | Item | | 7,500 |
| | | | | **Subtotal Roof** | **9,500** |
| **UF** | **Upper Floors** | | | | |
| 16 | Allowance for additional support framing / transfer structures where upper floor opening increased (scope TBC) | | Item | | 15,000 |
| | | | | **Subtotal Upper Floors** | **15,000** |
| **EW** | **External Walls** | | | | |
| 17 | Allowance for additional external cladding where roof alterations occured including associated flashing and the like | | Item | | 3,000 |
| 18 | Modify existing external walls / windows to create new single door opening for DDA access | | Item | | 5,000 |
| | | | | **Subtotal External Walls** | **8,000** |
| **ED** | **External Doors** | | | | |
| 19 | Single DDA access door (assumed push button entry) | 1 | No | 3,500.00 | 3,500 |
| | | | | **Subtotal External Doors** | **3,500** |
| **ND** | **Internal Doors** | | | | |
| 20 | No allowance for new internal doors or works to existing internal doors | | Note | | Excl. |
| | | | | **Subtotal Internal Doors** | **0** |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 1 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **BW** | **Building Works** | | | | |
| **NW** | **Internal Walls** | | | | |
| 21 | Reinforced concrete block wall to lift core including tying into adjacent structures (assumed 8000mm total height - TBC) | 66 | m2 | 550.00 | 36,300 |
| 22 | Lining to masonry core wall where exposed | 20 | m2 | 120.00 | 2,400 |
| 23 | Lightweight walls to upper floor where offices modified | | Item | | 2,000 |
| 24 | Allowance for scaffolding / access associated with lift core installation | | Item | | 7,500 |
| 25 | No allowance for additional structural support framing associated with removal of load bearing elements | | Note | | Excl. |
| | | | | **Subtotal Internal Walls** | **48,200** |
| **FF** | **Floor Finishes** | | | | |
| 26 | Allowance to make good floor associated with lift installation | | Item | | 1,000 |
| | | | | **Subtotal Floor Finishes** | **1,000** |
| **CF** | **Ceiling Finishes** | | | | |
| 27 | Fire rated ceiling to lift shaft | 4 | m2 | 250.00 | 1,000 |
| 28 | Allowance to make good ceiling where affected by lift installation | | Item | | 5,000 |
| 29 | No allowance for painting existing ceilings | | Note | | Excl. |
| | | | | **Subtotal Ceiling Finishes** | **6,000** |
| **WF** | **Wall Finishes** | | | | |
| 30 | No allowance to paint existing walls | | Note | | Excl. |
| 31 | No allowance for feature treatments to lift face | | Note | | Excl. |
| | | | | **Subtotal Wall Finishes** | **0** |
| **FT** | **Fitments** | | | | |
| 32 | No allowance for signage | | Note | | Excl. |
| 33 | No allowance to replace joinery to level 1 storage | | Note | | Excl. |
| | | | | **Subtotal Fitments** | **0** |
| **ES** | **Electrical Services** | | | | |
| 34 | Allowance to provide telephone line to lift | | Item | | 500 |
| 35 | Allowance for new lighting to ground floor | | Item | | 500 |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 1 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **BW** | **Building Works** | | | | |
| 36 | Allowance to provide power to new door | | Item | | 500 |
| 37 | Allowance to provide power to lift | | Item | | 1,000 |
| 38 | Allowance to make good lighting and power to level 1 offices (utlise existing) | | Item | | 2,000 |
| 39 | Allowance for sundry builders works associated with services | | Item | | 500 |
| 40 | PC Sum allowance to relocate / divert services to Level 1 to facilitate installation of lift (scope unclear - RISK ITEM) | | Item | | 5,000 |
| 41 | No allowance for upgrades to existing sub-boards (assumed adequate capacity) | | Note | | Excl. |
| | | | | **Subtotal Electrical Services** | **10,000** |
| **MS** | **Mechancial Services** | | | | |
| 42 | No allowance for new mechanical services or modifications to existing | | Note | | Excl. |
| | | | | **Subtotal Mechancial Services** | **0** |
| **FS** | **Fire Services** | | | | |
| 43 | Allowance for alterations to existing fire detection system to suit new layout including new as required (TBC) | | Item | | 500 |
| 44 | Allowance for smoke detector in shaft | | Item | | 1,000 |
| 45 | No allowance to relocate fire hose reel | | Note | | Excl. |
| | | | | **Subtotal Fire Services** | **1,500** |
| **TS** | **Transportation Services** | | | | |
| 46 | New dual entrance lift to serve 2 levels as per quotation by JPS Lifts dated 13th June 2018 | | Item | | 87,600 |
| 47 | Extra over allowance for optional emergency return to nearest floor upon power failure (TBC) | | Item | | 5,800 |
| 48 | Extra over allowance for batter backed-up emergency phone line (TBC) | | Item | | 2,600 |
| 49 | Allowance for builders works associated with services | | Item | | 6,000 |
| | | | | **Subtotal Transportation Services** | **102,000** |
| | | | | **Subtotal Building Works** | **256,200** |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 1 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **CT** | **Design Development Contingency** | | | | |
| | **Design Development Contingency** | | | | |
| 50 | Allowance for Design Development Contingency at 10% | | Item | | 25,000 |
| | | | | **Subtotal Design Development Contingency** | **25,000** |
| | | | | **Subtotal Design Development Contingency** | **25,000** |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 1 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **PR** | **Builder's Preliminaries and Margin (18%)** | | | | |
| | **Builder's Preliminaries and Margin** | | | | |
| 51 | Allowance for Builders Preliminaries and Margin at 18% | | Item | | 50,000 |
| | | | | **Subtotal Builder's Preliminaries and Margin** | **50,000** |
| | | | | **Subtotal Builder's Preliminaries and Margin (18%)** | **50,000** |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 1 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **ST** | **CITB Levy (0.25%)** | | | | |
| | **CITB Levy** | | | | |
| 52 | Allowance for CITB Levy at 0.25% | | Item | | 1,000 |
| | | | | **Subtotal CITB Levy** | **1,000** |
| | | | | **Subtotal Total Building Works** | **331,200** |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 1 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **CT** | **Construction Contingency (10%)** | | | | |
| | **Construction Contingency** | | | | |
| 53 | Allowance for Construction Contingency at 10% | | Item | | 35,000 |
| | | | | **Subtotal Construction Contingency** | **35,000** |
| | | | | **Subtotal Construction Contingency (10%)** | **35,000** |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 1 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **PF** | **Professional Fees (15%)** | | | | |
| | **Professional Fees** | | | | |
| 54 | Allowance for Professional Fees at 15% | | Item | | 55,000 |
| | | | | **Subtotal Professional Fees** | **55,000** |
| | | | | **Subtotal Total Cost (Excl. GST)** | **422,200** |

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# Elemental Report - DRAFT

**Project:** Gawler Visitors Centre Lift **Building:** Option 2
**Project No:** 181839 **Date:** June 2018
**GFA:** 0

| Code | Description | % B.C. | Cost/m2 | Sub total | Mark Up % | Total |
|---|---|---|---|---|---|---|
| | **Gawler Visitor Centre Lift_Option 2** | | | | | |
| BE | Basis of Estimate | 0.00% | | 0 | | 0 |
| BW | Building Works | 60.05% | | 187,500 | | 187,500 |
| CT | Design Development Contingency | 6.09% | | 19,000 | | 19,000 |
| PR | Builder's Preliminaries and Margin (18%) | 12.82% | | 40,000 | | 40,000 |
| ST | CITB Levy (0.25%) | 0.25% | | 750 | | 750 |
| | **Total Building Works** | **78.95%** | | **246,500** | | **246,500** |
| CT | Construction Contingency (10%) | 8.01% | | 25,000 | | 25,000 |
| PF | Professional Fees (15%) | 12.82% | | 40,000 | | 40,000 |
| ES | Escalation | 0.00% | | Excl. | | Excl. |
| GST | GST | 0.00% | | Excl. | | Excl. |
| | **Total Cost (Excl. GST)** | **100.00%** | | **312,250** | | **312,250** |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 2 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| | **Total Cost (Excl. GST)** | | | | |
| | **Basis of Estimate** | | | | |
| | **General** | | | | |
| | This Cost Plan provides an Order of Cost for the proposed lift installation at the Gawler Visitors Centre | | | | |
| | This estimate is based on measured quantities from the documentation as listed below to which we have applied rates and conditions we believe applicable based on projects of a similar type and scale. | | | | |
| | | | | | |
| | **This Estimate is based on the following information:** | | | | |
| | - Site visit dated 5th June 2018 | | | | |
| | - Existing drawing provided by Town of Gawler on 15th June 2018 | | | | |
| | | | | | |
| | **This Estimate includes the following items:** | | | | |
| | - Structural support framing where walls / floors removed (scope TBC) | | | | |
| | - Roof alterations | | | | |
| | - Design Development Contingency | | | | |
| | - Builder's Preliminaries and Margin | | | | |
| | - Construction Contingency | | | | |
| | - Professional Fees | | | | |
| | - CITB Levy | | | | |
| | | | | | |
| | **This Estimate specifically excludes the following items:** | | | | |
| | - Upgrade of existing Level 1 toilets | | | | |
| | - Relocation of fire hose reel | | | | |
| | - Fire services alterations | | | | |
| | - Seismic upgrades | | | | |
| | - Staging / phasing | | | | |
| | - Asbestos removal | | | | |
| | - Services infrastructure upgrades, cabling, boards and the like | | | | |
| | - Work outside nominated site boundaries | | | | |

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| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 2 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **BE** | **Basis of Estimate** | | | | |
| | - Escalation in costs | | | | |
| | - Decanting costs | | | | |
| | - Out of hours works | | | | |
| | - GST | | | | |
| | | | | | |
| | **This Estimate is based on the following assumptions:** | | | | |
| | The following assumptions have been adopted in our estimate: | | | | |
| | - The works will be completed during standard operating hours | | | | |
| | - The works will be competitively tendered on a lump sum basis amongst suitable contractors | | | | |
| | - The use of existing facilities for Builder's compound | | | | |
| | | | | **Subtotal Basis of Estimate** | **0** |
| | | | | **Subtotal Basis of Estimate** | **0** |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 2 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **BW** | **Building Works** | | | | |
| **DE** | **Demolition** | | | | |
| | *Substructure* | | | | |
| 1 | Sawcut and remove existing ground slab | | Item | | 2,000 |
| | | | | | |
| | *Upper Floors* | | | | |
| 2 | No allowance to remove existing upper floor (utilise existing stair void as advised) | | Note | | Excl. |
| | | | | | |
| | *Stairs* | | | | |
| 3 | Remove existing stair and dispose | 1 | No | 1,500.00 | 1,500 |
| | | | | | |
| | *Roof* | | | | |
| 4 | Allowance for demolition work associated with roof alterations | | Item | | 2,000 |
| | | | | | |
| | *External Walls* | | | | |
| 5 | Remove existing window and cut down wall to create new single DDA entry | | Item | | 2,000 |
| | | | | | |
| | *Internal Walls* | | | | |
| 6 | Remove lightweight walls to level 1 | | Item | | 1,000 |
| | | | | | |
| | *Floor Finishes* | | | | |
| 7 | Remove existing floor finishes | | Item | | 500 |
| | | | | | |
| | *Ceiling Finishes* | | | | |
| 8 | Remove existing ceiling and associated framing | | Item | | 500 |
| | | | | | |
| | *Fitments* | | | | |
| 9 | Remove joinery to upper level storage and dispose | | Item | | 1,000 |
| | | | | | |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 2 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **BW** | **Building Works** | | | | |
| | *General* | | | | |
| 10 | Allowance for sundry demolition works | | Item | | 1,000 |
| 11 | No allowance for asbestos removal | | Note | | Excl. |
| 12 | No allowance to remove and reinstate loose FFE, racks, goods and the like in ground floor Visitors Centre (assumed by Council) | | Note | | Excl. |
| | | | | **Subtotal Demolition** | **11,500** |
| **SB** | **Substructure** | | | | |
| 13 | Reinforced concrete lift pit (1000mm deep) including detailed excavation, waterproofing, etc. complete | | Item | | 25,000 |
| | | | | **Subtotal Substructure** | **25,000** |
| **RF** | **Roof** | | | | |
| 14 | Allowance for structural lifting beam incorporated into new roof framing | | Item | | 2,000 |
| 15 | Allowance for roof alterations to facilitate lift installation including modifications of existing structure and the like | | Item | | 7,500 |
| | | | | **Subtotal Roof** | **9,500** |
| **EW** | **External Walls** | | | | |
| 16 | Allowance for additional external cladding where roof alterations occured including associated flashing and the like | | Item | | 3,000 |
| 17 | Modify existing external walls / windows to create new single door opening for DDA access | | Item | | 5,000 |
| | | | | **Subtotal External Walls** | **8,000** |
| **ED** | **External Doors** | | | | |
| 18 | Single DDA access door (assumed push button entry) | 1 | No | 3,500.00 | 3,500 |
| | | | | **Subtotal External Doors** | **3,500** |
| **ND** | **Internal Doors** | | | | |
| 19 | No allowance for new internal doors or works to existing internal doors | | Note | | Excl. |
| | | | | **Subtotal Internal Doors** | **0** |
| **NW** | **Internal Walls** | | | | |
| 20 | Reinforced concrete block wall to lift core including tying into adjacent structures (assumed 8000mm total height - TBC) | 66 | m2 | 550.00 | 36,300 |
| 21 | Lining to masonry core wall where exposed | 20 | m2 | 120.00 | 2,400 |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 2 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **BW** | **Building Works** | | | | |
| 22 | Lightweight walls to upper floor where offices modified | | Item | | 2,000 |
| 23 | Allowance for scaffolding / access associated with lift core installation | | Item | | 7,500 |
| 24 | No allowance for additional structural support framing associated with removal of load bearing elements | | Note | | Excl. |
| | | | | **Subtotal Internal Walls** | **48,200** |
| **FF** | **Floor Finishes** | | | | |
| 25 | Allowance to make good floor associated with lift installation | | Item | | 1,000 |
| | | | | **Subtotal Floor Finishes** | **1,000** |
| **CF** | **Ceiling Finishes** | | | | |
| 26 | Fire rated ceiling to lift shaft | 4 | m2 | 250.00 | 1,000 |
| 27 | Allowance to make good ceiling where affected by lift installation | | Item | | 1,500 |
| 28 | No allowance for painting existing ceilings | | Note | | Excl. |
| | | | | **Subtotal Ceiling Finishes** | **2,500** |
| **WF** | **Wall Finishes** | | | | |
| 29 | No allowance to paint existing walls | | Note | | Excl. |
| 30 | No allowance for feature treatments to lift face | | Note | | Excl. |
| | | | | **Subtotal Wall Finishes** | **0** |
| **FT** | **Fitments** | | | | |
| 31 | No allowance for signage | | Note | | Excl. |
| 32 | No allowance to replace joinery to level 1 storage | | Note | | Excl. |
| | | | | **Subtotal Fitments** | **0** |
| **ES** | **Electrical Services** | | | | |
| 33 | Allowance to provide telephone line to lift | | Item | | 500 |
| 34 | Allowance for new lighting to ground floor | | Item | | 500 |
| 35 | Allowance to provide power to new door | | Item | | 500 |
| 36 | Allowance to provide power to lift | | Item | | 1,000 |
| 37 | Allowance to make good lighting and power to level 1 offices (utlise existing) | | Item | | 2,000 |

