



*Development East Tamaki*

# Comprehensive Catchment Management Plan

*Manukau City Council*



# *East Tamaki Comprehensive Catchment Management Plan:*

## *Catchment Management Guidelines*



The East Tamaki catchment has undergone an extensive catchment management planning and structure planning exercise over the last 3-4 years.

Manukau City Council, in conjunction with the ARC and Regional Growth Forum, have made a commitment to urbanise the catchment to accommodate a significant proportion of the City's growth over the next 20 years. To enable this to occur, the ARC has agreed to prepare a change to the RPS to extend the Metropolitan Urban Limits to the catchment boundary. One of the important prerequisites to support a decision to urbanise the area is the completion of a catchment management plan.

Manukau City Council have taken a comprehensive approach to catchment

management planning. This has resulted in this CMP including a discussion and recommendations on a range of issues, including the catchments in-stream ecology, terrestrial ecology, environmental and ecological enhancement measures, landscape and amenity assessments, as assessment of the costs of growth and provision of mitigation

measures, and mechanisms to implement the recommendations. Therefore, the final output of the catchment planning process is a Comprehensive Catchment Management Plan (CCMP)

The overall aim of the of the CCMP project is: *"To achieve an integrated approach to stormwater management, improving biodiversity and integration of recreational and amenity values"*.

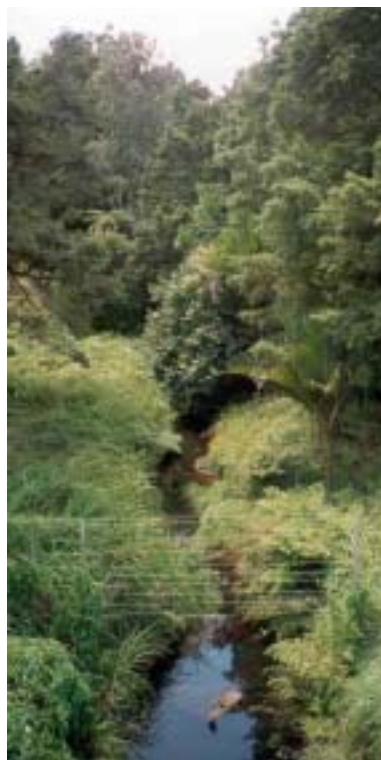
*Sustainable catchment management, in its simplest form, requires pragmatic long term solutions to complex problems.*

The CCMP aims to provide an integrated framework for the sustainable management of the catchment both through the development phase and into the future. The approach adopted by Council that in part sets a range of key targets for the study is to: *“To manage the stormwater budget in an integrated manner to minimise risk of flooding and enhance the quality of water through innovative and effective engineering techniques which support a high quality environment based on the Development East Tamaki Concept Plan.”*

The purpose of this document is to provide the catchment manager with a synopsis of the key catchment planning issues, objectives, and actions required to implement the Comprehensive Catchment Management Plan (CCMP).

From these issues and objectives, an underlying catchment management philosophy emerges which provides flexibility for Council, landowners, developers and the community, within the overall land use and environmental framework which has been developed through consultation and various technical studies.

The CCMP has been prepared on the basis of the DET Concept Plan that has undergone a significant consultation process and received wide public support. Manukau City Council adopted the Concept Plan in June 1999. The CCMP has also been prepared with close involvement from Council’s policy team preparing the Variation to the Proposed District Plan for East Tamaki. In this sense, the catchment manager must be aware of these



other important documents, which in their final forms, will provide a significant degree of guidance for catchment management, particularly during the development phase.

## Vision for the Catchment

The vision for the catchment is *“To achieve a sustainable community in the broadest sense. A sustainable community is about using, managing and protecting natural and physical resources in a way that enables communities to develop economically, socially and culturally while safeguarding the life supporting capacity of air, water, and ecosystems. A sustainable community must also take into account not only the health and well being of the community but also the needs of future generations.”*

This CCMP has built on this vision in developing environmentally sustainable solutions to the development of the catchment, and its long-term management.

## Catchment Management Issues

The key catchment issues are:

- § That the streams in the catchment which provide important habitat and migratory access for indigenous flora and fauna could be threatened by development, either directly through inappropriate land use development, or indirectly through water flows or water quality.
- § That the catchment stormwater budget could be significantly adversely affected by development without sufficient

integration of land use planning and stormwater management.

- § That the few important ecological areas in the catchment (e.g. Murphy's Bush) could potentially be adversely affected by poorly planned development.
- § That MCC has certain commitments to achieve land use densities, which could impact on the flexibility for managing the stormwater budget.
- § That landscape and amenity values could be significantly affected by development if improperly managed, resulting in a loss of character and focus for the area.
- § That the future population of the East Tamaki catchment requires a level of passive and active recreation open space to meet their future needs.
- § That the significant cost of growth arising from development of the catchment, provision of public amenity and mitigation measures could cause financial implications for Council unless carefully managed.
- § That the acquisition, enhancement and maintenance of the environmental corridors in the upper and lower catchment is open to some risk unless appropriate planning instruments are used to provide certainty.

