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ASSET MANAGEMENT PLAN
DRAINAGE

INTEGRATED**PLANNING**AND**REPORTING**FRAMEWORK

FairfieldCity
Celebrating diversity

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EXECUTIVE SUMMARY

The Drainage Asset Management Plan (AMP) outlines all the tasks and resources required to manage and maintain Council's Drainage System to an agreed standard. The AMP sets out a detailed overview of all Council's Drainage assets (valued at approximately $281 million). This AMP forecasts the resourcing required for maintaining the current condition of Council's drainage assets.

Overall Councils drainage assets are maintained at an average condition with only a small percentage of the drainage assets rated in poor condition. In 2011/12 Council invested $247,000 in drainage renewal.

Whilst this is a significant investment of funds by Council it has been calculated that there is a shortfall of $0.4 million per annum if Council seeks to maintain its drainage assets at the current condition. Without this funding shortfall being addressed the condition of Council's drainage assets will deteriorate over time, as identified in this Asset Management Plan.

1. INTRODUCTION

Fairfield City Council is responsible for the management of stormwater drainage assets valued at approximately $281 million built up over many generations. This presents significant challenges as many assets were constructed many decades ago, some of these are approaching the end of their useful asset life. The cost of maintaining and renewing these depreciating assets is likely to be a significant impact on scarce financial resources over the coming decades.

1.1 Fairfield City Plan Link

The Fairfield City Plan goals and objectives in this Asset Management Plan are:

Broad Theme	Goal	Outcomes	How objectives are addressed in AMP
Theme 2 - Places and Infrastructure	Goal 2: Buildings and infrastructure meet the changing standards, needs and growth of our community. Our city has activities, buildings and infrastructure to an agreed standard that cater to our diverse needs and future growth	2.1 Infrastructure is planned, managed and resourced to meet community need and service levels	Develop and apply asset management principles to support the maintenance and management of drainage assets. Provision of adequate funding towards asset renewal to meet adopted level of service.
		2.3 Community facilities and assets including libraries, museums, community accessible and valued by the community	Sound asset management practices as set out in this AMP are used to ensure that drainage assets are accessible where required and fully functional.
	Goal 1: Our city is a clean and attractive plan where we take pride in our diverse character. Our city takes pride in the diversity of its built environment which is reflected in the quality of new buildings and facilities as well as the care and maintenance of existing places and	1.1 Quality design, construction and maintenance help preserve our local character and respects the city's heritage and cultural diversity.	Provision of drainage assets through quality design (for purpose including whole of life costing), construction of new assets and asset upgrades. Undertake prompt repairs and maintenance of damaged assets and optimise serviceability and useability of the stormwater drainage network. Ensuring services are delivered at the right price and quality. Provision of adequate funding towards asset renewal.

Broad Theme	Goal	Outcomes	How objectives are addressed in AMP
	infrastructure	1.2 Places, infrastructure and buildings are clean, in good repair and meet important fire, safety, health and environmental standards.	Community focused and technical level of services are established and measured to ensure services are delivered effectively.
Theme 3 – Environmental Sustainability	Goal 3: Supporting Sustainable activities	3.1 Water is valued through harvesting and reuse	Reuse of stormwater wherever possible
Theme 5 – Good Governance and Leadership	Goal 1: We are well represented and governed where all act ethically and in the interest of the community Our City is well led by governments at all levels and efficiently managed by their administrations	1.3 Value for the public money that is spent	Sound asset management practices as set out in this building AMP are used to ensure that buildings are accessible, safe and fully functional.

1.2 Scope of this Plan

Fairfield City Council is responsible for the management of stormwater drainage assets as shown in Table 1.1 with a replacement value of $276 million.

Table 1.1

Asset Category	Quantity	Replacement Cost (,000)
Detention Basin*	5 items (Major)	$8,829
Gross Pollutant Trap (GPT)*	6 items (Major)	$2,254
Concrete Open Channel	6km	$9,453
Pipe	461km	$229,075
Drainage Pit	13358 items	$31,178
	Total	**$280,789**
Rain Garden	-	**-**
Headwalls	-	-
Open Earth Channel	-	-

Distribution of Drainage assets covered by this Asset Management Plan (AMP) are shown in Figure 1.1

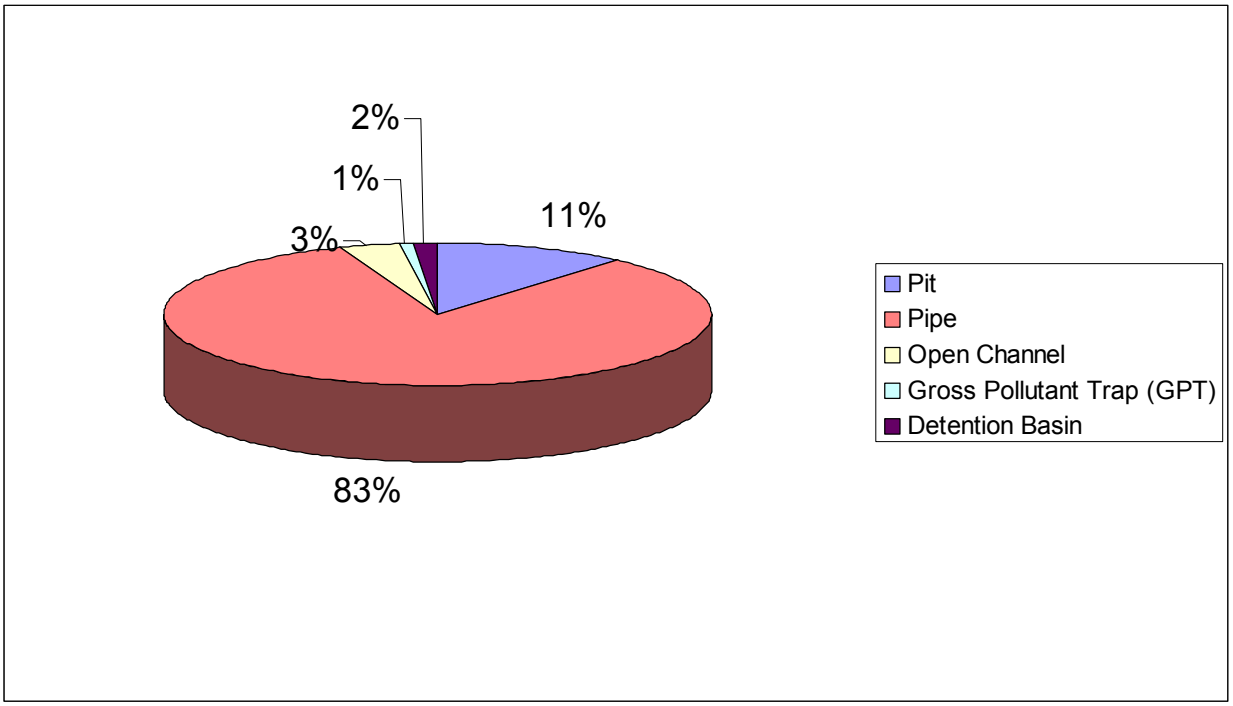


Figure1.1 - Distribution of Drain Assets

2. LEVELS OF SERVICE

2.1 Legislative Requirements

Council has to meet many legislative requirements including Australian and State legislation and State regulations. These include:

Legislation	Requirement
Local Government Act	Sets out role, purpose, responsibilities and powers of local governments including the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
The Australian Accounting Standards	The Australian Accounting Standards Section 27 (AAS27) requires that assets be valued, and reported in the annual accounts, which also includes depreciation value (i.e. how fast are these assets wearing out).
Road Act 1993	Sets out the extent of Council responsibilities and powers in the road reserve.
Water Management Act 2000	The objects of this Act are to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations and, in particular: (a) to apply the principles of ecologically sustainable development, and (b) to protect, enhance and restore water sources, their associated ecosystems, ecological processes and biological diversity and their water quality, and (c) to recognise and foster the significant social and economic benefits to the State that result from the sustainable and efficient use of water, including: (i) benefits to the environment, and (ii) benefits to urban communities, agriculture, fisheries, industry and recreation, and (iii) benefits to culture and heritage, and (iv) benefits to the Aboriginal people in relation to their spiritual, social, customary and economic use of land and water, (d) to recognise the role of the community, as a partner with government, in resolving issues relating to the management of water sources, (e) to provide for the orderly, efficient and equitable sharing of water from water sources, (f) to integrate the management of water sources with the management of other aspects of the environment, including the land, its soil, its native vegetation and its native fauna, (g) to encourage the sharing of responsibility for the sustainable and efficient use of water between the Government and water users, (h) to encourage best practice in the management and use of water.

