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APPENDICES

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Appendix 1: References

<i>Assessment of Public Health Risk Associated with Onsite Wastewater Disposal in Waitakere City</i>	
URS New Zealand Limited	Dec 2004
<i>Assessment of Public Toilets in Waitakere City</i>	
Waitakere City Council Parks Assets and Open Spaces	Feb 2005
<i>Assessment of Sanitary Services at Waikumete Memorial Park</i>	
URS New Zealand Limited	Feb 2005
<i>Assessment of Solid Waste Services in Waitakere City</i>	
Maunsell Limited	Feb 2005
<i>Assessment of Water Services Multimedia DVD</i>	
Creative Decisions Limited	Feb 2005
<i>Drinking Water Risk Assessments</i>	
Maunsell Limited	Feb 2005
<i>From the Sky to the Sea – The Auckland Water Management Plan</i>	
Auckland Region Councils, Local Network Operators and Watercare Services Limited	Feb 2004
<i>Funding Auckland Regional Stormwater – An Options Analysis</i>	
Price Waterhouse Coopers Limited, for Infrastructure Auckland	Feb 2004
<i>On-Site Cluster Wastewater Options</i>	
Fraser Thomas Limited	Sept 2004
<i>Operations & Maintenance Manual for On-Site Wastewater and Water Supply Systems</i>	
URS New Zealand Limited	Nov 2004
<i>Water Demand Action Plan</i>	
Maunsell Limited	Mar 2005

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Appendix 2: Outcomes for the Four Planning Scenarios for the 3 Waters

Waitakere City needs to make choices as to how the three-waters will be managed over the long term. It is only by envisaging where the city should be in fifty years time that progress can be made towards this goal – annual and longer term budgets can be aligned and work programmes tailored to suit.

Decisions have already been made that the eco-city will follow a path of water conservation and environmental protection. The reasons and some of the costs involved have been discussed in the body of this document. The real questions, then, are how fast should progress be, and should Waitakere City and its community 'go it alone' or plan to take the wider regional community with it?

Keeping these questions in mind, four scenario options for the future have been developed, and are set out below.

The four options impact differently on the 3 concept areas and paint very different pictures of what the future might look like for Waitakere City. Each option is detailed in the following tables.

Scenario 1: Current Progress

Waitakere City will continue to maintain the existing networks and implement treatment of stormwater as funds permit. Limited progress will be made towards the protection of traditional food source and reducing overflows and bathing restrictions.

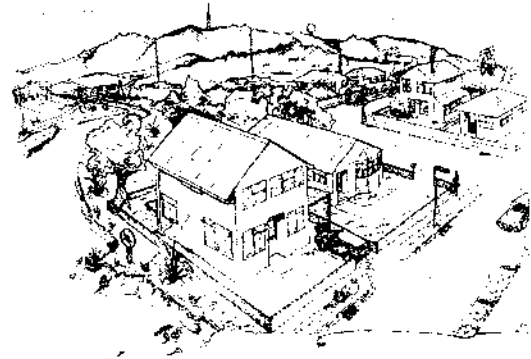


Table 24: Scenario 1 – Current Progress Within Waitakere City

<p>Rural</p> <ul style="list-style-type: none"> • All rain tanks meet required standards for safe drinking water • There are occasional leaks or overflows from septic tanks • Riparian management zone adjoining streams includes restored native vegetation to a width agreed with landowners to protect aquatic ecosystems • Traditional food sources in some rural receiving environments are protected where not affected by discharges from other councils • There are some wastewater discharges to streams or beaches • There are some restrictions to bathing in rural streams
<p>Urban</p> <ul style="list-style-type: none"> • Post 2005 infill housing will be given option of installing onsite storage or detention of stormwater; most also offered option of treatment to remove pollutants (depending on storage options) for stormwater • Water consumption is on average less than 160L/person/day • There are occasional sewer overflows within urban areas or to urban receiving environments and minor blockages are handled efficiently • Existing overland flow paths are unobstructed and generally consist of self-sustaining or low maintenance vegetation systems • Riparian management zone adjoining urban streams includes restored native vegetation typically extending at least 20m in areas of public ownership and to widths agreed with owners in areas of private ownership • Potentially polluted surface runoff from industrial sites along watercourse boundaries may discharge directly to the watercourse • There are some bathing restrictions for natural water bodies in urban receiving environments • Protect traditional food sources in some urban receiving environments where not affected by discharges from other councils • Some beach or stream disposal of wastewater

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- Many new residential dwellings to utilise stormwater
- All secondary overland flow paths are will be integrated into urban landscape design
- Riparian management zone adjoining urban streams includes restored native vegetation typically extending at least 20m in areas of public ownership and to widths agreed with owners in areas of private ownership
- All new streetscapes to include LIUDD features for addressing runoff (swales, rain gardens, porous paving, filtered kerb and channel etc)
- Traditional food sources in some water bodies are protected where not affected by discharges from other councils