## Catchment Resources

The East Tamaki study area comprises the upper part of the catchment 'upstream' and west of Te Irirangi Drive. The study area is approximately 1735 hectares. The area known as



"Development East Tamaki" has been identified for urban purposes since 1973.

The CCMP identifies the key resources within the catchment in detail. The approach to the protection, enhancement of the important environmental and ecological resources in the catchment is fundamental to the design and implementation of the stormwater strategy in particular. Investigations of existing catchment resources have focussed on the following:

### *In-stream habitat*

Fish and macroinvertebrates have been investigated. Six species of fish; shortfin eel, longfin eel, banded kokopu, Crans bully, mosquito fish and koi carp; were confirmed as being present with the Otara Creek catchment. The shortfin eel (*Anguilla australis*) appears to be the most abundant fish species in the catchment, however for future management purposes, the banded kokopu is an important indicator species, and identifies the need to consider fish passage in the management of the stream system.

The macroinvertebrate assessment indicated that most pollution sensitive taxa are not present in the catchment, suggesting that the existing pollution level (related to rural uses) is moderate.

### *Stream and Riparian Character*

Four representative stream and habitat types were recognised in the East Tamaki catchment (upstream of Chapel Road):

- § shallow lowland rolling streams (SR), and
- § valley headwater (HW),
- § hill valley (HV),
- § lowland first order streams (LFO).

The classification of streams into four types provides a basis for the management approach to instream and riparian habitat. In relation to riparian character, riparian vegetation is generally sparse the mid-lower catchment study area. A number of weed species (e.g. willow) occur on stream banks. The upper catchment has a number of well vegetated gullies which provide good habitat.

### *Landscape Inventory*

Analysis of the East Tamaki catchment has identified those elements, features and qualities that might be carried over from the present 'pre-urban' situation into its future urban form as the basis for landscape and amenity enhancement, and the retention of a sense of place and identity appropriate to the locality. These features, elements and patterns are divided into geophysical components and amenity characteristics. At a broader scale 5 identity areas have been identified. These are primarily distinguished by terrain and general land / vegetation cover. A number of more finely tuned landscape units have also been identified.

The five identity areas identified comprise:

- § The Point View Drive Ridge Area
- § The Redoubt Rd Ridge
- § The Ormiston Rd Saddle
- § The East Tamaki Valley
- § The East Tamaki Flats

The landscape assessment has provided an important basis for determining the future landscape and amenity needs of the area, and along with floodplain protection, have influenced the extent of environmental corridors in the catchment.

### *Terrestrial Ecology*

The most significant area of vegetation is Murphy's Bush in Murphy's Road. There are also a number of additional tracts of remnant vegetation (e.g. kahikatea stands) within the catchment which are significant.

Wildlife sightings of interest in the catchment include New Zealand pigeon, New Zealand dabchick, white heron, North Island Kaka.

Generally the Catchment supports a wide diversity of mostly common introduced and native bird species as a result of its remaining high diversity of habitat types i.e. grazed pasture to small forest remnants.

A number of management issues arise in respect to protecting the existing terrestrial ecology, and enhancing those existing resources in combination with the enhancement of the environmental corridors.

### *Stormwater Management*

Stormwater management in the catchment is a major issue in respect of development. The current rural character of the development area means that storm runoff is relatively low, and the overgrown natural channels and flood plain areas result in significant ponding and flood peak attenuation. Full conventional urbanisation would significantly increase peak flows and total runoff: the previous (1990) catchment plan predicted they would double. Downstream the runoff passes through an existing urban area with only limited channel capacity, and the effects of flood peak increase would be unacceptable in terms of flood risk to existing properties. It then discharges to a sensitive lake (Otara Lake) area where any increase in urban contaminant discharge would have further adverse effects. Finally,

*Comprehensive Catchment Management requires consideration of all catchment resources, identification of strategic issues, development of management responses, including appropriate design solutions and actions to implement the CMP.*

the principal streams have been identified as important habitat and fish migration routes.

The key responses in the CCMP have been:

- § to protect and enhance the principal streams in terms of fish passage and habitat;
- § to provide for flood peak attenuation from each development area so that overall the extreme flood peaks do not increase;
- § to reduce frequent flood peaks significantly so that stream erosion does not increase;
- § to provide for stormwater quality improvement measures such that urban contaminants are removed from discharges in accordance with the best practicable option approach;
- § to protect flood plain areas from development so that flood storage and conveyance capacity is retained and there is no building in at-risk areas.

