Additional information

Ordinary Meeting of Council

Wednesday, 28 October 2020, 6.00pm

Part 1

City of Fremantle

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PC2010 - 1 KNUTSFORD STREET, NO. 6 (STRATA LOT 2) FREMANTLE - TWO STOREY SINGLE HOUSE (TG DA0180/20)

Additional Information 1 – Site photos



Photo 1: Subject site, majority of limestone wall to remain



Photo 2: View across subject site towards 24 Ord Street



Photo 3: 24 Ord Street from Knutsford Street



Photo 4: Existing interface between subject site (left) and adjoining property



Photo 5: Knutsford Street streetscape, subject site left of frame

Additional Information 2 – SHO Assessment

Department of **Planning, Lands and Heritage**
GOVERNMENT OF WESTERN AUSTRALIA

Your ref: DA0180/20
Our ref: P13806-47340
Enquiries: Karen Jackson (08) 6552 4150

Chief Executive Officer
City of Fremantle
planning@fremantle.wa.gov.au

Attention: Tom Geddes

Dear Sir

ORD & BATEMAN STREET PRECINCT

Under the provisions of Section 73 of the *Heritage Act 2018*, the proposal as described below has been referred to the Heritage Council for its advice.

Place Number	P13806
Place Name	Ord & Bateman Street Precinct
Street Address	6 Knutsford Street, Fremantle
Referral date	19 June 2020
Proposal Description	New dwelling

We received the following drawings prepared by Slavin Architects dated 12 August 2020:

A300 Rev 2	South Elevation
A301 Rev 3	East Elevation
A302 Rev 2	West Elevation
A303 Rev 2	North Elevation
A900 Rev 2	Perspective looking up Knutsford Street
A901 Rev 2	Perspective looking down Knutsford Street

The proposal has been considered in the context of the identified cultural significance of *Ord & Bateman Street Precinct* and the following advice is given:

Findings

- The referral is for a new dwelling to 6 Knutsford Street, Fremantle, which was previously subdivided from 24 Ord Street (July 2017).
- The works comprise the demolition of existing limestone rubble retaining wall, brick paving, fencing, 4 x trees, and front limestone wall (section to the west retained, and material retained for rebuilding wall).
- The new building is a two storey 3 bedroom residence with a double garage to the front, and a clerestory window.

Postal address: Locked Bag 2506 Perth WA 6001 Street address: 140 William Street Perth WA 6000
Tel: (08) 6551 8002 info@dplh.wa.gov.au www.dplh.wa.gov.au
ABN 68 565 723 484
wa.gov.au

- The design was revised after consultation with neighbours and the drawings referenced above are the revised proposal.
- The proposal response sympathetically to the streetscape of Knutsford Street.

Advice
The proposal, in accordance with the plans submitted, is supported.

Please be reminded that you are required under r.42(3) of the *Heritage Regulations 2019* to provide us with a copy of the Council's determination within 10 days after making the decision.

Should you have any queries regarding this advice please contact Karen Jackson at karen.jackson@dplh.wa.gov.au or on 6552 4150.

Yours faithfully

Adelyn Siew
Director Heritage Development

18 August 2020

cc: Bill Coe, Slavin Architects, bill.coe@slavinarch.com.au

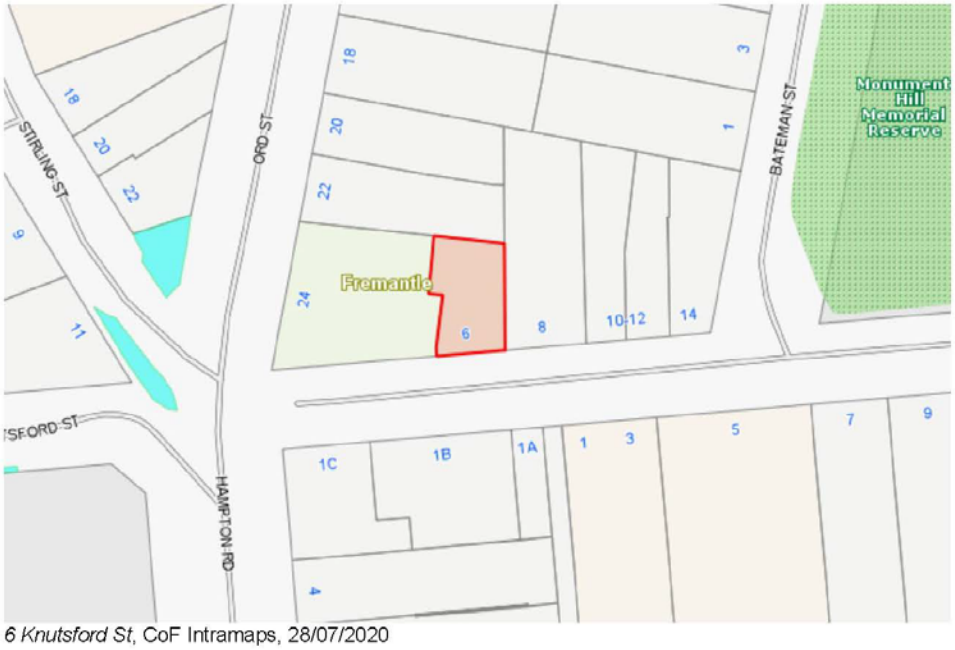
Additional information 3 – Heritage Assessment

Heritage Comment - Internal

Address:	6 Knutsford Street
Application number:	DA0180/20
Proposal:	New two storey dwelling
Requesting officer:	**Tom Geddes**
Date:	**13/08/2020**



6 Knutsford St, Aerial photograph, CoF Intramaps, 28/07/2020



6 Knutsford St, CoF Intramaps, 28/07/2020

INTRODUCTION

The purpose of this heritage comment is to assess the changes to the place that are proposed in DA0180/20 and the affect that they will have upon the heritage values of Address. The proposed changes include:

- New 2 storey dwelling

HERITAGE LISTINGS

State Register of Heritage Places

The place is included in the State Register of Heritage Places – a referral to DPLH Heritage **is** required.

Inherit

Inherit Database number - 24602

Heritage List and LHS

6 Knutsford Street is included on the City of Fremantle's Heritage List.

Heritage Area

The place is included in the Ord Street Precinct Heritage Area.

The Ord Street Precinct Heritage Area is designated as a Heritage Area in accordance with clauses 7.2.1 and 7.2.9 of Local Planning Scheme No. 4.

City of Fremantle

RELEVANT PREVIOUS DEALINGS

Recent meetings or discussions:

- N/A

Previous relevant DAs:

- N/A

Previous relevant legal dealings: N/A

BACKGROUND
Historical Information

House, 24 Ord Street is included in the precinct listing for Ord and Bateman Street.

The precinct comprises 10-24 Ord Street; 8-14 Knutsford Street; and 1-9 Bateman Street.

By 1832, the townsite of Fremantle had been laid out, and some building had commenced. By 1833, a dirt road had been made from Perth to Fremantle, named the Perth-Freemantle (sic) Road. Over the next decade, the towns of Fremantle and Perth developed, and four tracks were established leading from Fremantle: to Perth, to Canning Bridge, which was opened in 1843, to the Canning district and Kelmscott, and south to Mandurah.

Development in the Swan River Colony was slow through the period to 1850, when the commencement of transportation of convicts to the small colony heralded a period of rapid development. A wide program of public works was carried out by convict labour, including the building of Fremantle Prison. In the 1860s, the construction by convicts of a new Perth-Fremantle Road and the bridge over the Swan River at North Fremantle led to increased traffic on the road. In 1872, the Perth-Fremantle Road became a public highway. During this period, most people continued to reside within the early townsites, and in close proximity to their place of employment.

In the late 1880s and early 1890s, sub-division commenced of some of the large lots to the south and east of the town of Fremantle, along the roads to Mandurah and the Canning district. The Fremantle merchants who had acquired wealth through their commercial enterprises began to move into the East Fremantle area, to take advantage of the higher ground to the east of High Street and views to the Swan River and the ocean.

The Gold Boom that followed the discovery of gold at Coolgardie in 1892 brought an influx of population to Western Australia. The population of Fremantle increased rapidly, and residential development of the areas to the east, south, and north of the townsite proceeded apace through the 1890s, and into the first decade of the twentieth century. In 1901, the population of the Municipality was 14,700, a little over half the size of Perth.

Other than High Street, which bears the traditional name for a central street, most of the street names within the precinct honour Governors of the Swan River Colony or members of their families, or people associated with the development of the precinct. Governor Sir Harry Ord (1877-80), who signed the documents setting aside the land for Fremantle Park (1877), is commemorated in Ord Street. The continuation of this street is Hampton Street, in honour of Governor John Hampton (1862-68). Bateman Street commemorates the Bateman family, well known wealthy Fremantle merchants. Knutsford Street was named after the birthplace of Lord Holland, after whom another East Fremantle street was named. The section of Knutsford Street north of Ord Street was formerly Hill Street, as shown on sewerage maps. Post World War Two Sewerage Maps of Fremantle District show the precinct at that period.

City of Fremantle

Ord & Bateman Street Precinct comprises 10-24 Ord Street, 8-14 Knutsford Street, and 1-9 Bateman Street. The majority of the buildings in this group were built in the period 1892-1902, which may be divided into pre Gold Boom (1891-92), Gold Boom (1893-97) and turn of the century periods (1898-1902). Those dating from the pre Gold Boom period, are 20-22, and 24 Ord Street, and 8 and 12 Knutsford Street. Those dating from Gold Boom period are 12, 14, and 16 Ord Street, 14 Knutsford Street, and 1 Bateman Street; and from the turn of the century period, 10 and 18 Ord Street, and 3, 5, 7, and 9 Bateman Street. These places in Bateman Street were all built in the space of three years, 1901-03. For the most part, the places were built as single residences, constructed of limestone and brick with iron roofs, and the majority were 'modest working class cottages'. The houses are either in the Federation Bungalow or Federation Filigree styles.

In contrast with nearby streets, there are several two-storey buildings clustered in Ord Street and nearby at 1 Bateman Street. Of these, 20-22 Ord Street are semi-detached, as are some single storey cottages at 8 and 12 Knutsford Street; and these are the only semi-detached residences in the precinct.

In the pre Gold Boom period, Ivanhoe (c. 1890, demolished 1964), was one of the earliest and the largest residences built on the block. It was built for James Lilly (b. Tasmania, 1845, arr. c. 1877, d. Claremont, 1905), steamboat proprietor, shipping agent and Manager at Fremantle for the Adelaide Steamship Company. Set in large gardens, with stables, cottages, and pigsties, Ivanhoe was described by contemporaries as 'magnificent'. In 1964, Ivanhoe was demolished, and part of the grounds, now 6 Ord Street, at the corner of High and Ord Streets, was developed by Caltex Oil Company as a service station. Ivanhoe Flats, 8 Ord Street, at the rear of the service station, was built by Multiplex in 1968-72. The site of this well-known former residence, which was previously an important element of the streetscape, has not been included in the study area of Ord & Bateman Street Precinct. The flats and service station abut the precinct to the north.

Lionel Holdsworth (b. England, 1826, d. Fremantle, 1900), an expiree, accountant and mercantile clerk, after whom Holdsworth Street is named, owned much of the precinct in the early 1890s. In 1891-92, Hugh Dixson, tobacco merchant, principal of the Adelaide Company, Dixson and Sons Tobacco Factory, purchased a number of lots from Holdsworth, which he proceeded to develop. In 1891-92, two pairs of semi-detached cottages were built for him at 8 and 12 Knutsford Street. As the first occupants were tobacco twisters and the foreman of the tobacco company, it seems likely that they were employed by Dixson, and it is possible that he had the cottages purpose built to accommodate his workers. In 1892, at Lots 2 and 3 of 918, Dixson had built as an investment a pair of semi-detached two storey residences at 20-22 Ord Street in the Federation Filigree style and, in the same style, a two-storey residence at 24 Ord Street. The early tenants were police sergeants from the prison, and superintendents from the hospital, both of which were located nearby.

The residences within the precinct continue to be occupied as single residences, with the exception of 10 Ord Street, which is in use as doctor's rooms. In 2000, a walking guide of four residential blocks was published that included the precinct as block three.

The Heritage Council's documentation contains Management Strategies for the precinct as follows:

There should be no demolition of significant places within the precinct. Ord & Bateman Street Precinct should be protected by the conservation of the existing heritage buildings, street frontages, and gardens, together with careful management of the public domain. The character and intactness of the different elements of the precinct should be conserved and strengthened, and new development should be controlled to retain the heritage significance of the precinct and its diverse components. The need for the evolution of the place should be recognized and change managed to conserve the visual harmony of the precinct.

Physical Description

24 Ord Street (1891-2) completes the suite of two-storey buildings on the Ord Street frontage. It has a low stucco brick and pier boundary wall topped with a timber rail and picket palisade. The garden has terracotta tiled paths, and has rich and dense plantings of Palms, Peppermint Trees, Sheoak, Cypresses, Tea Tree, Oleander, Sugar Gums (Eucalyptus cladocalyx), Olive Trees, and shrubs. The house has a two-storey verandah. It is built in the Federation Filigree style with random course limestone walls and limestone rubble side walls, and stucco quoins and reveals. Most of the masonry is painted. There is a full width two storey skillion roof verandah across the front of the house, supported on barley sugar cast iron posts at ground floor level and square posts at first floor level, with a timber St. Andrew's cross motif balustrade. The columns have Corinthian capitals, and the present frieze is clearly a replacement for an earlier frieze, possibly of cast iron. The windows are double hung sashes, and the doors are paneled with glazed sidelights. The whole place has been conserved in a sympathetic manner and is in good order.

Ord & Bateman Street Precinct comprises 10-24 Ord Street; 8-14 Knutsford Street; and 1-9 Bateman Street.

It is set on a limestone ridge that rises sharply from Ord Street and continues on to become Monument Hill. The houses were all built within the decade between 1892 and 1902. The houses on Ord Street are either substantial duplexes or single residences, while the remainder are modest working class residences, some of which have been greatly expanded in the last decades of the twentieth century. To the north of the precinct the large villa Ivanhoe has been demolished and replaced with Ivanhoe Flats and a service station on the corner of High and Ord Streets. The buildings in the precinct are constructed in ashlar, random coursed and rubble limestone, tuck-pointed face brickwork and stucco, with corrugated metal roofs, with a small number of places having tiled roofs.

Ord Street is a busy road that was formerly a two-way pair and has been altered to a single lane in each direction relatively recently. Fremantle Prison is on the west side of the road beyond Knutsford Street, and most of the houses have views over the prison, to the City, harbour, and ocean.

Knutsford Street rises steeply away from Ord Street and is enclosed by predominantly nineteenth century houses. It has commanding views of the City, harbour, and ocean. The houses on the northern side of the street are closely related in terms of type, scale, and style.



Knutsford St, Street view, Googlemaps, 25/02/2020

IMPACT ASSESSMENT

Statement of Significance

House, 24 Ord Street is included in the precinct listing for Ord and Bateman Street.	
The precinct is rare as an intact group of Federation period residences.	Minor impact
The early owners and developers of the precinct were prominent Fremantle businessmen Lionel Holdsworth (expiree, accountant and mercantile clerk) and Henry Dixson (tobacco merchant).	No discernible impact
The precinct contributes to the Fremantle community's sense of place through its distinctive streetscape.	Minor impact
The houses between 20 and 24 Ord Street have strong landmark qualities as fine two-storey examples of Federation Filligree architecture, accentuated by their location above street level. The precinct contains a rare collection of fine Federation Filigree style residences.	Minor impact
The 2001 addition to 3 Bateman Street is of little significance. There are no intrusive elements.	No discernible impact

Impact on Significance

Aesthetic value	Minor impact	Condition	No discernible impact
Historic value	No discernible impact	Integrity	No discernible impact
Scientific value	No discernible impact	Authenticity	No discernible impact
Social value	No discernible impact	Historical evolution	Minor impact
Rarity	No discernible impact	Streetscape	Minor impact
Representativeness	No discernible impact		

Heritage Impact Comments

1. We have previously considered the original design:

There were many elements of this proposal that were very cleverly designed and were able to be supported from a heritage perspective.

The two elements of concern which it is considered would have a negative impact on the streetscape were:

- the skylight structure
- large blank wall facing the street – midway back and on the Hampton Road side of the house.

2. A revised proposal was then considered:

Overall this revised proposal was able to be supported from a heritage perspective

The reversal of the skylight element to face north is supported.

The change to a flat roof to the front verandah was not supported – this was an integral element of making the new building fit well into the existing streetscape.

3. The current proposal has now been considered and is supported from a heritage perspective. The revised proposal has addressed the above mentioned concerns.

RECOMMENDATIONS:

The current proposal is supported from a heritage perspective. The revised proposal has addressed the above mentioned concerns.