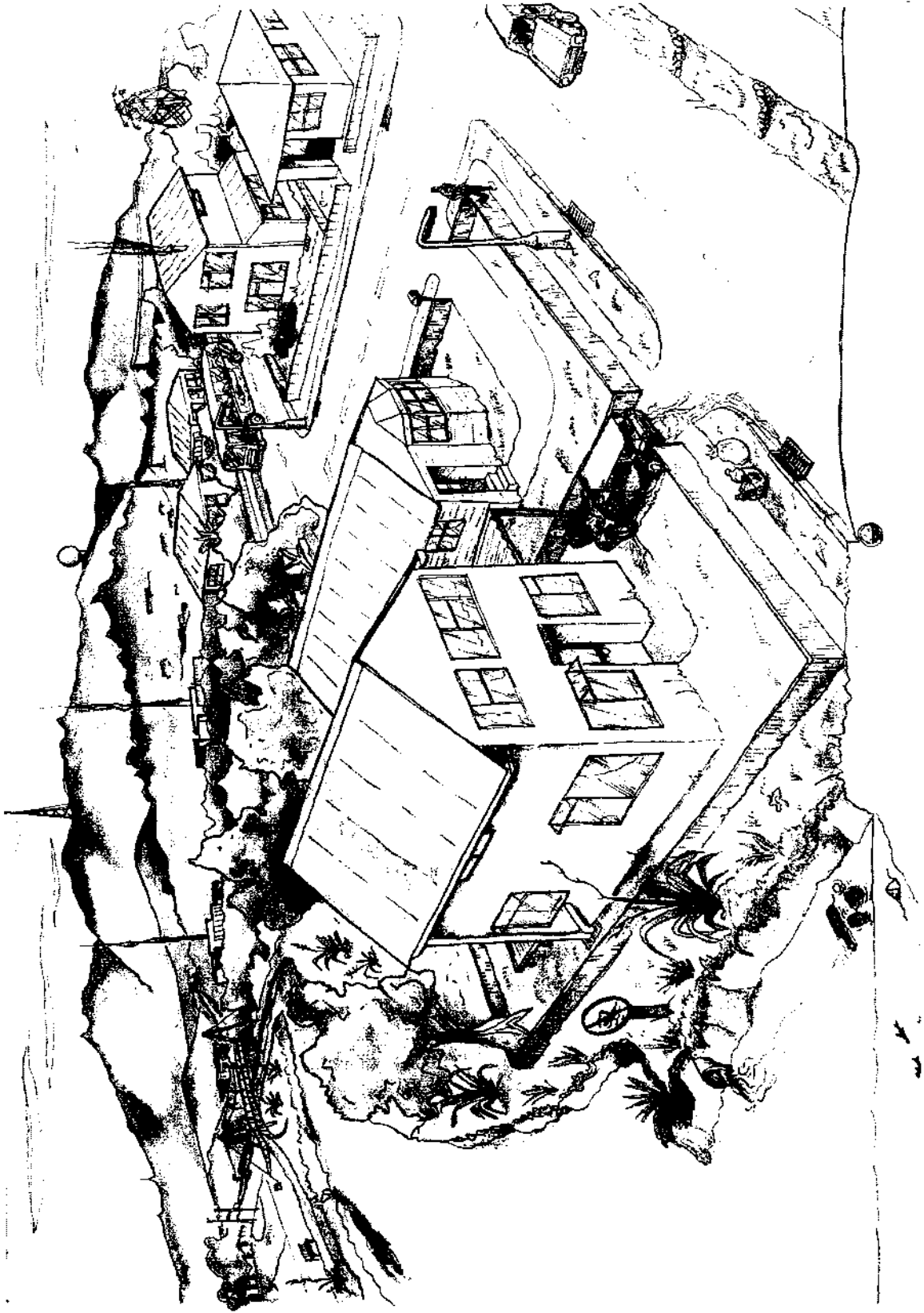
Scenario 1 is still aimed at achieving the eco-city vision but reduced funding will not allow this to happen by 2050, when the results will likely be:

- Established patches of native vegetation within the green corridors, interspersed with reserves of mown grass and specimen trees – pretty but has little ecological value
- Continued dumping of rubbish over fences along watercourse boundaries
- Continued growth of weeds and contaminant tolerant species of insects, birds and fish
- Protection of some streams and waterways while others are left to degrade

Note – this option will probably result in permanent loss of some stream biodiversity as a result of irreversible increases in heavy metal loadings in the streams and harbours or loss of macroinvertebrate species due to instream conditions

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Figure 27: Scenario 1 - Current Progress Within Waikare City



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Scenario 2: Slowing Progress

Waitakere City will undertake only the required services to ensure public health and safety. Little or no progress will be made in terms of treating runoff and protecting streams.

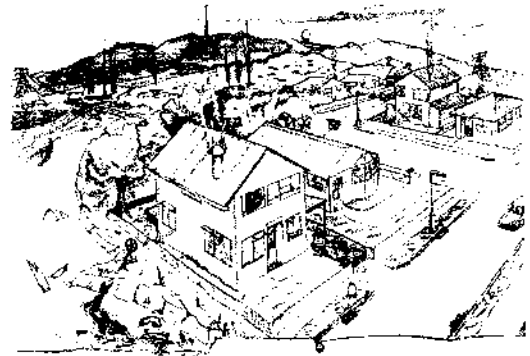


Table 25: Scenario 2 – Slowing Progress Within Waitakere City

<p>Rural</p> <ul style="list-style-type: none"> • All rain tanks meet required standards for safe drinking water • There are occasional leaks or overflows from septic tanks • Riparian management zone adjoining streams includes restored native vegetation to a width agreed with landowners to protect aquatic ecosystems • Traditional food sources in occasional rural receiving environments are protected • There are continued wastewater discharges to streams or beaches • There are continued restrictions to bathing in rural streams
<p>Urban</p> <ul style="list-style-type: none"> • Post 2005 infill housing will be given option of installing onsite storage or detention of stormwater; most also offered option of treatment to remove pollutants (depending on storage options) for stormwater • Water consumption is on average less than 160L/person/day • There are continued sewer overflows within urban areas or to urban receiving environments and minor blockages are handled efficiently as possible • Some existing overland flow paths are unobstructed and generally consist of self-sustaining or low maintenance vegetation systems • Riparian management zone adjoining urban streams includes restored native vegetation typically extending at least 20m in areas of public ownership and to widths agreed with owners in areas of private ownership • Potentially polluted surface runoff from industrial sites along watercourse boundaries may discharge directly to the watercourse • There are continued bathing restrictions for natural water bodies in urban receiving environments • Protect traditional food sources in occasional urban receiving environments • Some beach or stream disposal of wastewater

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- Many new residential dwellings to utilise stormwater
- All secondary overland flow paths are will be integrated into urban landscape design
- Riparian management zone adjoining urban streams includes restored native vegetation typically extending at least 20m in areas of public ownership and to widths agreed with owners in areas of private ownership
- All new streetscapes to include LIUDD features for addressing runoff (swales, rain gardens, porous paving, filtered kerb and channel etc)
- Traditional food sources in some water bodies are protected where not affected by discharges from other councils