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# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 2 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **BW** | **Building Works** | | | | |
| 38 | Allowance for sundry builders works associated with services | | Item | | 500 |
| 39 | PC Sum allowance to relocate / divert services to Level 1 to facilitate installation of lift (scope unclear - RISK ITEM) | | Item | | 5,000 |
| 40 | No allowance for upgrades to existing sub-boards (assumed adequate capacity) | | Note | | Excl. |
| | | | | **Subtotal Electrical Services** | **10,000** |
| **MS** | **Mechancial Services** | | | | |
| 41 | No allowance for new mechanical services or modifications to existing | | Note | | Excl. |
| | | | | **Subtotal Mechancial Services** | **0** |
| **FS** | **Fire Services** | | | | |
| 42 | Allowance for alterations to existing fire detection system to suit new layout including new as required (TBC) | | Item | | 500 |
| 43 | Allowance for smoke detector in shaft | | Item | | 1,000 |
| 44 | No allowance to relocate fire hose reel | | Note | | Excl. |
| | | | | **Subtotal Fire Services** | **1,500** |
| **TS** | **Transportation Services** | | | | |
| 45 | New dual entrance lift to serve 2 levels as per quotation by JPS Lifts dated 13th June 2018 | | Item | | 57,400 |
| 46 | Extra over allowance for optional emergency return to nearest floor upon power failure (TBC) | | Item | | 2,800 |
| 47 | Extra over allowance for batter backed-up emergency phone line (TBC) | | Item | | 2,600 |
| 48 | Allowance for builders works associated with services | | Item | | 4,000 |
| | | | | **Subtotal Transportation Services** | **66,800** |
| | | | | **Subtotal Building Works** | **187,500** |

CHRIS SALE consulting

# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 2 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **CT** | **Design Development Contingency** | | | | |
| | **Design Development Contingency** | | | | |
| 49 | Allowance for Design Development Contingency at 10% | | Item | | 19,000 |
| | | | | **Subtotal Design Development Contingency** | **19,000** |
| | | | | **Subtotal Design Development Contingency** | **19,000** |

CHRIS SALE consulting

# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 2 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **PR** | **Builder's Preliminaries and Margin (18%)** | | | | |
| | **Builder's Preliminaries and Margin** | | | | |
| 50 | Allowance for Builders Preliminaries and Margin at 18% | | Item | | 40,000 |
| | | | | **Subtotal Builder's Preliminaries and Margin** | **40,000** |
| | | | | **Subtotal Builder's Preliminaries and Margin (18%)** | **40,000** |

CHRIS SALE consulting

# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 2 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **ST** | **CITB Levy (0.25%)** | | | | |
| | **CITB Levy** | | | | |
| 51 | Allowance for CITB Levy at 0.25% | | Item | | 750 |
| | | | | **Subtotal CITB Levy** | **750** |
| | | | | **Subtotal Total Building Works** | **246,500** |

CHRIS SALE consulting

# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 2 |
| **Project No:** | 181839 | **Date:** | June 2018 |

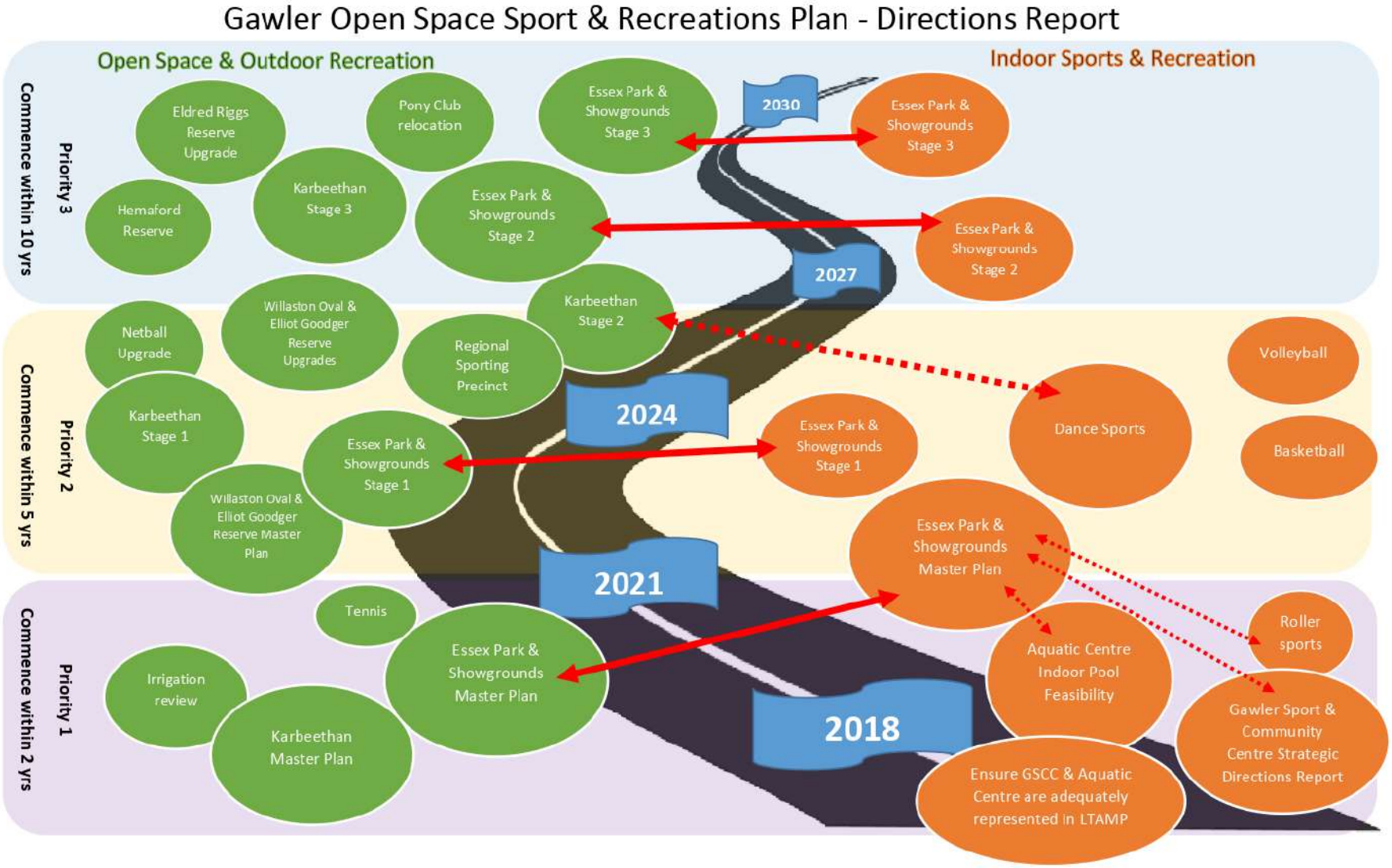
| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **CT** | **Construction Contingency (10%)** | | | | |
| | **Construction Contingency** | | | | |
| 52 | Allowance for Construction Contingency at 10% | | Item | | 25,000 |
| | | | | **Subtotal Construction Contingency** | **25,000** |
| | | | | **Subtotal Construction Contingency (10%)** | **25,000** |

CHRIS SALE consulting

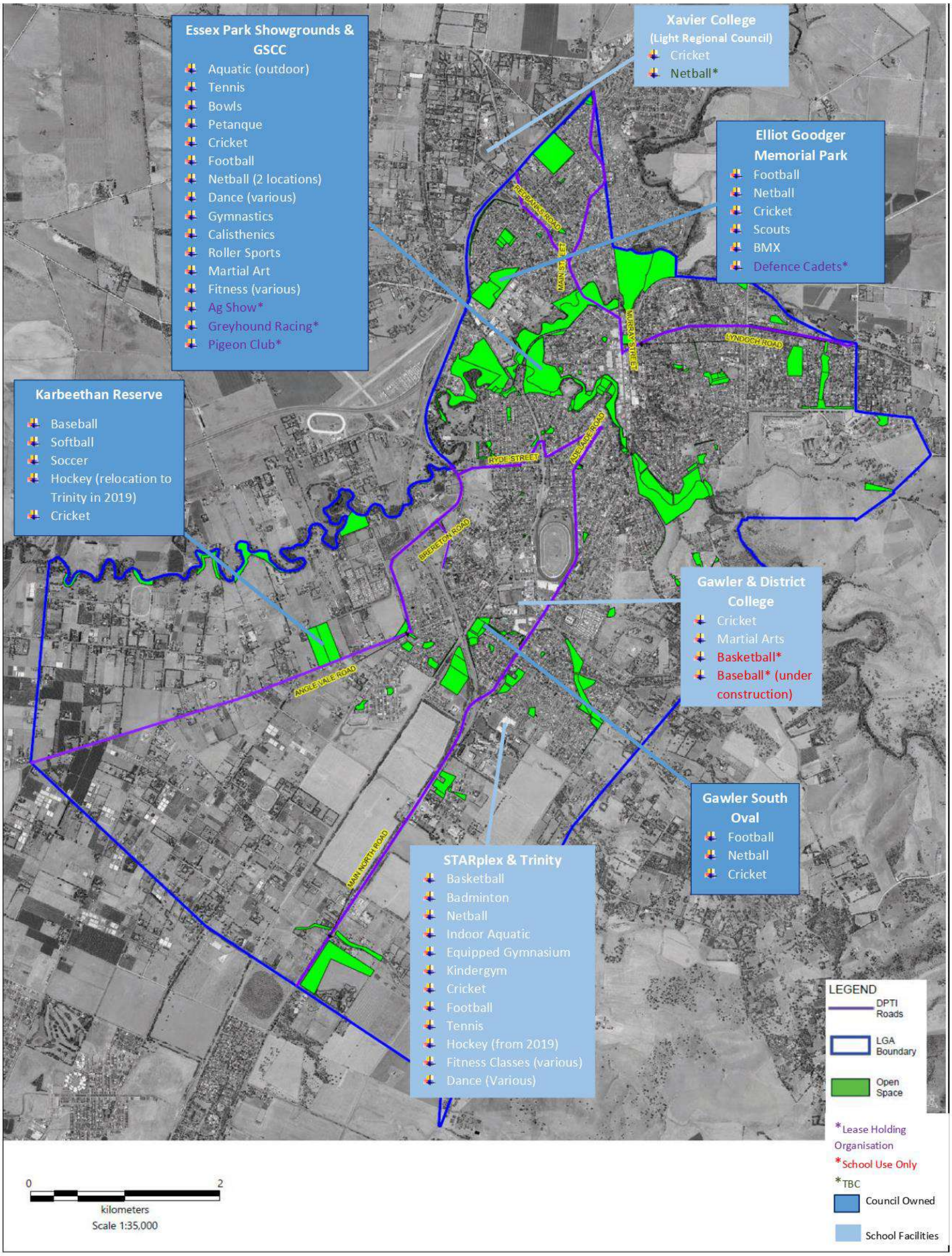
# Elemental Report - DRAFT

| | | | |
|---|---|---|---|
| **Project:** | Gawler Visitors Centre Lift | **Building:** | Option 2 |
| **Project No:** | 181839 | **Date:** | June 2018 |

| Code | Description | Quantity | Unit | Rate | Total |
|---|---|---|---|---|---|
| **PF** | **Professional Fees (15%)** | | | | |
| | **Professional Fees** | | | | |
| 53 | Allowance for Professional Fees at 15% | | Item | | 40,000 |
| | | | | **Subtotal Professional Fees** | **40,000** |
| | | | | **Subtotal Total Cost (Excl. GST)** | **312,250** |