Additional information 4 – Limestone wall heritage assessment

Heritage Comment – Internal – Additional Report

Address:	6 Knutsford Street
Application number:	DA0180/20
Proposal:	New two storey dwelling – Removal of Existing Limestone Wall
Requesting officer:	**Julia Kingsbury**
Date:	**16/09/2020**



6 Knutsford St, Aerial photograph, CoF Intramaps, 28/07/2020



6 Knutsford St, CoF Intramaps, 28/07/2020

INTRODUCTION

The purpose of this heritage comment is to assess the changes to the place that are proposed in DA0180/20 and the affect that they will have upon the heritage values of Address. The proposed changes include:

- New 2 storey dwelling
- Removal of limestone wall to east boundary

HERITAGE LISTINGS

State Register of Heritage Places

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Inherit

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City of Fremantle

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Knutsford St, Street view, Googlemaps, 25/02/2020

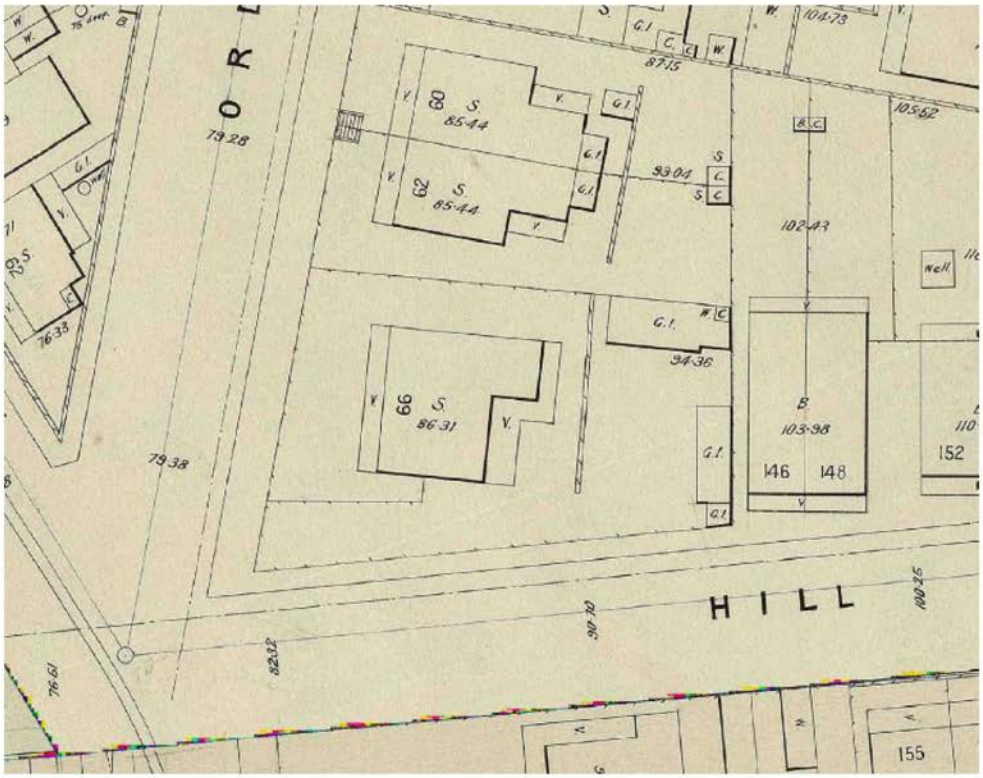
City of Fremantle

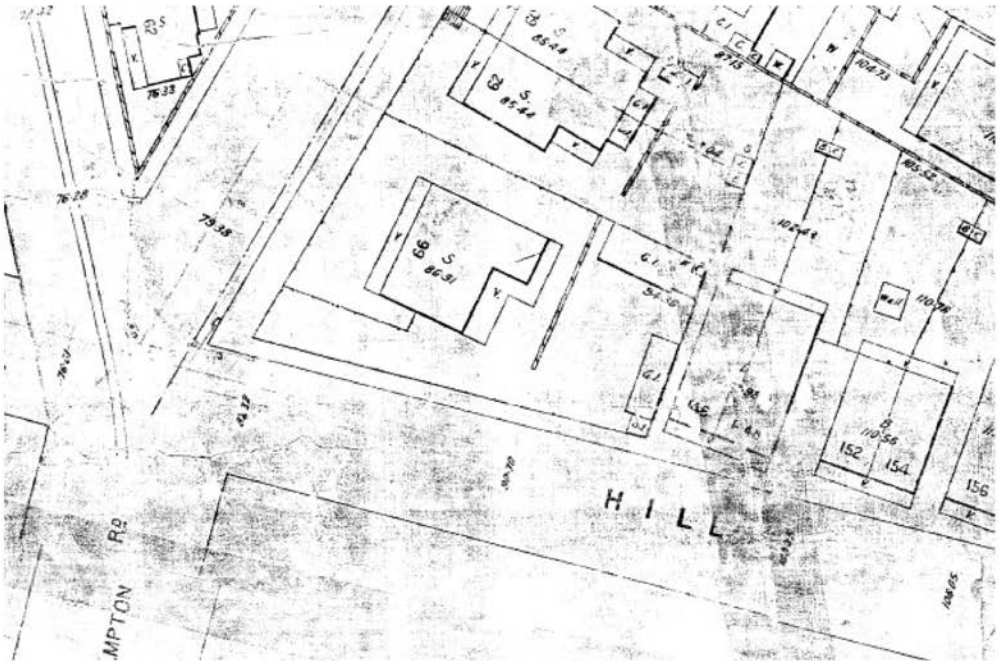
Limestone Wall

Located along the eastern boundary of the site is a 0.8m to 1.2m high rubble limestone wall. This wall appears to have been constructed in various stages and is in various states of condition.

The retaining wall on the east boundary of 6 Knutsford Street has not been identified as a heritage wall in either the HCWA Listing for the Ord Street Precinct or the CoF listing in the Local Heritage Survey (MHI). Other key limestone features are described in these listings including the natural limestone outcrop on which the adjacent duplex on Knutsford Street is constructed.

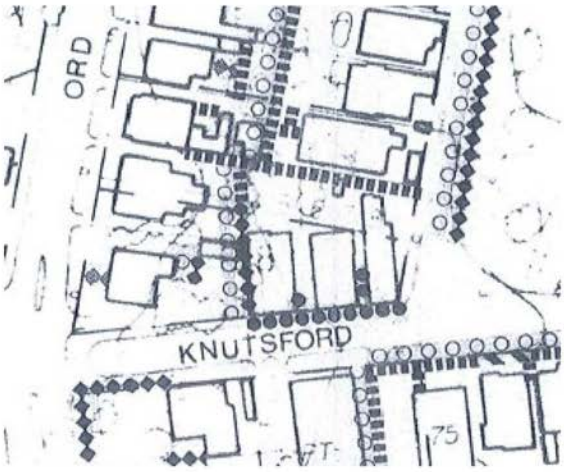
One of the main tools used to date early limestone walls in Fremantle are the historic PWDWA Metropolitan Sewerage Maps. These maps contain a wealth of detail and show the footprint of all buildings and outbuildings on site together with walls, fences and paths. Neither the 1904, 1908 or the 1950s maps show a stone wall on the east side of the site but there is a galvanised iron outbuilding and a timber framed fence on this boundary. See attached snips from these maps.





The Sewerage Diagrams indicate two galvanised iron sheds and a timber fence line along this boundary but does not indicate a limestone wall.

Most of the limestone features listed in our MHI were identified in the 1986 report "19th Century Limestone Walls and Steps in Fremantle". This report used historic maps and site inspections to compile a list of limestone features that helped contribute to Fremantle's distinctive character. This report identifies two features running along the east boundary of the site, a limestone wall of later construction and a retaining wall. It does not date the wall but it does indicate that the wall is NOT an original wall and dates to sometime after 1910.



the term "original wall" refers to the walls approx. before 1910 in the west-end and central areas, 1913 in the south area and 1904 in the eastern and north frem. areas

LEGEND

- original wall
- original wall built over or possibly incorporated in other building
- wall partially or completely replacing the original one
- wall or part of wall of later construction (date undetermined)
- remnant of building wall
- steps
- rock cliff face
- retaining wall
- delapidated state

"19th Century Limestone Walls and Steps in Fremantle".

The Local History Collection provides no information on a wall on the east boundary. The four tiered garden layout with limestone walls on this lot was constructed in 1996. Historic Aerial photographs of the site are not clear enough to see the east retaining wall or more recently this part of the site is obscured by trees, however the 1975 aerial photography does that the galvanised iron shed was still extant.

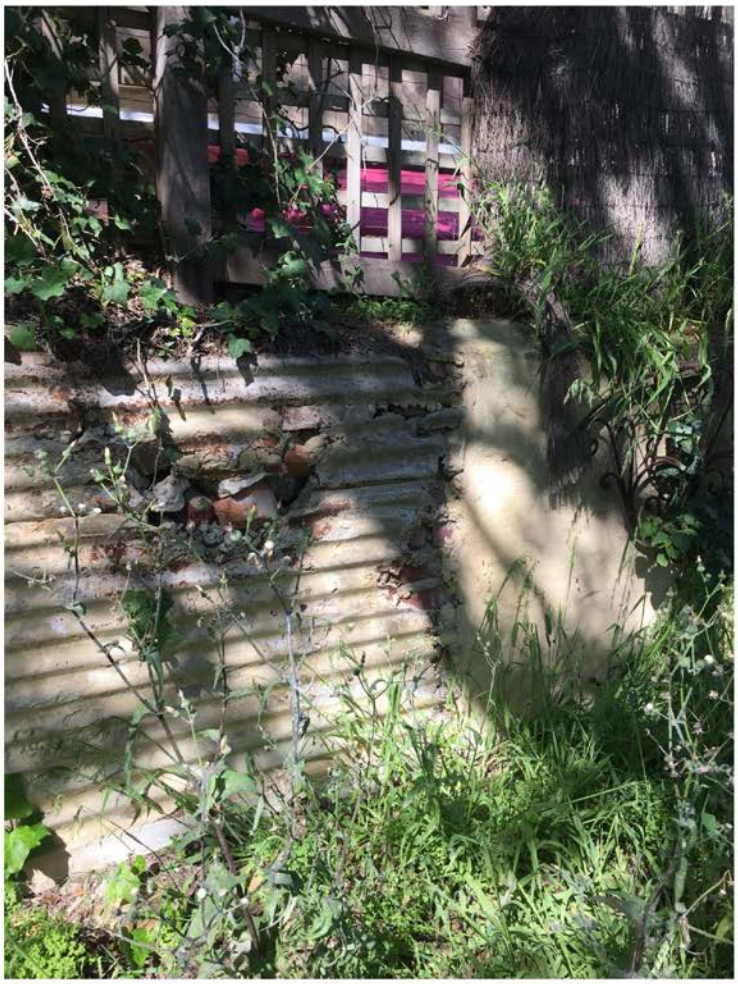
The site was inspected on the 15 September 2020 to view the extant limestone wall. The wall is in a poor condition with significant bows and miss alignment of the wall, large trees and roots growing through the wall, cement mortar and render patches, acrylic paint and rising damp degradation. There are also some sections of brick and corrugated iron infill.



City of Fremantle Heritage Officer 15 September 2020







City of Fremantle



City of Fremantle



IMPACT ASSESSMENT

Impact on Significance – Limestone Wall

Aesthetic value	Minor impact	Condition	No discernible impact
Historic value	No discernible impact	Integrity	No discernible impact
Scientific value	No discernible impact	Authenticity	No discernible impact
Social value	No discernible impact	Historical evolution	Minor impact
Rarity	No discernible impact	Streetscape	No discernible impact
Representativeness	No discernible impact		

City of Fremantle

Heritage Impact Comments – Limestone Wall

1. We have researched and considered:

    - HCWA Listing for the Ord Street Precinct
    - CoF listing in the Local Heritage Survey (MHI)
    - Historic Aerial Photographs
    - Historic PWDWA Metropolitan Sewerage Maps
    - 19th Century Limestone Walls and Steps in Fremantle
    - Local History Collection – Property File
    - Site Visit 15 Sept 2020

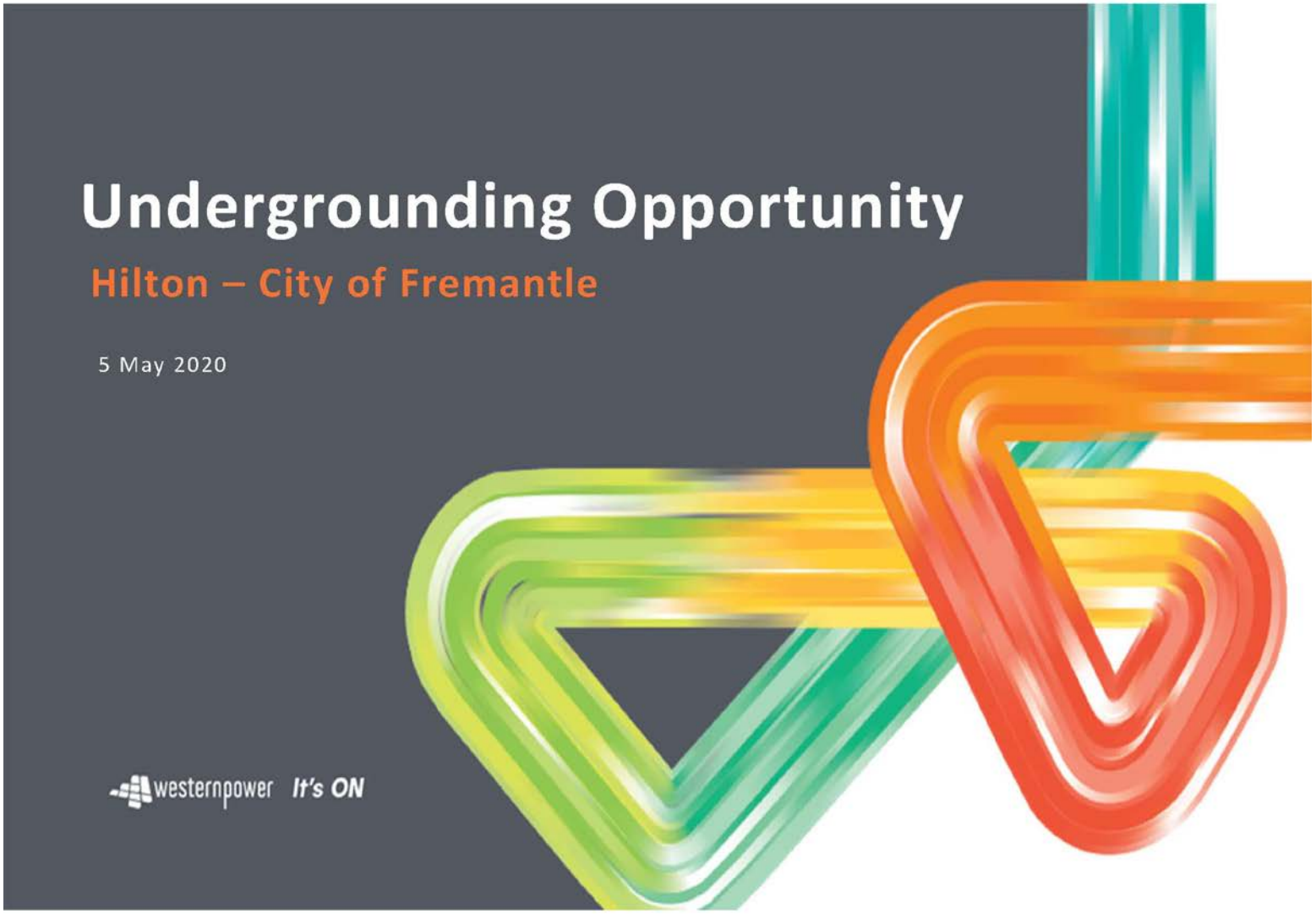
2. It is considered that the wall likely dates between 1975 – 1986.
3. It is considered that the removal of the wall can be supported from a heritage perspective.:
    - given the later date of construction,
    - the patchy nature of the wall,
    - later poor repairs with cement mortars and renders that would require removal,
    - the poor condition of sections of the wall, and
    - the further loss of wall elements when the vegetation growing through it is removed.

RECOMMENDATIONS:

The current proposal to remove the limestone wall is supported from a heritage perspective. The applicant is encouraged to reuse the limestone in an appropriate manner within the new development.

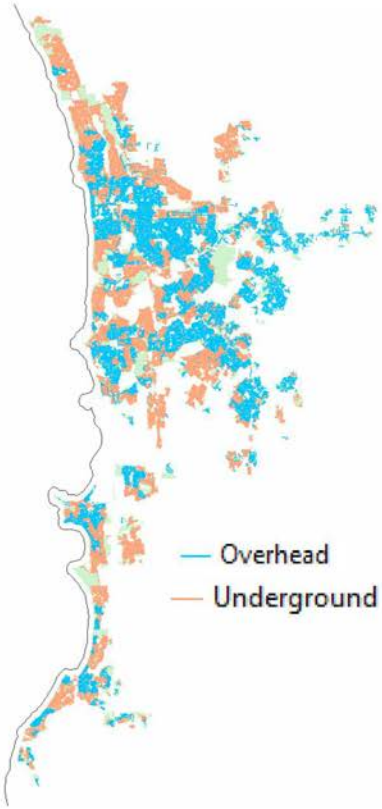
FPOL2010-11 HILTON UNDERGROUNDING POWER PROJECT

Additional information – Western Power Presentation – Undergrounding Opportunity in Hilton, City of Fremantle

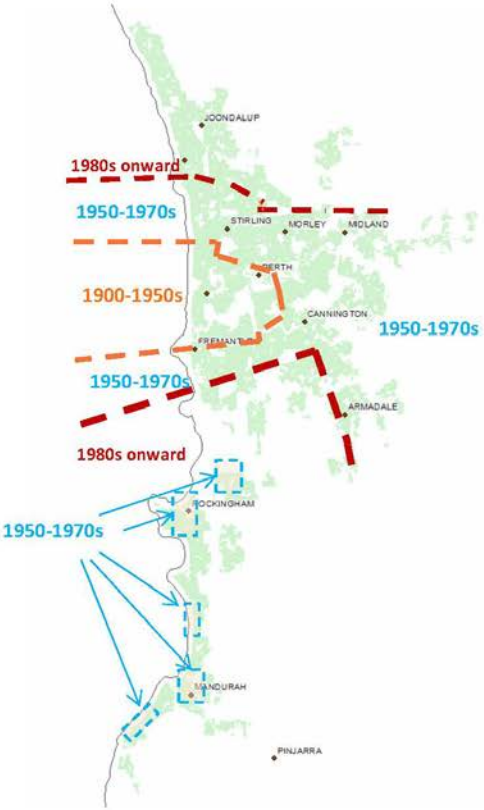



Background to underground power

Western Power's Network



- Many of the oldest suburbs established in the 1900s-1950s were undergrounded by the State Underground Power Program between 2000 and present day.
- A lot of older inner city suburbs are still served by overhead networks. They were establish in the 1950s to early 1970s.
- Most of the outer suburbs established after 1980s were undergrounded by the Urban Residential Development program.