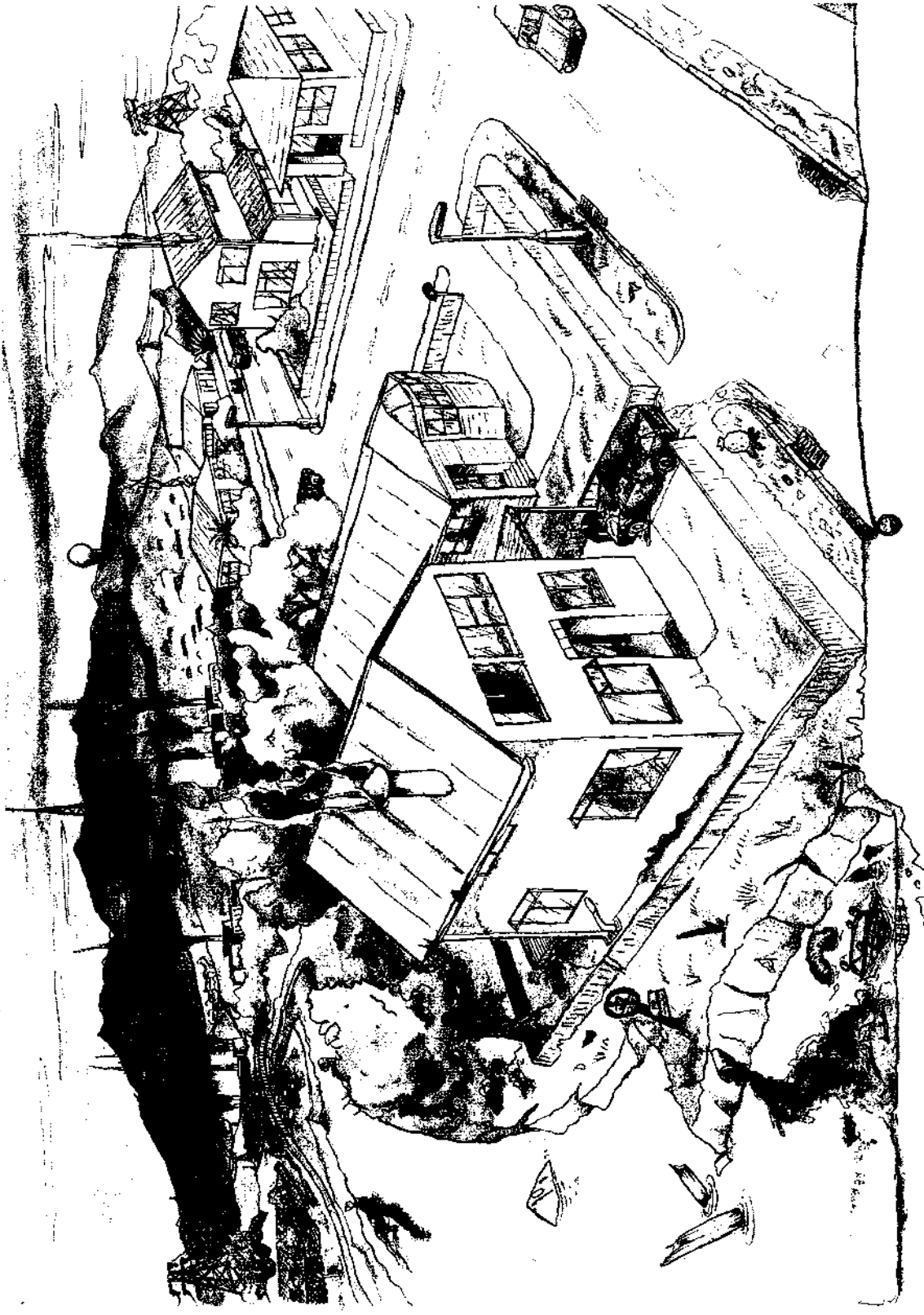
Across the city these add up to:

- Established patches of native vegetation within the green corridors, interspersed with reserves of mown grass and specimen trees – pretty but has little ecological value
- Continued dumping of rubbish over fences along watercourse boundaries
- Continued growth of weeds and contaminant tolerant species of insects, birds and fish
- Protection of some streams and waterways while others are left to degrade
- Continued discharges of wastewater to streams and harbours

Note – this scenario will probably result in permanent loss of some stream biodiversity as a result of irreversible increases in heavy metal loadings in the streams and harbours or loss of macroinvertebrate species due to in-stream conditions

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Figure 28: Scenario 2 - Slowing Progress Within Waitakere City



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Scenario3: Accelerated Progress – Within Waitakere City

Waitakere City will undertake an integrated and sustainable programme of work to ensure, for example, wastewater discharges to the harbours are rare. However, the impact of such a programme will be limited by discharges from the other territorial authorities that border 90% of the Upper Waitemata Harbour coastline, and the Manukau Harbour.

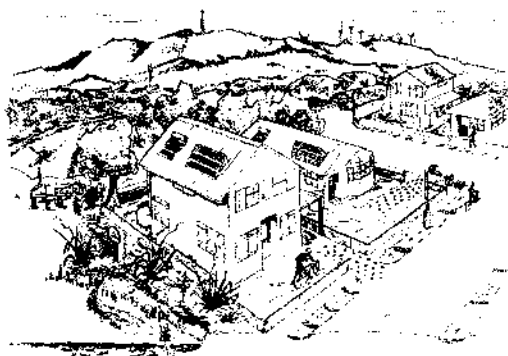


Table 26: Scenario 3 – Accelerated Progress /Within Waitakere City

<p>Rural</p> <ul style="list-style-type: none"> • All rain tanks meet required standards for safe drinking water • There are no leaks or overflows from septic tanks • Riparian management zone adjoining streams include restored native vegetation typically extending at least 30m from the stream, protect aquatic ecosystems • Traditional food sources in selected rural receiving environments are protected • There are no wastewater discharges to streams or beaches from Waitakere City • There are no restrictions to bathing in Waitakere rural streams
<p>Urban</p> <ul style="list-style-type: none"> • Post 2005 housing has onsite storage or detention of stormwater; most also provide for treatment to remove pollutants (depending on storage options) for stormwater • Water consumption is on average less than 150L/person/day • Even in wet weather, there are only rare sewer overflows within urban areas or to water bodies in urban areas; minor blockages are handled efficiently • Existing overland flow paths are unobstructed and generally consist of self-sustaining or low maintenance vegetation systems • Riparian management zone adjoining urban streams includes restored native vegetation typically extending at least 30m from the stream, to protect aquatic ecosystems • No potentially polluted surface runoff from industrial sites along watercourse boundaries discharge directly to the watercourse • No bathing restrictions exist for natural water bodies in Waitakere City's urban areas. • Protect traditional food sources in selected urban receiving environments where not affected by discharges from other councils • No beach or stream disposal of wastewater from Waitakere City