Legislation	Requirement
Local Government (General) Amendment (Stormwater) Regulation 2006 under the Local Government Act 1993	The object of this Regulation is to amend the Local Government (General) Regulation 2005: (a) to prescribe the maximum amount that may be charged by a council for the provision of stormwater management services, and (b) to provide that certain information regarding stormwater management services is to be included in a council's draft management plan, and (c) to provide that a council's annual report is to include certain information relating to the provision of stormwater management services. This Regulation is made under the Local Government Act 1993, including sections 403 (1), 428 (2) (r), 496A and 748 (the general regulation-making power).
Environmental Planning and Assessment Act 1979	Sets out guild lines for land use planning and promotes sharing of responsibilities between various levels of government in the state.
Environmental Planning and Assessment Amendment Act 2008	Sets out guild lines for land use planning and promotes sharing of responsibilities between various levels of government in the state.
Protection of the Environment Operations Act 1997	Sets out Council responsibility and powers of local area environment and its planning functions.

2.2 Adopted Levels of Service

The adopted Levels of Service that are considered appropriate to Fairfield City Council are scheduled in Table 2.2.1.

Table 2.2.1

External (Community Based) and Internal (Operations Based –Technical)					
Key Performance Indicator	**Level of Service**	**Target Performance**	**Current Performance**	**Performance Measure Process**	**Comments**
Social Needs	Ensure that drainage assets are fully functional for community needs	Importance and satisfaction levels are considered	Unknown	Community Survey Results	
Appearance	Stormwater drainage systems and associated assets in clean and presentable condition	Maximum 5 requests/ complaints per month regarding cleanliness	Unknown	Customer Service requests	CRM categories to be set up to track these measures

External (Community Based) and Internal (Operations Based –Technical)					
Key Performance Indicator	**Level of Service**	**Target Performance**	**Current Performance**	**Performance Measure Process**	**Comments**
Legislative Compliance	Council has a legal right to drain through an easement, drainage reserve or water course.	100% compliance	Unknown	All drainage assets mapped in Council's GIS system	
Health and Safety	Provide stormwater system that is low risk to the community	<5 per year Incident Reports	Unknown	Incident reports	
		<5 per year request related to safety	Unknown	Customer service requests	
Quality	Ensure that stormwater assets undergo appropriate maintenance to minimise disruption to service delivery	<20 complaints per annum	Unknown	Number of customer complaints per annum	
Quantity	Adequate capacity to accommodate flow rates generated by 1 in 5 year storms	20 storm water blockages per 100 km pipe per annum.	Unknown	Customer Service Requests Australian Rainfall Runoff technical specifications and guidelines	
Reliability and Performance	Percentage of customer request actioned within twenty eight days	100%	80%	Audit of Work Orders generated Customer Request Management statistics	Need to initiate new process to register all letter request into CRM
Responsiveness	All works relating to drainage assets are completed with agreed timeframes depending on task and rating as specified in risk register and	90% of work identified completed within designated response times	80%		Rating 1 responds to request within 24 hours and make safe as soon as practical. Repair within 7 workdays.

External (Community Based) and Internal (Operations Based –Technical)					
Key Performance Indicator	**Level of Service**	**Target Performance**	**Current Performance**	**Performance Measure Process**	**Comments**
	maintenance plan				Rating 2 responds to request within 24 hours and make safe as soon as practical. Repair within 6 months.
					Rating 3 responds to request within 48 hours and make safe as soon as practical. Repair within 6 - 18 months depending on risk assessment.
					Rating 4 respond to request within 10 workdays, prioritise and program work annually depending on condition rating and availability of resources
Condition	Average Asset Condition	Average condition will fall to maximum 2.1 in 20 years	Average condition of 1.6	Condition Data Analysis	Undertake regular condition inspection and modelling of assets
	Overall Asset Condition	Maximum 3.2 % of assets will be in condition 4 & 5 in 20 years with current level of funding	0.3% of assets base in condition 4 and 5	Condition Data Analysis	Undertake regular condition inspection and modelling of building assets

External (Community Based) and Internal (Operations Based –Technical)					
Key Performance Indicator	**Level of Service**	**Target Performance**	**Current Performance**	**Performance Measure Process**	**Comments**
Capacity	New stormwater drainage pipes are designed for 5 years storm events	95%	Unknown	Unknown	Modelling of the existing stormwater network needs to be carried out (Referred to Drainage Section)
Financial Sustainability	Drainage assets are managed for future generations	Asset Renewal Funding Ratio 40%	Asset Renewal Funding Ratio 140%	Annual Budget Expenditure Review	Target cannot be met with funding shortfall
	Projects are delivered within budget	100%	Unknown	Percentage of projects completed within 5% of commit to build budget	

3. FUTURE DEMAND

3.1. Demand Forecast

3.1.1 Technological Change

Table 3.1.1.1 Changes in Technology and Forecast effect on Service Delivery

Technology Change	Effect on Service Delivery
Integrated asset management system including electronic recording of asset condition and performance linked to GIS	Improve the efficiency and effectively measure the performance of asset management plan and delivery of service
Affordable continuous water quality measuring devices	More frequent measurement of water quality and level of pollutants
Improvements to pollutant control devices	Higher level of pollution capture and treatment of stormwater.
Alternative pipe materials and equipment	Reduce pipe laying costs
Further development of urban stormwater water sensitive devices and techniques	Reduce stormwater run-off and increase reuse
Affordable pipe liners	Cost effective method of retaining existing asset

3.1.2 Increased demand for asset renewal and maintenance

The new assets required to meet growth will be acquired from land developments and constructed by Council. The new asset values are summarised the table below:

Financial Year	Asset Value ('000)
2008/2009	$1,175
2009/2010	$1,290
2010/2011	$3,922

The growth of these additional assets is not anticipated to have a significant impact on the extent of the infrastructure assets managed by council, and has not been included in this first asset management plan.

Further research is required on projections of growth and the possible impact of this growth and change. This will be considered as part of the improvement plan for the total asset management plan. On this basis this plan does not allow for accelerated asset consumption or usage.

3.1.3 Change in Community Expectation

Community Expectations	Effect on Service Delivery
There is a strong desire from the community for increased environmental responsibility and the reuse of stormwater runoff	Existing networks are not suitable for the purpose

3.1.4 Environmental Considerations

Environment and Climate Change (Sea Level Change)	Effect on Service Delivery
It is widely accepted that climate is changing	Some services such as the stormwater network may be impacted by climate/rainfall and severe events.

3.4 Demand Management

Demand for new services will be managed through a combination of managing existing assets, upgrading and replacing assets as given in the renewal plan. Demand management practices include non-asset solutions, insuring against risks and managing failures.

Opportunities identified to date for demand management are shown in Table 3.1.3.1. Further opportunities will be developed in future revisions of this Drainage Asset Management Plan.

Table 3.1.3.1 Demand Management Strategies Summary

Service Activity	Demand Management Strategies
All Drainage Assets	WSUD – more overland flow, green swales, local detention basins, less impervious areas on new developments.
	Greater compliance for surface water runoff pollution particularly on new developments to reduce the silting up of pits, pipes and other water ways.
	Greater cleaning and flushing of the underground system to ensure full capacity is realised.
	Clearing and widening of natural waterways to increase capacity and therefore their role in the stormwater drainage network.
	More use of GPTs on private property to arrest pollutants before they reach the Council network.