Key benefits of underground power

- Improved public safety
- Improved reliability and security
- Improved street appearance
- Increased property value
- Reduction in street tree pruning
- Lower life-cycle costs
- Improved opportunity for emerging technologies




Funding Models

Undergrounding Programs

Program type	Project selection		Funding		Likely LGA cost comparison (per property)	Is Network renewal required?
	By	Criteria	Contributor	Method		
SUPP	Underground Power Steering Committee (EPWA)	▪ Local government contribution 50% or above ▪ Network renewal requirements ▪ Community support above 50%	LGAs WP State Gov't	LGA 50% or above	Mid ($3k-$9k)	Maybe - Variable
				Western Power avoided costs		
				State Government to fund remainder		
Customer Funded	LGA	▪ Local amenity ▪ Community consultation	LGAs	Project costs (balance)	Most ($4k-$10k)	Maybe - Variable
			WP	Avoided costs		
WP's Network Renewal Underground Program Pilot	WP	▪ WP network renewal requirements	LGAs	Project costs (Opex)	Least ($1.5k -$2.5k)	Yes - maximised
			WP	Project costs (Capex)		

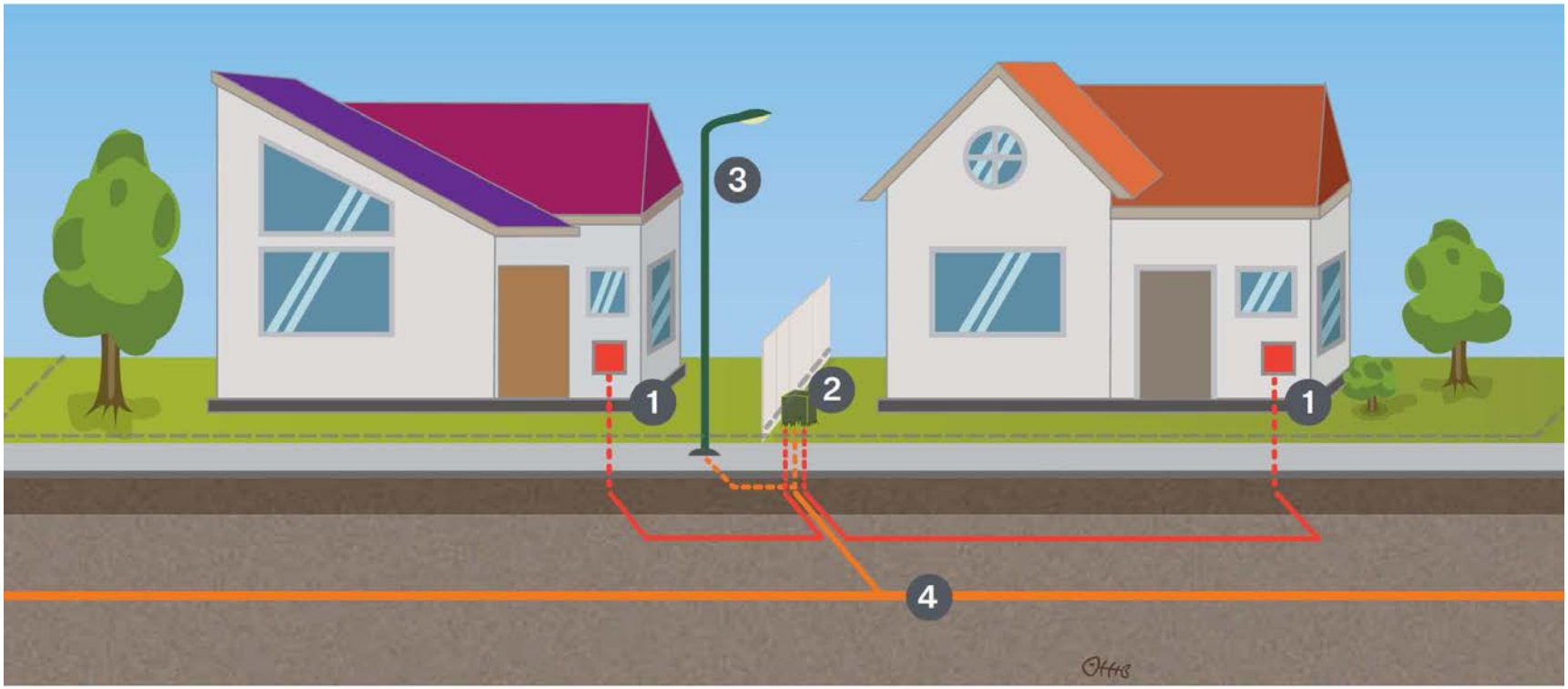
Network Renewal Underground Program Pilot

- Current undergrounding programs underway result in improving cost competitiveness
- It is more efficient for Western Power to replace overhead assets with underground assets in the four pilot areas
- Given the condition of the network, renewal & maintenance work **will** be carried out in the area either way (ie. overhead or underground)



Funding Model

- Local Government Authorities (LGA's) will be requested to fund the Operating Expenditure portion of the works (1 – residential consumer mains)
- Western Power will fund the Capital Expenditure portion of the undergrounding works that includes all of Western Power's infrastructure (2,3,4)



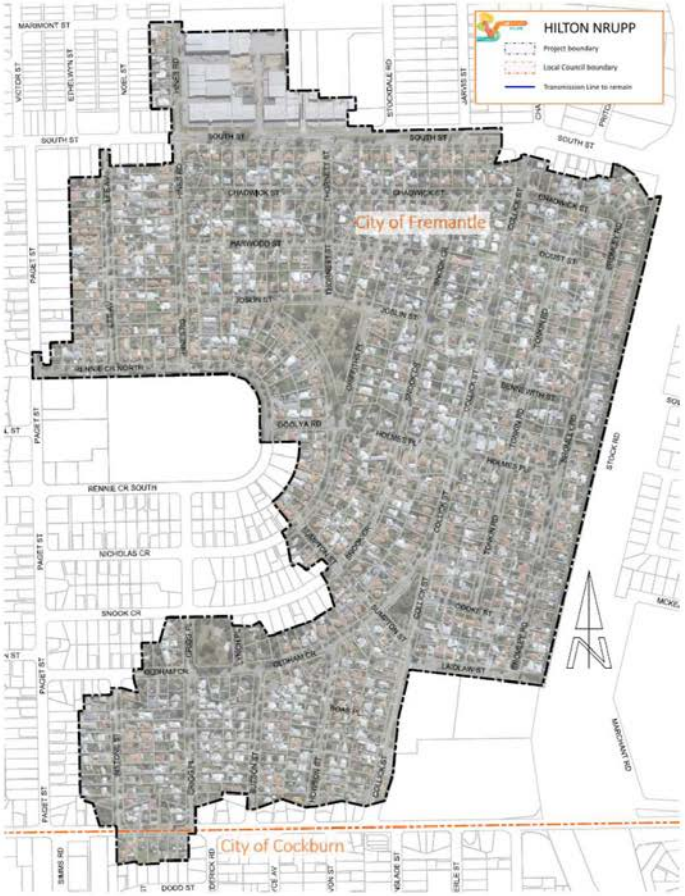
Current Pilot Opportunities




The proposed project in Hilton

Proposed Project Boundary – Hilton

Project boundaries are determined by the age & risk profile of the overhead assets in the area



Co-Funding Agreement

Western Power is planning to approach the project funding as follows:

1. WP and City of Fremantle to sign a Memorandum of Understanding (MoU) outlining the relative intention of both parties
2. Western Power have commenced the detailed design and will prepare a Business Case for approval
3. Post community consultation it is intended that Western Power and the City of Fremantle will enter into a Co-Funding Agreement where the Parties will agree to participate in and financially contribute to the Project
4. Western Power will initiate a tender process and enter into a construction contract post completion of detailed design



Indicative Timeline

- The project will be in planning phase for approximately 10 months followed by approximately 13 months of construction



Stakeholder Communication Plan

- Western Power and LGA websites will be updated with key messaging for the community and residents
- Start-up newsletter/brochure information
- undergroundpower@westernpower.com.au or Western Power call centre
- Resident engagement will proceed during the detailed design stage including;
  - Community council meeting
  - Customer consultation process
- Frequently Asked Questions FAQ's established



SPT2010-4 WATER CONSERVATION STRATEGY REVIEW AND NEW ACTION PLAN

ADDITIONAL INFORMATION:

1. Water Conservation Strategy (Aug 2013)

The City of Fremantle

Water conservation strategy

August 2013

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Executive Summary

A key imperative of the City is to reduce water reliance by actions such as providing incentives for residents to reduce water consumption and to implement staged water management actions for all City of Fremantle properties and recreation areas, with clear targets for reduced water usage and improved water health in accordance with the State Water Strategy.

The purpose of this Water Conservation Strategy report is threefold:

1. Provide background knowledge on the current and projected water resource situations in the City of Fremantle:
2. Identify and publicise strategies, plans and actions that the City of Fremantle has accomplished and is planning to enact: and
3. Outline additional strategies that the City can investigate to progress water conservation and water quality goals.

The City involvement with the ICLEI – Local Governments for Sustainability Water Campaign has also had a strong influence of in the structure of this Report and production of the 2013 Water Conservation Action Plan and the City's involvement in the One Planet Living program.

This report was endorsed by Council on 28 May 2014.

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1. Introduction

The City of Fremantle (CoF) through the 2010 to 2015 Strategic Plan outlined that it has a strong focus on providing environmental leadership for the benefit of current and future generations. The City acknowledges that sustainable management practises of our water resources are vital to the future health of our community.

The Water Conservation Strategy provides the key elements to how the City of Fremantle will work alongside the Fremantle community and other stakeholders to provide tangible and long lasting water conservation actions and provisions to ensure the maintenance or improvement of the health of fresh water resources, that is, the water sources from aquifers and rain catchments including our iconic Swan River.

The strategy brings together the initiatives the City has committed to through engagement in the ICLEI – Local Governments for Sustainability Water Campaign™ and the City of Fremantle Water Conservation Plan 2009, which superseded the CoF Water Conservation Plan 2007/2008 and was updated in response to the Department of Water's State Water Plan 2007.

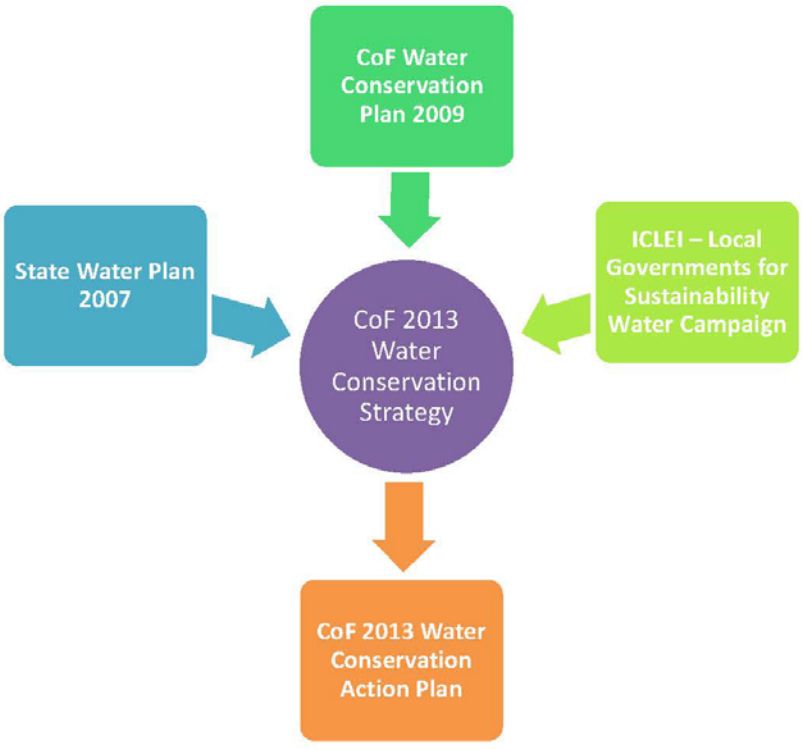


Figure 1 - Strategy inputs

2. City of Fremantle Water Conservation Strategy Aims

GOAL

The City of Fremantle's goal is to sustainably preserve the health of water resources so that the aesthetic and functional amenity of the City can be maintained for future generations to utilise and enjoy.

PURPOSE

The Purpose of the City of Fremantle 2013 Water Conservation Strategy is to enable water to be conserved and water quality to be maintained or improved while preparing for future water challenges through policy development, effective communication and implementation of actions.

AIM

To encourage the pursuit of the Water Conservation Strategies the City will strive to achieve:

- The ICLEI Water Campaign Milestones;

- The Department of Water Ground Water Targets; and

- The One Planet Action Goals.

Through analysis of the current state of water needs, issues and management practises and based on the Water Conservation Aim, the City has developed a set of Action Goals and a new plan of action, detailed as the City of Fremantle 2013 Water Conservation Action Plan, that will address requirements from the Department of Water, while developing the 2nd and 3rd Milestones for the ICLEI Water Campaign™.

This 2013 Water Conservation Strategy additionally outlines areas where future investigations could take place to progress water conservation and improvement of water quality.

3. Analysis of Current Water Issues

3.1 Australia

Australia is the driest inhabited country in the world making water conservation a critical topic for discussion and planning for authorities. The average yearly rainfall is less than 600 millimetres for more than 75% of the country, with places like the south west of Western Australia's rainfall significantly reduced in recent decades.

3.2 Western Australia

Our population in Western Australia increased from 2.35 million to about 2.8 million between 2001 and 2011, making it the most rapidly growing state in Australia. WA's 24% population increase was well above the Australian growth percentage of 15% during this period (ABS 2011). WA's water demand trends during the last century mirrors the population growth patterns. From 2000 to 2008, the rate of water use increased on average by 3.87% annually (Department of Water 2010, p. 3).

Climate change projections in the upcoming years further justify the need for multifaceted, interdisciplinary, and integrated water conservation strategies. The south western regions of Western Australia are projected to experience further reduced rainfall as a result of global climate change. The influence of this decline will be far reaching; affecting residential, industrial, agricultural, and governance sectors of WA (Water Corporation 2009). Perth is one region whose water demands are expected to be most affected by climate change, along with the Greenough, Moore, Peel and Preston regions (Thomas 2008, p. 13).

3.3 Perth

Perth exhibited the most rapid population increase of any Australian capital city between 2001 and 2011, growing by 26%, or 380,100 individuals (ABS 2011). This growth is projected to continue in the near future. Of all the capital cities, Perth is expected to increase by a 1.6% annual rate between 2008 and 2051 – growing from 1.6 million to 3.2 million in 2051 (ABS 2010).

The graph below indicates the gap between water supply and demand to 2060 in Perth and can be found in the Water Corporation's October 2009 report, *Water Forever: Towards Climate Resilience.*

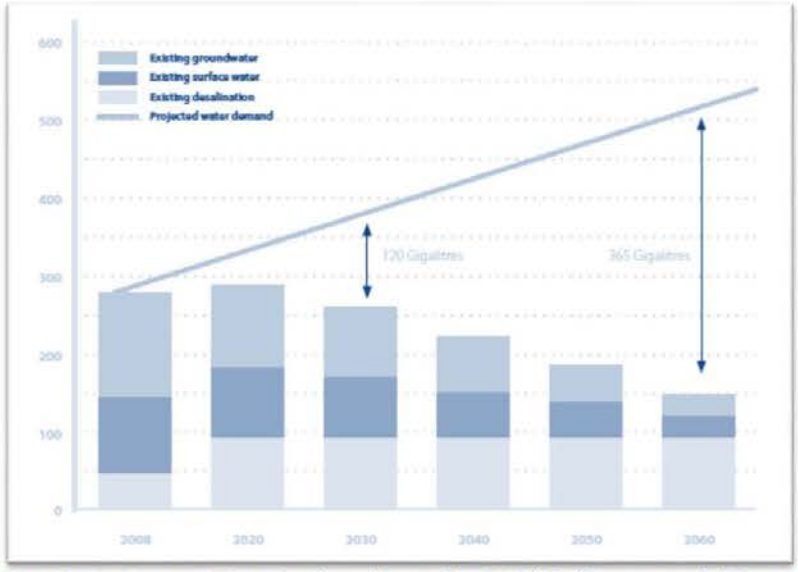


Figure 2 - Gap Between Water Supply and Demand to 2060 (Gigalitres per year) (Water Corporation 2009, p. 7)

Water availability in Perth has been labelled as the most challenging of future water supply and demand scenarios (Thomas 2008, p. 14). Even in "low growth" population projections, the Perth area is expected to be in a water shortage by 2020 with existing groundwater, surface water, and desalinisation sources (Department of Water 2010, p. 4). The graph below from the Department of Water indicating ever decreasing average yearly inflow into Perth dams since the 1970s reiterates this projection.

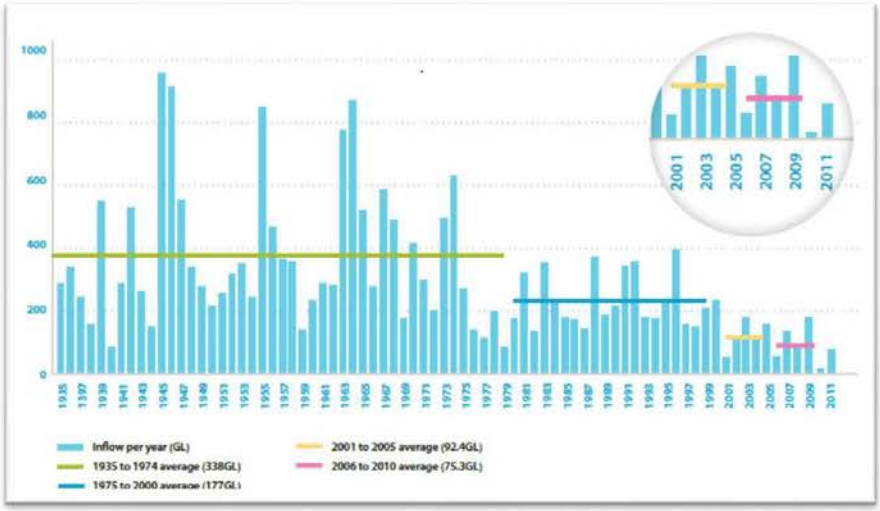


Figure 3 - Historical Annual Stream flows into Perth Dams (Gigalitres per Year) (Water Corporation 2011, p. 4)

3.4 Fremantle

The City of Fremantle (CoF), located only 20 km south west from Perth city centre at the mouth of the Swan River, includes the following suburbs: Beaconsfield, Hilton, North Fremantle, O'Connor, Samson, South Fremantle, and White Gum Valley.

The City is a predominantly residential area, with substantial maritime and industrial areas and some commercial and tourist land use and includes Western Australia's major commercial port, handling the majority of the State's imports and exports. Fremantle encompasses a total land area of about 19 square kilometres, including significant river foreshore and coastline. Fremantle is named after Charles Howe Fremantle, Captain of the HMS Challenger which arrived in the area in 1829.

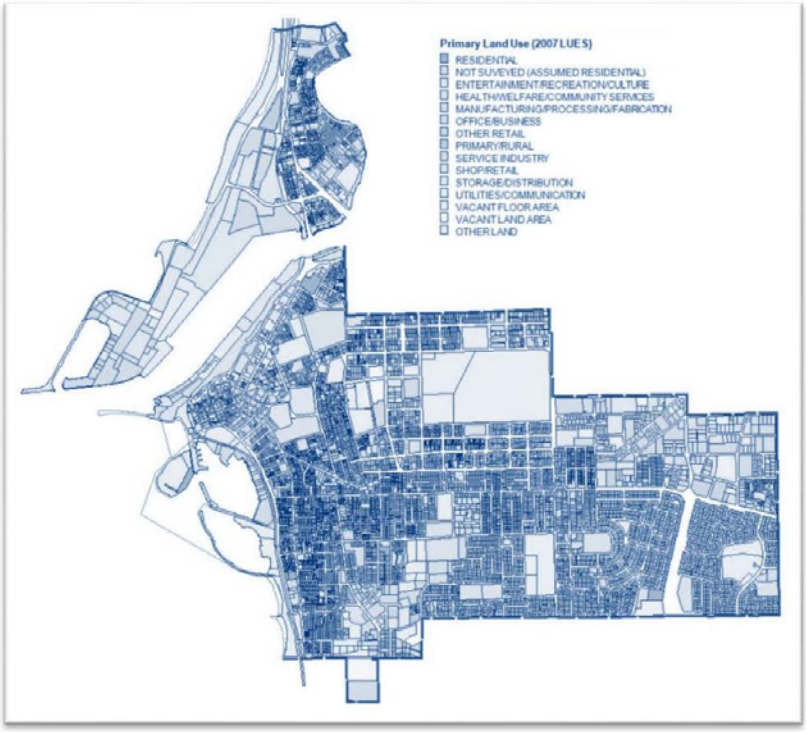


Figure 4 - City of Fremantle Map (COF IntraMap System 2012)

In 2001, estimated resident population was 25,710 individuals. The Australian Bureau of Statistics (ABS) estimated there were 28,626 people in 2010 in Fremantle LGA – so there was an increase of 2,285 in population in 4 years, which equals a 9.2% growth in population. According to the Australian Bureau of Statistics as of 2012, Fremantle has a population of 28,626 individuals.