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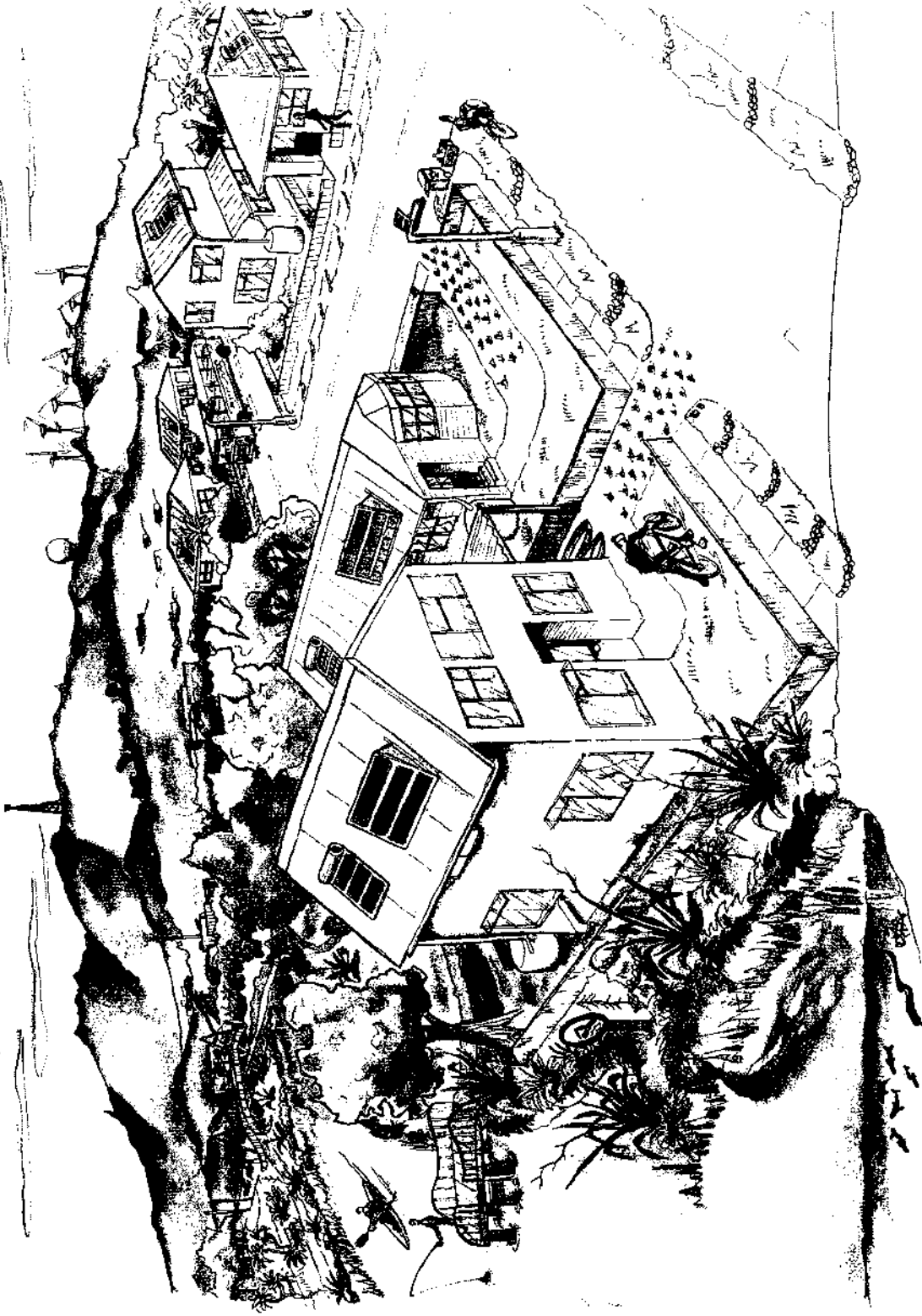
- Virtually all residential dwellings utilise stormwater
- All secondary overland flow paths are will be integrated into urban landscape design
- Riparian management zone adjoining streams include restored native vegetation typically extending at least 30m from the stream, protect aquatic ecosystems
- All new streetscapes to include LIUDD features for addressing runoff (swales, rain gardens, porous paving, filtered kerb and channel etc)
- Traditional food sources in selected water bodies are protected where not affected by discharges from other councils

Scenario 3 focuses on achieving the eco-city vision within Waitakere City and adds up to:

- A sustainable and integrated approach to the use of our water resources within Waitakere City
- A city wide commitment to establishing and maintaining native vegetation in the green corridors of the city to protect and enhance the native birds, fish and insects that live in our environment
- Watercourses that are protected, enjoyed and valued by everyone
- Being able to walk along our streams, find native fish and hear native bird song

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Figure 29: Scenario 3 - Accelerated Progress / Within Wairakere City



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Scenario 4: Accelerated Progress – Regional Integration

All councils in the Auckland region work cooperatively, sharing resources and skills, with a commitment to achieving an agreed integrated and sustainable approach to the three waters. For example, once Waitakere City achieves the goal of rare wastewater discharges to the Upper Harbour, the impact of this improvement will be supported by similar approaches from North Shore City Council and Rodney District Council.