4. RISK MANAGEMENT

In order to establish those risks that will be covered by the risk management program a table has been developed showing sources of risk, their potential impacts, current controls and action plans (refer to Table 4.1). The risk register has established the responsibilities of the relevant departments (City Assets and City Works) and person.

This table will be further developed, as the sources of risk become better understood.

Table 4.1: Drainage Asset Risk Register (to use this sheet refer to Generic Asset Management Plan - Section 1: Table 4.1, 4.2, 4.3 and 4.4)

Hazards	Risk (what can happen?)	Likelihood	Consequence	Risk Score	Current Controls	Are Existing Controls Adequate?	Action Needed	Responsibility
Asset Condition	Ongoing deterioration of drainage assets	4	3	12	Repaired after receiving request from resident	No	1. Regular condition inspections 2. Asset modelling 3. Annual allocation of sufficient funding and resources	Manager City Assets
Asset Condition	Poor asset condition causes damage and injury to staff and community member	3	4	12	Repaired after receiving request from resident	No	1. Prioritise capital and maintenance works based on condition 2. Submit appropriate funding requests for Drainage inspections (CCTV camera) and maintenance	Manager City Assets
Insufficient Maintenance	Insufficient maintenance over the years increases the risk of injury to users	3	3	9	Reactive type	No	Prepare program work as per AMP for budget consideration	Manager City Assets
Natural Events (flooding, bushfire, earthquake etc)	Significant asset loss due to Natural events	3	3	9		Yes	Organise inspection immediately after flooding.	Manager City Assets
Restricted flow	Damage and injury caused by restricted flow	3	3	9	Repaired after receiving request from resident	No	Asset inspections as set out in AMP and maintenance program development	

Hazards	Risk (what can happen?)	Likelihood	Consequence	Risk Score	Current Controls	Are Existing Controls Adequate?	Action Needed	Responsibility
Overflow due to blockage of pipes and pits	Damage and injury caused by restricted flow	3	3	9	Repaired after receiving request from resident	No	Asset inspections as set out in AMP and maintenance program development	Manager City Works and City Assets
OHS Practices	Injury due to poor OHS practices	2	3	6		Yes	Need to ensure they are followed	Manager City Assets and City Works
Inappropriate works	Damage and injury caused by inappropriate works	2	3	6		No	Need to ensure that works are carried out in accordance with specification.	Manager City Works
Poor Design and Construction	Injury caused by poor design and construction	4	3	12	Some design check in place	No	Adopt more rigourous design to ensure that standards are achieved and documented. Implement quality control & quality assurance processes in construction. Establish post construction review with design	Manager City Assets and City Works

5. LIFE CYCLE MANAGEMENT PLAN

5.1 Objective

The objective of the drainage network is to transport stormwater from the point of collection to its point of discharge.

5.2 Asset Inclusions and Exclusions

5.2.1 Inclusions

The assets covered by this plan are shown below:

- Piped drainage
- Gross Pollutant Traps
- Drainage pits
- Headwalls
- Piped drainage
- Detention Basins
- Litter baskets
- Concrete lined channels
- Open earth channels
- Rain Garden

5.2.2 Exclusions

Other assets are not covered by this plan:

- Bridges

This is covered in the Roads and Transport Asset Management Plan.

5.3 Life Cycle Issues

Some of the key life-cycle issues relating to drainage assets are:

- The quality of road reinstatement by service authorities and other organisations has a significant effect on drainage quality.

- The emphasis on predictive modelling of concrete pipe and pits deterioration needs to be continued to enable understanding of drainage useful life and planned increases in rehabilitation expenditure.

5.4 Hierarchy

The hierarchy for this asset class has been created to assist maintenance and renewal planning. All assets fall within a unified guideline with regard to design, operation, maintenance and renewal.

Road & Drainage Reserve	Description
Regional	Drainage system on the regional road
Collector	Drainage system on the collector
Local	Drainage system on the local road
Cul-De-Sac	Drainage system on the cul-de-sac
Drainage Reserve	Drainage system on the drainage reserve (not on the road)

5.5 Asset Description

Fairfield City Council manages 461 kilometres of pipe, 13,358 pits and other drainage structures. Generally drainage assets have been broken down into the following asset components for condition assessment, maintenance and renewal works and expenditure forecasts:

Drainage Assets	Asset Components
Pit	Grated Gully Pit Kerb Inlet Pit Grated Pit with Kerb Inlet Junction Pit Letterbox Pit Median Pit Grated Surface Inlet Pit in Open Space
Pipe	Class 2 Pipe (225mm to 2100mm)
Open Channel	Concrete
Detention Basin	Structures
Gross Pollutant Traps (GPT)	Structures

5.6 Physical Parameters

5.6.1 Asset Capacity, Performance and Compliance

Most of the drainage system was built in Fairfield over the last several decades. The theoretical design capacity of drainage in some areas may no longer effectively manage higher stormwater runoff from additional development, infill housing and other increases in impervious areas (i.e. increased residential concrete surfaces).

The capacity analysis of stormwater pipes in Fairfield is carried out by the Council's Natural Systems Branch. This information is being captured and will be included in subsequent AMPs.

5.6.2 Asset Condition

Results included in the following table were gathered through an audit of the drainage assets by Council staff.

Condition is measured using a 1-5 rating system as defined in the Table 5.6.2.1 below:

Level	Condition	Description	% Life Consumed
1	Excellent	No work required (normal maintenance)	0
2	Good	Only minor work required	25
3	Average	Some work required	50
4	Poor	Some renovation needed within I year	75
5	Very Poor	Urgent renovation/upgrading required	100

Examples of stormwater pits are shown below:

Condition 1:
No work required (normal maintenance)

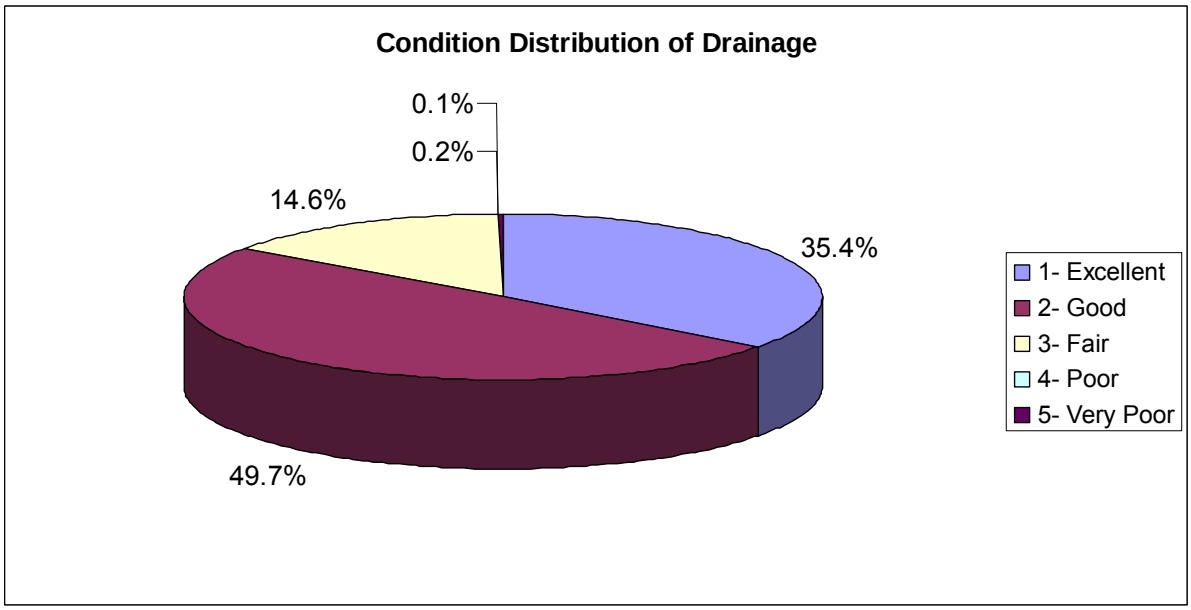
Condition 2:
Only minor work required

Condition 3:
Some work required

Condition 4:
Some renovation needed within 1 year

Condition 5:
Urgent renovation/upgrading required

Audit results for all Council Drainage assets result in the condition profile shown below:



5.7 Asset Valuation

Valuation of Council's drainage assets was undertaken by the Council and audited by the External Auditors in June 2010. For the purpose of this plan, the replacement costs stated will be those derived from the 2010 assessment plus the asset value from the creation of assets in 2010 and 2011. A summary of replacement cost and written down value is detailed in Table 5.1.1 below.