Gawler Open Space Sport & Recreations Plan - Directions Report
Open Space & Outdoor Recreation
Indoor Sports & Recreation
Commence within 10 yrs
Priority 3
Commence within 5 yrs
Priority 2
Commence within 2 yrs
Priority 1
Eldred Riggs Reserve Upgrade
Pony Club relocation
Essex Park & Showgrounds Stage 3
2030
Essex Park & Showgrounds Stage 3
Hemaford Reserve
Karbeethan Stage 3
Essex Park & Showgrounds Stage 2
Essex Park & Showgrounds Stage 2
2027
Karbeethan Stage 2
Willaston Oval & Elliot Goodger Reserve Upgrades
Netball Upgrade
Regional Sporting Precinct
Volleyball
Karbeethan Stage 1
2024
Essex Park & Showgrounds Stage 1
Essex Park & Showgrounds Stage 1
Dance Sports
Basketball
Willaston Oval & Elliot Goodger Reserve Master Plan
Essex Park & Showgrounds Master Plan
2021
Tennis
Roller sports
Essex Park & Showgrounds Master Plan
Aquatic Centre Indoor Pool Feasibility
Irrigation review
Gawler Sport & Community Centre Strategic Directions Report
2018
Karbeethan Master Plan
Ensure GSCC & Aquatic Centre are adequately represented in LTAMP

## Sporting & active recreation supported in Gawler by location.



Local Government Association of South Australia

The voice of local government.

*In reply please quote our reference:* ECM 666492 KJ/SR

17 October 2018

Mayor Karen Redman
Town of Gawler
PO Box 130
GAWLER SA 5118
**Emailed:** Mayor@gawler.sa.gov.au

Dear Mayor Redman

**Regional Groupings of Metropolitan Councils**

As you are aware, changes to the LGA's governance structure with the implementation of the new Constitution envisages the reformation of the Metropolitan Local Government Group into the Greater Adelaide Region Organisation of Councils (GAROC). The role of GAROC is regional advocacy, policy initiation and review, leadership, engagement and capacity building in the regions.

The new Constitution further provides that Members may be organised into regional groups for the purpose of participating in the processes for the election of GAROC. The regional groupings of members are not formed to undertake any other function for the purposes of the LGA.

For the 2018 GAROC elections currently underway only one regional grouping was in place, being all metropolitan councils.

A productive workshop was held at the September MLGG meeting and followed by the September Board meeting, respective resolutions were passed that:

*"membership of GAROC be based on regional voting after 2018, and that member councils be consulted on the following GAROC model for future voting after 2018:*

- *North – Playford, Salisbury, Tea Tree Gully, Gawler*
- *West – Port Adelaide Enfield, City Charles Sturt, West Torrens, Holdfast Bay*
- *South – Onkaparinga, Mitcham, Marion*
- *East – Prospect, Walkerville, Campbelltown, Norwood Payneham & St Peters, Burnside, Unley, Adelaide Hills*

*A report on the outcomes of the consultation with member councils will be presented to GAROC at the end of February 2019."*

Please refer to the attached for further information on the above model. Note that the LGA Constitution provides that the Lord Mayor of the City of Adelaide or his or her nominee will be a member of GAROC. The City of Adelaide is therefore not included in the above proposed regional groupings.

148 Frome Street Adelaide SA 5000 | GPO Box 2693 Adelaide SA 5001 | T 08 8224 2000 | F 08 8232 6336 | W lga.sa.gov.au

Local Government Association of South Australia

The voice of local government.

The purpose of this letter is to seek your council's feedback on the proposed regional groupings as outlined above. Note that the regional groupings can be established at any time and following your feedback a report will be presented to both GAROC and the Board in February / March 2019. Once GAROC and the Board has considered your feedback, the Greater Adelaide regional groupings will be included as a Schedule to the GAROC terms of reference and presented to the April 2019 Ordinary General Meeting for ratification. These groupings will then be in place for any future GAROC elections, including election to fill any casual vacancies that may arise.

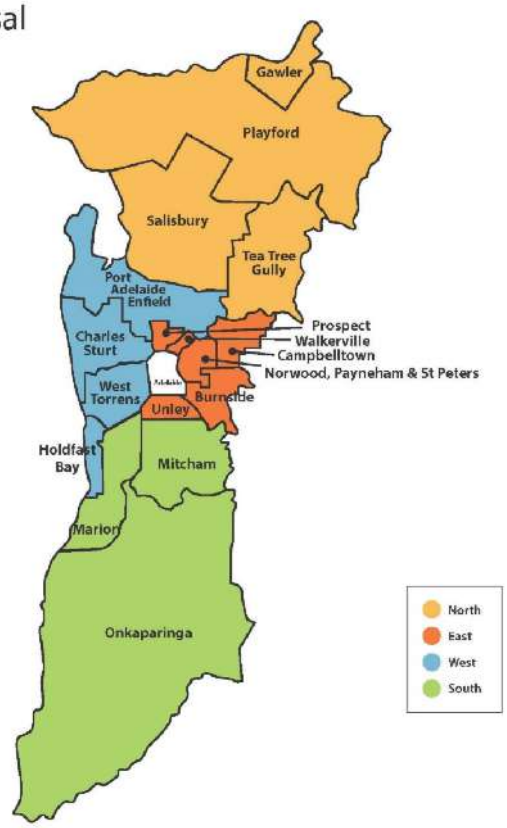
We look forward to receiving your feedback on the above model **by Friday 8 February 2019** via email to Kathy Jarrett, kathy.jarrett@lga.sa.gov.au. Please also feel free to contact Kathy on (08) 8224 2010 if you would like to discuss this matter further.

Yours sincerely

Matt Pinnegar
**Chief Executive Officer**
*Telephone: (08) 8224 2039*
*Email: matt.pinnegar @lga.sa.gov.au*

*Copy to:* *CEOs*

## GAROC regional groupings proposal




The proposed regional groupings have the following representation in terms of population.

| *North* | Population |
|---|---|
| Gawler | 23,192 |
| Playford | 90,669 |
| Salisbury | 140,906 |
| Tea Tree Gully | 99,518 |
| **Total** | **354,285** |

| *East* | Population |
|---|---|
| Adelaide Hills | 39,525 |
| Burnside | 45,464 |
| Campbelltown | 51,265 |
| Norwood, Payneham & St Peters | 36,443 |
| Prospect | 21,095 |
| Unley | 38,916 |
| Walkerville | 7,838 |
| **Total** | **240,546** |

| *South* | Population |
|---|---|
| Onkaparinga | 169,073 |
| Mitcham | 66,372 |
| Marion | 90,602 |
| **Total** | **326,047** |

| *West* | Population |
|---|---|
| Port Adelaide Enfield | 123,947 |
| Charles Sturt | 114,688 |
| West Torrens | 59,457 |
| Holdfast Bay | 36,399 |
| **Total** | **334,491** |

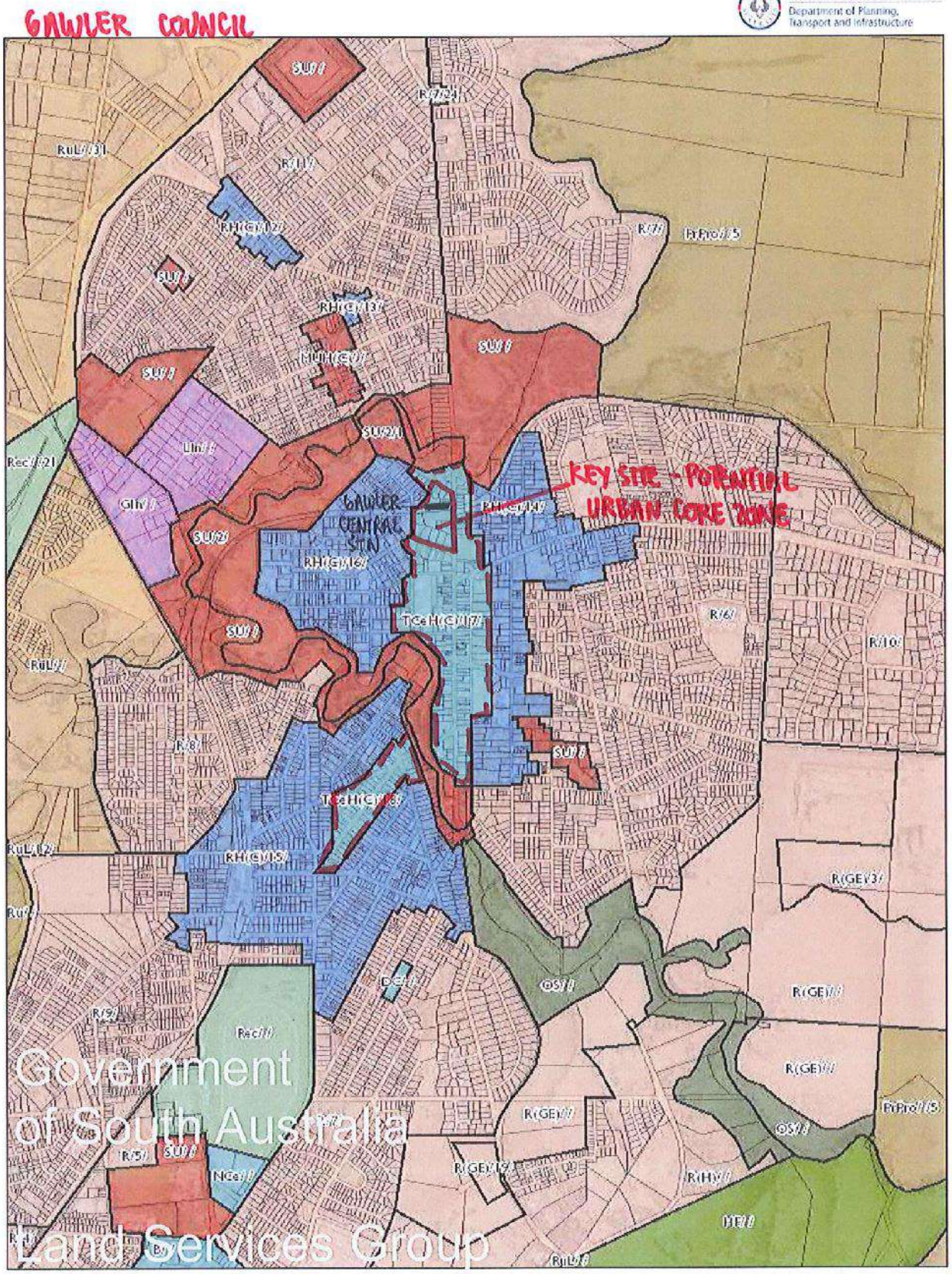
Note that the LGA Constitution provides that the Lord Mayor of the City of Adelaide or his or her nominee will be a member of GAROC. The City of Adelaide is therefore not included in the above proposed regional groupings.