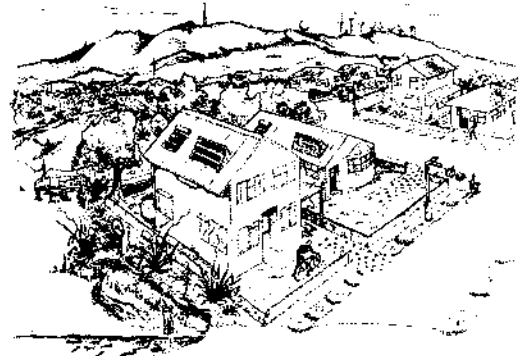


Table 27: Scenario 4 – Accelerated Progress /Regional Integration

<p>Rural</p> <ul style="list-style-type: none"> • All rain tanks meet required standards for safe drinking water • There are no leaks or overflows from septic tanks • Riparian management zone adjoining streams include restored native vegetation typically extending at least 30m from the stream, protect aquatic ecosystems • Traditional food sources in selected rural receiving environments are protected • There are no wastewater discharges to streams or beaches • There are no restrictions to bathing in rural streams
<p>Urban</p> <ul style="list-style-type: none"> • Post 2005 housing has onsite storage or detention of stormwater; most also provide for treatment to remove pollutants (depending on storage options) for stormwater • Water consumption is on average less than 150L/person/day • Even in wet weather, there are only rare sewer overflows within urban areas or to water bodies in urban areas; minor blockages are handled efficiently • Existing overland flow paths are unobstructed and generally consist of self-sustaining or low maintenance vegetation systems • Riparian management zone adjoining urban streams includes restored native vegetation typically extending at least 30m from the stream, to protect aquatic ecosystems • No potentially polluted surface runoff from industrial sites along watercourse boundaries discharge directly to the watercourse • No bathing restrictions exist for natural water bodies in urban areas. • Protect traditional food sources in most urban receiving environments • No beach or stream disposal of wastewater

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- Virtually all residential dwellings utilise stormwater
- All secondary overland flow paths are will be integrated into urban landscape design
- Riparian management zone adjoining streams include restored native vegetation typically extending at least 30m from the stream, protect aquatic ecosystems
- All new streetscapes to include LIUDD features for addressing runoff (swales, rain gardens, porous paving, filtered kerb and channel etc)
- Traditional food sources in most water bodies are protected

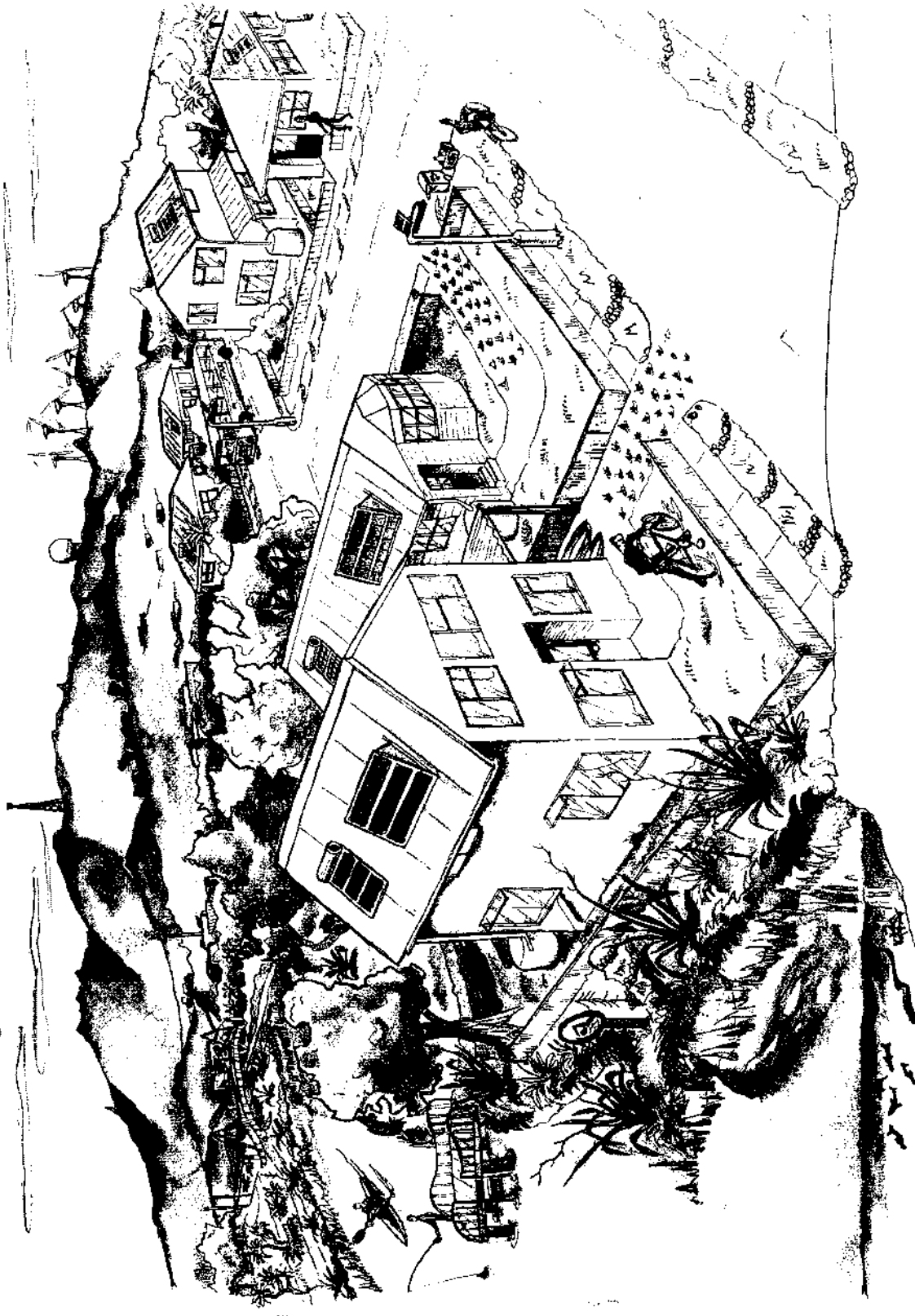
Scenario 4 achieves the eco-city vision quickly across the region and taken as a whole will add up to:

- A sustainable and integrated approach to the use of our water resources seen across the region
- A region wide commitment to establishing and maintaining native vegetation in the green corridors of the city to protect and enhance the native birds, fish and insects that live in our environment
- Watercourses that are protected, enjoyed and valued by everyone
- Being able to walk along our streams, find native fish and hear native bird song

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Figure 30: Scenario 4 - Accelerated Progress / Regional Integration



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Appendix 3: The Tactical Action Plans for the 3 Waters

Draft Tactical Action Plan 1 – Ensure Our Community Values Water

Council is committed to meeting increasing community expectations on a range of issues including:

- The sustainable management of Waitakere City's water cycle
- Public health & safety and environmental protection
- The impact of climate change
- Value for money and fair water services
- Maintaining Waitakere City's quality lifestyle
- Responsible and inclusive water management
- Respect for cultural and heritage needs
- Growing populations with greater demands for water services

To reduce the need for new regional water supplies and to improve the health of our streams and harbours, we now need to change the way the community uses water. Council believes that protecting and enhancing our lifestyles and environment will only occur if the community values water and uses it wisely.