Table 5.1.1: Asset Valuation

Asset Group	Current Replacement Cost ($000)	Accumulated Depreciation ($000)	Depreciated Replacement Cost ($000)
Stormwater Drainage	$280,789	$50,753	$230,036

*annual depreciation $2,175,000

5.7.1 Asset Useful Life

The useful life of an asset is defined as a period over which a depreciable asset is expected to be fully utilised.

Useful life used in this Asset Management Plan is adjusted to reflect the local environment of Fairfield City Council through officer knowledge and based on the following:

- International Infrastructure Management Manual (IPWEA, 2006)
- Council's experience with similar assets
- Other Council AMPS

The useful life of drainage assets is as follows:

Drainage Assets	Type	Useful Life (years)
Pit	Grated Gully Pit Kerb Inlet Pit Grated Pit with Kerb Inlet Junction Pit Letterbox Pit Median Pit Grated Surface Inlet Pit in Open Space	150 150 150 150 150 150 150
Pipe	Class 2 Pipe (225mm to 2100mm)	150
Open Channel	Concrete	100
Detention Basin	Structures	100
Gross Pollutant Traps (GPT)	All	100

5.8 Historical Expenditure

The historical expenditure over the past three years is detailed in Table 5.1.2.

Table 5.1.2: Historical Expenditure

	2009/2010	2010/2011	2011/2012
Operation	$1,561,408	$1,608,250	$1,220,630
Maintenance	$410,000	$608,000	$758,562
Renewal	$50,000	$175,000	$247,000

Analysis of historic maintenance cost data shows that the average maintaining cost is 0.6% and operation cost is 0.2% of the total asset value (replacement cost).

5.9 Life Cycle Activities

5.9.1 Operations

Operational activities keep the asset utilised but have no effect on condition. Typical operational activities can include but are not limited to the pit cleaning, asset inspection, asset management software maintenance

5.9.2 Maintenance

Maintenance activities are those routine works which keep assets operating to the required service levels. They fall into two broad categories:

1. *Planned Maintenance (proactive)*
   Maintenance works carried out in response to reported problems or defects. Typical planned maintenance activities include:
   - Re-grading Table Drains

2. *Unplanned Maintenance (reactive)*
   Maintenance works unplanned to prevent asset failure and deterioration. Typical planned maintenance activities include:
   - Repair of damaged pit lid, grate, end wall etc 3

5.9.2.1 Maintenance Standards

Drainage asset maintenance standards are a set of performance criteria to the agreed service standard and future maintenance. They form the basis of the minimum level of service for a particular asset.

These standards allow the Manager City Assets to develop a plan that determines the level of maintenance needed based on the agreed service standard for all drainage assets.

Each asset will be allocated a hierarchy to identify the maintenance standard that is required. Maintenance standards, condition auditing and frequency of servicing/maintenance will vary depending on the importance of the asset.

The actual asset condition will be compared against the desired maintenance standard, or in the case of legislation the required maintenance standard. Variations from the standard that are identified will form part of the maintenance plan.

The current maintenance standards for drainage assets are detailed in the maintenance plan in **Appendix 1**.

5.9.2.2 Maintenance Strategy

Maintenance strategies include:

- Prevent premature deterioration or failure of drainage assets.
- Deferring minor maintenance work if drainage assets are due for rehabilitation/renewal.
- Ensuring all assets are maintained to deliver the desired levels of service.

Maintenance works are prioritised based on the following factors:

- The safety of asset users
- It is likely that the area of distress may expand
- Renewal work depends on the planned maintenance works
- Asset hierarchy
- Statutory regulation
- Executive priority

Maintenance Specifications
Maintenance work is carried out in accordance with the Council's specification with reference to the Australian Services standards.

5.9.2.3 Maintenance Program

Currently, the maintenance of Council's drainage assets is undertaken following routine inspections and/or receiving a substantiated customer complaint. Maintenance funding projections will be provided once all assets components are logged and maintenance requirements determined. **Appendix 1** identifies how the future maintenance will be determined and costed for each asset.

In this AMP, for the purpose of modelling future maintenance, current funding levels were utilised.

5.9.2.4 Maintenance Service Provision

Current Service Provision
Fairfield City Council currently uses a mixture of its own staff and external contractors for the provision of drainage maintenance services.

5.10 Renewal Plan

Renewals
Renewal work is the replacement of an asset or a significant component to restore its original size and capacity. Typical drainage renewal works include replacement of existing:

- Pits
- Pipes

5.10.1 Renewal Strategy

Renewal/replacement strategies are determined on the basis of:

- Risk – where the risk of failure and associated safety, financial and commercial impact justifies action;

- Asset performance – when the asset fails to meet the required level of service; and

- Economics – when it is no longer economic to continue repairing the asset (that is, the annual cost of repairs exceeds the annualised cost of renewal).

Current renewal expenditure on Council's drainage assets (replacement value $281million) is $247,000 which equates to approximately 0.09% of total replacement cost.

This asset management plan enables Council to holistically manage its drainage assets through the development of annual renewal program based on systematic analysis. Implementation of the annual renewal program requires a commitment of funds to deliver the level of service identified by the Community and adopted by Council.

All renewal works are prioritised based on the following criteria:

- Asset hierarchy

- Maintenance standard

- OHS obligations

- Statutory obligations

- Overall condition

- Environment impacts

- Future impact on other asset

- Costs

Renewal Specifications
Maintenance work is carried out in accordance with the Council's Specification, Auspac including Australian Service Standards and Specifications

5.10.3 Renewal Expenditure Forecasts

Data has been gathered and entered into approved (industry standard) software to provide a (20) year financial analysis. The objective of the analysis is to model the deterioration of the drainage network in order to determine asset performance and renewal needs over the next twenty years.

Four different funding scenarios have been modelled and the results plotted on a graph showing the relationship between the renewal budget and its effect on future network condition.

The assessment also incorporates Council's long term financial plan projections and assumptions about asset performance and rates of deterioration.

These four *"what if"* scenarios cover the expenditure required for renewal works programs which include replacement of Drainage assets or its components.