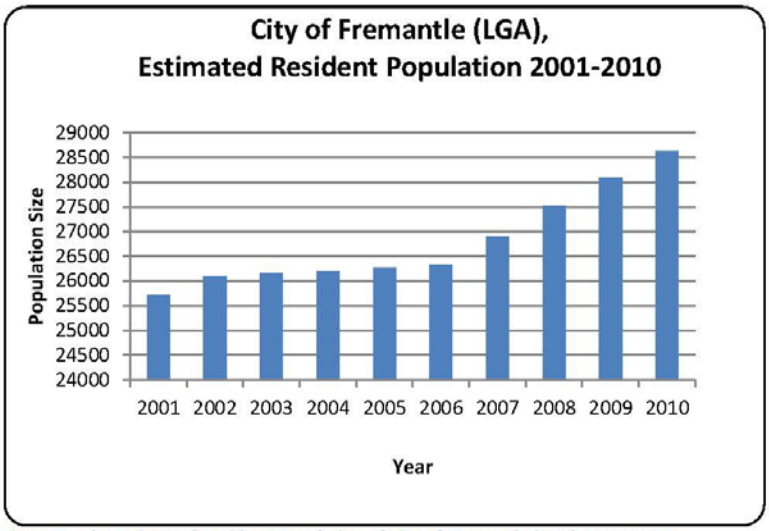
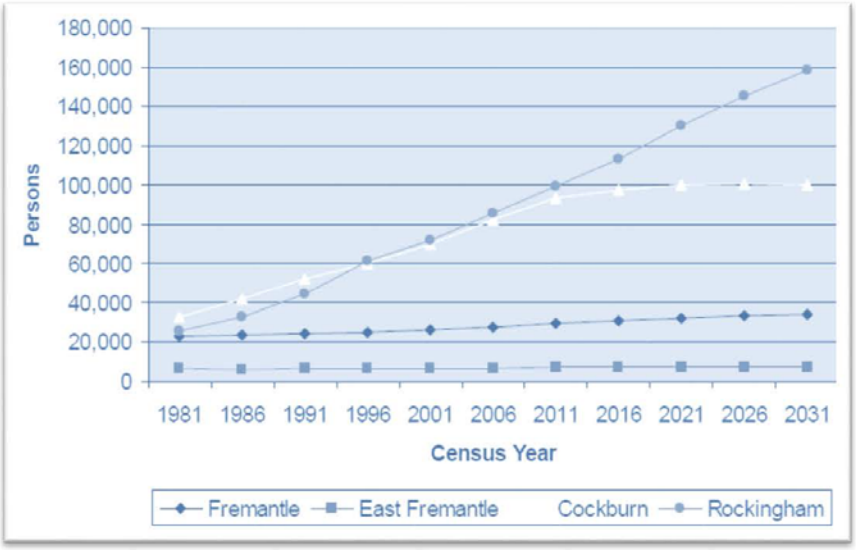


Figure 5 - The Estimated Resident Population of City of Fremantle (LGA), 2001-2010

As can be seen in the graph below, Fremantle's population is not projected to drastically increase over the next few decades relative to other local government areas, staying below 40,000 people. However, even with limited growth, the issues surrounding limited water availability in the future are relevant to the City of Fremantle due to its close vicinity to Perth.

Figure 6 - Population Projection for Fremantle and Surrounding LGAs (1981-2031) (Data Analysis Australia 2004)



3.5 Other Local Governments

What are other local governments doing?

Local Government Authorities (LGAs) throughout WA and Australia are already taking significant steps to combat water scarcity in the coming years. Strategies are numerous and range greatly in scope, cost, and target audiences. Some examples of practices already implemented include behaviour change campaigns, community awareness demonstrations, technology introductions, and informed planning. The City of Fremantle can learn from the successes and challenges of others. Summarised below are a selection of local case studies.

City of Subiaco's "Think Water!" Information Kit

Subiaco developed a complete local action water conservation plan in 2008. One especially novel aspect of their strategy was the "Think Water!" educational campaign. This is an informational toolkit distributed to businesses and community members. It consists of small, doable, water-conserving strategies and necessary tools. Subiaco was commended for this initiative and was given the Water Conservation award at the Australian Sustainable Cities Awards in November of 2011 (Department of Environment and Conservation 2011).

City of Stirling's Water Smart Parks: Irrigating Parks and Gardens Efficiently

The City of Stirling exemplifies effective management of parks, reserves, and other public open spaces. This is accomplished through efficient strategies such as ecozoning and hydrozoning. Additionally, the City of Stirling has installed effective technologies such as irrigation system retrofits, "soil moisture probes," and inclusion within an enclosed watering circuit (ICLEI 2008).

Town of Cottesloe's Groundwater Restoration Project

Started in 2006, the focus of Cottesloe's groundwater restoration project was to restore the town's primary aquifer through a four year strategic plan. This plan exemplifies the use of new technologies (underground treatment tanks, below-ground sumps, and stormwater kerbside soak pits) and community education campaigns. For this project, the Town of Cottesloe received a 2007 WA Water Award for *Management of Water Resources by a Small Organisation* (ICLEI 2008).

4. ICLEI - Local Governments for Sustainability

4.1 Background of ICLEI

Founded in 1990, ICLEI-Local Governments for Sustainability is a non-profit consortium of more than 1,200 local, regional, and national governments dedicated to pursuing and implementing sustainable development. ICLEI provides member support and facilitates valuable networking between governments, thus propelling and strengthening current sustainability related initiatives (ICLEI 2008). There are 127 local government councils throughout Australia currently participating in the ICLEI conglomerate; 42 from Western Australia. The City of Fremantle joined the ICLEI-Local Governments for Sustainability at the end of 2008.

The Water Campaign™

> "The water campaign is an international freshwater management program that builds the capacity of local government to reduce water consumption and improve local water quality" (ICLEI 2008).

Due to Australia's great variation of water sources that are influenced by climatic fluctuations it understandably becomes a necessity to have local responsibility when considering water management. ICLEI created the Water Campaign™ as a template framework for local governments worldwide. This framework provides support and resources from ICLEI and existing members who have experience in the Water Campaign and sets benchmark goals for local government water strategy trajectories.

The two primary and overarching focuses of the Water Campaign™ are water quality and water conservation. These headings are further divided into corporate and community sectors. ICLEI's Water Campaign™ benchmark program is comprised of the following milestones:

- Milestone 1: Perform a water consumption and water quality audit.
- Milestone 2: Determine targets to decrease water consumption and to improve water quality.
- Milestone 3: Create and implement a local water action plan.
- Milestone 4: Apply policies and strategies with the goal of integrated water use management. Quantify the benefits that result.
- Milestone 5: Monitor and make public water consumption and water quality progress.

The City of Fremantle achieved Milestone 1 of the corporate and community module of ICLEI's Water Campaign™ in January of 2012. To achieve this, the City developed a summary of water use by council actions. The City also completed a water quality checklist to

determine the most effective practices to adopt to improve water quality in Fremantle. On 2 August 2012 Fremantle Mayor, Dr. Brad Pettit, accepted the Milestone 1 award.

The Water Campaign™ Milestone 2 targets will be established in this strategy using the baseline data established through the Milestone 1 water consumption and water quality audit and the Milestone 3 Local Water Action Plan is incorporated into the City of Fremantle 2013 Water Conservation Action Plan.

4.2 Milestone 1 Water Consumption and Water Quality Audit Summary

Records indicate that in 2012 there were 28,626 (ABS 2012) people in City of Fremantle, consuming 4,111,937kL of water, resulting in 143.6kL of water use per capita. The main sources of water for the community and council are groundwater and scheme water. In the City of Fremantle LGA, water use can be divided into 86.8% groundwater and 13.2% scheme water.

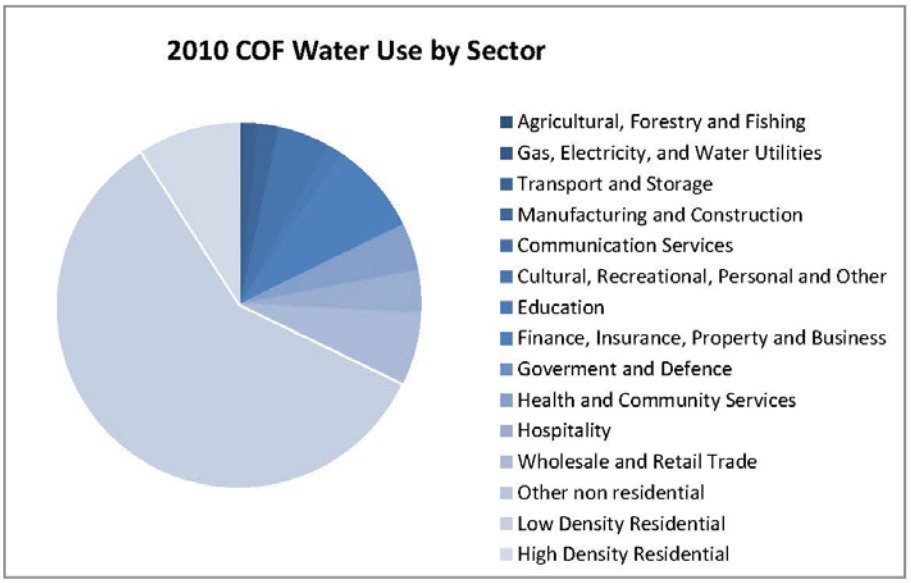


Figure 7 - City of Fremantle Water Use by Sector, 2010

Corporate versus community water usage

To better organise an effective water strategy for the City of Fremantle, and in accordance with the ICLEI Water Campaign™ module format, the water plan is divided into corporate and community objectives.

- Corporate: refers to the water usage activities within Council operations. This includes City of Fremantle buildings, parks, recreation fields, reserves and public verges.

Corporate water is primarily **bore water**, or groundwater, pumped from major aquifers in the Fremantle area to irrigate CoF properties. **Scheme water**, managed by the Department of Water, is mainly used in COF buildings.

- Community: refers to the water usage activities of residential and private sectors.

Community water use is primarily **scheme water**, managed by the Department of Water and piped from dams.

Corporate Inventory Outcomes - Water Conservation

The Corporate Inventory included collecting and organising data relating to scheme water consumption within the City of Fremantle. The data was categorised by type of facility and aggregated to create a series of reports, examples of which are provided below.

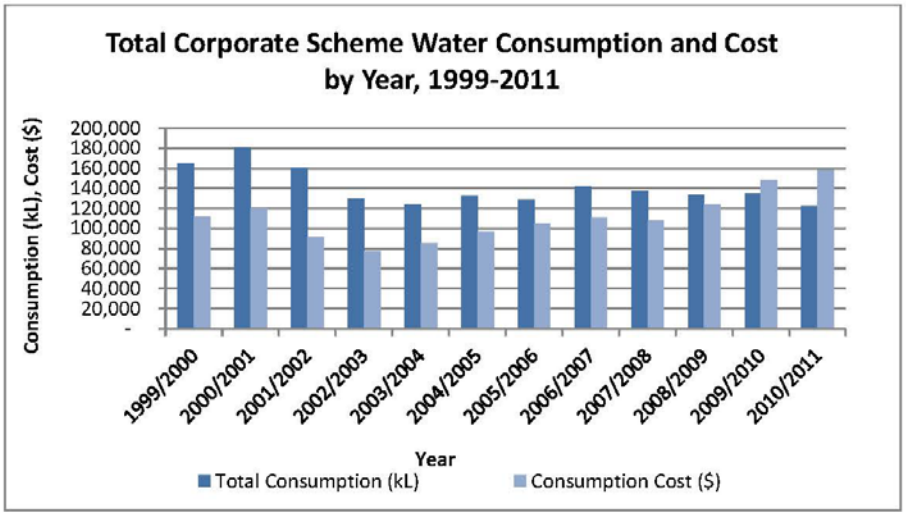


Figure 8 - Total Corporate Scheme Water Consumption and Cost in COF by Year, 1999-2011

The baseline figure for targets in Milestone 2 will be the latest figures:

2010/2011 Total Consumption:	**122,578 kL**
2010/2011 Consumption Cost:	**$ 158,209**

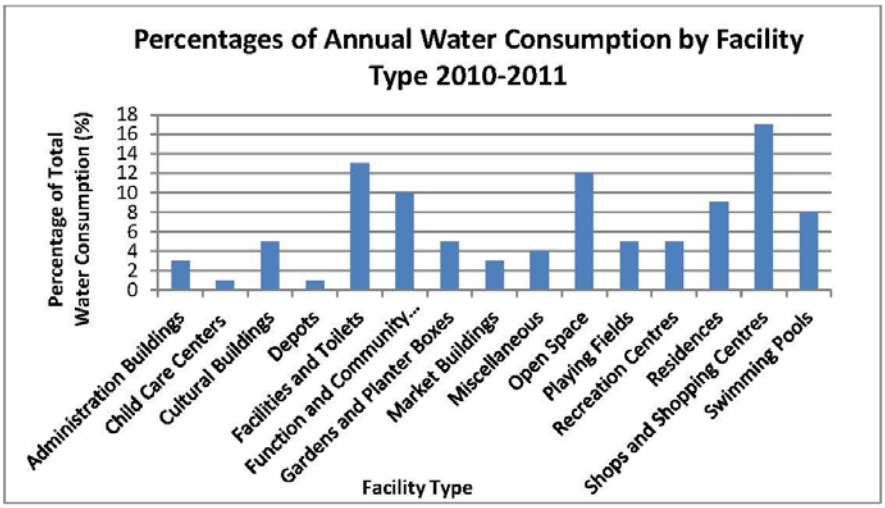


Figure 9 - Percentages of Annual Water Consumption by Facility Type, 2010-2011

Community Water Conservation Analysis

The Water Corporation provided community water consumption data aggregated by suburbs, ANZSIC category, sector and density. This data was analysed through the completion of the ICLEI Water Campaign™ Community Workbook. A summary of the results of this analysis is presented below.

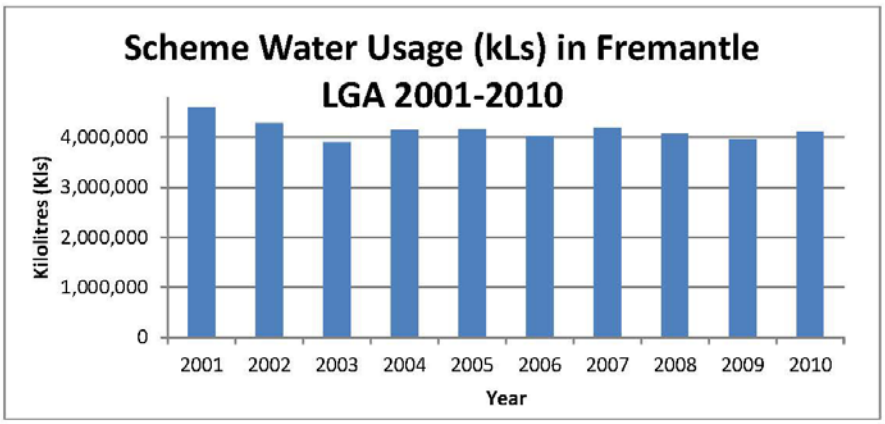


Figure 10 - Scheme Water Usage (kLs) in Fremantle LGA, 2001-2010

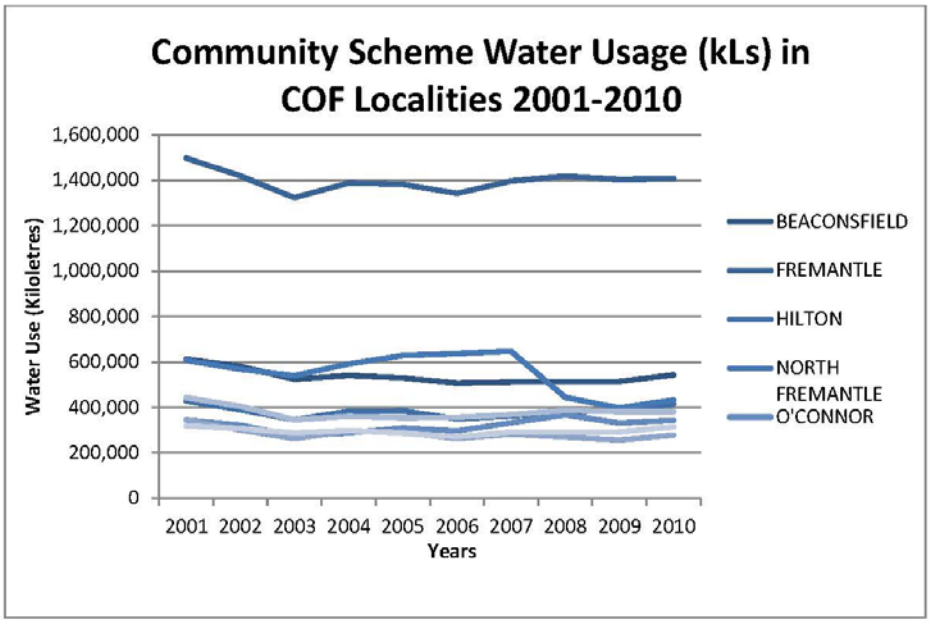


Figure 11 - Community Water Usage (kLs) in COF Localities, 2001-2010

Water Quality

Further in the process to achieve Milestone 1 the City examined 7 key water quality management areas relating to corporate and community actions and identified gaps and proposed 3 priority areas for each.

Corporate Water Quality

City of Fremantle has identified the following priority areas for the management of water quality impacts of the City's operations:

- Sediment control
- Nutrient management
- Gross Litter and Pollution Management

Community Water Quality

City of Fremantle has identified the following priority areas for the management of water quality impacts for the community:

- Waste water management
- Ground water management
- Gross littler and pollution management

5. The Western Australian Department of Water (DOW)

The State Government Department of Water manages the state's water sources. More than 80% of WA's water goes towards "irrigated agriculture, mining, services, industry, and parks" (Department of Water 2012).