Table 28: Draft Tactical Action Plan 1

Council in partnership will aim at the following	What we will do by 2010	Where we want to be in 2026
<p>Increased participation in water decision-making by:</p> <p>Creating a community water forum to better understand community values, needs and expectations.</p>	<p>Develop planning to move from a consultative approach to a broader, ongoing and appropriate community engagement model</p> <p>Support more stakeholder representation on water-related community groups</p> <p>Enhance catchment network support</p> <p>Know what our community wants</p>	<p>Stronger stakeholder engagement occurs in all water management decisions</p> <p>Community groups have embraced the total water cycle</p>
<p>Improved information and education on all aspects of water by:</p> <p>Community and customer education on the water cycle and its cost</p>	<p>Continue implementation and refinement of specific water advice detailing water consumption and water efficiency solutions</p> <p>Provide more timely advice on water use and service delivery for water supply, wastewater, flood mitigation, stormwater management, and recycled of water in its 3 states where appropriate. This would include suggested efficiency measures and costs.</p> <p>Continue to promote mobile community water efficiency awareness initiatives</p> <p>Stormwater and Litter Awareness Campaigns</p> <p>Comprehensive flood information is made available and is understood</p> <p>Continue to research and measure customer needs for water services</p>	<p>Waitakere City is New Zealand's most water aware urban community, expressed in positive behavioral changes</p> <p>Alternate sources of water supply that are fit for purpose are accepted as "the norm"</p> <p>The community understands and is aware of water issues</p> <p>Water sensitive behaviors are common at home and at work</p> <p>The community and industry have accepted water efficiency measures</p> <p>Small and large scale sustainable water schemes are established</p>

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<p>Strengthened educational programs and alliances</p>	<p>Promote water education program for primary and secondary schools Provide 15,000 contacts per year through the schools program Facilitate 100 guided tours of Council's Three Waters facilities per year Annual release of public sustainability report for all water services Input to other Council reporting on the environment and service delivery Encourage customers to adopt more effective water management The top 200 industrial and business water customers will have management plans to identify innovative water management solutions</p>	<p>Broad ranging and diverse alliances exist with many educational groups, all of which support water education. This would include water education certificates Water is regarded by industry as a limited, valuable resource requiring effective management practices A centre for water excellence has been created On line learning resources have been widely developed and are in use</p>
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Draft Tactical Action Plan 2 – Support a Distinctive Water Lifestyle for Waitakere City

Council surveys of the community and our work with stakeholder groups across the city confirm that the community wants:

- Improved access to waterways like walkways, bikeways and more parks near streams, rivers and coastal margins.
- More opportunities to enjoy water activities like fishing, swimming, boating or just sitting by the water.
- More creative and better supported water festivals and events.
- Greater access to safe and affordable alternative water supplies like rainwater tanks and recycled water.

To meet these and other community expectations, Council is also committed to placing more emphasis on promoting recreation in and near waterways, while facing significant challenges to protect public safety and the environment.

Table 29: Draft Tactical Action Plan 2

Council in partnership will aim at the following	What we will do by 2010	Where we want to be in 2026
Positioning water as the core of Waitakere City's lifestyle by: Promoting water related recreation and healthy lifestyles Enhancing Waitakere City's image as a water-smart Eco-City Supporting indigenous and heritage initiatives Supporting water festivals and events in Waitakere City	Promote the streams and harbours as the focus of urban life Better manage Lake Wainamu, and the Waitakere Ranges catchments for water quality and eco-tourism Support the use of stream, harbour and ocean images in art, music and literature, where culturally appropriate The people of Waitakere City recognise the value of our rivers Indigenous and heritage initiatives are recognised Provide support for festivals and events	Waitakere City's waterways are healthy Strong regional and wider recognition of Waitakere City's water lifestyle Significant support for Iwi and heritage initiatives Strong participation in a diverse range of water festivals and events with participation of our Pacific neighbours Broad adoption of, and support for, neighbourhood-scale alternative water schemes
Supporting extensive community access to waterways	Provide increased recreational opportunities, facilities and services on the streams, harbours and beaches, where appropriate	Waitakere City residents and visitors use and enjoy streams, lakes, wetlands, harbours and parks as part of work and leisure Access to water environments is widespread and in harmony with the environment, and public access continues to increase

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Draft Tactical Action Plan 3 – Build Strong Regional Water Partnerships

A sustainable water future for Waitakere City can only be achieved if we strengthen our relationships with regional stakeholders. For example, wider use of recycled water and more efficient use of water needs better regulations and incentives in order to gain better support from the community, business and all tiers of government.

Some regional water partnerships require greater formality and legislative support to meet challenges. Less structured and voluntary regional partnerships are important for water reform and Council is committed to supporting stronger and new stakeholder relationships.

Table 30: Draft Tactical Action Plan 3

Council in partnership will aim at the following	What we will do by 2010	Where we want to be in 2026
Regional "water cycle thinking" by: Sharing research and strategy with regional partners Leading regional water and recycling projects Strengthening and aligning policy and regulation	Strengthen efforts to improve regional health of streams, lakes, wetlands and beaches Ensure regional water sensitive urban design (WSUD) and water recycling standards and guidelines are in place and implemented Support planning and implementation of one integrated regional water recycling scheme Advocate for inclusion of WSUD and recycling provisions in all new regional green field developments Ensure that uniform water conservation measures, supported by better regulation, are in place	Strategies align to ensure the best regional outcomes for our waterways and natural resources There is multiple reuse of the water in our region Regional water policy and regulation is highly integrated and responsive to social, economic and environmental needs Regional water issues are jointly managed on a regional and local basis Council is valued as a regional partner and leader in sustainable water service provision
Support for a regional urban water cap by: Ensuring water allocation resides with the most appropriate party Promoting water trading	Support regional water trading	Water allocation between urban and rural users and for the environment is equitable
Promoting integrated catchment management by: Ensuring planning extends across council boundaries and includes all of the waterway catchments	Contribute to development of regional waterways catchment management plans	Strong regional management occurs for all waterways

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Draft Tactical Action Plan 4 – Manage Water to Meet Our Social Obligations

Because the three-waters services, including catchment management and stormwater control, water supply and wastewater, are provided at a local level in Waitakere City, Council is in a good position to facilitate more sustainable and better integrated water services in conjunction with our regional partners, iwi, stakeholders and customers.