The scenarios are described as follows:

Scenario 1: Maintain Current Expenditure
Renewal Expenditure ($247,011) – Impact on Drainage Assets

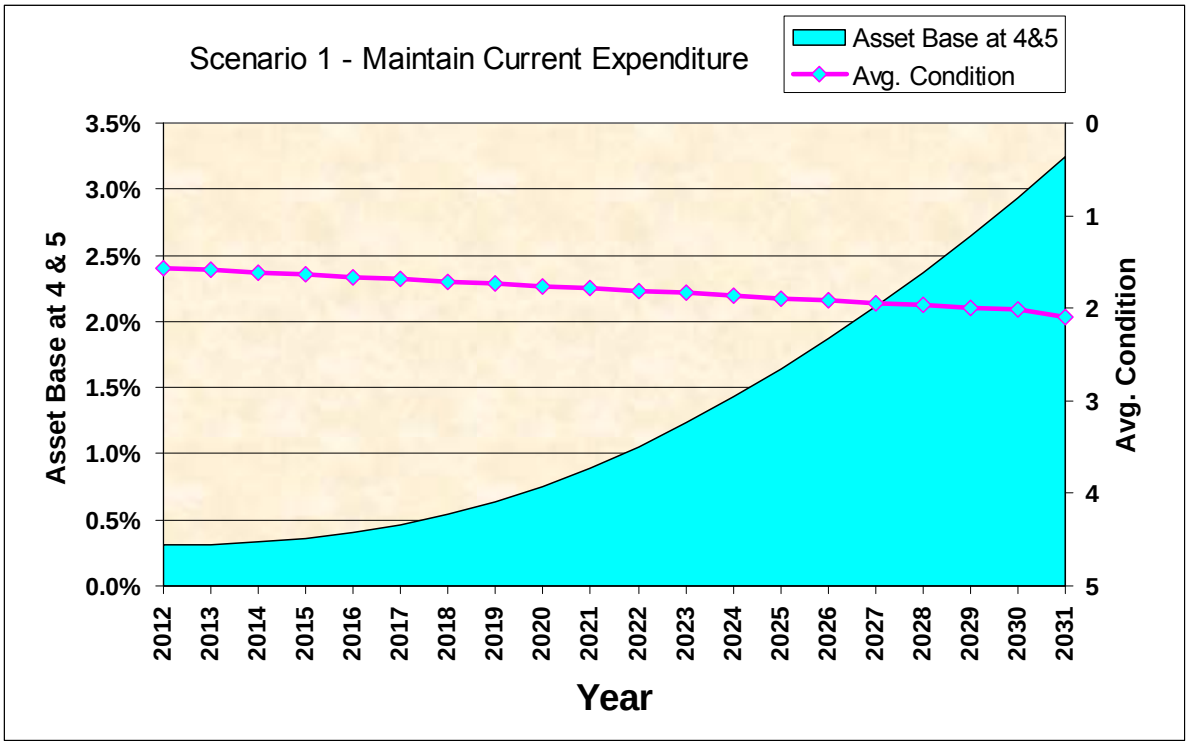


Figure 5.10.3.1 – Scenario 1

This scenario shows that the average Drainage condition will fall from 1.6 to 2.1 and asset base at condition 4 & 5 will rise approximately 3.2% by 2031 with the current level of expenditure.

Scenario 2: Maintain current condition.

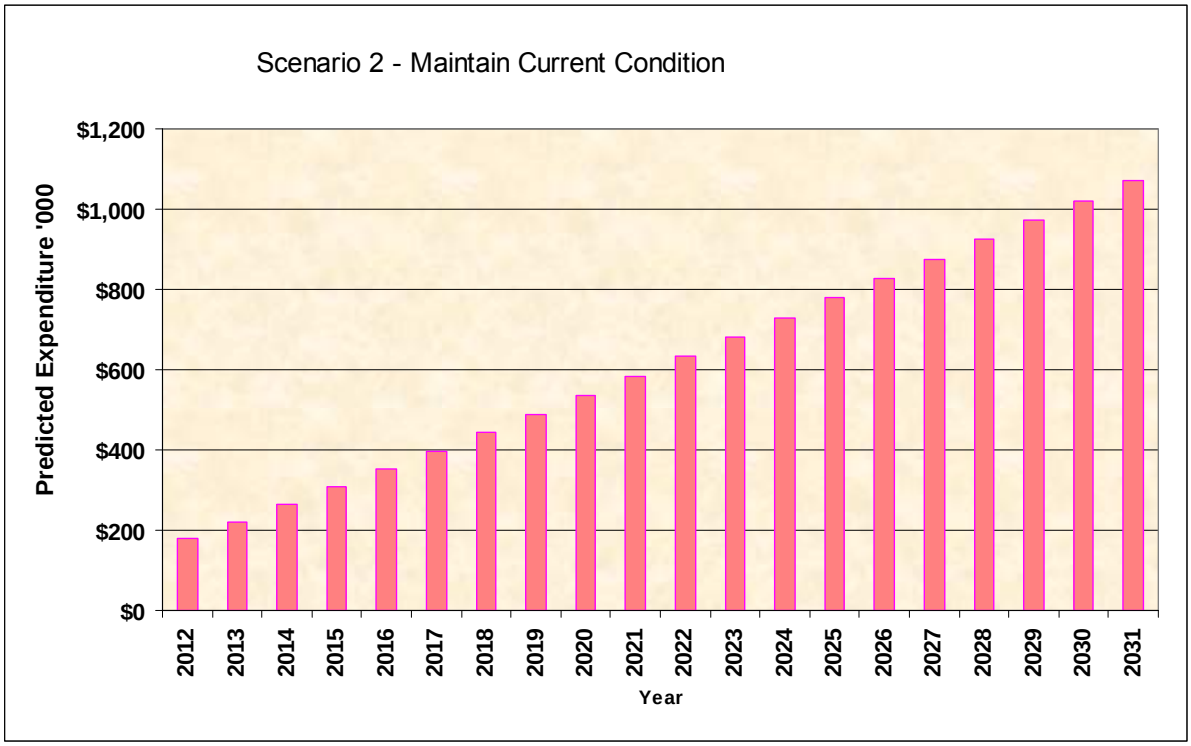


Figure 5.10.3.2 – Scenario 2

This scenario shows an estimated funding level required to maintain the current condition of Drainage assets over the next twenty years. An additional estimated amount of $367,000 per annum is required to maintain the current condition. The existing asset backlog would remain the same.

Scenario 3: Maintain an average condition of 2 or better and replace all assets at conditions 4 and 5.

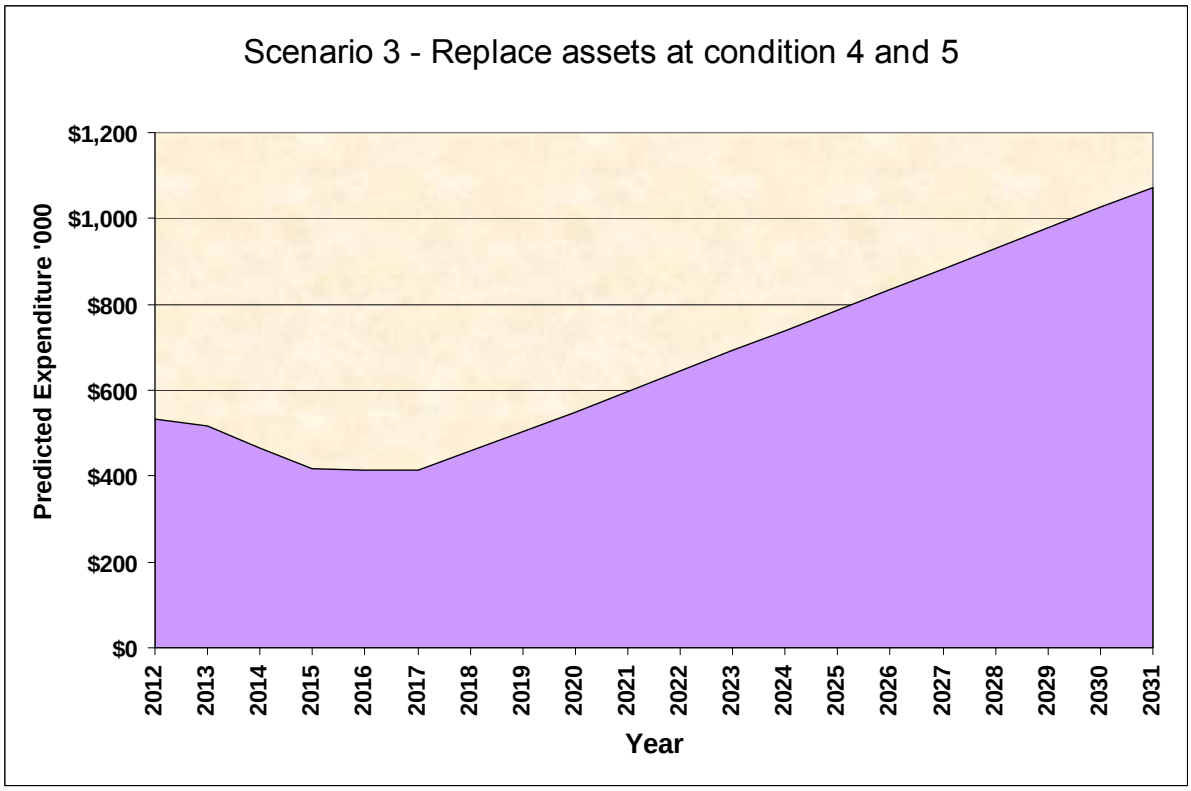


Figure 5.10.3.3 – Scenario 3

This scenario shows an estimated funding of $13,702,000 is required to maintain an average condition 2 and replace all assets at condition 4 and 5 of over the next 20 years. This equates to $685,000 per annum over the next 20 years.