**Land Services Group**

The Property Location Browser is available on the Land Services Group Website: www.sa.gov.au/landservices

Date created:
November 27, 2018

Government of South Australia
Department of Planning, Transport and Infrastructure



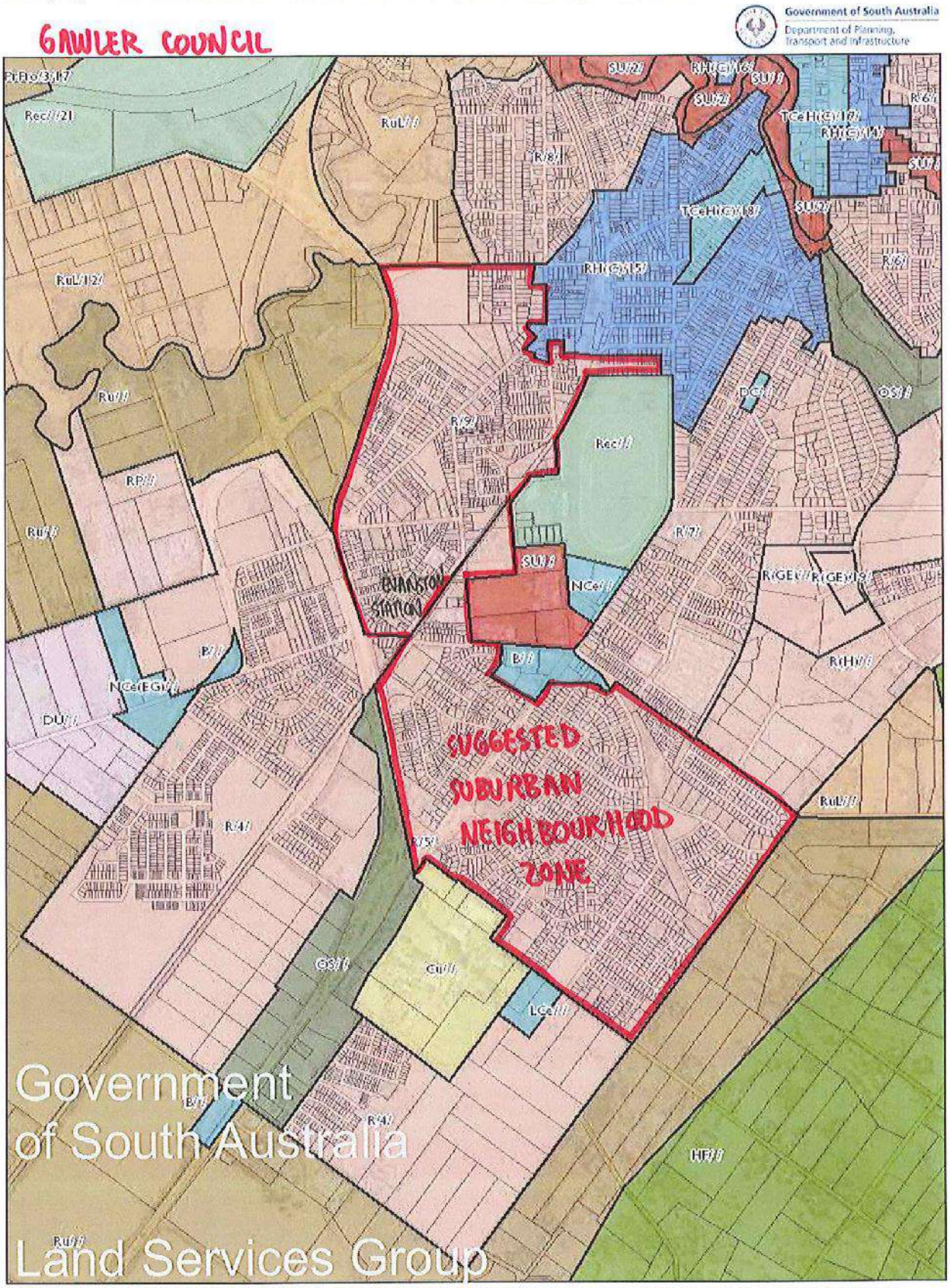

**Disclaimer:** The information provided above, is not represented to be accurate, current or complete at the time of printing this report. The Government of South Australia accepts no liability for the use of this data, or any reliance placed on it.

**Land Services Group**

The Property Location Browser is available on the Land Services Group Website: www.sa.gov.au/landservices

Date created:
November 27, 2018

Government of South Australia
Department of Planning, Transport and Infrastructure

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Proposed Development Plan Amendment Area
PIONEER PARK
BAROSSA VALLEY WAY
MURRAY STREET
MAIN NORTH ROAD
REID STREET
Land Use
Commercial (small scale)
Mixed Use
Transport
Retail
Tourism and Hospitality
Open Space
Public Realm
Parking and Service Areas
Access
Ring Road Connection
Access Road
Major Pedestrian Links
Bike Path
Function
Rail Corridor
Bus Link and Stop
Multi Deck Parking
Pedestrian Crossings
Green Walls and Roofs
State and Local Heritage Sites (Adaptive re-use of existing built form)
Contributory Heritage Sites
Lift
Urban Form
Anticipated Building Height (storeys)
Important Buildings that enhance public realm and streetscape character
50 m

35

| Analysis of Council's Strategic Documents pertinent to the electrification of the Gawler line | |
|---|---|
| **Document** | **Comment** |
| Gawler Community Plan 2017-2027 | The Community Plan clearly identifies the electrification of the Gawler line and beyond as a significant goal to advocate and plan towards.<br><br>***GOAL 2 Managed and Sustainable Growth***<br><br>*2.4 Manage growth through the real connection of people and places*<br><br>*2.4.1 Advocate and plan for the electrification and extension of rail infrastructure to Gawler Central and beyond.* |
| Gawler Town Centre 2017-2020 Car Parking Strategy | Although the focus of this document is to assess car parking provision within the Historic Town Centre (Conservation) Zone, the strategy does speak to increasing public transport patronage to aid with alleviating pressures in busy spots and to ease general traffic congestion.<br><br>A key recommendation concerning the rail line is for Council to Advocate to DPTI for regular increases in train service frequencies to Gawler Central railway station (as well as electrification of line).<br><br>The strategy suggests that in order for the electrified line to attract new/more passengers it will need to be accompanied by greater service frequencies.<br><br>***Under section 7.3 Public Transport of the Strategy***<br><br>*Gawler Central Railway Station is located at the northern edge of the town centre. Not all trains operate to Gawler Central station which is better located for town centre access than Gawler station. Gawler Central Railway Station is located in close proximity to Gawler Central shopping centre and Coles, although there is poor pedestrian access to and from the train station through the car park or via Murray Street to access the shopping centre. Apart from a short period in the peak hour, the current service operates half hourly in the daytime and hourly after 8.30pm.*<br><br>*In order to improve the attractiveness of public transport as a means of travelling to Gawler, Council will need to advocate strongly to DPTI for upgrades to services and stops/stations, seeking to develop service patterns that are likely to increase demand but remain within what is expected to be a limited operating budget.* ***The proposed electrification of the rail line to Gawler could be expected to attract some new passengers, with modern rolling stock and improved journey times, although this would need to be complemented with*** |

| | |
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| | ***increased service frequencies to maximise the patronage opportunities.***<br><br>***Pertinent Actions and Recommendations from section 7.4 to improve public transport patronage***<br><br>*i. Improve footpath conditions and pedestrian provisions as identified in section 6.4 above and the Town of Gawler Strategic Walking and Cycling Plan.*<br>*ii. Install (or work with private land owners to install) bike parking at key locations (e.g. adjacent shopping centres) within the town centre, with clear routes and signage to these locations.*<br>*iii. Improve cycling routes into and in the Town Centre as identified in the Strategic Walking and Cycling Plan.*<br>*iv. Review existing bus stop locations within the town centre for provision of seating, shelter and information (timetables).*<br>*v. Review and seek to improve walking route connectivity to/from Gawler Central Train Station and the Town Centre and Murray Street.*<br>***vi. Advocate to DPTI for regular increases in train service frequency to Gawler Central railway station and implementation of the proposed electrification of the line.***<br>*vii. Work with the Department of Planning, Transport and Infrastructure to improve the bus service operations in Gawler to provide:*<br>○ *a simplified network with clear and consistent routes and service numbers and opportunities to increase the catchments of services*<br>○ *regular service patterns at the same time each hour throughout the day*<br>○ *improved frequencies, increasing further as demand increases*<br>○ *opportunities for local branding to raise awareness and promotion of the services.* |
| Gawler Town Centre Strategic Framework | The Gawler Town Centre Strategic Framework that sought to provide practical strategies and directions. Below are a list of the frameworks objectives:<br>• Reinforcing the predominance of Gawler Town Centre<br>• Establishing clear direction and policy framework for the Gawler Town Centre as a Major District Centre<br>• Learning from relevant overseas and interstate town centre projects. Beginning an engagement process with interest groups and agencies to set the scene for future actions.<br><br>Sections of the framework which are relevant to the Railway/Coles precinct are below: |

| | |
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| | • Update parking rates in Council's Development Plan with more contemporary rates which have become common place across Adelaide.<br>• The preparation of a Gawler Town Centre DPA that introduces the following is recommended:<br>  ○ An updated Structure Plan, based on the foundations of this report;<br>  ○ Simplify the policy context to avoid duplication and promote a user-friendly document, while still provide an appropriate level of direction to applicants and the planning authority;<br>  ○ Update the Zone's Desired Character statements to better reflect the contents of the DPLG (now DPTI) Planning Guide: Desired Character Statements (July 2009);<br>  ○ As per Flighpath Architects' recommendation identify infill development opportunities;<br>  ○ As per Flighpath Architects' recommendation, review and if deemed appropriate amend existing Development Plan Table Ga/7, to reduce the number of listed historic 'contributory items';<br>  ○ As per Frank Siow's recommendation, amend existing Development Plan Table Ga/2 to update car parking requirements to better reflect best practice (e.g. change car parking rates for shops from 7 spaces per 100 square metres of floor space to 5.5 spaces per 100 square metres). Furthermore, consider a common car parking ratio for shops, offices and cafes to encourage mixed use developments and greater Town Centre vibrancy.<br><br>• Relevant recommendations:<br>  ○ Advocate and plan for the upgrade of rail infrastructure and improve the standard of services on the Gawler Line (including the electrification of the Gawler Line).<br>  ○ Advocate for investigations to extend passenger rail services on the "Penrice Soda Limestone train line" (related to Concordia and the 30-Year Plan's objectives).<br>  ○ Prepare detailed community based urban design guidelines as part of the Town Centre Master Plan for the town centre (e.g. including integrated precinct plans for Murray Street, The Gawler Central, Commercial Lane Big W Precinct, Goose Island and Pioneer Parks). These guidelines / precinct plans will seek to reenergise public places and promote private sector investment (and grants).<br>  ○ Encourage appropriately designed 3 to 4 storey mixed use developments within the Gawler Town Centre to increase local population, activate streets, increase |

| | |
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| | community surveillance and increase catchments for local services and businesses.<br>○ Encourage the redevelopment of the Gawler Central Train Station and associated commercial centre to facilitate better integration and activation of Cowan Street, Murray Street and Pioneer Park.<br>○ Commercial Lane should be developed as an important link between the Gawler Central Train Station, Gawler Central Commercial Development, Council's Car Parking Station and the Big W Precinct. Reconfigure the Council owned car park to construct a visible lift (to promote the use of the car park) and provide small shop frontages to Commercial Lane and Finniss Street.<br>○ Encourage appropriate infill development opportunities near heritage sites (refer to heritage recommendations) to promote a positive Council attitude to investors and its community. Consider promoting the success of the Old-Spot Hotel development.<br>○ Actively promote / publicise appropriate infill development opportunities near heritage places, including, but not limited to (refer to preliminary schemes in Appendices Report):<br>• Big W DDS Precinct (north east corner of Reid and Bridge Streets)<br>• Pile's Building Shops (Murray Street)<br>• Baptist Church (between Murray Street and Julian Tce)<br>• 25 Murray Street (between Murray and High Streets)<br>• Town Hall Precinct (between Murray and High Streets)<br>• National Bank Precinct (Murray Street)<br>• Former Post Office and National Trust Museum (east of Murray Street, south of Calton Road and west of High Street)<br>• Railway Station / Coles Precinct (north west of Cowan and Murray Streets)<br>• Former State Bank Precinct (Murray Street).<br>○ Advocate and plan for park and ride facilities at Stations within Gawler Council to ensure outlying areas can be better serviced by upgraded transport networks.<br>○ Advocate and plan for the upgrade of the Gawler Central Train Station and Environs. |
| Gawler Town Centre Design Framework | |