The Department of Water continues to take steps towards addressing water resource conservation. Strategy plans are outlined in the 2003 publication entitled 'Securing our Water Future: A State Water Strategy for Western Australia'. This plan was updated in the Government of Western Australia report, 'State Water Plan 2007'. The plan suggests that Western Australia implement key actions including:

1. Use and recycle water wisely
2. Plan and manage water resources sustainably
3. Invest in science, innovation and education
4. Protect ecosystems, water quality and resources
5. Enhance the security of water for the environment and use
6. Develop water resources for a vibrant economy
7. Deliver services for strong and healthy communities

(Government of Western Australia 2007, p. 5)

In 2010, the Department of Water created a strategic five year plan for water conservation in Western Australia through to 2015. The goals highlighted in this roadmap to water conservation are as follows:

Goal 1: Water needs for population and economic growth are met now and for the future.

Goal 2: Western Australia has contemporary and adaptive water management.

Goal 3: Western Australia exceeds national standards in water efficiency and demand management.

Within this framework, the Department of Water has formulated specific action steps to achieve these goals. The plan's proposed actions are multifaceted in discipline; overlapping in areas of policy, science and technology, behaviour change, infrastructural change, and partnerships, among others (Department of Water 2010, p. 3).

*The full Department of Water Strategic Conservation Plan 2010-2015 can be found at **http://www.water.wa.gov.au/PublicationStore/first/97029.pdf**.

6. City of Fremantle Water Conservation Previous initiatives

2009 Water Conservation Plan

Water Conservation Plan
As part of the Department of Water's ground water conservation efforts, each Local government Area within the Perth metropolitan area was asked to prepare and submit a Water Conservation plan to the Department by the 30th of June [2008]. The plan aimed at giving the DoW and the LGA up to date information on each areas groundwater use, something that has not been previously monitored.

The City has 3 licenses covering all of the parks and reserves within the city that do not use scheme water.

The City of Fremantle has a licensed allocation of 671250kl per year; we have estimated our usage for 07/08 to be approximately 723981kl. We have therefore used approximately 53000kl more than we are licensed (and therefore legally allowed to) there are also a number of bores that the city administers that we did not have licenses for. The water conservation planning process has allowed us to identify these bores and license applications have now been submitted to rectify this situation The use of scheme water for irrigation is widespread within the city. We have committed to monitoring all potable water use within areas under the cities management as part of the cities water conservation plan.

Issues and Objectives:
Issues

1. The COF is currently overusing its groundwater allocation, steps need to be put in place to rectify this situation.
2. There are currently sites where water use is not under the administration of the City of Fremantle (CoF), yet are on CoF's groundwater license i.e. Fremantle oval and Fremantle public golf course.
1. 2a.
2. Saltwater intrusion into the superficial aquifer within the North Fremantle area limits use.
3. Current irrigation systems are old and efficiency and effectiveness is questionable
4. Current manual control of the operation of the irrigation systems is impeding improved management strategies.
5. There is a need to develop a drought contingency plan.
6. Increased water demand from the future developments such as Leighton Parklands will require new landscape guidelines and practices.
7. Managing community expectations for the provision of quality green spaces.
8. The allocation of sufficient funding to undertake water conservation objectives, particularly reticulation system upgrades.
9. Accuracy of all data sets needs to be improved.

Objectives

1. Lead the community by example when it comes to water conservation.
2. To reduce groundwater use from current levels to 10% less than the licensed allocation over the next five years.
3. Undertake a review of all Public Open Space and irrigated areas under the CoF's control and identify areas where water savings can occur.
4. Monitoring and manage all potable water use under the City of Fremantle's (CoF) control.
5. Conform to current Best Management Practices when developing / redeveloping irrigated areas.
6. Develop a Drainage Strategy that endeavors to recharge drainage water to ground water aquifers.
7. Communicate the CoF's water conservation aims and objectives to the community.

The City of Fremantle's 2009 Water Conservation Plan was organised in the following sections:

6.1 Water Conservation Action Strategies

6.1.1 Irrigation System Performance Strategy
6.1.2 Irrigation Maintenance Strategy
6.1.3 Hydrozoning and Ecozoning strategy
6.1.4 Water Budgeting Strategy (ground and scheme; corporate and community)
6.1.5 Communications Strategy (corporate and community)
6.1.6 Park Development Guidelines
6.1.7 Drought Contingency Plan
6.1.8 Alternative Water Supply Development Strategy

Water Conservation Actions Implemented by The City of Fremantle has already accomplished various water conservation initiatives. These initiatives are recorded below:

Strategy area	Completed Action
Irrigation Maintenance	Achieve a distribution uniformity audit across all irrigation systems.
Irrigation Maintenance	Achieve flow and pressure tests across the entire COF's bores.
Hydrozoning and Ecozoning	Assigned water categories to all parks in conjunction with updating irrigated area data.
Water Budgeting	Installed flow metres on all bores.
Staff Training	Developed a training and accreditation program for irrigation staff.

6.2 Water Conservation Current Actions

The City of Fremantle is currently in the process of completing the following actions to meet the water conservation objectives. These actions include the following:

Strategy area	**Ongoing Action**
Irrigation Maintenance	Monitor water use and turf condition for watering category on a monthly basis and compare with our allocation reducing water use. Yearly production report is submitted to the Department of Water.
Water Budgeting	The COF is working with golf course management on monitoring water used by the Fremantle Leisure Centre for pool use. Currently in the process of amending our licenses.
Alternative Water Supplies	Research alternative water options.

6.3 Water Conservation Priorities

The City of Fremantle has proposed the following actions and is set to undertake them according to the following priority implementation timeline scale:

- Priority 1: Immediately

- Priority 2: Within 6 months
- Priority 3: Within 12 months
- Priority 4: Within 2 years
- Priority 5: Within 3 years

Water Campaign™ **Strategy Area and Action**	**Priority**
Irrigation Performance Strategy Action	
Install central control systems within two high profile parks and reserves.	4
Develop a plan to have all irrigation on a central control system.	5
Test a drip irrigation system in a turfed area.	4
Irrigation Maintenance Strategy Action	
Develop a maintenance plan to annually undertake the above actions and document progress.	3
Develop guidelines for turf maintenance to reduce water use including the use of wetting agents, soil amelioration, leaf tissue analysis, improved aeration, etc., and document this.	3
Develop and implement a plan to undertake water quality testing across all bores.	5
Hydrozone Ecozone Strategy Action	
Sign agreement with golf course and the Fremantle Dockers on the use of bore water.	1
Undertake a review of all irrigated areas under COF's control to identify in which areas water savings can occur and hydrozones and ecozones can be implemented.	1
Develop a plan for the progressive implementation of hydrozoning and ecozoning across the COF's parks, and reserves.	5
Assign water categories to all parks in conjunction with updating irrigated area data.	3
Water Budgeting Strategy Action	
Improve irrigation data quality index to 1.	3
Communications Strategy Action	
Develop a communication plan to inform the community of water use changes and the COF's planned projects for water conservation.	3
Remove turf in selected high visibility locations throughout the COF and replace with waterwise native planting to increase the communities' awareness of water issues and to lead by example. This will be accomplished in conjunction with the public open spaces study.	5
Park Develop Guidelines Strategy Action	
Develop a set of 'Water Conservation Design Guidelines' to guide the development of new parks, turf areas, and the re-development of existing areas.	3
Drought Contingency Plan	
Develop a drought contingency plan for the city's irrigated areas.	4
Alternative water supplies	
Staff to continue investigating alternative water options including rainwater harvesting, water recycling (e.g. greywater reuse), etc.	1

7. Drought Contingency for Fremantle

7.1 Introduction

A drought is an extended period during which there is not sufficient water for users' usual requirements. The term does not assume merely rainfall deficiencies; if this was true, the majority of the country would be ever considered to be in a state of drought due to precipitation patterns. Consequently, a large part of drought management responsibility lies predominantly with how we use the water we have (BOM no date provided).

7.2 Australian Context

Australia is the driest inhabited continent in the world and also has some of the most precipitation variability of any country due its vast size. In the average decade within this fluctuating climate, Australia experiences approximately three good and three bad years in relation to rainfall adequacy (BOM no date provided).

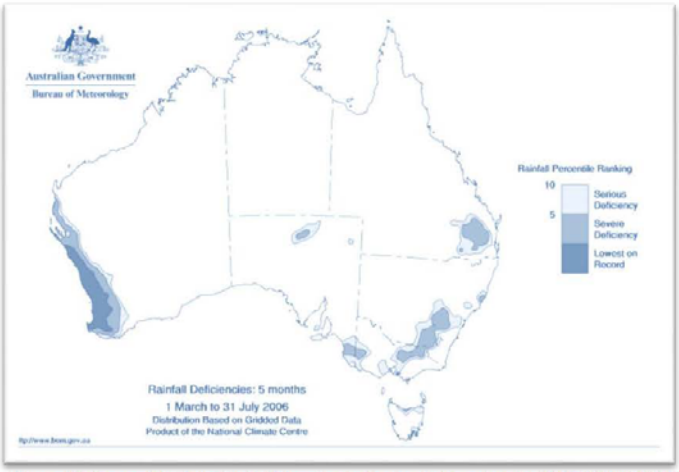


Figure 12: Percentile Rainfall Deficiencies in Australia March-July, 2006 (BOM 2006)

7.3 Perth Context

Continuing trends of decreased rainfall in the Perth metropolitan area are exacerbated when combined with the current patters of increased urban surfaces, ever-growing urban population, and high water demand. This combination creates added stress on Perth's bore and scheme water sources. Perth's recent rainfall deficiency history that continues today exemplifies this, as can be seen in the following excerpts and climatic image from the Australian Bureau of Meteorology.

"For the 5-month period from March to July, a large part of western WA from Albany to north of Carnarvon is affected by severe rainfall deficiencies...This is the third consecutive month with very much below average rainfall (decile 1) across a significant part of western WA" (BOM 2006).

*"For the **11-month** period from January 2010 to November 2010, below average falls over the southwestern half of WA during November 2010 has maintained areas of rainfall deficiency as described in the previous drought statement and slightly increased areas of lowest on record"* (BOM 2010).

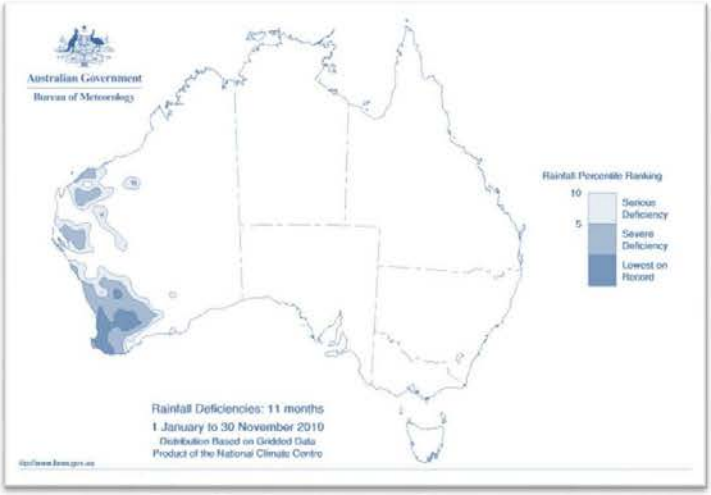


Figure 13: Percentile Rainfall Deficiencies in Australia January-November, 2010 (BOM 2010)

"The southwest region had its driest year on record in 2010*, and the two-year period* 2010–2011 *was the driest on record in some parts of southwest Western Australia. Rainfall for the 3- and 4-year periods ending August 2012 has also been the lowest on record for the southwest" (BOM 2012).*

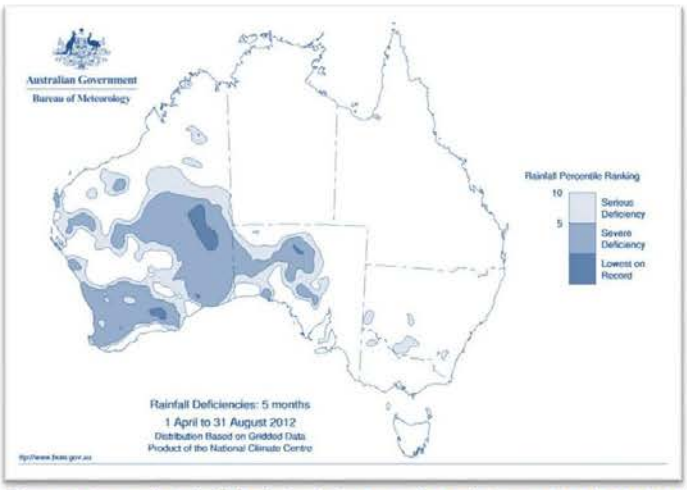


Figure 14: Percentile Rainfall Deficiencies in Australia April-August, 2012 (BOM 2012)

7.4 City of Fremantle Context

In preparation for impending water stress projections for Australia and in response to seasonal climatic dry periods, many cities and towns throughout WA and greater Australia have introduced drought contingency plans. Preparation and knowledge of drought response actions are essential for an effective response to any degree of drought severity. Below is a sampling of towns that have already developed drought contingency plans.

- Town of Weipa, Queensland
- Coffs Harbour City Council, New South Wales
- Mount Isa City Council, Queensland

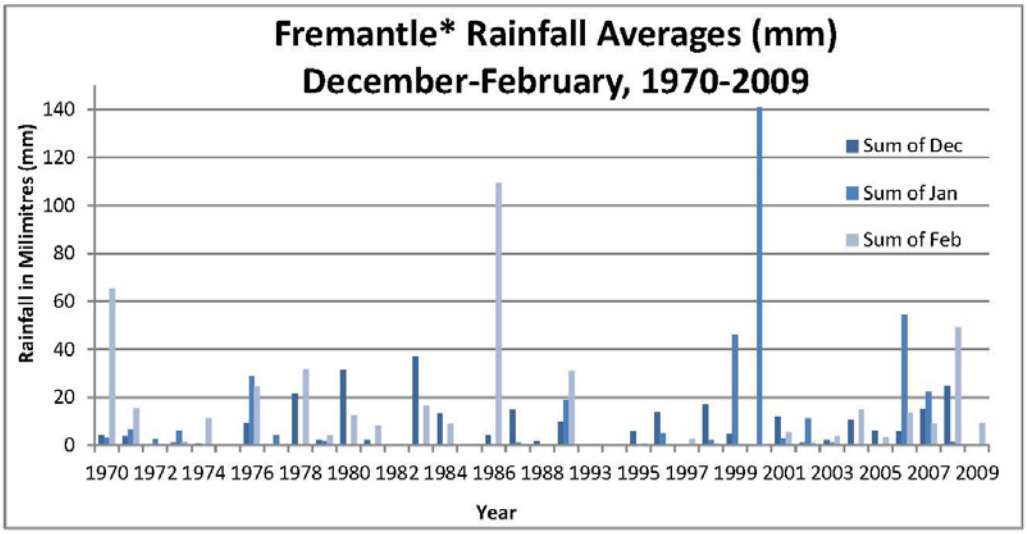


Figure 15: Fremantle* Rainfall Averages (mm) December-February, 1970-2009

**Rainfall data from 1997-2009 was collected from Swanbourne, 9.6km from Fremantle*

7.5 Current Drought Management for the City of Fremantle

The City of Fremantle Parks and Landscapes Department has already begun to develop a preliminary priority scale for corporate bore water. This priority scale was developed based on size, functionality, location, and appearance and consists of the following divisions:

- Category 3: Low Priority. In low level low drought events, reductions will be applied here first.
- Category 2: Medium priority. Reductions will be applied here in a medium drought level event.
- Category 1: High priority. Due to the value of these spaces, reductions will be applied here only during high level drought events.

The following chart outlines the existing hierarchy of public open spaces (e.g., corporate bore water) in regards to water allocation in the case of a drought event.

CATEGORY 1	CATEGORY 2	CATEGORY 3
Booyeembara Park	Alfred Road Park	Aurthers Head
Bruce Lee Reserve	Arnott's POS	Bathers Beach
Esplanade Reserve	Beach St Park	Beacy Park
Fremantle Park	Beach Street Reserve	Burford Place Park
Gibson Park	Biscuit Factory Park	Collick St Park
Gil Fraser Reserve	Davis Park	Cyprus Hill Park
Hilton Dick Lawrence	Depot Verge	Douglas Street Park
Hilton Ken Allen	Edwards College POS	Gold Street Park
Hilton Mid Ground	Elder Place Reserve	Jarvis Street Park
Hilton South Ground	Fremantle Markets Car Park	King William Park
Kings Square	Gordon Dedman Reserve	Lilydale Park
Memorial Reserve	Griffiths Park	Sandown / Hollis Park
North Bank Foreshore	Grigg Park	Wilson Park
North Fremantle Memorial	Holland St Park	
Pioneer Reserve	Horrie Long Reserve	
Princess May Reserve	Knutsford St Park	
Queens Square	McCabe Park	
Railway Reserve	Parmelia Park	
South Beach	Philimore St Gardens	
	Plane Tree Grove POS	
	Portside Park	
	Rennie Cresent Park	
	Samson Park	
	SEW Park	
	South Terrace Primary	
	Valley Park	
	Virginia Ryan Park	

Table 1: Priority Ranking of Fremantle Public Open Spaces in the Event of Drought

7.6 Looking Forward - The Next Step for the City of Fremantle

Corporate bore water is only one sector of total water resources consumed by the City of Fremantle. Fremantle should also identify the following:

1. Priority scale for corporate scheme water
2. Priority scale for community bore water
3. Priority scale for community scheme water

8. City of Fremantle 2013 Water Conservation Strategy Objectives

Water Conservation Strategy Objectives (Measures)

The City of Fremantle has drawn upon the framework objectives included in the Department of Water Strategic Conservation Plan 2010-2015 for this water conservation strategy to be endorsed as a 'Waterwise Council'.

The objectives also include factors from Milestone 1 of the ICLEI's Water Campaign™ for the City to move towards achieving all the Water Campaign's Milestones.

Additionally the City of Fremantle is committed to becoming more sustainable in all of its management areas. As such the Council has subscribed to take part in the One Planet initiative.

The One Planet Living framework focuses on ten areas that comprehensively address the environmental, social and economic aspects of sustainability. 'Sustainable Water' - using water more efficiently in buildings and in the products we buy; tackling local flooding and water course pollution – is one of the ten One Planet Actions that will be specifically addressed in this Water Conservation Strategy though the Strategy will also address areas such as 'Zero Waste' and 'Land Use and Wildlife'.