A funding GAP between the current and proposed expenditure is $438,000 per annum.

Scenario 4: Remove all assets at condition 5

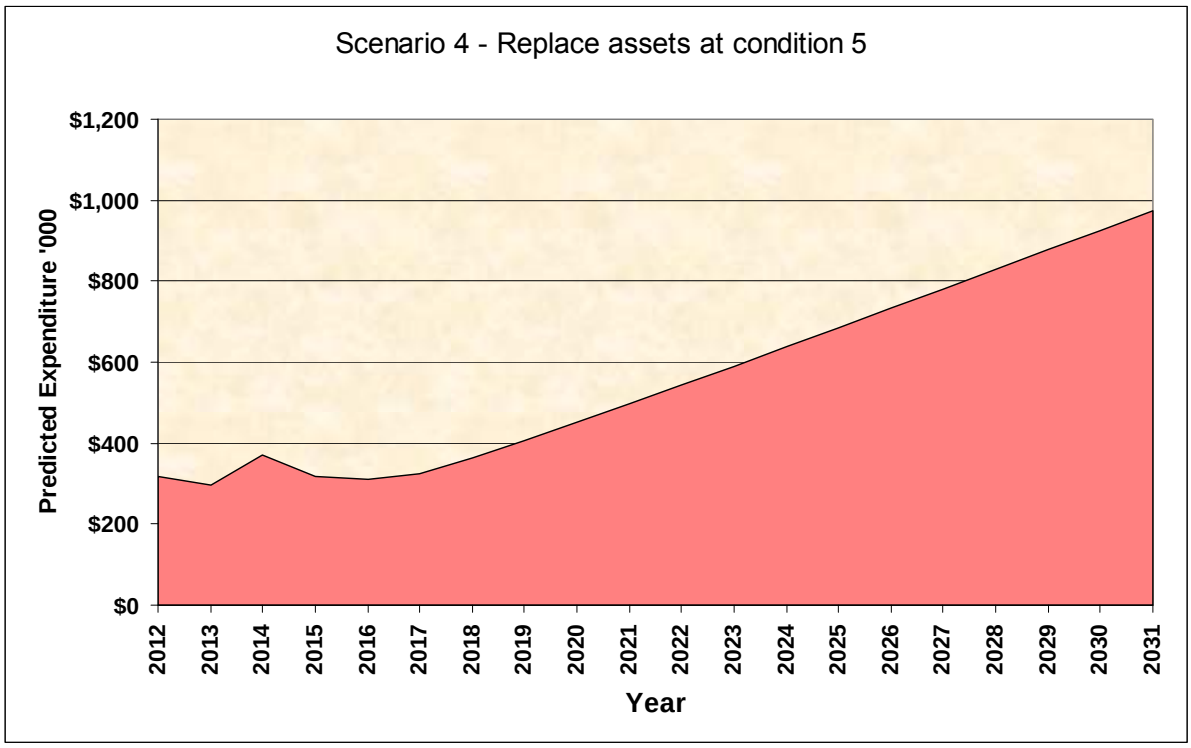


Figure 5.10.3.4 – Scenario 4

This scenario shows an estimated funding level required to replace all assets at Condition 5 over the next 20 years. An average additional estimated amount of $325,000 per annum is required to replace all assets at condition 5. The current level of expenditure is approximately $247,000

5.9 New/Upgrade Works

New/upgrade works involve the extension or upgrade of assets required to cater for growth or additional levels of service. New works create an asset that did not exist or extend an asset beyond its original size or capacity

5.9.1 New/Upgrade Works Strategy

Most of the drainage assets in Fairfield are created as part of subdivisional activity. The constructions of new assets within new subdivisions are generally funded by the developers and must be constructed in accordance with the Council's Subdivisional Standards. On completion, provided the assets comply with the Subdivisional Standards, they are vested in the Council (i.e. Council takes over ownership). There are few capital expenditure implications with this type of asset creation, the more significant implications are maintenance and renewal related.

Other proposals for extension or new assets require the development of a Business Case. Fairfield City Council has developed a format for the submission of Business Cases to demonstrate alignment to the City Plan, life cycle costs, impacts on existing services/infrastructure, forecasted usage rates and analysis as to the need for the service.

Business Cases enable Council to prioritise projects and provide the necessary information to decide whether to proceed to construct a drainage project.

All drainage assets must undergo a whole of life analysis that will consider the impact of longer term renewal, maintenance as well as operating costs on Council's financial viability.

Where decisions are made to proceed with additional assets they will be included on asset management plans so that provision will be built in to future budgets to accommodate the expenditure.

5.9.1 Fairfield City Council – Capital Works Program and Funding Forecasts

Currently, work is being undertaken to identify and prioritise capital works programs to be included in subsequent Asset Management Plans

Standards and Specifications
Standards and specifications for new assets and for upgrade/expansion of existing assets are the same as those for renewal and will be the subject of a future revision

5.10 Asset Disposal

Asset disposal involves assessment of strategic goals and the recognition that some assets may be underperforming or surplus to operating requirements. Disposal of assets may be recommended when:

- The asset is under utilised and surplus to Council service delivery
- Community consultation identifies that the asset is not providing a value for money service
- The asset is not aligned with corporate goals or the City Plan

No assets have been identified for possible decommissioning and disposal in this asset management plan. Where cash flow projections from asset disposals are not available, these will be considered in future revisions of this asset management plan.

6. FINANCIAL FORECAST

6.1 20 Year Financial Forecasts

All asset expenditure has been considered and models developed.

The results are presented as four "*what if*" scenarios for the expenditure required for renewal, operation, maintenance and new/upgrade works over a 20 year period.

This assessment also incorporates Council's long term financial plan projections and assumptions about asset performance, rates of deterioration and funding requirements.

Below is an example of the expenditure categories and the actual expenditure for a single financial year (2011/12).

Table 6.1 – Actual Expenditure 2011/12

Expenditure Type	2011/2012
Operation	$1,220,630
Maintenance	$758,562
Renewal	$247,011
New Works	$3,921,676

Scenario 1: Maintain current level of expenditure:
With current level of funding, the average Drainage condition will fall to 2.1 and asset base will rise to 3.2% at conditions 4 and 5 in 20 years.

Table 1: 20 year expenditure forecast for drainage

	Actual Expenditure	Predicted Expenditure																			
	2011 / 2012	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Operations	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221
Maintenance	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759
Renewal	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247
Upgrade/New Works	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922
Years																					
Current Expenditure	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149
Predicted expenditure	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149
Funding GAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Scenario 2: Maintain current condition

This scenario shows that an average additional funding of $367,000 per annum is required to maintain the current condition of Drainage assets.