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| | The design framework provides a vision as well as a set of actions which explore opportunities for three key precincts across the town centre to generate uplift and greater vibrancy.<br><br>The Gawler Central shopping centre is located within the northern precinct. The following sections/references from the framework document are specific to the northern precinct in general.<br><br>  <br><br>*3.1.3 Vision*<br><br>*Gawler North will become a vibrant mixed use zone with residential, retail, commercial development and a transport hub, easily accessible with well-designed pedestrian connections to the town centre and surrounding open spaces.*<br><br>*The existing local centre and railway station that currently define the northern entrance to Gawler have the potential to be transformed into a transport orientated mixed-use centre that connects Gawler Town Centre to the region. The combination of new buildings, pedestrian walkways, urban gardens, trees and road crossings will deliver an accessible gateway for Gawler with a vibrant mix of residential, retail, commercial opportunities and transport links with a strong connections to the town centre and adjacent open spaces.*<br><br>*3.1.4 OBJECTIVES*<br>• *Encourage development that creates opportunities for vibrant high-quality mixed use and residential use.*<br>• *Develop transport interchange opportunities with integrated access to rail and bus, cycle connections and parking (review against State Government* |

| | |
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| | *recommendations as part of the Integrated Transport and Land Use Plan).*<br>• *Create continuous, safe and easily accessible pedestrian links north-south through the precinct.*<br>• *Extend Murray Street north (to the railway station) and create a continuous mainstreet.*<br>• *Develop a sense of arrival for the north end of Murray Street using well-designed building, tree planting and landscaping.*<br>• *Develop Pioneer Park as a primary destination on Murray Street with pedestrian and cycle connections to the town centre and surrounding residential areas.*<br>• *Encourage innovative development and integration of landscape treatments to create attractive public spaces including green roofs and green walls.*<br><br>*3.1.5 PRECINCT ACTIONS*<br>*1. Transport Interchange*<br>• *Integrated transport function with rail, bus and parking*<br>• *Increased links from east to west and north to south integrating the Coles shopping centre precinct and surrounding suburbs with the isolated existing station*<br>• *Improved open space and landscape provision as well as signage*<br>• *Investigate future capacity of the transit corridor and Murray Street / rail crossing (potential grade separation of rail corridor - long term)*<br>• *Consider potential for cycle link to the Barossa (along rail corridor)*<br>• *Explore opportunities for residential development that activates Murray Street and transport interchange*<br><br>*2. Retail and Commercial Centre (Coles)*<br>• *Increase retail and commercial floor space of shopping centre*<br>• *Increase mixed use and retail vibrancy*<br>• *Develop strong links through shopping centre between transport interchange and town centre*<br>• *Potential future development within existing building car park footprint*<br>• *Potential service access to north of the existing shopping centre d from Murray Street.*<br>• *Future development of shopping centre along west side of Murray Street as part of main street extension*<br>• *Explore opportunities for mixed use development with residential, commercial and retail development*<br><br>*3. Murray Street (main street)* |

| | |
|---|---|
| | • *Extend Murray Street north and develop high-quality built form (2-3 storeys) as part of the existing shopping centre development*<br>• *Improve north-south connections from Murray Street to transport interchange and shopping centre*<br>• *Increase landscape amenity with high-quality landscape treatments including street trees, green walls and roofs*<br>• *Explore opportunities for mixed-use development with residential, commercial and retail development complimenting existing development*<br>• *Increased activity to building edges through good urban design and appropriate land use planning with a focus on retail and hospitality*<br><br>*4. Council Car Park/Laneway Activation*<br>• *Redevelop multi-level car park to increase pedestrian access and passive surveillance (potential development of lift adjacent to multi-deck car park)*<br>• *Explore adaptive uses for Council car park including temporary event space, market and youth park*<br>• *Redevelop laneways to provide short-term accessibility and increase connectivity and activation with high-quality urban design outcomes and appropriate landscape treatments*<br><br>*3.1.6 Implementation Plan*<br>*1. Redevelopment of Bridge Street North triangle to include mixed use and transport infrastructure (long term) (2-3 storeys) limited to the existing car park area, and excluding contributory items. Ensuring interface with existing residential edge compliments existing land use character and heritage value.*<br><br>*2. Develop new transport interchange with built form development that creates integrated train, vehicle and bus access (2-3 storeys) high-quality public realm and elevated walkway connection and seamless integration of bus and train access.*<br><br>*3. Bus interchange, car park and turn around with primary access from Murray Street and Bridge Street North (review against development plan concept Fig CoP/4)*<br><br>*4. Maintain the ring road and potential opportunities to improve access, connections to rail station and public realm. Consideration will need to be given to the ongoing impacts of traffic and rail crossing on Murray Street redevelopment (limited improvement pedestrian access and potential impacts for grade-separated rail crossing). A detailed traffic* |

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| | *assessment should be undertaken as well as ongoing review of the State Government Integrated Transport and Land Use Plan*<br><br>*5. Explore potential to develop a multi-deck car park with retail development and create access to King Street/Light Square. Explore the potential of integrating existing built form into new development.*<br><br>*13. Redevelopment of Coles site to provide reconfigured service area enabling development of Murray Street frontage*<br><br>INFRASTRUCTURE GUIDE<br>*4.2 GAWLER NORTH*<br><br>*Power*<br>*Electrical loading for additional residences based upon 4KVA to 6KVA per dwelling and 7KVA per 100 square metres of commercial/mixed use development – in the northern precinct, it is anticipate that there will be an additional residential load of about 260KVA, and a commercial and mixed use load of about 2,205KVA.*<br><br>*Stormwater*<br>*With reference to the Gawler River 100 year ARI hazard map it is considered that there is a low risk of flooding immediately to the north-west of Bridge Street North.*<br><br>*Consideration should be given to flood mitigation measures in this area, such as establishing minimum floor levels, before undertaking development in this vicinity.*<br><br>*Sewer*<br>*The existing sewer system in the northern Precinct has sufficient spare capacity to accept the additional discharge from further development. There is a proposal to extend a rising main in Julian Terrace heading south and an upgrade to the pump station in Patterson Terrace. With this and no other upgrade work, there would be spare capacity for about an additional 30 residential allotments;*<br>*If this is supplemented by an upgrade of about 430m of 300mm diameter sewer along Main North Road, the spare capacity would increase to about 80 residential allotments;*<br>*If this is further supplemented by an upgrade of about 540m of 300mm diameter sewer in Edith & Blanch Street, the spare capacity would increase to about 270 residential allotments.*<br><br>*Roads & Traffic*<br>*Key issues:*<br>*• Access into area from the north may need to consider an alternative to Murray Street that connects to Julian Terrace Route, particularly the development of Bridge Street North* |

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| | *and will need to include the upgrade of the bridge crossing (refer to page 34 and 35: Ring Road Option 2).*<br>*• With the transport interchange, there is a need to consider bus access and the development of looped access on to the existing bus network. In addition, parking capacity for the transport interchange needs to be increased.*<br>*• Removing other car parks and centralising in north may create congestions issues and further investigation will be required. This approach will need to be mitigated by new car parks along High Street in Gawler South Precinct*<br>*• Pedestrian crossing of Murray Street needs to be focused on key movements and locations*<br>*• Need to be cognisant of Crime Prevention Through Environmental Design – underpasses not preferred unless can activate some how*<br>*• Need to review traffic impact on Cowan Street and status of Bridge Street North (including the bridge crossing). Likelihood of increased traffic movements on Cowan Street from surrounding future developments. If there is no connection on Bridge Street North then higher volumes including commercial traffic will be directed onto Murray St north of Cowan St. This would have adverse impact on connectivity across Murray Street (to Pioneer Park) which is one of key recommendations of Plan.*<br>*• The provision of extra traffic on Cowan St also reduces ability for safe pedestrian movement across it and hence connectivity of Coles site to rest of Town Centre.*<br>*• No issue with residential traffic as alternative access points are available for area north of rail line.*<br><br>RECOMMENDATIONS<br>*5.2 DEVELOPMENT PLAN AMENDMENT*<br><br>*Based on the contents of the Gawler Town Centre Design Framework it is recommended that Council initiate a Gawler Town Centre Development Plan Amendment (DPA). The DPA fundamentally will seek to incorporate the relevant design framework recommendations into an updated Development Plan. Having regard to the Gawler (CT) Development Plan consolidated on 30 April 2015, a summary of the recommended updates are proposed. It is noted that the proposed updates to Council's Development Plan will be reviewed in greater detail and finalised during the preparation of the DPA's Statement of Intent as required by Section 25 of the Development Act 1993 and Regulation 9 of the Development Regulations 2008.*<br><br>*Mapping / Structure Plans*<br>*1. Amend (potentially enlarge) the Town Centre Historic (Conservation) Zone boundary illustrated on Gawler (CT) Zones Map Ga/5 in accord with the objectives/ relevant boundaries* |

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| | *of the design framework. This may include encapsulating the allotments fronting Pioneer Park.*<br>*2. Delete Gawler (CT) Town Centre Historic (Conservation) Policy Areas Figure TCeH(c)/1 as it appears to replicate the information contained in Gawler (CT) Policy Areas Map Ga/14.*<br>*3. Update Gawler Town Centre Concept Plan Fig CoP/1 based on the recommendations of the design framework.*<br>*4. Gawler Town Centre Concept Plan Fig CoP/2, Fig CoP/3 and Fig CoP/4 are considered appropriate*<br><br>*Desired Character Statements*<br>*• The Town Centre Historic (Conservation) Zone does not accommodate a Desired Character statement (DCS). Although it is acknowledged that the two associated Policy Areas do. It is generally considered to be best practice to prepare well drafted DCS at the Zone and Policy Area. The Environment, Resources and Development Court have often commented that a well-crafted DCS assist in the interpretation of Development Plan policy, particularly where such policy may appear to have multipurpose-objectives. DCS should be drafted in accord with the Department of Planning Transport and Infrastructure (DPTI)'s "Planning Guide – Desired Character Statements".*<br>*• The two Policy Areas DCS need revision (particularly the Town Centre Light Policy Area). The revision should be based on the mentioned DPTI Planning Guide. In addition to deleting non-core text, the Statement can adopt more persuasive language relating to mixed-use and residential development which seek high-quality architectural design that complements (not replicates) heritage buildings.*<br><br>*Zone Objectives and Principles of Development Control*<br>*• Although many of these provisions are still appropriate, they need to be fine-tuned within the context of design framework.*<br>*• Introduce additional urban design policies, particularly at the street level that reinforce main street activation of places (i.e., promoting 3 to 8metre regular shop frontages and discourage long inactive walls) and increase design policies relating to medium density apartments.*<br><br>*Building Heights*<br>*• Existing Development Plan policies refer to "one and two storey" developments. These policies could be adopted by stakeholders to discourage developments higher than two storeys. Once the design framework is adopted (including desired building heights), it is recommended that these building heights be incorporated into Council's Development Plan (an example of such an approach is contained within the City of Port Adelaide Enfield Regional Centre Zone Concept Plan Map PAdE/35 - Main Street Policy Area).* |

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| | *• Appropriate building heights which encourage residential development should be considered allowing for yield and commercial return issues, views and separation from traffic noise and footpath behaviour.*<br><br>*Car Parking*<br>*• As per the Gawler Town Centre Strategic Framework, amend the existing Development Plan Table Ga/2 to update car parking requirements to better reflect best practice (change car parking rates for shops from 7 spaces per 100 square metres of floor space to 5.5 spaces per 100 square metres).*<br>*• Update other land uses (i.e., serviced apartments) car parking rates to reflect best practice. Refer to updated DPTI standards and Aurecon "Parking Spaces for Urban Places: Car Parking Study – Guideline for Greater Adelaide" (2013).*<br>*• Within certain locations, design car parks to promote alternative after hours use such as temporary markets or community events (i.e. avoid use of car wheel stops that a trip hazards)*<br><br>*Heritage*<br>*• Support Gawler Community Plan 2014 Strategy 1.3.5 - Gawler's historic character and unique 19th century architecture identified, preserved and enhanced.*<br>*• Review Development Plan and other Council policies to assist ongoing use and reuse of heritage places and to encourage new development on non-heritage sites to complement and build on the historic character of the town centre.*<br><br>*Outdoor Dinning*<br>*• Development Plan policies should be updated to encourage activities (i.e., café tables) to occupy the road reserve in appropriate locations thereby increase town centre vibrancy.*<br><br>*Catalyst Sites*<br>*• The concept of catalyst site Development Plan policies (refer to Adelaide City Council Development Plan) that promotes intensive high-quality development on large sites considered. However, given the clarity of the design framework and the proposed Development Plan policies (including increased urban design policies and on merit height provisions), catalyst policies are not required.* |
| Barossa, Light and Lower North Region Open Space, Recreation and Public Realm Strategy | This document seeks to provide guidance on a regional level pertaining to open space, recreation and public realm.<br><br>The document provides numerous benchmarks specific to population and population growth. |

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| | Although the document does not speak to the electrification of the Gawler rail line specifically it does speak to monitoring and responding to population change. It is possible that the subject DPA could promote greater densities and as a result population.<br><br>Relevant benchmarks and recommendations include:<br>• Benchmark of 9 hectares of useable open space per 1000 people<br>• Benchmark of 1 play space for every 825 people (at time of review TOG were 6 short of meeting this benchmark)<br>• Monitor the region's growth and respond to open space provision in line with the principles in this strategy to ensure the community has access to appropriate amounts and quality of open space.<br>• Access to open space and recreation facilities should be supported through high quality pedestrian links and pathways.<br>• Encourage and support tourism operators to create and maintain landscaped grounds that reflect the topography, character and amenity of the surrounding area and attract visitors to the region.<br>• Continue to develop a safe and interconnected network of trails that provide strong linkages to key destinations including tourism destinations, townships, parks and playing fields.<br>• Gawler's predicted growth to 2036 will require an additional 124 ha of open space to meet the 9ha/1000 benchmark. Applying the 30% Local & Neighbourhood / 70% District distribution, 37 ha should be passive and 87 ha structured.<br>• Identify connections between the town centre & adjacent open space.<br>• Promote Gawler as a centre for walking and cycling tourism.<br>• Reflect authentic township character through thoughtful entrance signage, local artwork and local material selection suitable for a moving car or for a pedestrian to walk up to and read.<br>• Undertake council works upgrades that focus on supporting existing public realm uses and carefully consider future growth.<br>• Encourage business owners to think about the spaces outside their buildings so as to attract more people to use the public realm. |
| Town of Gawler Open Space, Sport and Recreation Plan 2025 | This document flows on from the Barossa, Light and Lower North Region Open Space, Recreation and Public Realm Strategy and provides guidance which is more specific to Open Space, sport and recreation in the Town of Gawler.<br><br>Relevant recommendations include:<br>• Strengthen the connection between the Town Centre and South Para River and key river parks such as Apex Park and Goose Island. This can be achieved through quality pathways, |