Council believes that good management of water resources and services involves ensuring that all stakeholder groups are treated fairly. Council is committed to ensuring that we consider adopting a range of innovative water solutions, which are focused on meeting the needs of both the environment and of stakeholders across the community. Council is committed to working more with business and industry to support cleaner production and wiser use of water resources.

Table 31: Draft Tactical Action Plan 4

Council in partnership will aim at the following	What we will do by 2010	Where we want to be in 2026
Establishing appropriate institutional arrangements to improve interaction between the ARC, Watercare, neighbouring councils and other network operators	Promote a governance structure with clear responsibility for policy, regulation and total water cycle management. This would have a local, regional and state perspective	The governance structure will be defined to best meet community and environmental needs
Establishing a water policy and regulatory framework for Regional and District Plan and developer contributions, including provisions for: recycled water greywater rainwater tanks stormwater harvesting groundwater potable water	Implement mandatory Water Sensitive Urban Design (WSUD) standards for new development in Waitakere City including supply alternatives such as rainwater tanks in new houses Mandatory water efficient appliances for new development Develop water efficiency requirements to address existing development such as for renovations, infill and intensification	All households in Waitakere are fully fitted with water efficient appliances and devices Our customers will have choices
No compromise to public health from water services	100% compliance with New Zealand water quality standards, for both drinking and recycled water Continue to reduce overflows from the sewer system Manage risks associated with waterway quality to meet community expectations	Drinking water will still be of the highest quality, safe from pharmaceuticals, chemicals and biological contaminants All water services are delivered to protect public health All supplied water will be 100% compliant with National Standards
Waterway health managed for recreational purposes	Continued protection and rehabilitation of waterway corridors	Waterway quality matches community expectations and is enhanced through community partnerships
Flooding managed for public safety during emergencies	Strategic drainage infrastructure to relieve flood impacts	
Providing water resource and infrastructure security	Waitakere City's water infrastructure and water resources have accredited security plans	

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<p>Water services excellence</p>	<p>Current high water service standards are maintained or enhanced</p>	<p>Council's water services include strong partnerships with our customers and the community Council's strong customer focus and stakeholder relationships have shaped our local and city water solutions</p>
<p>Affordable water services</p>	<p>Provide economic support for financially disadvantaged groups Facilitate transition to full cost service and water efficiency Further consider options for tiered water tariffs</p>	<p>Waitakere City's water services are affordable and equitable Further price/tariff level reform to reflect full cost pricing</p>

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Draft Tactical Action Plan 5 – Create Healthy Waterways

The health of Waitakere City's waterways has been declining due to impacts from a diverse range of catchment conditions and past management practices. Council is committed to protecting and enhancing our catchments and waterway corridors.

This will protect and enhance water flow and quality, ecology and provide improved amenity and recreational opportunities for the community.

Table 32: Draft Tactical Action Plan 5

Council in partnership will aim at the following	What we will do by 2010	Where we want to be in 2026
Improving waterway health	Refine waterway quality objectives for nitrogen, phosphorous, sediments and toxins and for other public health aspects from diffuse point sources Progress scientific analysis to set sustainable ecological limits/indicators	Appropriate, agreed and achieved waterway health ratings for all Waitakere City's waterways Waitakere City streams, lakes, harbours, and beaches are safe for swimming
Improving stormwater quality by reducing: erosion sediment litter nutrients other contaminants	Maintenance of Stormwater Quality Improvement Devices (SQIDs) and gully baskets located in litter 'hot spots' Transition from SQIDs to Water Sensitive Urban Design (WSUD) Reduce infiltration and inflow of stormwater into the wastewater system by further flow gauging, system modeling, source detection and rehabilitation works Develop neighbourhood water plans with integrated water solutions including waterway rehabilitation Improve management of open water bodies (lakes, lagoons)	Identify and advocate for waterway environmental flows The natural water cycle has been restored to agreed conditions across Waitakere City
Re-establishing environmental flows	Provide input to regional initiatives Advocate to the ARC and Watercare Services for environmental flows	Identification and advocating for environmental flows in Waitakere City's waterways
Managing catchments and protecting and enhancing riparian corridors	Complete a management plan for all Waitakere catchments Better management of Council owned lands Advocate for catchment Management plans for all catchments that flow to the Waitemata and Manukau Harbours	All Waitakere City's catchments and other catchments flowing to the Manukau and Waitemata Harbours are healthy, safe and well protected

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<p>Improving sewer overflow management</p>	<p>Zero dry weather pump station overflows</p> <p>Invest in additional emergency back up pump station generators and wastewater storage to minimise wet weather overflow impacts</p> <p>Regulation better reflects sustainable environment and community needs</p> <p>Dry weather system overflows are managed efficiently and effectively with no adverse impact to the environment</p>	<p>Environmentally and socially acceptable inflow and overflow levels for the sewer network</p>
<p>Reducing treated wastewater discharge and impacts</p>	<p>100% compliance with the Auckland Regional Council Air, Land and Water Plan</p>	<p>Ecologically sustainable effluent discharge</p> <p>Zero wastewater discharge to waterways</p>
<p>Bio-solids management</p>	<p>Higher order beneficial reuse of 50% of biosolids</p>	<p>Higher order beneficial reuse (100%)</p>
<p>Reducing greenhouse gas emissions</p> <p>Optimising treatment, transport and energy management</p>	<p>Implementation of Waitakere City's energy efficiency program</p> <p>Reduce greenhouse gas emissions from water services on a per property basis</p>	<p>Reduction in treatment, transport and energy requirements using local solutions</p> <p>Substantial support for creating and using renewable energy sources and for minimising the use of non-renewable energy</p>
<p>Maximise renewable energy sources</p>	<p>Purchase of green energy to offset energy increases</p>	<p>Purchase of green energy to offset energy increases</p> <p>Further reduce greenhouse gas emissions from water services on a per property basis</p>

A105

Draft Tactical Action Plan 6 – Provide Sustainable Water Services for the City

Council believes that an innovative approach to providing local water services is fundamental to a sustainable future.

