Attachment 6

Predictive Financial Model
Assumptions & Limitations
1 General – All Scenarios

1. Only drainage pits and pipes were modeled.

2. Funding for WSUD treatments is addressed separately in the WSUD & Stormwater Management Strategy.

3. Condition audit data collected for 2.4% of Council pipes and 23% of Council pits was assumed to be a representative sample of the overall network condition.

4. The model predicts asset performance over a 20 year period.

5. The network was predicted to continue to grow at 0.5% per annum.

6. All new drainage assets are assumed to be contributed assets resulting from land development projects.

7. In the absence of Knox specific historic data, the economic life of a drainage pit or pipe is assumed to be 80 years. Straight line asset deterioration has been assumed at rate of 1.25% pa.
2 Status Quo scenario

The Status Quo funding scenario assumes the Drainage Asset Management Plan is not adopted. It therefore makes use of existing budgets and projections in accordance with Council’s Long Term Financial Strategy (LTFS).

2.1 Assumptions – New & Upgrade

1. The 2009/10 figures are based on the current budget.

2. The allocation for subsequent years is as per the estimate provided in the Business Improvement Project – Drainage – Service & Asset Management (For New & Upgrade Drainage Works (2008)). This amount of $322,000 per year is based on historical data and the ability to address approximately one third of extreme or high risk drainage issues expected to be identified by the Works Services team and referred to Project Delivery for asset upgrade. (i.e. three issues p.a.)

3. LTFS estimates under the category 4017 Drainage Upgrades are unreliable sources of status quo new/upgrade spending, as the new/upgrade program is considered in its entirety at budget time each year with the high likelihood of discretionary funding moving between different asset programs.

4. Annual inflation of 3% has been adopted for new/upgrade works under this scenario.

2.2 Assumptions – Renewal

1. The 2009/10 figures are based on the current budget.

2. The allocation for subsequent years is as per the funding set out in the LTFS (asset renewal category – 1003 Drainage). These figures already include an allowance for annual inflation.

2.3 Assumptions – Maintenance

1. The 2009/10 figures are based on the current budget.

2. The allocation for subsequent years is as per the funding set out in the LTFS (for the first 5 years) and then assumed to continue over the remainder of the 20 year planning horizon (adjusted annually for inflation of 3%). Maintenance activities include the following:
   - 34205 Drainage Maintenance
   - 34207 Lintel Installations
   - 34222 Outfall Drainage Channel Maintenance
   - 34260 Drainage Pipe Cleaning
   - 34273 Drainage Pit Cleaning

3. The maintenance figure also includes an estimate of operational overheads. Based on historical data and the LTFS the overheads were calculated as 34% of the 34025 Works Management & Administration account.
2.4 Assumptions – Operating

1. No additional operating initiatives are part of this scenario. Operational funding modelling is limited to improvements only, not existing operational arrangements. Hence status quo improvements are nil.
3 Medium scenario

Adoption of the medium scenario will focus investment on operational improvements, a sustainable level of renewal funding and higher priority upgrade opportunities. Renewal funding will be set at levels sufficient to ensure the condition of all Council drainage assets (pits and pipes) will be rated as Condition 4 (Poor) or better by 2029/30, by the ongoing removal of components in Condition 5. With limited condition data available, and the pitfalls in extrapolating this data to the entire network, this is considered a reasonable and responsible assumption. Annual inflation of 3% is applied to all works programs in this scenario. In order to allow time for Council adoption of this plan and time to set up the processes, resources, systems etc required to implement the DAMP, this scenario assumes that all works will continue in accordance with the status quo scenario until 2011/12 (or 2012/13 in the case of new and upgrade works).

3.1 Assumptions – New & Upgrade

1. The 2009/10, 2010/11 and 2011/12 figures are based on the status quo scenario.

2. The allocation for subsequent years is as per the estimate for the medium scenario provided in the Business Improvement Project – Drainage – Service & Asset Management (For New & Upgrade Drainage Works (2008)).

3. The allocation includes one component to address all extreme or high risk drainage issues expected to be identified by the Works Services team and referred to Project Delivery for asset upgrade. (i.e. 10 issues per year) This has been assumed to require $1,000,000 per year for the first 10 years (i.e. address 10 issues per year), and then $500,000 per year for the following 10 years. (i.e. address 5 issues per year as fewer issues are likely to be identified)

4. This also includes a component to address works identified in the Knox Drainage Strategy. High Priority works totalling $6,620,000* are to be addressed in the first 15 years, with Medium Priority works totalling $13,343,000* to be addressed in the following 25 years (of which only 3 years form part of this planning horizon).