Key factors and best practices that have been included are:

- Address water usage from multiple angles (technology, behaviour, policy, etc.)
- Develop a timeline of long term goals with benchmarked years
- Identify short term action steps to achieve long term goals
- Monitor and publish progress

The City of Fremantle 2013 Water Conservation Strategy has 7 Action Goals and these will be achieved through the implementation of the Action items listed for each Goal.

The Actions to achieve these goals and, have been developed through the steps of:

- Plan;
- Develop policies, guidelines and campaigns;
- Communicate and implement campaigns; and
- Monitor and report results.

The Goals and Action Plan has been summarised in the Appendix attached to this report.

The City of Fremantle 2013 Water Conservation Strategy has 7 Action Goals:

Water Management Goal

Achieve the "Waterwise Council" certification by 2015, supported by the community and in conjunction with the Department of Water, Water Corporation, and ICLEI.

Corporate Scheme Water Conservation Goal

Scheme water consumption in the City of Fremantle decreased by 32% between 2001 and 2011. The new goal is to reduce the City scheme water consumption by a further 10% over the next 10 years between 2013 to 2022 below the 2011 level of 122,578 kilolitres.

Corporate Groundwater Water Conservation Goal

The Department of Water 2013 groundwater licence allocation of 7,500 kilolitres per hectare per year is 708,000kL. The goal is to reduce groundwater extraction by 10% below the 2013 allocation level over the next 10 years to 2022.

Community Water Conservation Goal

Community scheme water usage in the City of Fremantle decreased by about 10% between 2001 and 2010. The goal is to reduce community scheme water usage over the next 10 years to 2022 by a further 10% below the 2010 level.

Corporate Water Quality Goal

The Corporate Water Quality Goal is to achieve 50 Water Campaign™ Corporate Action points by 2018.

Community Water Quality Goal

The Community Water Quality Goal is to achieve 50 Water Campaign™ Community Action points by 2018.

Drought Contingency Goal

The approval by Council of a Drought Contingency Plan that incorporates a plan of action for drought urgency stages by 2016.

Note that ICLEI normally allocate 5 points for each appropriate Water Campaign™ Action Plan Item

9. Proposed Strategies for City of Fremantle

9.1 Water Management

Goal

Achieve the "Waterwise Council" certification by 2015, supported by the community and in conjunction with the Department of Water, Water Corporation, and ICLEI.

To achieve the "Waterwise Council" certification supported in conjunction with the Department of Water, Water Corporation, and ICLEI the following actions are planned.

Action Plan Items

1	Create a Water Smart Team comprising staff and community members to contribute to planning and implementation of the Water Conservation Strategy. Water Smart Team to review Council Policies in relation to corporate and community water use and water quality and provide policy change recommendations and policy guidelines.
2	Water Smart Team to develop appropriate campaigns for all goals, set the priorities and find resources (financial, human, material) to enact campaigns and monitor and report on progress.
3	Ensure that appropriate staff members attend a waterwise training course on waterwise gardening and irrigation and on internal auditing.
4	Effectively communicate the City's water conservation aims and objectives and action plan to the community.
5	Create public communication venues including multiple forms of media e.g. social media, online newsletters, email blasts, etc., for community water dialogues.
6	Launch educational campaigns to inform public of water concerns in WA and Fremantle.
7	Disseminate waterwise information to the community.
8	Disseminate progress reports of campaigns and actions to Council and the community.
9	Survey a selection of the community each year over 5 years to monitor the attitudes towards water conservation and the impact the City has had on these attitudes and report.
10	Water Smart Team to provide annual review on what has worked or not and create new campaigns if required.
11	Demonstrate substantial progress within 18 months towards implementation of actions; and include reporting on water efficiency targets and performance in the council's annual report.
12	Apply for Waterwise Council certification and for Water Campaign Milestones.

Table 2: Corporate Water Management Action Plan

Make corporate water usage and conservation progress information easily accessible to the public

The development of additional informational outlets of council activity and progress has great potential for more effective council-community interaction. The promotion water conservation strategy successes that the COF is already undertaking, in addition to future plans, can be achieved via documents such as this, more routine website updates, etc.

Distribute routine updates about groundwater usage

To increase instantaneous updates of Fremantle's water conservation progress, successes of other local governments, and educational blurbs informing the public of the status of WA's water, etc., the City will create and maintain various communication tools to maximise the target audience. These strategies include the following:

- FaceBook page updates
- Twitter
- Online newsletter (subscribe via listserv)

9.2 Corporate Scheme Water Conservation

Goal

Scheme water consumption in the City of Fremantle decreased by 32% between 2001 and 2011. The new goal is to reduce the City scheme water consumption by a further 10% over the next 10 years between 2013 to 2022 below the 2011 level of 122,578 kilolitres.

Action Plan Items

1	Develop policies and guidelines to help reduce scheme water in all City of Fremantle owned and managed properties
2	Develop a water audit routine for corporate buildings and public open spaces with benchmarks to track progress.
3	Develop a routine maintenance audit for the functionality and efficiency of pipes, taps, and other water appliances.
4	Retrofit council buildings with water efficient technology, e.g. toilets, taps.
5	Post visible water conservation reminders within corporate buildings.
6	Investigate the viability of installing rainwater tanks in City managed buildings and properties for irrigation or other uses.
7	Investigate the viability of installing greywater reuse systems in City managed buildings and properties for irrigation or other uses.
8	Publicise corporate water usage and conservation progress information.

Table 3: Corporate Scheme Water Conservation Action Plan

Develop a water audit routine for corporate buildings and public open spaces
Establish a periodic audit schedule with benchmarks to track progress. This could also inspire more definitive water conservation goal-setting and motivation to reach and exceed these goals.

Check taps routinely for maintenance needs
Developing a routine audit for the functionality and efficiency of pipes, taps, and other water appliances is an easy and relatively inexpensive policy to implement, but one that could yield significant water savings.

What are other local governments doing?

*Case study: Waterless Urinal Installation in the City of Melville, WA

Commencing in 2004, the City of Melville replaced all twelve existing urinals in the primary management building to microbial block waterless urinals. Findings show that by retrofitting these urinals, the City saves ten kilolitres of water annually. The yearly cost of maintenance, installation, and materials is about $612 (ICLEI 2008).

Retrofit council buildings with water efficient technology, e.g. toilets, taps
Replacing current water appliances within corporate buildings with more advanced, up-to-date, and efficient models is a relatively simple step that could result in significant water savings in addition to monetary returns. Examples include waterless urinals and WELS certified low-flow taps.

What are other local governments doing?

*Case study: "Smart Metering" in Logan City, QLD

Logan City aided in the development and installation of installed smart-meter technology in partnership with Ibis information systems through SQL databases. Council installed these "smart meters" throughout a variety of sites including swimming pools, administration buildings, and a wastewater processing facility, among others. This state of the art equipment provides data in a digital configuration with high quality analysis of where and how water is being consumed. Funding was made possible through the Queensland Department of Local Government and due to the fact that Logan City's implementation of the meters was a pilot project (ICLEI 2008).

Post visible water conservation reminders within corporate buildings
A key part of any successful behaviour change campaign is effective communication and messaging. By posting catchy, memorable, and easy-to-read reminders (e.g., stickers, decals, other forms of signage) in close vicinities to high water use sites (e.g., kitchen sinks, bathroom sinks), individual water reduction behaviours will be easier to instil as habit.

9.3 Corporate Groundwater Water Conservation

Goal

The Department of Water 2013 groundwater licence allocation of 7,500 kilolitres per hectare per year is 708,000kL. The goal is to reduce groundwater extraction by 10% below the 2013 allocation level over the next 10 years to 2022.

The current bore water allocation is 7,500 kilolitres per hectare per year.
DOW total allocation = 708,173 kilolitres
GWL157613(4) - Perth - Superficial Swan - 507,900 kilolitres
GWL157615 - Perth - Leederville - Esplanade/Pioneer Parks - 32,325 kilolitres
GWL168282 - Perth - Superficial Swan - North Fremantle - 39,150 kilolitres
GWL104723 - Perth - Superficial Swan - Fremantle Golf Course - 129,000 kilolitres

Action Plan Items

1	Undertake a review of all irrigated areas under COF's control to identify in which areas water savings can occur and hydrozones and ecozones can be implemented.
2	Develop a set of 'Water Conservation Design Guidelines' to guide the development of new parks, turf areas, and the re-development of existing areas.
3	Develop and implement a plan to undertake water quality testing across all bores.
4	Develop an agreement with golf courses and the Fremantle football oval on the reduction of use of bore water.
5	Develop a plan for the progressive implementation of hydrozoning and ecozoning across the City's parks and reserves.
6	Replace current irrigation systems with efficient irrigation technologies.
7	Investigate alternative water supply options.
8	Install central control systems for parks and reserves.
9	Install water-monitoring sensors for irrigation systems of parks and reserves and provide training in their use.
10	Plant waterwise and native vegetation in City managed gardens.
11	Apply wetting agents to reduce watering need to City managed gardens and turf.
12	Use mulch on City managed gardens to reduce evaporative water loss, etc.
13	Remove turf in selected high visibility locations throughout the City and replace with waterwise native planting to increase the communities' awareness of water issues and to lead by example.
14	Develop a communication plan to inform the community of ground water use changes and the COF's planned projects for water conservation.

Table 3: Corporate Groundwater Water Conservation Action Plan

Hydrozone suitable areas

Hydrozoning is a strategy to categorise areas into separate zones requiring different amounts of irrigation water. Irrigation can thus occur at a precise level and unnecessary irrigation will be minimised. Depending on the nature and function of the space, this can take several different forms.

- *Parks, ovals, verges, sports grounds:* Fremantle can classify these areas into separate water requirement zones based on their function, frequency of usage, and appearance.
- *Garden beds and bushland regions:* Fremantle can employ landscaping strategies to ensure that plants are arranged based on how much irrigation water they require. For example, drought resistant plants should be grouped together, while plants that need fifteen minutes of watering should be in a different location.

What are other local governments doing?

*Case study: Soil Moisture Monitoring Sensors in the City of Joondalup, WA

In Joondalup, water moisture sensors, also called lisometers, were installed in ten pilot "active sporting grounds," at various soil depths, over five months. This environmental technology was introduced to improve irrigation efficiency by decreasing unnecessary groundwater use on areas that were sufficiently irrigated. Post-pilot analysis indicates that this endeavour was successful and aided in the development of a more effective watering timetable. Lisometers are now scheduled to be implemented in all primary public open spaces. Appropriate education was required among staff, however, to understand data gathered by the lisometers. The approximate cost was $53,000 to buy and install the sensors, in addition to battery substitutions every 2-3 years; this is about equivalent to an annual cost of $100 per lisometer (Waterwise Council, no date).

Install water-monitoring sensors in public open spaces, parks, etc.

Water monitoring sensors in public open spaces would provide Fremantle with valuable information about the most effective water allocation combination. This aids in water conservation in the cases where soil is found to be too moist, and also increased aesthetic appeal of green spaces and parks without over allocation. It is important to note that trainings may be required for successful installation and data interpretation of the sensors.

Plant waterwise and native vegetation

Waterwise and native vegetation require much less water than grass areas while still maintaining aesthetic appeal and cultural character. This can save the City of Fremantle water that would have been used for irrigation.

Apply wetting agents to reduce watering need

Due to WA's climate, many native soils frequently become quite dry. This can also result in soils failing to absorb water, which means that the water applied to green spaces and gardens does not effectively penetrate "root zones". Wetting agents can remedy this

problem; they disintegrate the impenetrable layer of soils, thus helping the water to truly reach the targeted plants (Department of Water 2012).

Use mulch to reduce evaporative water loss, etc.

According to the DOW, applying 50-75mm of "coarse mulch" to gardens has a variety of water conservation and plant quality benefits while also minimizing evaporative loss. These include decreasing the soil temperature in hot weather, reducing the spread of weeds, and adding healthy minerals to the soil (Department of Water 2012).

9.4 Community Water Conservation

Goal

Community scheme water usage in the City of Fremantle decreased by about 10% between 2001 and 2010. The goal is to reduce community scheme water usage over the next 10 years to 2022 by a further 10% below the 2010 level.

Action Plan Items

1	Develop policies and guidelines on greywater use and encourage greywater use for irrigation.
2	Develop incentive programs for retrofitting water saving devices in residences and businesses.
3	Develop a community water saving campaigns like the 'Every drop counts!' campaign.
4	Develop tools and resources for community water saving actions (e.g. Subiaco's "Think Water!" toolkit).
5	Develop a web link on the City of Fremantle website to the 'savewater!® Alliance website - www.savewater.com.au' or similar.
6	Hold demonstrations and workshops for water conservation strategies (waterwise plants, retrofitting your home, etc.).
7	Develop hands-on water saving events and communications avenues for youths at schools and organised events.
8	Encourage residents to substitute plumbing products, sanitary ware, and white goods with water efficient models.
9	Spotlight residents or business effective home water managers in City publications.
10	Encourage installation of water use monitoring technology, e.g. shower timers.
11	Conduct surveys with the community to monitor reactions to campaigns.

Landscaping and outdoors

12	Encourage compliance with watering rosters and weather event reminders to turn off reticulation.
13	Establish community expectations of bore water use to develop accountability and responsibility.
14	Encourage residents and businesses to install flow meters to their bores and monitor water use.
15	Encourage residents and businesses to reduce or cap bore water use in the home to the suggested amount.
16	Provide training or information to help residents adjust their reticulation controllers.
17	Distribute free giveaways of waterwise seeds or native plants at sponsored events.
18	Encourage residents to plant suitable native species in their gardens.
19	Encourage residents to order street trees for their verge.
20	Provide free mulch to residents and advise on the water saving benefits of mulch.
21	Provide free native plants for verge or waterwise garden planting.
22	Encourage covering of outdoor pools with covers when not in use.

Table 4: Community Water Conservation Action Plan

Adopt small water saving habits at home – every drop counts!
Not all water conservation strategies have to be large-scale and costly. Below are several simple, free ways to immediately reduce your home water usage.

- Wash vegetables in a bowl in the sink rather than under a running tap
- Turn off the tap while brushing your teeth
- Take four minute showers or less
- Run dishwasher and laundry machine only when completely full

Hold community landscaping and gardening workshops
Community landscaping workshops would be an effective way to teach easy and effective ecozoning and hydrozoning strategies that residences and businesses can implement. Additionally, these workshops would help to characterise these strategies as the norm, not the exception, while also encouraging community involvement.

Develop youth communication avenues and hands-on events (e.g. youth newsletter, school partnerships) Instilling waterwise attitudes and awareness in Fremantle's youths is critical for the COF's long term water conservation goals. By developing a variety of different programs, events and publications the COF can engage Fremantle's youth and make them take a stake in their family's water consumption. Targeting a youth audience has proved successful in various Australian towns; adopting successful strategies from these case studies will aid in the development of Fremantle-specific programming. In many cases, youth can be the driving force of behaviour change within a household.

Substitute plumbing products, sanitary ware, and white goods with water efficient models
Improving water efficiency is the fastest and most economical way to save water. The *Water Efficiency Labelling and Standards* (WELS) certification guarantees a baseline water efficiency standard in plumbing, sanitary ware, and white goods products. By 2021, utilisation of water efficient products are expected to decrease indoor water usage by greater the 100,000 megalitres annually, and will save residents money in the long-run (WELS 2012).

Existing Program

Showerhead Swap is a water conservation program in the Perth Metropolitan area in which residents can trade in two old showerheads for efficient substitutes for free. Simply return your two old showerheads to the Returns and Exchange section of your local hardware store with your most recent water use account (Water Corporation no date provided).

Existing Program

Toilets to Go is a program jointly sponsored by the Water Corporation, Select Solutions and Caroma. The purposed of this program is to provide residential and private property owners the chance to substitute single flush or "inefficient dual flush" toilets with Caroma 4-star dual flush toilets at a discounted supply and installation fee (up to 30% less) (Water Corporation no date provided).

Spotlight effective home water management strategies
The City can identify willing residences and businesses that practice successful indoor water conservation strategies for public spotlight in a publication (e.g. website, newsletter, etc.). Acknowledged individuals can then be added to COF water conservation resource database to aid and support other homeowners unsure of how to move forward.

Install water use monitoring technology, e.g. shower timers
By shortening your shower form seven to four minutes, approximately 27 litres can be saved per shower. Your savings can pay off the price of a shower timer– a win-win situation! (Bunnings Warehouse no date provided).

What are other local governments doing?

* Case Study: Shower Timer Campaign in the City of Burnside, SA.

In winter of 2008, the City of Burnside launched the "A Change in Burnside Can Change the Whole World" shower timer campaign, focused on increasing community knowledge of effective home water management. A "water conservation pack" was distributed to each residence and included a four-minute shower time, refrigerator magnet, and educational card. The city of Burnside spent $20,350 to develop and issue the kits, to result in projected daily water saving of 1.98 megalitres from Burnside residences. Community monetary savings also have the capacity to be $1.4 million each year (ICLEI 2008).

Follow and encourage compliance with watering rosters
Fremantle will continue to encourage and enforce watering rosters that are currently in place. Developing an additional list of priority areas for increased water regulation may also be beneficial.

Establish community expectations of bore water use to develop accountability and responsibility
The City encourages and community involvement and participation in water conservation strategies. Providing each neighbourhood with the tools to develop neighbourhood or community goals for water use (information leaflets, discussion and brainstorming topics, goal setting templates, with periodical check-ins, etc.) might help to propel increased involvement and peer-to-peer accountability.

Reduce or cap bore water use in the home to the suggested amount
Fremantle will recommend neighbourhood associations, businesses and industries, or individual residences, or other groups attempt cap bore use to the target amount (determined by the council, neighbourhood association, family, etc).

Distribute free giveaways of waterwise seeds at sponsored events
Giveaways of items advocating water-conscious behaviours will continue to make public and form positive perceptions of these behaviours in the mind of the public. The "free" nature of giveaways also has the potential to expand the audience and participants of Fremantle natives who may not have been willing to take the first step towards adoption by purchasing seeds themselves.

Plant trees in your garden
Tree planting is a good water conservation strategy because it provides valuable shade to other plants in your garden, reducing irrigation needs. Additionally, and depending on the size, trees can also shade residences. This lowers the need for air conditioning, saving money and water (Department of Water 2012).

Cover outdoor pools with covers when not in use
This can conserve approximately 55 litres of water daily from evaporative loss. It also lessens the need to add to add chemicals to ensure water quality, which saves you money (Water Corporation 2011).

What are other local governments doing?

*Case study: Sustainable Display Home - Promoting Water Management in City of Mandurah, WA

The City of Mandurah collaborated with various sustainable urban design companies to design and construct the "Sustainable Mandurah Home". The home showcases water conservation methods including efficient technology, landscaping, and alternate water acquisition and recycling strategies that can be emulated by Mandurah residents. For this reason, the City of Mandurah and its partners focused on three principles throughout design and construction: liveability and ease of replication, affordability, and environmental responsibility (ICLEI 2008).