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| | streetscapes and signage that guide people between the river and the town centre with a particular focus on connecting to spaces and facilities planned for in the Gawler Connect project (heritage buildings, community library, performing arts facility and public spaces). Streetscapes in Walker Place and Tod Street and enhancements to the strip of land in front of Apex Park and Goose Island (where the existing toilets are) have been identified as a particular priority in the town centre planning. The Town Centre Urban Design Precinct Plan will look at strengthening and /or creating linkages throughout the town centre to key civic areas:<br>- Walker Place has the potential to become the civic heart of the town and a centre point for community activities<br>- Goose Island is suitable to host a number of seasonal/temporary events (e.g. festivals, markets, outdoor cinema)<br>- Pioneer Park provides 10,000m2 of public open space and could be further used for event activations<br><br>Pedestrian links within the centre and around the edges, footpath connections, better disabled access, and landscaped connections will all be key elements to a better functioning network of civic areas.<br><br>• Continue to conserve and regenerate natural environments including bushland areas and the riparian corridors. This will include implementing Biodiversity and Management Plans, as well as the Action Plans in the Gawler Urban Rivers Master Plan for:<br>- Dead Man's Pass<br>- River Junction Precinct<br>- Gawler River Precinct<br>- Gawler Central Precinct<br>- Clonlea and surrounds |
| Barossa, Light and Lower North Regional Disability Access and Inclusion Plan | The Plan aims to ensure that the region becomes more accessible for and inclusive of people living with a disability. It will help people within the community that are living with a disability to contribute and feel welcome, have access to services and retail outlets, and participate in everyday activities.<br><br>**Engineering and Infrastructure**<br>• Improve public open space access.<br>• Council staff to be aware of the relevant Australian Standards for infrastructure development relevant to disability access and inclusion.<br>• Ensure all new signs meet International or Australian Standards to give clear directions and information.<br><br>**Development and Environment** |

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| | • Council's Development Planning and Design Code to be inclusive.<br>• Advise builders and developers of their obligations under the Disability Discrimination Act 1992. |
| Social Infrastructure and Services Study | The Town of Gawler has prepared this 'Social Infrastructure and Services Study' to identify the current and future provision of social infrastructure within the Council area and surrounds.<br><br>The document provides guidance largely for the planned growth areas of Gawler e.g. Gawler East. The recommendations below are somewhat applicable:<br><br>• Continue to work with other non-government organisations to determine their locational requirements and willingness to provide community facilities in growth areas.<br><br>• Ensure that planning policies in new centre zones and residential zones provide sufficient flexibility to enable community facilities to locate there10. |
| Town of Gawler Walking and Cycling Plan 2018-2028 | This plan seeks to improve the walkability, cyclability and the general connectivity of the Town of Gawler to enable people of all ages and abilities to choose to walk and/or cycle for transport or recreation and generate greater vibrancy and further improve the liveability of the town.<br><br>The plan provides the following as its top 5 priorities:<br>• *Connecting the Jack Bobridge Bikeway to Gawler Bike Hub;*<br>• *Connecting the Stuart O'Grady Bikeway to Gawler Bike Hub;*<br>• *Connecting the Bike Hub to the River Shared Path Network;*<br>• *Improving access and safety to and from Schools; and*<br>• *Undertaking a Wayfinding Strategy to install directional signage to key destinations - i.e. Bike Hub/Visitor Information Centre, Train Stations, Shops/cafes, and the River Shared Path network.*<br><br>More specifically the Walking and Cycling Plan provides the following guidance/recommendations pertinent to the Town Centre, which is likely to be the most relevant in terms of this DPA:<br>***1. Connect the Jack Bobridge Bikeway into the Gawler Township and Bike Hub***<br>*1.6 Liaison and advocacy: with The Barossa Council and Concordia Developers to ensure their Shared Path connects into Eucalypt Drive Sharrows (action 1.1 above).*<br>*1.7 Liaison and advocacy: with The Barossa Council and Concordia Developers for potential Shared Path along Rail Easement from Jack Bobridge to Murray Street.* |

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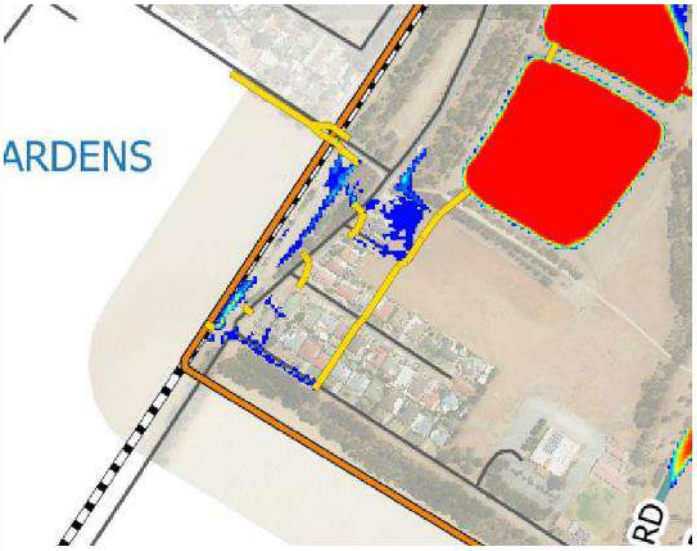
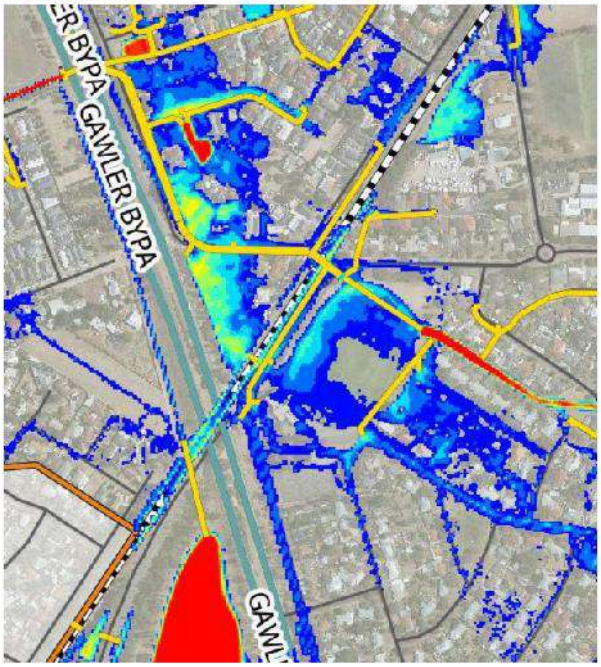
| | ***2. Connect the Stuart O'Grady Bikeway into the Gawler Township and Bike Hub***<br>*2.4 Rail crossing: Shared Path Passive Rail crossing at Warren Street*<br>*2.5 Council to liaise with DPTI regarding connections from Paternoster Road to Stuart O'Grady with consideration of permeability between Reid and Willaston.* |
| Gawler and Surrounds Stormwater Management Plan | **Tambelin Station**<br>The Tambelin railway station is on the boundary of the Gawler and Surrounds SMP, as shown in the image below. Stormwater runoff from the railway station discharges to the Clark Road drainage system, via a culvert under the railway line, which discharges to the Coventry Road drainage system and the Orleana Waters wetland on Coventry Road. The second image (below) shows that the culvert under the railway line on Clark Road has greater than or equal to a 10% AEP level of service. The flood plain mapping extract in the first image is from the 1% AEP long term development scenario. There does not appear to be an extensive issue with flooding in this area, however if the opportunity to upgrade the culvert under the railway line arises then it may be worthwhile upgrading the culvert.<br>  |


**Railway Terrace and Przibilla Drive**

There is significant flooding in a 1% AEP future development scenario flood event around Railway Terrace and Przibilla Drive as a result of insufficient flow capacity under the Gawler Bypass to convey stormwater runoff from the Clifford Road Drain catchment.



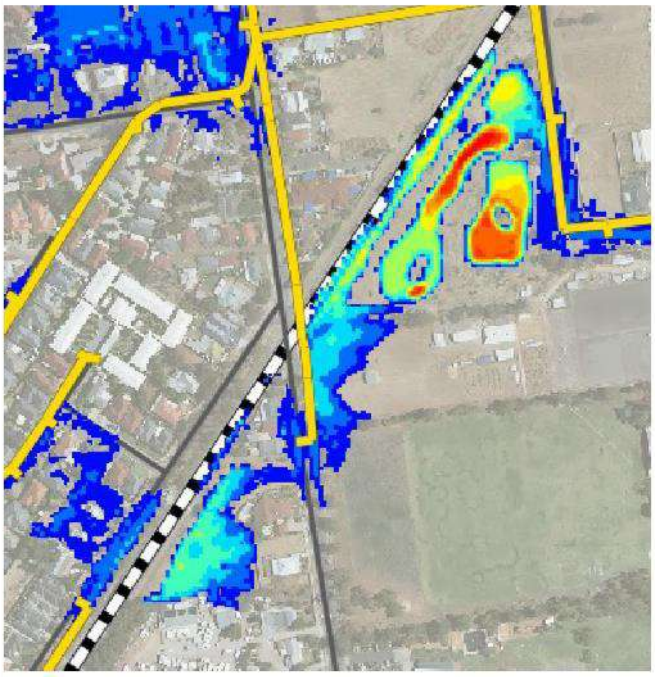

**Evanston Oval**

There is a drainage channel on the eastern side of Evanston Oval. In a 1% AEP future development scenario flood event, water will spill

over the railway line and cause inundation of buildings along Dyson Street and Railway Crescent. Reference is made to the diagram above for flooding in the vicinity of the railway line.

**Para Road and Evanston Railway Station**

The image below shows the extent of flooding in a 1% AEP future development scenario storm event. The railway line forms a barrier at Para Road, forcing water to pond on the east and west sides of Para Road. Stormwater upgrades would be required to reduce the risk of flooding on the southern side of the railway line.



**Gawler Central Railway Station**

There appears to be only minor flooding around the Gawler Central Railway Station, as shown in the image below. The existing stormwater pit and pipe system is limited, however there is reasonable fall and overland flow paths away from the Station towards the North Para River.

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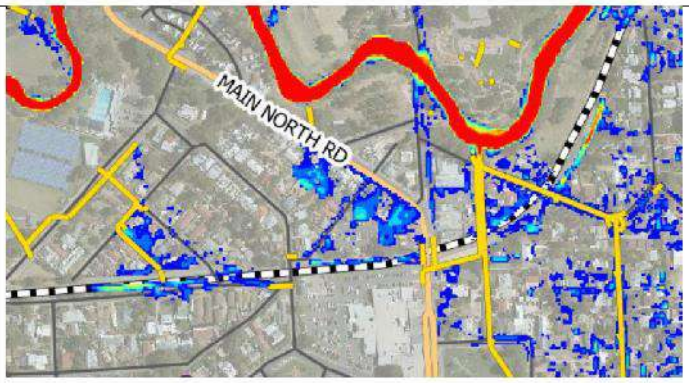
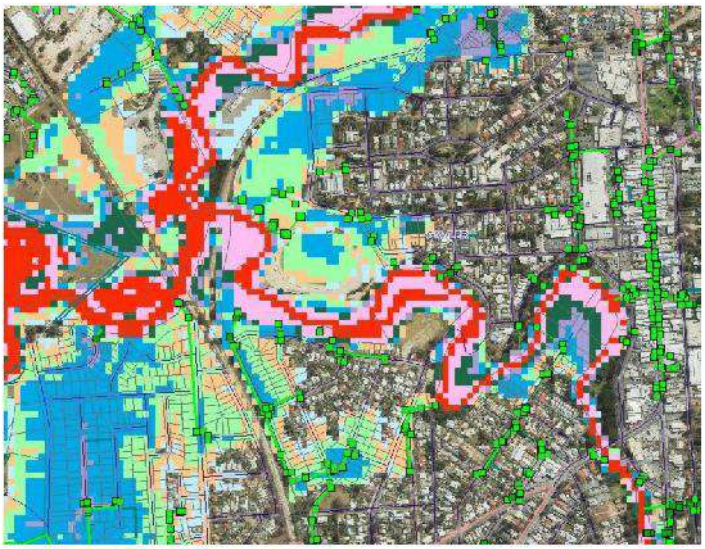
| |  <br><br>**2008 Floodplain Mapping**<br>2008 Floodplain mapping shows significant inundation of the railway line and surrounding areas in the vicinity of the North Para, South Para and Gawler Rivers. The 1% AEP flood extent is shown in the image below.<br><br>  |
| Town of Gawler – Biodiversity Management Plan | In review of this, there are no direct links between the BMP and the train stations.<br><br>Broad links to the BMP (below), can inform landscaping considerations at the train stations.<br>Native Plant lists can be provided at a later date upon request to Council.<br><br>***9. Diversify street trees*** |