   *The Knox Drainage Strategy 2005 identified High Priority works totalling $5,710,000 and Medium Priority works totalling $11,510,000 – these figures have been adjusted to reflect 2010 costs.

5. Annual inflation of 3% has been adopted for new/upgrade works under this scenario.

6. All new drainage assets are assumed to be contributed assets resulting from land development projects.

3.2 Assumptions – Renewal

1. The 2009/10 and 2010/11 figures are based on the status quo scenario.

2. Funding for condition based renewals in years 2011/12 – 2029/30 has been based on the assumption that all components in condition 5 (failed) will be progressively renewed to ensure no components in this condition remain by
2029/30. Funding has been determined on the basis of calculated unit rates, an 80 year economic life for pits and pipes and straight line deterioration of these components. Renewal funding between pits and pipes is based on a 30% (pits) and 70% (pipes) funding split between these components. These proportions are an estimate provided by Council’s Construction team.

3. Renewal figures include an allowance for 0.5% annual drainage network growth from contributed assets and capital works projects.

4. Annual inflation of 3% has been adopted for renewal unit rates under this scenario.

3.3 Assumptions – Maintenance

1. The 2009/10 and 2010/11 figures are based on the status quo scenario.

2. Current funding (ie. status quo) is maintained (and adjusted for annual inflation of 3%) for drainage maintenance activities in all subsequent years. Maintenance funding between pits and pipes is based on a 26% (pits) and 74% (pipes) funding split between these components. These proportions are based on historical data estimates.

3. All maintenance figures include a proportional component of operational funding to manage these maintenance programs as described previously in section 2.3 of this attachment.

3.4 Assumptions – Operating

1. The costs of current day to day service operations are not included in any funding scenario.

2. An annual cost of $100,000 is included for drainage condition audits commencing in 2011/12.

3. A total cost of $1,336,500 for funding DAMP improvement projects relating to the Engineering & Infrastructure Directorate has been included. This cost has been spread evenly over 10 years, commencing in 2011/12.

4. A total cost of $30,000 for funding DAMP improvement projects relating to the City Development Directorate has been included. This cost has been spread evenly over 10 years, commencing in 2011/12.

5. Annual inflation of 3% has been adopted for operational funding under this scenario.

6. The cost for delivery of DAMP improvement projects is as detailed in the attached spreadsheet. This scenario assumes only those projects marked ‘consultant’ will require funding. Improvement projects marked as ‘internal’ will be incorporated within respective directorate business plans and operational capabilities.
4 High scenario

Like the medium scenario, adoption of the High scenario will focus investment on operational improvements, a sustainable level of renewal funding and higher priority upgrade opportunities. The difference is that funding will be sought to realise these outcomes in a shorter timeframe with a higher service level of renewal funding. Renewal funding will be set at levels sufficient to ensure the condition of all Council drainage assets (pits and pipes) will be rated as Condition 3 (Fair) or better by 2029/30, by the ongoing removal of components in Condition 4 and 5. With limited condition data available, and the pitfalls in extrapolating this data to the entire network, this is an ambitious assumption. Additional operating funds are sought to fast track the implementation of improvements projects in order to ensure all future investment in drainage is spent effectively. Annual inflation of 3% is applied to all works programs in this scenario. In order to allow time for Council adoption of this plan and time to set up the processes, resources, systems etc required to implement the DAMP, this scenario assumes that all works will continue in accordance with the status quo scenario until 2011/12 (or 2012/13 in the case of new and upgrade works).

4.1 Assumptions – New & Upgrade

1. The 2009/10, 2010/11 and 2011/12 figures are based on the status quo scenario.

2. The allocation for subsequent years is as per the estimate for the high scenario provided in the Business Improvement Project – Drainage – Service & Asset Management (For New & Upgrade Drainage Works (2008)).