9.5 Corporate Water Quality

Goal

The Corporate Water Quality Goal is to achieve 50 Water Campaign™ Corporate Action points by 2018.

ICLEI normally allocate 5 points for each appropriate Water Campaign™ Action Plan Item

The City of Fremantle has identified the following priority areas for the management of water quality impacts of the City's operations:

- Sediment control
- Nutrient management
- Gross Litter and Pollution Management

Action Plan Items

1	Develop policies and guidelines on prevention of sediment-laden runoff into drains including from construction sites.
2	Develop policies and guidelines on Gross Litter and Pollution Management.
3	Develop and make public a stormwater management plan.
4	Identify all river and ocean outfalls and develop a 5 year plan for progressively closing these down and infiltrating all storm water within the City.
5	Train staff in Water Sensitive Urban Design principles and practises and encourage use in City planning and designs.
6	Develop and implement a range of methods (e.g. biofiltration swales, etc.) to improve the quality of storm water infiltrated into aquifers within the city.
7	Communicate effectively to the community the environmental impact of nutrient management issues.
8	Communicate effectively to the community the City's management strategies for gross litter pollution.
9	Communicate effectively to the community and businesses/trades people the City's nutrient management plans.
10	Require a plan for site sediment runoff containment as part of building or development applications.
11	Substitute impervious paving with pervious pavement or vegetation
12	Install gross litter pollution traps; record and monitor the amounts of litter that these traps catch.
13	Develop a regular schedule for inspecting, cleaning, and repairing the stormwater system
14	Implement street sweeping after high-debris events

Table 5: Corporate Water Quality Action Plan

Stormwater Management Strategies

According to the Stormwater Management Manual for Western Australia, stormwater is "water flowing over ground surfaces in natural streams and drains as a direct result of rainfall over a catchment" (Department of Water no date provided).

Impervious surfaces in urban or semi-urban areas result in high speed stormwater runoff. This runoff can also pose environmental and public health threats within Fremantle by

collecting contaminants present in the built environment. Algal blooms and fish kills in WA have resulted in greater interest in improving stormwater control. Retrofitting existing areas with water sensitive urban design (WSUD) can aid in improving water quality and water permeation into groundwater storage sources. Non-structural and behavioural strategies also have potential for stormwater management (Department of Water no date provided).

Develop and make public a stormwater management plan
As the city moves forward in developing and implementing stormwater management strategies, a plan will be articulated to the public through effective communication strategies (e.g. website, listserv, etc.).

Introduce biofiltration swales
Fremantle can implement biofiltration swales near manageable stormwater runoff sources including carparks, roads, and other impermeable areas. Biofiltration swales are lightly inclined green canal-shaped areas that biologically filter stormwater runoff. These can also add aesthetic character to impervious surfaces in the city of Fremantle (Government of Western Australia 2004, ch. 9 p. 103).

Substitute impervious paving with pervious pavement or vegetation
Impermeable paving is a primary cause of stormwater runoff during high precipitation occurrences. Retrofitting paved areas (carparks, roads, public squares, plazas, etc.) with porous pavement or natural plants and vegetation can decrease the rate of runoff and avert soil erosion that high runoff can cause, while also improving water quality through filtration into groundwater (Government of Western Australia 2004, ch. 9 p. 81).

What are other local governments doing?

*Case study: Permeable Pavement Installation in the City of Manly, NSW

The City of Manly substituted conventional pavement with "permeable pavement and permeable sub-base" on parking regions along the North Steyne on Ocean Beach. This strategy was combined with treatment and recycling of stormwater and the removal of kerbside gutters (Government of Western Australia 2004, ch. 6 p. 22).

Monitor stormwater system
Develop a regular schedule for inspecting, cleaning, and repairing the stormwater system. Peak pollution, precipitation, and other extreme events must be taken into account. Monitoring will ensure functionality by eliminating pollutant build-up (debris, leaves, etc.) among the drainage network (Government of Western Australia 2004, ch. 7p. 22).

Implement street sweeping after high-debris events
Street sweeping during high debris events can be an effective measure to improve stormwater quality. High debris events could include construction work on roads, and populated public events, among others (Government of Western Australia 2004, ch. 7 p. 22).

9.6 Community Water Quality

Goal

The Community Water Quality Goal is to achieve 50 Water Campaign™ Community Action points by 2018.

ICLEI normally allocate 5 points for each appropriate Water Campaign™ Action Plan Item

The City of Fremantle has identified the following priority areas for the management of water quality impacts for the community:

- Waste water management
- Ground water management
- Gross littler and pollution management

Action Plan Items

1	Research the installation of third pipe infrastructure in new developments in reference to existing planning regulations and produce a set of guidelines.
2	Develop guidelines on good septic use practises.
3	Update data register regarding onsite septic systems and provide owners with guidelines.
4	Develop creative educational programming and demonstrations
5	Work collaboratively with local schools on litter educational campaigns to engage youth.
6	Launch periodic "litter education programs" in the City of Fremantle.
7	Develop a demonstration site for household waste water reuse and promote it to the community.
8	Support community group/schools programs to monitor pathogens and nutrients in receiving waters; publicise these groups on the COF website.
9	Provide education materials to the community on ground water bore extraction issues.
10	Design and Implement clear signage and/or innovative ways to promote appropriate litter removal.
11	Develop and disseminate literature to locations prone to dangerous litter or waste (e.g., petrol stations and garages).
12	Design and install clean drains signage (e.g. stencils) next to stormwater drains.
13	Develop information on "catchment friendly" gardening with native vegetation.
14	Organise community "cleanup days".

Table 6: Community Water Quality Action Plan

Develop and distribute stormwater informational literature
Create stormwater management literature to increase community awareness about stormwater management and easy, doable actions that can be taken to minimise groundwater contamination. This can be distributed through intrapersonal interaction, email, newsletters, social media, etc.

Develop creative educational programming and demonstrations

Creative projects and campaigns are often more effective at communicating a strong message than simply information. Murals, art projects, competitions, etc., are some examples of loose programming frameworks that Fremantle can consider.

Preserve native vegetation
Organise gardens with "catchment friendly" strategies and native vegetation. Minimising impervious surfaces by protecting native vegetation reduces runoff and increases groundwater infiltration.

Schedule community "cleanup days"
The City of Fremantle can schedule occasional community volunteer cleanup days to pick up debris and rubbish from roads, public spaces, neighbourhoods, etc. This can lessen risk of groundwater contamination via storm runoff through litter reduction, in addition to increasing accountability among peers and building community (Government of Western Australia 2004, ch. 8 p. 14).

What are other local governments doing?

*Case study: Yellow Fish Road

To increase awareness of stormwater runoff and contamination within communities, a group of volunteers created Yellow Fish Road. Community groups can buy Yellow Fish Road kits to a group that stencils "anti-pollution slogans" adjacent to storm drains to inform the community to practice appropriate stormwater management behaviours. Additionally, Yellow Fish Road drain stencilling adds to the city's aesthetic character. Recently, the City of Rockingham has adopted an adjusted version of Yellow Fish Road stencilling specifically for school children of Rockingham and pollution awareness concerning the Cockburn Sound (Government of Western Australia 2004, ch. 8 p. 28).

9.7 Drought Contingency

Goal

The approval by Council of a Drought Contingency Plan that incorporates a plan of action for drought urgency stages by 2016.

Action Plan Items

1	Define parameters for stages of drought urgencies inline with any Water Authority defined stages.
2	Define communication strategy to effectively inform the public of drought response actions to dispel surprise and anxiety.
3	Identify priority areas for corporate and community water reductions during a drought.
4	Identify and prioritise locations to keep water flow for important aesthetic, recreational or infrastructure requirements and those areas of lowest priority that will have the first water reductions when required.
5	Develop action and response strategies for each drought urgency stage.
6	Define actions required to provide smooth transitions regarding water regulations in the case of drought urgency scenarios.
7	Develop further drought amelioration plans such as storm water harvesting or use of treated water (in partnership with Water Corporation) for public open spaces. *(e.g. http://archive.iclei.org/index.php?id=10237, http://archive.iclei.org/index.php?id=2464)*
8	Demonstrate the City's current efforts towards water conscious behaviours.
9	Consult with the Community on the draft Drought Contingency Plan
10	Present the Plan to Council for approval

Table 6: Drought Contingency Action Plan

Extensive Drought Management Analysis

Due to the complex integrated nature of developing a thorough and effective drought contingency plan, the City of Fremantle will explore the possibility of engaging third party consulting groups to lead the analysis and plan development. This will ensure an unbiased, expertly managed, and comprehensively analysed plan with well-developed action responses.

An extensive drought contingency plan for the City of Fremantle will also identify:

- **Targets:** Water usage amounts that restrictions will seek to meet
- **Triggers**: Conditions that are predicted to result in a drought event stage
- **Restrictions**: Measures enacted to moderate the form, frequency, and length of water use actions

(Carberry 2007).

10. Conclusion

As can be seen throughout this report, water conservation strategies are needed in Australia now more than ever. The City of Fremantle recognises this and has already taken steps towards creating a waterwise local government authority.

However, this represents only the beginning. To succeed, it is essential that both corporate and community sectors together become aware of the importance of water conservation in the City of Fremantle and take action towards conserving this vital resource.

The water conservation strategy presented in this report outlines a wide range of areas that may be addressed to assist in future proofing the City against the changes in population and climate that can affect our water supplies.

The City will need to continue to work with the Department of Water, ICLEI and One Planet, ensuring the community is engaged and committed to the sustainability of water resources for future generations.

11.Glossary

ABS: Australian Bureau of Statistics

BOM: Bureau of Meteorology

COF: City of Fremantle

Corporate water use: Refers to water usage activities within Council operations. This includes City of Fremantle buildings, parks, recreation fields, reserves, public verges, etc.

Community water use: Refers to water usage activities in all non-corporate sectors. This includes households, businesses, and industry.

DOW: Department of Water

ICLEI: An international local government organisation created to address sustainability issues. It originally stood for International Council for Local Environmental Initiatives, but is now technically called ICLEI - Local Governments for Sustainability.

LGA: Local Government Authority

WELS: Water Efficiency Labelling and Standards. This is a standards system developed by the Australian Government to rate water use efficiency of various water products.

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13.Appendix A - City of Fremantle 2013 Water Conservation Action Plan

Separate attachment

City of Fremantle

2013 Water Conservation Strategy Report

Appendix A

City of Fremantle
2013 Water Conservation Action Plan

Goal
The City of Fremantle's goal is to sustainably preserve the health of water resources so that the aesthetic and functional amenity of the City can be maintained for future generations to utilise and enjoy.
Purpose
The Purpose of the City of Fremantle 2013 Water Conservation Strategy is to enable water to be conserved and water quality to be maintained or improved while preparing for future water challenges through policy development, effective communication and implementation of actions.
Aim
To encourage the pursuit of the Water Conservation Strategies the City will strive to achieve: - The ICLEI Water Campaign Milestones; - The Department of Water Ground Water Targets; and - The One Planet Action Goals.

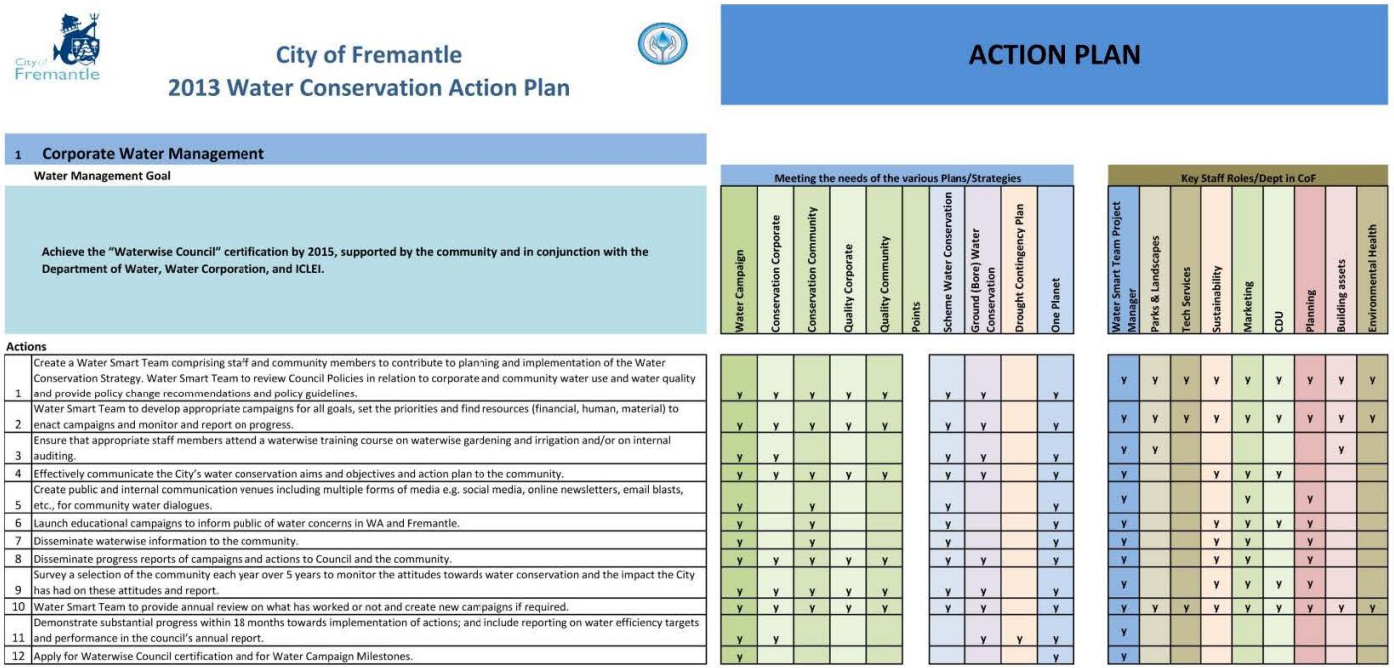
Water Conservation Plan 2013 - Action Plan

City of Fremantle
2013 Water Conservation Action Plan

The City of Fremantle 2013 Water Conservation Strategy has 7 Action Goals:

Overview
The 7 Action Goals will be achieved through the implementation of the Action items listed for each Goal.
The Actions have been developed generally through the steps of: plan; develop policies, guidelines and campaigns; communicate and implement campaigns; and monitor and report results.

	ACTION GOALS	Meeting the needs of the various Plans/Strategies									
		Water Campaign	Conservation Corporate	Conservation Community	Quality Corporate	Quality Community	Points	Scheme Water Conservation Strategies	Ground (Bore) Water Conservation Strategies	Drought Contingency Plan	One Planet
	Water Management Goal										
1	Achieve the "Waterwise Council" certification by 2015, supported by the community and in conjunction with the Department of Water, Water Corporation, and ICLEI.	y						y	y	y	y
	Corporate Scheme Water Conservation Goal										
2	Scheme water consumption in the City of Fremantle decreased by 32% between 2001 and 2011. The new goal is to reduce the City scheme water consumption by a further 10% over the next 10 years between 2013 to 2022 below the 2011 level of 122,578 kilolitres.	y	y					y			y
	Corporate Groundwater Water Conservation Goal										
3	The Department of Water 2013 groundwater licence allocation of 7,500 kilolitres per hectare per year is 708,000kL. The goal is to reduce groundwater extraction by 10% below the 2013 allocation level over the next 10 years to 2022.	y	y						y		y
	Community Water Conservation Goal										
4	Community scheme water usage in the City of Fremantle decreased by about 10% between 2001 and 2010. The goal is to reduce community scheme water usage over the next 10 years to 2022 by a further 10% below the 2010 level.	y		y				y			y
	Corporate Water Quality Goal										
5	The Corporate Water Quality Goal is to achieve 50 Water Campaign™ Corporate Action points by 2018.	y			y		50				y
	Community Water Quality Goal										
6	The Community Water Quality Goal is to achieve 50 Water Campaign™ Community Action points by 2018.	y				y	50				y
	Drought Contingency Goal										
7	The approval by Council of a Drought Contingency Plan that incorporates a plan of action for drought urgency stages by 2016.									y	



City of Fremantle
2013 Water Conservation Action Plan

ACTION PLAN

1 Corporate Water Management

Water Management Goal

Achieve the "Waterwise Council" certification by 2015, supported by the community and in conjunction with the Department of Water, Water Corporation, and ICLEI.

	Actions	Meeting the needs of the various Plans/Strategies									Key Staff Roles/Dept in CoF								
		Water Campaign	Conservation Corporate	Conservation Community	Quality Corporate	Quality Community	Points	Scheme Water Conservation	Ground (Bore) Water Conservation	Drought Contingency Plan	One Planet	Water Smart Team Project Manager	Parks & Landscapes	Tech Services	Sustainability	Marketing	CDU	Planning	Building assets	Environmental Health
1	Create a Water Smart Team comprising staff and community members to contribute to planning and implementation of the Water Conservation Strategy. Water Smart Team to review Council Policies in relation to corporate and community water use and water quality and provide policy change recommendations and policy guidelines.	y	y	y	y	y		y	y		y	y	y	y	y	y	y	y	y	y
2	Water Smart Team to develop appropriate campaigns for all goals, set the priorities and find resources (financial, human, material) to enact campaigns and monitor and report on progress.	y	y	y	y	y		y	y		y	y	y	y	y	y	y	y	y	y
3	Ensure that appropriate staff members attend a waterwise training course on waterwise gardening and irrigation and/or on internal auditing.	y	y					y	y		y	y	y						y	
4	Effectively communicate the City's water conservation aims and objectives and action plan to the community.	y	y	y	y	y		y	y		y	y			y	y	y			
5	Create public and internal communication venues including multiple forms of media e.g. social media, online newsletters, email blasts, etc., for community water dialogues.	y		y				y			y	y				y		y		
6	Launch educational campaigns to inform public of water concerns in WA and Fremantle.	y		y				y			y	y			y	y	y	y		
7	Disseminate waterwise information to the community.	y		y				y			y	y			y	y		y		
8	Disseminate progress reports of campaigns and actions to Council and the community.	y	y	y	y	y		y	y		y	y			y	y		y		
9	Survey a selection of the community each year over 5 years to monitor the attitudes towards water conservation and the impact the City has had on these attitudes and report.	y	y	y	y	y		y	y		y	y			y	y	y	y		
10	Water Smart Team to provide annual review on what has worked or not and create new campaigns if required.	y	y	y	y	y		y	y		y	y	y	y	y	y	y	y	y	y
11	Demonstrate substantial progress within 18 months towards implementation of actions; and include reporting on water efficiency targets and performance in the council's annual report.	y	y						y	y	y	y								
12	Apply for Waterwise Council certification and for Water Campaign Milestones.	y									y	y								

City of Fremantle
2013 Water Conservation Action Plan

ACTION PLAN

2 Corporate Scheme Water Conservation

Corporate Scheme Water Conservation Goal

Scheme water consumption in the City of Fremantle decreased by 32% between 2001 and 2011. The new goal is to reduce the City scheme water consumption by a further 10% over the next 10 years between 2013 to 2022 below the 2011 level of 122,578 kilolitres.