Table 2: 20 year expenditure forecast for drainage

	Actual Expenditure	Predicted Expenditure																			
	2011 / 2012	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Operations	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221
Maintenance	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759
Renewal	**247**	**179**	**221**	**263**	**307**	**351**	**397**	**443**	**489**	**537**	**584**	**632**	**681**	**729**	**778**	**827**	**876**	**925**	**973**	**1022**	**1070**
Upgrade/New Works	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922
Years																					
Current Expenditure	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149
Predicted expenditure	6149	6081	6023	6165	6209	6253	6299	6345	6391	6439	6486	6534	6583	6631	6680	6729	6778	6827	5654	6924	5972
Funding GAP	0	68	26	-16	-60	-104	-150	-196	-242	-290	-337	-385	-434	-482	-531	-580	-629	-678	-726	-775	-823

Scenario 3: Maintain an average condition of 2 or better and remove all assets at conditions 4 and 5.
This scenario shows that an additional funding of $438,000 per annum is required to maintain an average condition 2 and replace all assets at conditions 4 and 5 of Drainage assets over the next 20 years.

Table 3: 20 year expenditure forecast for Drainage

	Actual Expenditure	Predicted Expenditure																			
	2011 / 2012	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Operations	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221
Maintenance	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759
Renewal	**247**	**536**	**521**	**472**	**423**	**422**	**421**	**467**	**514**	**561**	**609**	**657**	**705**	**754**	**803**	**851**	**900**	**949**	**998**	**1046**	**1094**
Upgrade/New Works	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922
Years																					
Current Expenditure	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149
Predicted expenditure	**4928**	**6438**	**6423**	**6374**	**6325**	**6324**	**6323**	**6369**	**6416**	**6463**	**6514**	**6559**	**6607**	**6656**	**6705**	**6753**	**6802**	**6851**	**6900**	**6948**	**6996**
Funding GAP	**0**	**-289**	**-274**	**-225**	**-176**	**-175**	**-174**	**-220**	**-267**	**-314**	**-362**	**-410**	**-458**	**-507**	**-556**	**-604**	**-653**	**-702**	**-751**	**-799**	**-847**

Scenario 4: Replace all assets at condition 5.
This scenario shows that additional funding of $324,000 per annum is required to replace all assets at condition 5 over the next 20 years.

Table 4: 20 year expenditure forecast for drainage

	Actual Expenditure	Predicted Expenditure																			
	2011 / 2012	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000	$000
Operations	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221	1221
Maintenance	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759	759
Renewal	**247**	**317**	**298**	**376**	**322**	**318**	**330**	**370**	**414**	**459**	**506**	**554**	**602**	**650**	**699**	**748**	**797**	**846**	**895**	**944**	**993**
Upgrade/New Works	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922	3922
Years																					
Current Expenditure	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149	6149
Predicted expenditure	**4928**	**6219**	**6200**	**6278**	**6224**	**6220**	**6232**	**6272**	**6316**	**6361**	**6408**	**6456**	**6504**	**6552**	**6601**	**6650**	**6699**	**6748**	**6795**	**6846**	**6895**
Funding GAP	**0**	**-70**	**-51**	**-129**	**-75**	**-71**	**-83**	**-123**	**-167**	**-212**	**-259**	**-307**	**-355**	**-403**	**-452**	**-501**	**-550**	**-599**	**-648**	**-697**	**-746**

6.1.1 Financial Projection Discussions

Fairfield City Council has spent $1.2 million in the 2012/2013 financial year on drainage assets renewal. There is a minimal funding gap for various scenarios as shown above however future funds will still have to be identified if Council is to sustain its drainage assets into the future.

Key Assumptions

- All expenditure is stated in dollar values as at 30 June 2012, with no allowance made for CPI over the 20-year planning period.
- Maintenance allocations are based on maintaining current level of expenditure
- Assumptions have been made to average useful lives, these assumptions will be reviewed and the accuracy improved based on further analysis of asset deterioration.
- No disposal of assets is considered in this financial projection.

6.3 Funding Strategy

The focus of this Asset Management Plan is on identifying the optimum cost for each asset group necessary to produce the desired level of service. How the cash flow is to be funded is a matter for separate consideration as part of Council's funding policy review.

Current Funding sources available for these assets include:

Asset Type	Funding Source
Drainage	Rates Federal Government funding State Government funding Private developer funded works WASIP Stormwater Levy Section 94

6.4 Confidence Levels

The confidence in the asset data used as a basis for the financial forecasts has been assessed using the following grading system:

Confidence ratings for each asset group and/or sub-group

Asset Category	Confidence Rating							
	Qty	Condition	Age	Service Levels	Demand Forecasts	Lifecycle Mange	Financial Forecasts	Overall Rating
Drainage	B	C	C	B	C	C	C	C

Confidence ratings and estimates of uncertainty values

Confidence Grade	Confidence Rating and Description
A	Highly Reliable < 2% uncertainty Data based on sound records, procedure, investigations and analysis which is properly documented and recognised as the best method of assessment
B	Reliable 2-10% uncertainty Data based on sound records, procedures, investigations, and analysis which is properly documented but has minor shortcomings for example the data is old, some documentation is missing and reliance is placed on unconfirmed reports or some extrapolation
C	Reasonably Reliable 10–25 % uncertainty Data based on sound records, procedures, investigations, and analysis which is properly documented but has minor shortcomings for example the data is old, some documentation is missing and reliance is placed on unconfirmed reports or significant extrapolation.
D	Uncertain 25–50% uncertainty Data based on uncertain records, procedures, investigations and analysis, which is incomplete or unsupported, or extrapolation from a limited sample for which grade A or B data is available.
E	Very Uncertain > 50% uncertainty Data based on unconfirmed verbal reports and/or cursory inspection and analysis

7. ASSET MANAGEMENT PRACTICES

Council utilises the following computer software *as part of Council's Asset Management system* to manage its drainage assets:

- Peoplesoft
- Conquest
- EAM
- Moloney Predictive Modelling Tool
- Mapinfo (GIS – Geographic Information System)

8. PLAN IMPROVEMENT AND MONITORING

8.1 Improvement Program

The improvement tasks identified are as follows:

AMP Reference Number	Action	Planned Start Year
Section 2 Level of Service	Develop and review levels of service for drainage assets	Ongoing
Section 4 Risk Management	Review and update Risk Register	Ongoing
Section 7 Asset Management Practices	Review financial data and processes, particularly those relating to asset valuations and depreciation	Ongoing
Section 7 Asset Management Practices	Train appropriate Council staff in using activity guidelines, AMP level of service, AMP intervention levels, AMP inspection regime	31/12/2013
Section 5 Life Cycle Management	Develop and implement asset handover processes	31/12/2012
Section 5 Life Cycle Management	Develop prioritisation criteria for drainage renewal program	Ongoing
Section 5 Life Cycle Management	Identify and quantify all drainage legislative requirements	31/12/2013
Section 7 Life Cycle Management	Develop planned maintenance program with costing	31/12/2013
Section 5 Life Cycle Management	Develop asset capitalisation policy	31/12/2012
Section 7 Life Cycle Management	Collect condition data for drainage pipes using CCTV	Ongoing
Section 3 Demand Forecasts	Analyse the current growth trends and use to develop future expected growth scenarios	31/12/2013
Section 7 Asset Management Practices	Integrate/interface asset management systems, spatial systems (GIS) and corporate/finance system where possible	31/12/2013
Section 5-Life Cycle Management	Develop a process so that the “life cycle cost “must be considered in the evaluation of major capital upgrade and new work proposals	31/12/2012

Appendix 1 – Stormwater Drainage Asset Maintenance

Pipe, Pit and Rain Garden Maintenance

Item	Reason for Activity	Treatment Description	Intervention Level	Regional Road	Collector Road	Local Road	Cul De Sac	Drainage Reserve
Pipe, Pit and Rain Garden maintenance	Blocked , damaged and broken pipe and pit causing overflow	General maintenance includes cleaning, clearing, flushing and repair of damaged pits includes repair and replacement of gratings and lids	Pit lid broken or not appropriately located Obstructions in pipes restricting flow of water Grates blocked or not appropriately located Pits blocked Flooding Pits or surrounds damaged Pipes broken Scours of either inlet or outlet Weed growth	Cleaning and clearing annually in accordance with Maintenance Works Program Reactive works-Response Rating 1	Cleaning and clearing annually in accordance with Maintenance works Program Reactive works-Response Rating 2	Cleaning and clearing two times per year Reactive works-Response Rating 2	Cleaning and clearing two times per year Reactive works-Response Rating 2	Cleaning and clearing two times per year Reactive works-Response Rating 1