3. The allocation includes one component to address all extreme or high risk drainage issues expected to be identified by the Works Services team and referred to Project Delivery for asset upgrade. (i.e. 10 issues per year) This has been assumed to require $1,000,000 per year for the first 10 years (i.e. address 10 issues per year), and then $500,000 per year for the following 10 years. (i.e. address 5 issues per year as fewer issues are likely to be identified)

4. This also includes a component to address works identified in the Knox Drainage Strategy. High Priority works totalling $6,620,000* are to be addressed in the first 10 years, with Medium Priority issues totalling $13,343,000* to be addressed in the following 15 years (of which only 8 years form part of this planning horizon).

   *The Knox Drainage Strategy 2005 identified High Priority works totalling $5,710,000 and Medium Priority works totalling $11,510,000 – these figures have been adjusted to reflect 2010 costs.

5. Annual inflation of 3% has been adopted for new/upgrade works under this scenario.

4.2 Assumptions – Renewal

1. The 2009/10 and 2010/11 figures are based on the status quo scenario.

2. Funding for condition based renewals in years 2011/12 – 2029/30 has been based on the assumption that all components in condition 4 (poor) and 5 (failed) will be progressively renewed to ensure no components in these
conditions remain by 2029/30. Funding has been determined on the basis of calculated unit rates, an 80 year economic life for pits and pipes and straight line deterioration of these components. Renewal funding between pits and pipes is based on a 30% (pits) and 70% (pipes) funding split between these components. These proportions are an estimate provided by Council's Construction team.

3. Annual inflation of 3% has been adopted for renewal unit rates under this scenario.

4.3 Assumptions – Maintenance

1. The 2009/10 and 2010/11 figures are based on the status quo scenario.

2. Current funding (ie. status quo) is maintained (and adjusted for annual inflation of 3%) for drainage maintenance activities in all subsequent years. Maintenance funding between pits and pipes is based on a 26% (pits) and 74% (pipes) funding split between these components. These proportions are based on historical data estimates.

3. All maintenance figures include a proportional component of operational funding to manage these maintenance programs as described previously in section 2.3 of this attachment.

4.4 Assumptions – Operating

1. The costs of current day to day service operations are not included in any funding scenario.

2. A total cost of $2,199,000 for funding DAMP improvement projects relating to the Engineering & Infrastructure Directorate has been included. This cost has been spread evenly over 5 years, commencing in 2011/12.

3. A total cost of $54,000 for DAMP improvement projects relating to the Corporate Development Directorate has been included. This cost has been spread evenly over 5 years, commencing in 2011/12.

4. A total cost of $39,000 for DAMP improvement projects relating to the City Development Directorate has been included. This cost has been spread evenly over 5 years, commencing in 2011/12.

5. Annual inflation of 3% has been adopted for operational funding under this scenario.

6. The cost for delivery of DAMP improvement projects is as detailed in the attached spreadsheet. This scenario assumes ALL improvement projects will require additional funding to enable them to be completed within 5 years (that is, projects marked both 'internal' and 'consultant').
5 Limitations

1. An estimated economic life of 80 years was assumed for pits and pipes and used to define a straight line deterioration rate of 1.25% per annum. Comparison of Council’s economic life assumptions against other Councils in Victoria suggests that a longer life (in the order of 100 years) may actually be more applicable resulting in a slower deterioration rate than that used by the model. If Council has under estimated the expected asset life then the renewal funding requirements predicted by the model may be overstated.

2. Asset condition predictions provided by the model may be unreliable for the following reasons:
   - Only pits and pipes with in the road reserve were condition audited. No easement pits or pipes were audited.
   - The condition audit sample was very small
   - The current condition of 2.4% of drainage pipes and 23% of drainage pipes was assumed to be representative of the condition of the whole network

3. The extrapolation of pipe condition data to the entire network may be inaccurate given that the small percentage of the network audited focused on areas, with a history of flooding issues and therefore failed pipes were expected to be found.

4. Extrapolation of the pit condition data to the entire network may be inaccurate given that only pits in the road reserve were audited.

5. Current drainage renewal practices do not differentiate spending for pits and pipes. Funds are allocated to a single budget item Drainage Renewal – 1003. The split of expenditure between pits and pipes is at the discretion of the Construction team. The model predicts future condition based on a constant split of renewal funding between pits (30%) and pipes (70%). This is reflective of current practices but may not be appropriate over the entire 20 year prediction period.

6. Improvement project costs are preliminary and not based on detailed scoping.