Actions

		Meeting the needs of the various Plans/Strategies										Key Staff Roles/Dept in CoF								
		Water Campaign	Conservation Corporate	Conservation Community	Quality Corporate	Quality Community	Points	Scheme Water Conservation	Ground (Bore) Water Conservation	Drought Contingency Plan	One Planet	Water Smart Team Project Manager	Parks & Landscapes	Tech Services	Sustainability	Marketing	CDU	Planning	Building assets	Environmental Health
1	Develop policies and guidelines to help reduce scheme water in all City of Fremantle owned and managed properties	y	y					y			y	y			y			y	y	
2	Develop a water audit routine for corporate buildings and public open spaces with benchmarks to track progress.	y	y					y			y	y			y				y	
3	Develop a routine maintenance audit for the functionality and efficiency of pipes, taps, and other water appliances.	y	y					y			y	y			y				y	
4	Retrofit council buildings with water efficient technology, e.g. toilets, taps.	y	y					y			y	y			y				y	
5	Post visible water conservation reminders within corporate buildings.	y	y					y			y	y							y	
6	Investigate the viability of installing rainwater tanks in City managed buildings and properties for irrigation or other uses.	y	y					y			y	y			y				y	
7	Investigate the viability of installing greywater reuse systems in City managed buildings and properties for irrigation or other uses.	y	y					y			y	y			y				y	
8	Publicise corporate water usage and conservation progress information.	y	y					y			y	y			y	y				

City of Fremantle
2013 Water Conservation Action Plan

ACTION PLAN

3 Corporate Groundwater Water Conservation

Corporate Groundwater Water Conservation Goal

The Department of Water 2013 groundwater licence allocation of 7,500 kilolitres per hectare per year is 708,000kL. The goal is to reduce groundwater extraction by 10% below the 2013 allocation level over the next 10 years to 2022.

Actions

		Meeting the needs of the various Plans/Strategies									Key Staff Roles/Dept in CoF								
		Water Campaign	Conservation Corporate	Conservation Community	Quality Corporate	Quality Community	Points	Scheme Water Conservation	Ground (Bore) Water Conservation	Drought Contingency Plan	One Planet	Water Smart Team Project Manager	Parks & Landscapes	Tech Services	Sustainability	Marketing	CDU	Planning	Building assets	Environmental Health
1	Undertake a review of all irrigated areas under COF's control to identify in which areas water savings can occur and hydrozones and ecozones can be implemented.	y							y		y	y	y							
2	Develop a set of 'Water Conservation Design Guidelines' to guide the development of new parks, turf areas, and the re-development of existing areas.	y							y		y	y	y		y					
3	Develop and implement a plan to undertake water quality testing across all bores.	y							y		y	y	y							
4	Develop an agreement with golf courses and the Fremantle football oval on the reduction of use of bore water.	y							y		y	y	y			y	y			
5	Develop a plan for the progressive implementation of hydrozoning and ecozoning across the City's parks and reserves.	y							y		y	y	y							
6	Replace current irrigation systems with efficient irrigation technologies.	y							y		y	y	y							
7	Investigate alternative water supply options.	y							y		y	y	y		y					
8	Install central control systems for parks and reserves.	y							y		y	y	y		y					
9	Install water-monitoring sensors for irrigation systems of parks and reserves and provide training in their use.	y							y		y	y	y		y					
10	Plant waterwise and native vegetation in City managed gardens.	y							y		y	y	y		y					
11	Apply wetting agents to reduce watering need to City managed gardens and turf.	y							y		y	y	y		y					
12	Use mulch on City managed gardens to reduce evaporative water loss, etc.	y							y		y	y	y							
13	Remove turf in selected high visibility locations throughout the City and replace with waterwise native planting to increase the communities' awareness of water issues and to lead by example.	y							y		y	y	y		y		y			
14	Develop a communication plan to inform the community of ground water use changes and the COF's planned projects for water conservation.	y							y		y	y	y		y	y	y			

City of Fremantle
2013 Water Conservation Action Plan

ACTION PLAN

5 Corporate Water Quality

Corporate Water Quality Goal

The Corporate Water Quality Goal is to achieve 50 Water Campaign™ Corporate Action points by 2018.

The City of Fremantle has identified the following priority areas for the management of water quality impacts of the City's operations:
- Sediment control
- Nutrient management
- Gross Litter and Pollution Management

Actions

		Meeting the needs of the various Plans/Strategies										Key Staff Roles/Dept in CoF								
		Water Campaign	Conservation Corporate	Conservation Community	Quality Corporate	Quality Community	Points	Scheme Water Conservation	Ground (Bore) Water Conservation	Drought Contingency Plan	One Planet	Water Smart Team Project Manager	Parks & Landscapes	Tech Services	Sustainability	Marketing	CDU	Planning	Building assets	Environmental Health
1	Develop policies and guidelines on prevention of sediment-laden runoff into drains including from construction sites.	y			y		5				y	y	y	y	y			y	y	y
2	Develop policies and guidelines on Gross Litter and Pollution Management.	y			y		5				y	y		y	y			y		y
3	Develop and make public a stormwater management plan.	y			y		5				y	y		y		y				
4	Identify all river and ocean outfalls and develop a 5 year plan for progressively closing these down and infiltrating all storm water within the City.	y			y		5				y	y	y	y	y					
5	Train staff in Water Sensitive Urban Design principles and practises and encourage use in City planning and designs.	y			y		5				y	y	y	y	y					
6	Develop and implement a range of methods (e.g. biofiltration swales, etc.) to improve the quality of storm water infiltrated into aquifers within the city.	y			y		5				y	y	y	y	y					
7	Communicate effectively to the community the environmental impact of nutrient management issues.	y			y		5				y	y	y		y	y				
8	Communicate effectively to the community the City's management strategies for gross litter pollution.	y			y		5				y	y	y	y	y	y				
9	Communicate effectively to the community and businesses/trades people the City's nutrient management plans.	y			y		5				y	y	y		y	y				
10	Require a plan for site sediment runoff containment as part of building or development applications.	y			y		5				y	y		y				y		y
11	Substitute impervious paving with pervious pavement or vegetation	y			y		5				y	y	y	y						
12	Install gross litter pollution traps; record and monitor the amounts of litter that these traps catch.	y			y		5				y	y		y					y	
13	Develop a regular schedule for inspecting, cleaning, and repairing the stormwater system	y			y		5				y	y		y						
14	Implement street sweeping after high-debris events	y			y		5				y	y		y						
							70													



City of Fremantle
2013 Water Conservation Action Plan



ACTION PLAN

6 Community Water Quality

Community Water Quality Goal

The Community Water Quality Goal is to achieve 50 Water Campaign™ Community Action points by 2018.

The City of Fremantle has identified the following priority areas for the management of water quality impacts for the community:
- Waste water management
- Ground water management
- Gross littler and pollution management

Actions

		Meeting the needs of the various Plans/Strategies										Key Staff Roles/Dept in CoF								
		Water Campaign	Conservation Corporate	Conservation Community	Quality Corporate	Quality Community	Points	Scheme Water Conservation	Ground (Bore) Water Conservation	Drought Contingency Plan	One Planet	Water Smart Team Project Manager	Parks & Landscapes	Tech Services	Sustainability	Marketing	CDU	Planning	Building assets	Environmental Health
1	Research the installation of third pipe infrastructure in new developments in reference to existing planning regulations and produce a set of guidelines.	y				y	5				y							y		y
2	Develop guidelines on good septic use practises.	y				y	5				y	y						y	y	y
3	Update data register regarding onsite septic systems and provide owners with guidelines.	y				y	5				y	y						y		y
4	Develop creative educational programming and demonstrations	y				y	5				y	y			y	y	y			
5	Work collaboratively with local schools on litter educational campaigns to engage youth.	y				y	5				y	y			y					
6	Launch periodic "litter education programs" in the City of Fremantle.	y				y	5				y	y			y	y				
7	Develop a demonstration site for household waste water reuse and promote it to the community.	y				y	5				y	y			y			y		
8	Support community group/schools programs to monitor pathogens and nutrients in receiving waters; publicise these groups on the COF website.	y				y	5				y	y			y					
9	Provide education materials to the community on ground water bore extraction issues.	y				y	5				y	y	y	y	y	y				
10	Design and Implement clear signage and/or innovative ways to promote appropriate litter removal.	y				y	5				y	y	y		y	y				
11	Develop and disseminate literature to locations prone to dangerous litter or waste (e.g., petrol stations and garages).	y				y	5				y	y		y	y					y
12	Design and install clean drains signage (e.g. stencils) next to stormwater drains.	y				y	5				y	y		y	y					
13	Develop information on "catchment friendly" gardening with native vegetation.	y				y	5				y	y	y				y			
14	Organise community "cleanup days".	y				y	5				y	y			y					
							70													

City of Fremantle
2013 Water Conservation Action Plan

ACTION PLAN

7 Drought Resilience

Drought Contingency Goal

The approval by Council of a Drought Contingency Plan that incorporates a plan of action for drought urgency stages by 2016.

Develop an extensive drought contingency plan for the City of Fremantle that will identify:

- Targets: Water usage amounts that restrictions will seek to meet
- Triggers: Conditions that are predicted to result in a drought event stage
- Restrictions: Measures enacted to moderate the form, frequency, and length of water use actions

Actions

		Meeting the needs of the various Plans/Strategies										Key Staff Roles/Dept in CoF								
		Water Campaign	Conservation Corporate	Conservation Community	Quality Corporate	Quality Community	Points	Scheme Water Conservation	Ground (Bore) Water Conservation	Drought Contingency Plan	One Planet	Water Smart Team Project Manager	Parks & Landscapes	Tech Services	Sustainability	Marketing	CDU	Planning	Building assets	Environmental Health
1	Define parameters for stages of drought urgencies inline with any Water Authority defined stages.									y		y	y							
2	Define communication strategy to effectively inform the public of drought response actions to dispel surprise and anxiety.									y		y	y		y		y			
3	Identify priority areas for corporate and community water reductions during a drought.									y		y	y							
4	Identify and prioritise locations to keep water flow for important aesthetic, recreational or infrastructure requirements and those areas of lowest priority that will have the first water reductions when required.									y		y	y							
5	Develop action and response strategies for each drought urgency stage.									y		y	y							
6	Define actions required to provide smooth transitions regarding water regulations in the case of drought urgency scenarios.									y		y	y							
7	Develop further drought amelioration plans such as storm water harvesting or use of treated water (in partnership with Water Corporation) for public open spaces. *(e.g. http://archive.iclei.org/index.php?id=10237, http://archive.iclei.org/index.php?id=2464)*											y	y							
8	Demonstrate the City's current efforts towards water conscious behaviours.									y		y	y		y	y				
9	Consult with the Community on the draft Drought Contingency Plan									y		y	y		y		y			
10	Present the Plan to Council for approval									y		y								

Additional Information 2 – Water Conservation Strategy (Aug 2013) Action List - Summary

Action
Survey a selection of the community each year over 5 years to monitor the attitudes towards water conservation and the impact the City has had on these attitudes and report.
Develop a communication plan to inform the community of groundwater use changes and planned projects for water conservation.
Comment
These actions are identified as an action that is operational, duplicated and/or done by others. The Water Corporation undertakes frequent community surveys. It is recommended the City use the Water Corps survey/s where relevant. Continuing partnership opportunities with Water Corporation is an action in the Plan. The Water Corporation (including close liaison with the DWER) have a comprehensive communication and engagement program around water saving/efficiency – as well as an interactive website people can use. As a Water Wise accredited Council, the City has access to data and resources to communicate and promote water efficiency to the community. The City is now accessing, using and disseminating the water wise message with Water Corporation and via other communications channels (web, social media, print etc). This is now embedded in operations through Media and Communications, City Design and Projects and Parks and Landscapes, as well as One Planet communications.
Action
Develop a set of “Water Conservation” design guidelines
Comment
There are now a range of water conservation design guidelines developed through the Water Corporation, DWER and (then) Department of Sport and Recreation.
Action
Develop agreements with golf courses and the Fremantle football oval to reduce bore water.
Comment
The City is working with the Fremantle Public Golf course to implement a new, efficient irrigation system as part of the High Street upgrade. The private Royal Fremantle Golf course is on a separate groundwater licence. Since the adoption of the Strategy, the City, manages Fremantle oval in conjunction with the football club and applies best practice turf and water management.

Community Water Conservation Actions

Action
Develop policies and guidelines on greywater use and encourage greywater use for irrigation.
Comment

Greywater systems are to be promoted on individual sites where feasible. There is refund policy in place where the cost of the application is refunded when a system is installed (requires health approval).
Action
Develop incentive programs for retrofitting water saving devices in residences and businesses.
Comment
Water Corporation provides a rebate service for water efficient fixtures
Actions
Develop a community water saving campaigns like the 'Every drop counts!' campaign
Develop tools and resources for community water saving actions (e.g. Subiaco's "Think Water!" toolkit).
Develop a web link on the City of Fremantle website to the 'savewater!® Alliance website -www.savewater.com.au' or similar.
Develop hands-on water saving events and communications avenues for youths at schools and organised events.
Encourage residents to substitute plumbing products, sanitary ware, and white goods with water efficient models.
Spotlight residents or business effective home water managers in City publications
Encourage installation of water use monitoring technology, e.g. shower timers.
Conduct surveys with the community to monitor reactions to campaigns.
Encourage compliance with watering rosters and weather event reminders to turn off reticulation.
Establish community expectations of bore water use to develop accountability and responsibility.
Encourage residents and businesses to install flow meters to their bores and monitor water use.
Encourage residents and businesses to reduce or cap bore water use in the home to the suggested amount.
Encourage covering of outdoor pools.
Comment
Water Corporation provides a range of community tools and information on water saving. The City works with the Water Corporation on community programs as part of the Waterwise Council accreditation program. The City runs events and/or partners in events and programs encouraging water efficiency through the One Planet framework, including the Climate Clever program. The Water Corporation runs the Waterwise Schools program, which includes primary schools within the City e.g. White Gum Valley PS. The Water Corporation and DWER both encourage compliance with scheme and groundwater rosters, which now include financial penalties. Water Corporation and DWER also introduced watering day rosters (the same as scheme water) for private bores.

Corporate Water Quality

Actions
Develop policies and guidelines on prevention of sediment-laden runoff into drains including from construction sites and develop policies and guidelines on Gross Litter and Pollution Management.
Comment
These actions are captured/undertaken and is progressively addressed through asset management plans and development construction management plans. Policy LPP 1.10 Construction Sites applies to development and includes requirements for gross litter and pollution management. There is a new action to review and update this policy.
Actions
Develop and make public a stormwater management plan and identify all river and ocean outfalls and develop a 5-year plan for progressively closing these down and infiltrating all storm water within the City.
Comment
Plan development subject to budget approval. Action carried over into new Plan
Actions
Train staff in Water Sensitive Urban Design principles and practises and encourage use in City planning and designs.
Develop and implement a range of methods (e.g. biofiltration swales, etc.) to improve the quality of storm water infiltrated into aquifers within the city.
Install gross litter pollution traps; record and monitor the amounts of litter that these traps catch.
Comment
Training periodically available through professional associations (including Planning Institute of Australia). Extensive publication and promotion of principles (including through Better Urban Water Management Guidelines). Staff are aware of Water Sensitive Urban Design principles and practices and apply in both City projects and developer structure plans/development plans. Installation of gross pollutant traps occurs in new development. In existing areas, it is subject to budget available. The Stormwater Management Plan action will include best practice stormwater infiltration and litter/pollution management.
Actions
Communicate effectively to the community the environmental impact of nutrient management issues. Communicate effectively to the community the City's management strategies for gross litter pollution. Communicate effectively to the community and businesses/trades people the City's nutrient management plans.
Comment

This is now embedded in operations through Media and Communications, City Design and Projects and Parks and Landscapes, as well as One Planet communications.

Community Water Quality

Actions
Develop guidelines on good septic use practises.
Update data register regarding onsite septic systems and provide owners with guidelines.
Develop creative educational programming and demonstrations.
Comment
Department of Health provides information on good septic system practices (and included when purchasing and installing systems. Data register of systems in place. ATU (Alternative Treatment Units) have been demonstrated at other developments with City support e.g. sustainable housing demonstrations.
Actions
Work collaboratively with local schools on litter educational campaigns to engage youth.
Develop a demonstration site for household waste water reuse and promote it to the community.
Support community group/schools programs to monitor pathogens and nutrients in receiving waters; publicise these groups on the COF website.
Comment
These actions are undertaken by others such as Keep Australia Beautiful, natural area care groups, Water Corporation etc. Developing a ‘stand-alone’ demonstration site is considered cost-prohibitive however numerous examples exist and have been available for public inspection and periodically promoted by the City (eg Josh’s House). Support for further research and promotion (eg through CRC research in Knutsford) in train. Monitoring of pathogens and nutrients in receiving waters is undertaken by Swan River Trust and Department of Health (though could be included in the Stormwater Management Plan recommended in the new Plan).
Actions
Provide education materials to the community on ground water bore extraction issues.
Design and Implement clear signage and/or innovative ways to promote appropriate litter removal.
Develop and disseminate literature to locations prone to dangerous litter or waste (e.g., petrol stations and garages).
Comment
Undertaken by others e.g. Water Corporation, DWER.
Actions
Design and install clean drains signage (e.g. stencils) next to stormwater drains.
Develop information on “catchment friendly” gardening with native vegetation.
Comment

Installation of clean drain signs could be undertaken as part of the Stormwater Management Plan. The City promotes catchment friendly gardening with endemic species.

Drought Contingency

Actions
Define parameters for stages of drought urgencies in line with any Water Authority defined stages.
Define communication strategy to effectively inform the public of drought response actions to dispel surprise and anxiety.
Identify priority areas for corporate and community water reductions during a drought.
Identify and prioritise locations to keep water flow for important aesthetic, recreational or infrastructure requirements and those areas of lowest priority that will have the first water reductions when required.
Develop action and response strategies for each drought urgency stage. Define actions required to provide smooth transitions regarding water regulations in the case of drought urgency scenarios.
Develop further drought amelioration plans such as storm water harvesting or use of treated water (in partnership with Water Corporation) for public open spaces.
Demonstrate the City's current efforts towards water conscious behaviours.
Consult with the Community on the draft Drought Contingency Plan.
Present the Plan to Council for approval.
Comment
Drought contingency measures have been condensed for clarity, and will formalise drought-relevant activities largely covered through existing operations