Concrete and Earthen Open Channel Maintenance

Item	Reason for Activity	Treatment Description	Intervention Level	Regional Road	Collector Road	Local Road	Cul De Sac	Drainage Reserve
Open Channel Maintenance	Damaged concrete panels and blocked drain causing flow restrictions and scouring of banks	General maintenance includes cleaning, clearing and repair of damaged concrete panels	Ponding in drains Loose components (i.e. bricks, bluestones to be replaced) Vegetation restricts flow of water Litter visible Drains noticeably scoured Drain is reduced by silt to less than 75% of its original capacity	Cleaning and clearing annually in accordance with Maintenance Works Program Reactive works-Response Rating 1	Cleaning and clearing annually in accordance with Maintenance Works Program Reactive works-Response Rating 2	Cleaning and clearing two times per year Reactive works-Response Rating 2	Cleaning and clearing two times per year Reactive works-Response Rating 2	Cleaning and clearing two times per year Reactive works-Response Rating 1

Head Walls Maintenance

Item	Reason for Activity	Treatment Description	Intervention Level	Regional Road	Collector Road	Local Road	Cul De Sac	Drainage Reserve
Head Walls Maintenance	Blocked drain causing flow restrictions and scouring of banks	General maintenance includes cleaning, clearing and repair of damaged head walls	End walls collapsed or blocking inlet or outlet Damaged head walls	Annually in accordance with Maintenance Works Program	Annually in accordance with Maintenance Works Program	Annually in accordance with Maintenance Works Program	Annually in accordance with Maintenance Works Program	Annually in accordance with Maintenance Works Program

Detention Basin Maintenance

Item	Reason for Activity	Treatment Description	Intervention Level	Regional Road	Collector Road	Local Road	Cul De Sac	Drainage Reserve
Detention Basin Maintenance	Blocked drain causing flow restrictions and scouring of banks	General maintenance includes cleaning, clearing, flushing and repair of damaged pits including repair and replacement of gratings and lids	Visible litter Pit lids broken or not appropriately located. Grates blocked.	Annually in accordance with Maintenance works Program Reactive works-Response Rating 1	Annually in accordance with Maintenance works program Reactive works-Response Rating 2	Annually in accordance with Maintenance works program Reactive works-Response Rating 2	Annually in accordance with Maintenance works program Reactive works-Response Rating 2	Annually in accordance with Maintenance works program Reactive works-Response Rating 1

Gross Pollutant Trap (GPT) **Maintenance**

Item	Reason for Activity	Treatment Description	Intervention Level	Regional Road	Collector Road	Local Road	Cul De Sac	Drainage Reserve
GPT Maintenance	GPT blockage	General maintenance includes cleaning, clearing, flushing and repair of damaged pits including repair and replacement of gratings and lids	Visible litter Pit lids broken or not appropriately located Grates blocked GPT with excess of 20% silting	Annually clean as determined by Inspection Reactive works-Response Rating 1	Annually clean as determined by Inspection Reactive works-Response Rating 2	Annually clean as determined by Inspection Reactive works-Response Rating 2	Annually clean as determined by Inspection Reactive works-Response Rating 2	Annually clean as determined by Inspection Reactive works-Response Rating 1

Table and Side Drain Maintenance

Item	Reason for Activity	Treatment Description	Intervention Level	Regional Road	Collector Road	Local Road	Cul De Sac	Drainage Reserve
Table drain, cut off and side drain	Build up of access water flows along the road shoulder	Grade or excavate to ensure vegetation and silt are removed and drain is free	Excess flow of water along road shoulder. Shoulder is higher than pavement edge	Annually in accordance with Maintenance Works Program	Annually in accordance with Maintenance Works Program	Annually in accordance with Maintenance Works Program	Annually in accordance with Maintenance Works Program	Annually in accordance with Maintenance Works program

Appendix 2 – Stormwater Drainage Asset Inspection

Asset Type	Hierarchy	Inspection Type	Frequency	Responsibility
Pit	Regional	Risk Inspection	6 Months	City Works
		Condition Inspection	25% of pit network annually	City Assets
	Collector	Risk Inspection	12 months 6 months for hot spot pit	City Works
		Condition Inspection	25% of pit network per year	City Assets
	Local	Risk Inspection	12 months 6 months for hot spot pit	City Works
		Condition Inspection	25% of pit network per year	City Assets
	Cul-De-Sac	Risk Inspection	24 months 6 months for hot spot pit	City Works
		Condition Inspection	25% of pit network per year	City Assets
	Drainage Reserve	Risk Inspection	6 months	City Works
		Condition Inspection	25% of pit network per year	City Assets
Pipe	Regional	Risk Inspection	6 months	City Works
		Condition Inspection	2.5% of pipe network per year	City Assets
	Collector	Risk Inspection	6 months	City Works
		Condition Inspection	2.5% of pipe network per year	City Assets
	Local	Risk Inspection	12 months	City Works
		Condition Inspection	1% of pipe network annually	City Assets
	Cul-De-Sac	Risk Inspection	24 months	City Works
		Condition Inspection	1% of pipe network per year	City Assets
	Drainage Reserve	Risk Inspection	3 months	City Works
		Condition Inspection	2.5% of pipe network per year	City Assets

Asset Type	Hierarchy	Inspection Type	Frequency	Responsibility
Rain Garden	Regional	Risk Inspection	6 months	City Works
		Condition Inspection	25% of rain garden network per year	City Assets
	Collector	Risk Inspection	12 months	City Works
		Condition Inspection	25% of rain garden network per year	City Assets
	Local	Risk Inspection	12 months	City Works
		Condition Inspection	25% of rain garden network per year	City Assets
	Cul-De-Sac	Risk Inspection	24 months	City Works
		Condition Inspection	25% of rain garden network per year	City Assets
	Drainage Reserve	Risk Inspection	6 months	City Works
		Condition Inspection	25% of rain garden network per year	City Assets
Open Channel	Regional	Risk Inspection	6 months	City Works
		Condition Inspection	25% of open channel per year	City Assets
	Collector	Risk Inspection	6 months	City Works
		Condition Inspection	25% of open channel per year	City Assets
	Local	Risk Inspection	12 months	City Works
		Condition Inspection	25% of open channel per year	City Assets
	Cul-De-Sac	Risk Inspection	24 months	City Works
		Condition Inspection	25% of open channel per year	City Assets
	Drainage Reserve	Risk Inspection	6 months	City Works
		Condition Inspection	25% of open channel per year	City Assets
Gross Pollutant	Regional	Risk Inspection	6 months	City Works

Asset Type	Hierarchy	Inspection Type	Frequency	Responsibility
Traps (GPT)		Condition Inspection	Annually	City Assets
	Collector	Risk Inspection	Annually	City Works
		Condition Inspection	Annually	City Assets
	Local	Risk Inspection	Annually	City Works
		Condition Inspection	Annually	City Assets
	Cul-De-Sac	Risk Inspection	Annually	City Works
		Condition Inspection	Annually	City Assets
	Drainage Reserve	Risk Inspection	Annually	City Works
		Condition Inspection	Annually	City Assets
Detention Basin	Regional	Risk Inspection	Annually	City Works
		Condition Inspection	Annually	City Assets
	Collector	Risk Inspection	Annually	City Works
		Condition Inspection	Annually	City Assets
	Local	Risk Inspection	Annually	City Works
		Condition Inspection	Annually	City Assets
	Cul-De-Sac	Risk Inspection	Annually	City Works
		Condition Inspection	Annually	City Assets
	Drainage Reserve	Risk Inspection	Annually	City Works
		Condition Inspection	Annually	City Assets