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| | *Maintain a diversity of street trees, whilst reducing the emphasis on 'flowering gums' in new or replacement street trees. Explore the feasibility of increasing the number of local and other native tree and large shrub species which meet infrastructure compatibility criteria.*<br>***10. Suburban roadside regreening***<br>*Increase the structural complexity of vegetation on the verges of suburban roadsides. This should include clearly delineated patches of highly diverse local native grassy and herbaceous species, as well as a broader move away from large areas devoid of vegetation in favour of increasing native grass cover. Other habitat features should also be incorporated where feasible such as logs and rocks.*<br>***23. Water sensitive urban design***<br>*Development has the potential to alter surface and groundwater hydrology through increased hard surfaces, stormwater interception and rainwater capture. This changes the area, volume and location of infiltration and surface flows which can have secondary impacts on a number of hydrologically sensitive vegetation types and habitat feature which are found in or near to the development zone. Overcoming these issues can use a combination of conventional and progressive water sensitive urban design (WSUD) engineering.*<br>*1) As much as possible permeable surfaces or similar should be utilised to minimise the extent of changes to water infiltration patterns.*<br>*2) Where detention is required it should be as close as possible to source, with facilities made for infiltration from these points where suitable. This may be on Council reserves or similar open space. These should be planted with appropriate wetland adapted local native species* |
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| Gawler (CT) Development Plan – consolidated 20 February 2018 | South Australian Planning Policy Library (SAPPL) | Comparison Comments |
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| **General Provisions: Conservation** | **General Provisions : Heritage Places** | |
| **OBJECTIVES**<br><br>Objective 11: Conservation, preservation, enhancement or improvement of scenically attractive areas, including land adjoining scenic routes and riverine environments.<br><br>Objective 12: Retention and enhancement of localities in the Council area of distinctive and valued or historic significance through preservation of State and Local Heritage Places, Contributory Items and other places of historic character, and compatible infill development.<br><br>Objective 13: Retention of environmentally-significant areas of native vegetation.<br><br>Objective 14: Retention of native vegetation where clearance is likely to lead to problems of soil erosion, soil slip and soil salinization, flooding or a deterioration in the quality of surface waters.<br><br>Objective 15: Retention of native vegetation for amenity purposes, for livestock shade and shelter and native wildlife corridors.<br><br>Objective 16: Retention and maintenance of wetlands and existing native vegetation for its conservation, biodiversity, and habitat value and environmental management function.<br><br>Objective 17: Conservation of Aboriginal sites, items and areas which are of archaeological, | **OBJECTIVES**<br><br>Objective 1: The conservation of State and local heritage places.<br><br>Objective 2: The continued use, or adaptive reuse, of State and local heritage places that supports the conservation of their cultural significance.<br><br>Objective 3: Conservation of the setting of State and local heritage places. | **OBJECTIVES**<br><br>In comparing the Gawler Development Plan and the SAPPL specific to general provisions and heritage, the conservation provisions within Gawler's Development Plan look to provide guidance in relation to both environmental and heritage conservation.<br><br>Due to the conservation provisions within the Gawler Development Plan including environmental considerations, they are greater in number however in relation to heritage places specifically, they are similar.<br><br>The SAPPL speaks explicitly to adaptive reuse, which is considered beneficial as this is not quite as strong in this section of the Development Plan, however is discussed in other areas.<br><br>The Gawler Development Plan also speaks to the preservation of contributory items and character, these are not identified in the section examined of the SAPPL. |

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| cultural, mythological or anthropological significance.<br><br>**PRINCIPLES OF DEVELOPMENT CONTROL (PDC)**<br><br>32 The natural character of the North and South Para Rivers and Gawler River valleys should be retained and restored where affected by previous development.<br><br>33 Development should be undertaken with the minimum effect on natural features, land adjoining water or scenic routes or scenically-attractive areas.<br><br>34 Trees of historical or local significance and single trees or groups of trees of particular visual significance should be preserved and protected against disfigurement. If it is necessary to fell these trees, replanting should proceed as part of the development.<br><br>35 Development should not impair the character or nature of buildings or sites of architectural, historical or scientific interest or sites of natural beauty (including those not specifically identified of heritage importance in Table Ga/2 or Table Ga/5).<br><br>36 When excavation in historic conservation zones or places and items in Table Ga/2, Table Ga/5 or Table Ga/6 is proposed, consideration should be given to an archaeological assessment prior to excavation. Monitoring should occur during construction to protect and recover artefacts and document important historic features. | **PRINCIPLES OF DEVELOPMENT CONTROL (PDC)**<br><br>1 *(Core policy where State and/or Local Heritage Places Table(s) exists)* A heritage place spatially located on *Overlay Maps – Heritage* and more specifically identified in *Table X/X - State Heritage Places or in Table X/X- Local Heritage Places* should not be demolished, destroyed or removed, in total or in part, unless either of the following apply:<br>(a) that portion of the place to be demolished, destroyed or removed is excluded from the extent of the places identified in the *Table(s)*<br>(b) the structural condition of the place represents an unacceptable risk to public or private safety.<br><br>2 Development of a State or local heritage place should retain those elements contributing to its heritage value, which may include (but not be limited to):<br>(a) principal elevations<br>(b) important vistas and views to and from the place<br>(c) setting and setbacks<br>(d) building materials<br>(e) outbuildings and walls<br>(f) trees and other landscaping elements<br>(g) access conditions (driveway form/width/material)<br>(h) architectural treatments<br>(i) the use of the place.<br><br>3 Development of a State or local heritage place should be compatible with the heritage value of the place.<br><br>4 Original unpainted plaster, brickwork, stonework or other masonry of existing State or local heritage places should be preserved, unpainted.<br><br>5 New buildings should not be placed or erected between the front street boundary and the façade of existing State or local heritage places. | **PRINCIPLES OF DEVELOPMENT CONTROL (PDC)**<br><br>Although there are similarities in terms of the objectives between Council's Conservation General Provisions and the Heritage Places within the SAPPL, the PDCs become more focussed, with Gawler's Development Plan becoming more environmentally focussed under the conservation provisions.<br><br>The detail provided within the Heritage Places general provisions aligns more with the PDCs within specific zones of the Gawler Development Plan. |

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| 37 Native vegetation and roadside vegetation should be preserved and replanted with local indigenous species where practical and should not be cleared if it:<br>(a) provides important habitat for wildlife;<br>(b) has a high plant species diversity or has rare or endangered plant species and plant associations;<br>(c) has high amenity value;<br>(d) contributes to the landscape quality of an area;<br>(e) has high value as a remnant of vegetation associations characteristic of a district or region prior to extensive clearance for agriculture;<br>(f) is associated with sites of scientific, archaeological, historic, or cultural significance; or<br>(g) is growing in, or is characteristically associated with, a wetland environment.<br><br>38 Native vegetation should not be cleared if such clearance is likely to:<br>(a) create or contribute to soil erosion;<br>(b) decrease soil stability and initiate soil slip;<br>(c) create, or contribute to, a local or regional soil salinity problem;<br>(d) lead to the deterioration in the quality of surface waters; or<br>(e) create or exacerbate the incidence or intensity of local or regional flooding.<br><br>39 When clearance is proposed, consideration should be given to:<br>(a) retention of native vegetation for, or as:<br>(i) corridors or wildlife refuges;<br>(ii) amenity purposes; | 6 Development that materially affects the context within which the heritage place is situated should be compatible with the heritage place. It is not necessary to replicate historic detailing, however design<br>elements that should be compatible include, but are not limited to:<br>(a) scale and bulk<br>(b) width of frontage<br>(c) boundary setback patterns<br>(d) proportion and composition of design elements such as rooflines, openings, fencing and landscaping<br>(e) colour and texture of external materials.<br><br>7 Multi-storey additions to a State or local heritage place should be compatible with the heritage value of the place through a range of design solutions such as:<br>(a) extending into the existing roof space or to the rear of the building<br>(b) retaining the elements that contribute to the building's heritage value<br>(c) distinguishing between the existing and new portion of the building<br>(d) stepping in parts of the building that are taller than the front facade.<br><br>8 The introduction of advertisements and signage to a State or local heritage place should:<br>(a) be placed on discrete elements of its architecture such as parapets and wall panels, below the canopy, or within fascia and infill end panels and windows<br>(b) not conceal or obstruct historical detailing of the heritage place<br>(c) not project beyond the silhouette or skyline of the heritage place<br>(d) not form a dominant element of the place.<br><br>9 The division of land adjacent to or containing a State or local heritage place should occur only where it will:<br>(a) create an allotment pattern that maintains or reinforces the integrity of the heritage place and the character of the surrounding area<br>(b) create an allotment or allotments of a size and dimension that can accommodate new development that will reinforce and complement the heritage place and the zone or policy area generally<br>(c) be of a size and dimension that will enable the siting and setback of new buildings from allotment boundaries so that they do not overshadow, dominate, encroach on or otherwise impact on the<br>setting of the heritage place | |

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| (iii) livestock shade and shelter; or<br>(iv) protection from erosion along watercourses and the filtering of suspended solids and nutrients from run-off;<br>(b) the effects of retention on farm management; and<br>(c) the implications of retention or clearance on fire control.<br><br>40 Local indigenous plant species should be considered for landscaping, screening buffer planting and revegetation activities. | (d) provide an area for landscaping of a size and dimension that complements the landscape setting of the heritage place and the landscape character of the locality<br>(e) enable the State or local heritage place to have a curtilage of a size sufficient to protect its setting. | |
| **Gawler (CT) Development Plan – consolidated 20 February 2018** | **South Australian Planning Policy Library (SAPPL)** | **Comparison Comments** |
| **TOWN CENTRE HISTORIC (CONSERVATION) ZONE** | **URBAN CORE ZONE** | |
| **OBJECTIVES**<br><br>Objective 1: The principal centre and focus for retail, business, community and entertainment activities serving the local and broader community and visitors to Gawler.<br>Two Policy Areas are identified in Fig TCeH(C)/1 according to:<br>(a) historic significance;<br>(b) the future character for each;<br>(c) the type and nature of development considered appropriate; and<br>(d) other features that differentiate one area from another.<br><br>Objective 2: A range and distribution of uses and activities aimed at providing, in convenient and accessible groupings, convenience goods and comparison goods to serve the day-to-day, weekly | **OBJECTIVES**<br><br>1 A mixed use zone accommodating a mix of employment generating land uses and medium to high density residential development in close proximity to a high frequency public transport corridor.<br><br>2 Development within a mixed use environment that is compatible with surrounding development and which does not unreasonably compromise the amenity of the zone or any adjoining residential zone.<br><br>3 Smaller dwellings, including innovative housing designs, located close to local services and public transport stops.<br><br>4 Mixed use development integrated with a high quality public realm that promotes walking, cycling, public transport patronage and positive social interaction. | **OBJECTIVES**<br><br>A key difference between the zones and their objectives is the fact that the Town Centre Historic (Conservation) Zone is conservation oriented.<br><br>The Urban Core Zone seeks to create a vibrant town centre where people can live and work. The Town Centre Historic (Conservation) Zone also aims to create a zone which promotes residential and business opportunities, however does place greater emphasis on the retention, adoption and restoration of historic building and character. |

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| and tourist needs of the community and those attending the area.<br><br>Objective 3: Public and private car parking areas located and designed convenient to the users of the centre.<br><br>Objective 4: Facilities to enhance the function and amenity of the centre for pedestrians.<br><br>Objective 5: Protection and reinforcement of the historic value, character and significance.<br><br>Objective 6: Use of upper building levels of buildings for residential and serviced apartments and hospitality services.<br><br>Objective 7: Retention/restoration, adaptation and re-use of desired building stock and maximization of the potential of derelict and underutilised land.<br><br>Objective 8: Co-ordinated development of rear car parking areas to:<br>(a) optimize available car parking spaces;<br>(b) upgrade building frontages with shop fronts;<br>(c) establish clearly defined pedestrian links to Murray Street via arcades, sheltered thoroughfares and covered malls; and<br>(d) enhance the appeal and public amenity of pedestrian areas/space.<br><br>Objective 9: A built character which:<br>(a) is individualistic and strongly identified with the zone;<br>(b) comprises separate, discrete visual components with common unifying architectural elements; | 5 A zone that provides a spatial separation, or transitions down, in scale and intensity to adjacent lower density residential zones.<br><br>6 Development that contributes to the desired character of the zone. | The Town Centre Historic (Conservation) Zone in comparison to the base objectives in the Urban Core Zone in the SAPPL is far more detailed and provides guidance in relation to the following:<br>- Car Parking<br>- Streetscape<br>- Building use<br>- Building alignment, setback and form<br>- Vistas<br>- Ground slope<br>- Topography<br>- Character<br>- Township prominence<br><br>The objectives presented in the SAPPL are generally used as a basis and then further detail and consideration is included through the DPA process when applied to an area. |