Local water schemes will be tailored to take advantage of our climate and rich natural environment. There are many opportunities to better use water to provide clean and green open spaces, and to support an active, healthy and prosperous lifestyle.

Providing sustainable water services for Waitakere requires smarter thinking and innovative solutions. Council has approached this challenge by fundamentally changing the way we relate to, and use, the water cycle. This includes a more integrated and sustainable approach to management of catchments, waterways, stormwater, water supply and wastewater services. This approach will better protect our local catchments and improve amenity for local residents and visitors.

Table 33: Draft Tactical Action Plan 6

Council in partnership will aim at the following	What we will do by 2010	Where we want to be in 2026
<p>Promoting Water Sensitive Urban Design (WSUD) by:</p> <p>Reduction in the use of water from the supply dams by water efficiency measures</p> <p>implementing appropriate water conservation measures including reform of regulation and pricing, and education</p> <p>minimising water supply system losses and theft</p> <p>promoting integrated water planning for all water services</p>	<p>Achieve an 11% reduction, by water efficiency, of the use of water from the water supply dams</p> <p>Ensure all new urban development reflect WSUD principles</p> <p>Reduce potable water network losses</p> <p>Complete city-wide and local area Integrated Water Plans</p> <p>Develop integrated water cycle planning and management to suit redevelopment and urban renewal</p> <p>Promote effective infrastructure charges planning and better align development charges with the actual use of Council's water services and to reflect full cost recovery including environmental and social impacts</p>	<p>Water supply usage of 125 litres/person/day</p> <p>Generational change in the way water services are delivered</p> <p>All new and existing homes, businesses and communities embrace water sensitive design principles</p>
<p>Promoting alternative water sources and supplies including:</p> <ul style="list-style-type: none"> • recycled water • greywater • rainwater tanks • stormwater harvesting • groundwater • other surface water storages • emerging technologies such as desalination and condensation 	<p>Achieve a seven percent substitution of urban potable water supply by alternative water supplies</p> <p>Develop planning for homes, businesses, neighbourhoods and open spaces across Waitakere to better use 'fit-for-purpose' water</p> <p>Examine opportunities for dual reticulation infrastructure, water mining and other recycling technologies</p> <p>All new developments investigate sustainable and integrated water options as routine</p>	<p>20% substitution of urban potable water supply by alternative water supplies</p> <p>Extensive local area and citywide use of alternate water supply schemes</p> <p>Zero wastewater discharge into waterways</p> <p>100% of all recycled water will be used sustainably</p> <p>Stormwater systems will be capable of harvesting stormwater and improving natural water cycle conditions</p>

A106

Draft Tactical Action Plan 7 – Manage Flooding Through Structural and Non-Structural Means

Both the flood risk and amenity of our waterways have strongly influenced the development of Waitakere City.

Council's challenge is to improve the way we manage flood risks to property and to people, whilst taking opportunities to improve stormwater quality and to restore our natural water cycle.

Table 34: Draft Tactical Action Plan 7

Council in partnership will aim at the following	What we will do by 2010	Where we want to be in 2026
Better flooding information	Open access to all water information affecting private properties (flood, pipes, waterways) Raised awareness of community and business about flooding effects, availability of information, community responsibilities, flood warning system	
Codes and specifications	District Plan and Code of Practice with improved codes and information	
Strategic flood mitigation	Maintenance and improvement of the stormwater network so that it operates to full capacity Impact of flooding minimised by implementation of the Flood Risk Management Strategy Use natural channel solutions and waterway rehabilitation programs to improve waterways Improve public safety, asset protection and public access during flood events	Solutions implemented to mitigate flood prone areas (existing and future urban development)
Link with emergency services planning	Natural disaster mitigation plans are in place to support emergency services during flood events	

A107

Draft Tactical Action Plan 8 – Manage Water to Deliver Economic Prosperity

Council is committed to supporting the economy of Waitakere City. A key challenge is to support and encourage future growth and business while ensuring we meet our social obligations.

Waitakere City’s population is predicted to increase between 2,500 and 2,900 people each year. This growth increases wealth and employment, but carries with it the challenge to better deliver timely and affordable water services. Some of the challenges include:

- Community expectations for environmental quality of the city’s natural and built assets
- Increased focus on efficient and innovative water use by the community, business, industry and agriculture
- Greater focus on true costs, equity of prices, and fair cost allocation
- Rising stakeholder expectations for innovative and efficient water services and infrastructure
- Poor understanding of the ecosystems services value provided by our natural catchments and waterways,

Council is determining how to better deliver a diverse range of sustainable water solutions tailored to Waitakere City and its local areas.

Table 35: Draft Tactical Action Plan 8

Council in partnership will aim at the following	What we will do by 2010	Where we want to be in 2026
Promoting transparency and a balanced approach to reform of water pricing and regulation	Facilitate transition to full cost service and water efficiency Further consider options for tiered water tariffs	Business and the community continue to enjoy reliable, safe and affordable water services The full costs of using water services are shared equitably by the users
Developing and implementing incentives and disincentives to use water wisely	Undertake pricing reform to encourage water conservation Ensure all regulatory reform aligns with the national and regional agenda	The price of water reflects the full cost including allowance for environmental impacts and to address social needs Further price/tariff level reform to reflect full cost pricing
Providing strategic asset management in order to provide timely and affordable water infrastructure and services	Continue to implement nationally recognised asset management practices Develop planning for ecosystem services Optimise use of existing natural and built assets Promote least cost asset planning and delivery Assets managed appropriately to meet delivery of service standards	Waitakere City’s water service solutions give the best environmental, economic and community outcomes Waitakere City’s water infrastructure is managed and adapted to support a diverse range of new local water schemes
Strengthening financial planning to better rationalise capital and recurrent costs	Progress planning for developer contributions to reflect the true costs of development Smooth and minimise capital and recurrent costs from water services and infrastructure	Developer contributions reflect true costs of development

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