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| (c) presents an articulated façade to the public street frontage and enhances these public spaces; and<br>(d) utilizes the ground slope so as to create multiple building and car parking levels.<br><br>Objective 10: Retention and enhancement of the historic character and significance of the Policy Areas based on a consistent patterning of buildings to the street and to their sites, and a preponderance of 19th Century and early 20th Century architecture characterised by:<br>(a) buildings developed up to the street alignment with verandahs and/or balconies overhanging the footpath;<br>(b) no direct vehicle access from Murray Street and frontages developed with traditional shop fronts;<br>(c) orientation of buildings to the street with minimal or no set-backs from side boundaries having regard to traffic safety;<br>(d) one and two-storey buildings of a variety of design and detail, but with a scale which does not dominate or overwhelm the streetscape;<br>(e) development that does not detract from the prominence of significant townscape items, in particular the main civic and institutional buildings and hotels;<br>(f) buildings which create a high degree of individuality and with discrete building facades of generally no more than 25 metres width;<br>(g) buildings with a high proportion of "solid" to glass fronts, and where presentation emphasises horizontal rather than vertical elements; and<br>(h) simple or orthogonal built-form typical of the character of 19th Century building stock using elements such as pitched, gable (25 to 45º), hip or hip-gable combination roofs, parapets and cornices | | |

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| with traditional materials, particularly stone and rendered masonry and traditional colours.<br><br>Objective 11: Retention of all places and items which contribute to the historic character and significance of the Policy Areas as expressed in the Future Character.<br><br>Objective 12: Conservation and enhancement of the historic character of the Policy Areas through consideration of:<br>(a) Streetscape character;<br>(b) Building alignment and set-backs;<br>(c) Building form, materials and colours;<br>(d) Site layout, landscaping and fencing.<br><br>Objective 13: Maintenance of the existing topography.<br><br>Objective 14: Retention of historic townscape vistas and views.<br><br>Objective 15: A business, shopping, civil and entertainment area with a traditional Main Street Character and a strong pedestrian function that has some variety of scale and building forms, but not of a form or height which would overwhelm or detract from the predominance of significant Murray Street buildings or the elevated and distinctive plateau of the Church Hill State Heritage Area. | | |
| **PRINCIPLES OF DEVELOPMENT CONTROL**<br><br>**1** Development should promote and maintain pedestrian connections:<br>(a) to Murray Street; | **PRINCIPLES OF DEVELOPMENT CONTROL**<br><br>**Land Use**<br>1 The following types of development, or combination thereof, are envisaged in the zone:<br>▪ affordable housing | **PRINCIPLES OF DEVELOPMENT CONTROL**<br><br>In regards to envisioned land uses, the Council development plan contains this details within the |

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| (b) the Centre's principal parking areas and parklands;<br>(c) from Murray Street through to Reid Street<br>(d) Commercial Lane alignment from Cowan Street through to Tod Street.<br><br>**2** Fencing should not impede pedestrian thoroughfares shown on Figure CoP/1.<br><br>**3** Major public entrances to malls (of an integrated centre development) should be clearly signposted and identified with suitable building design elements which reinforce and complement the predominant built character.<br><br>**4** Parking areas and traffic movement should be co-ordinated.<br><br>**5** Commercial Lane should be redeveloped for retail uses.<br><br>**6** Development should incorporate separate commercial servicing and patron access points and manoeuvring areas.<br><br>**7** Off-street parking and vehicle access points should be located such that breaks in the continuity of street front buildings are minimized.<br><br>**8** Redevelopment of surplus rear and service yards should be coordinated between adjoining sites, to maximize off-street parking and development incorporating attractive shop fronts.<br><br>**9** Landscaping should:<br>(a) complement and not mask or overwhelm the building development; | ▪ aged persons accommodation<br>▪ community centre<br>▪ consulting room<br>▪ dwelling<br>▪ educational establishment<br>▪ licensed premises<br>▪ nursing home<br>▪ office<br>▪ pre-school<br>▪ residential flat building<br>▪ retirement village<br>▪ shop or group of shops<br>▪ supported accommodation.<br><br>2 *(Conversion note: select only if there is a Core Area identified)* The following additional types of development, or combination thereof, are envisaged within the Core Area of the zone, identified on *Concept Plan Map XX/XX*:<br>▪ hotel<br>▪ indoor recreation centre<br>▪ *(Conversion note: optional policy)*light industry<br>▪ place of worship<br>▪ tourist accommodation.<br><br>3 Development listed as non-complying is generally inappropriate.<br><br>4 Core Areas, Transition Areas and other identified features should be developed in accordance with the relevant *Concept Plan Map(s) XX/XX (Insert references)*.<br><br>5 Core Areas should be developed to include a range of land uses that are high pedestrian generators, directly promote public transport use and provide opportunities for multi-purpose trips.<br><br>6 *(Conversion note: optional policy)* Light industrial and commercial development (including high technology and research based activity) should be located in Core Areas and be compatible with adjoining uses. | policy areas (Town Centre Gawler South Policy Area and Town Centre Light Policy Area) section. Looking at both policy areas within the Gawler Development Plan there are some similarities with the envisioned uses in the Urban Core Zone.<br><br>Shared Envisioned Land Uses<br>- Consulting Room<br>- Community centre / use<br>- Dwellings<br>- Educational establishment<br>- Office<br>- Shop or group of shops<br>- Hotel<br>- Place of Worship<br><br>Different envisioned uses within the SAPPL<br>- Affordable housing<br>- Aged persons accommodation<br>- Licensed premises<br>- Nursing home<br>- Pre-school<br>- Residential flat building<br>- Retirement village<br>- Supported accommodation<br>- Indoor recreation centre (core only)<br><br>Looking through the list of envisioned uses which are different in the SAPPL, none of them are listed as non-complying in the Development Plan and would as a |

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| (b) define pedestrian boulevards, car park entries and public avenues; and<br>(c) comprise ornamental exotic species characteristically employed in the 19th Century and early 20th Century plantings.<br><br>**10** The built form, site development and trading conditions should promote public access and surveillance and create a feeling of security and personal safety.<br><br>**11** No new industrial, or warehousing development should be undertaken within the area.<br><br>**12** Any redevelopment of an existing industrial or warehousing development should be confined to its existing site and only occur if it reduces the impacts associated with the desired future character and amenity of its locality.<br><br>**Conservation**<br><br>**13** Development should reinforce and complement the historic character and significance of the area and the integrity of any places and items identified in Table Ga/2, Table Ga/5 or Table Ga/6.<br><br>**14** Vacant land, buildings or sites having a detrimental affect on the character of the locality not identified as having any heritage significance should be redeveloped and upgraded in accordance with the historic character of the Policy Area.<br><br>**15** Development should conserve, maintain, enhance and reinforce the existing streetscape character of the Policy Area and the historic | 7 Core Areas should incorporate integrated public open spaces, sport and recreation facilities, and community areas that act as social hubs for communal activity.<br><br>8 *(Conversion note: core policy except for City of Adelaide Development Plan)* Except in Core Areas where a higher intensity of development is envisaged, non-residential development should comprise uses that:<br>(a) are of local or neighbourhood scale<br>(b) encourage walking to local shopping, community services and other activities<br>(c) do not detrimentally impact on the amenity of nearby residents.<br><br>*9 (Conversion note: delete reference to the Main Street Policy Area X in this policy where it is not identified in the zone)* Except in the Main Street Policy Area where there is no maximum floor area, a shop or groups of shops should have the following maximum gross leasable areas*(Conversion note: Neighbourhood scale retail activity is anticipated in the zone. This floor area can be varied upward based on strategic retail analysis that demonstrates a different figure is appropriate)*:<br><br>**Designated area** — **Shop or groups of shops (square metres)**<br>Core Area — X *(Conversion note: choose 3,000 or 5,500)*<br>Transition Area — X *(Conversion note: choose 500 or 1,000)*<br>Areas not designated as one of the above — X *(Conversion note: choose 500 or 1,000)*<br><br>*(Conversion note: this policy is optional and would not be relevant in a District or Regional Activity Centre setting where a higher intensity of development is envisaged).*<br><br>**Form and Character**<br>10 Development should be consistent with the desired character for the zone.<br><br>11 Residential development (other than residential development in mixed use buildings), should achieve a minimum net residential site density in accordance with *Concept Plan Map XX/XX*. | result need to be assessed upon their merit under current legislation.<br><br>The Town Centre Historic (Conservation) Zone contains 13 PDC's which speak directly to conservation (reinforcement of historical character). These PDC's are detailed and provide guidance on a number of matters including:<br>- Colour<br>- Materials<br>- Demolition<br>- Integrity and compatibility<br><br>The Urban Core Zone doesn't contain this level of detail, however does contain the following PDC under Form and Character 'Development should be consistent with the desired character for the zone'. This would imply that the Desired Character Statement would need to be relatively detailed to provide the planner with adequate guidance, nevertheless Council's current policies in this regard are far more detailed and place specific.<br><br>The Urban Core Zone speaks to building envelopes and height, however prior to discussing further it should be noted that these policies are in a draft format and would be the subject of investigation, concept plan generation and discussion prior to being applied to an area. The Urban |

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| character of individual buildings, items, structures, and places.<br><br>**16** Development should enhance and contribute to the visual cohesiveness and historic character of the Policy Area by reference to the external appearance of the building (architectural detail, materials and colours) and any new buildings should be of complementary height, scale, set-back, form and external appearance, and display creative and diverse examples of high standard contemporary architecture.<br><br>**17** Colours of external painted surfaces and materials should be chosen to preserve and enhance the desired future character and historic character of the zone. The use of primary colours should be limited to signage, posts, window frames, door frames, door panels and limited areas on new structures, only where they make an important architectural contribution.<br><br>**18** Primary colours should not be used in decorative mouldings or render.<br><br>**19** Painting on stone work and fluorescent finishes are not appropriate.<br><br>**20** Places and items identified in Table Ga/2, Table Ga/5 or Table Ga/6 should not be demolished, but instead be retained, upgraded and adapted such that:<br>(a) the quality or condition which gives the place its significance is protected or enhanced. This should include elements of the place which have significant cultural associations; | *Conversion note: the minimum net residential site density should be set at a figure that ensures the achievement of strategic targets that are established in structure plans – refer to Technical Information Sheets for advice.*<br>*As a starting point the following minimums should be considered, however, higher minimums are encouraged choose a number from the range:*<br><br>***Designated area*** — ***Minimum net residential site density***<br>*Core Area* — *150-200 dwellings per hectare net (High density)*<br>*Transition Area* — *70-150 dwellings per hectare net (High density)*<br>*Any area not designated by the above* — *70-150 dwellings per hectare net (High density)*<br><br>*OR (Conversion note: express density either in the table or on a Concept Plan)*<br><br>11 Residential development (other than residential development in mixed use buildings), should achieve a minimum net residential site density in accordance with the following, except where shown on *Concept Plan Map XX/XX*:<br><br>**Designated area** — **Minimum net residential site density**<br>Core Area — X *(Conversion note: select a number between 150 and 200)* dwellings per hectare net<br>Transition Area — X *(Conversion note: select a number between 70 and 150)* dwellings per hectare net<br>Any area not designated by the above — X *(Conversion note: select a number between 70 and 150)* dwellings per hectare net<br><br>12 Residential development in a mixed use building should achieve a minimum net residential site density of 60 dwellings per hectare.<br><br>13 *(Conversion note: core policy except for City of Adelaide Development Plan)* In Transition Areas, development should provide a built form that provides the | Core Zone does appear to seek 4 (and up to 10) storey development as a minimum within core areas identified on key landmark sites identified in corresponding concept plans. This is at odds with the Gawler Town Centre Design Framework which seeks to cap height limits at 3 storeys.<br><br>The Urban Core Zone also speaks explicitly to significantly increasing residential site densities within designated areas. Policies within the Urban Core Zone speak to achieving 60 dwellings per hectare in designated areas. In comparison, the Broad Hectare Report showed that Gawler achieved an average of 11.2 lots per hectare – 2017. Council's Development Plan and more specifically the Town Centre Historic (conservation) zone does not envision areas within the zone accommodating such growth. However the Gawler Town Centre Design Framework does provide guidance for such a vision and does suggest a DPA be undertaken to support such a vision.<br><br>The Town Centre Historic (Conservation) Zone speaks specifically to signage and provides detailed guidance in relation to what is appropriate. Council's development plan also contains performance standards in table |