It should be realised that the proposed future drainage subcatchments provide for a strategic overall framework for the planning of development. Failing to adequately attenuate runoff volume from one or part of a subcatchment during development may be acceptable, however, the detention volume which has been omitted needs to be catered for further downstream or in adjacent subcatchments and the consequence from the unmitigated portion of the runoff must be clearly documented. Ensuring these issues are dealt with, while providing some flexibility to developers, is a key monitoring role for the catchment manager. MCC consent processing



officers will need to ensure such issues are identified and addressed by Council.

## **Catchment Management Objectives**

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A number of catchment management objectives are identified in the CCMP. These relate to the following key outcome areas:

- § Instream and Riparian Management
- § Stormwater Management Objectives
- § Terrestrial Ecology Objectives
- § Land Use Objectives
- § Landscape and Amenity Objectives
- § Recreation Objectives
- § Implementation Objectives

## **Implementation Plan**

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Implementation of this CCMP requires a range of actions to be undertaken by the catchment manager, both now, and into the future. The implementation of the CCMP needs to address the environmental objectives set out in the CCMP. Implementation must also be mindful of other objectives, which are consistent with the CCMP, such as those land use objectives identified in the draft Variation. Many issues of implementation relate to timing, and so it is important that the catchment manager is familiar with the cost of growth and staging issues identified. An appreciation of development pressures through monitoring the rate of uptake of new land, enhancement of environmental corridors, installation of ponds,

and progress on other mitigation measures are important prerequisites for successfully managing implementation of the CCMP.

The most significant issue in the catchment is the management of stormwater. Stormwater influences the instream habitat, and it is important to manage both flood peaks and volumes, and also low flows.

The stormwater mitigation framework is based on providing a backbone of stormwater ponds across the catchment (49 in total). This backbone can be supported by low impact design approaches to achieve additional water quality benefits, and some attenuation benefits on more frequent events.

Ponds serve individual subcatchments within the study area. Ponds were located only in the environmental corridor, and efforts were made to ensure they did not impact on any existing land use. This assumes that the environmental corridors identified do not encroach on any existing houses in the area. There may be some locations where environmental corridors could impinge into existing houses.

It is noted however that ponds were assigned at a strategic level only and hence, there will be points of detail that should be addressed and resolved as development progresses, which may result in small changes in the boundary of the environmental corridors at specific locations. The approach to vesting the environmental corridors in the middle and lower catchment provides Council with flexibility to achieve this in discussion with developers through the resource consent process.

One of the key management issues will be anticipating the rate and location of growth. Due to the number of difficulties in making such predictions, the approach to stormwater mitigation has provided flexibility to Council and developers in the timing of pond construction.

There is a fundamental difference in the management of the upper parts of the catchment which are too steep to support urban density development, to the mid and lower parts of the catchment/study area. This difference relates to the way in which the stream network is managed.

In the upper catchment, all enhancement measures, stormwater management and other mitigation is the responsibility of the landowner. The environmental corridors will remain with the ownership of the private landowner. However, the enhancement of the environmental corridors (as defined in the CCMP maps) will be required as part of any future subdivision or land use consent. Where no further subdivision occurs, Council should aim to work with landowners and provide incentives to enhance the environmental corridors.

In the middle and lower catchment, the environmental corridors are to be secured into public ownership at the point of subdivision. This will be done by vesting those areas identified on the maps as either 1% AEP floodplain, or environmental corridor. Stormwater ponds identified in the CCMP can be constructed either by developers prior to their earthworks for development, or Council ahead of development.

In both the upper and lower catchment, criteria for enhancement of these corridors have been provided. These criteria should form the basis for working with landowners in the upper catchment (e.g. through education, or as conditions on resource consents) and as a basis for works in the environmental corridors in the lower catchment.

The following table identifies the objectives, key success factors, and recommended actions required by the catchment manager to implement the CCMP.

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
<p><b>Instream and Riparian Management</b></p> <p>To manage the Otara Creek catchment in such a manner to sustain a viable banded kokopu population.</p>	<p>§ suitable adult banded kokopu habitat in the headwater and hill valley streams;</p> <p>§ passage of juvenile and adults of the species throughout the entire mainstem reaches of the river from headwater streams, hill valley streams and lowland rolling streams to the river mouth;</p> <p>§ sufficient deep pool habitat throughout the mainstem reaches from headwaters and hill valley sections, and throughout mainstem lowland rolling streams, especially during low flows</p> <p>§ improvement of water quality to reduce oxygen depletion, high water temperatures, and excessive algal production;</p> <p>§ improvement of bank stability, particularly in the headwater and hill valley streams, to minimise excessive siltation of stream substrate in the lowland rolling streams, and to minimise the infilling of pools and the smothering of substrates to improve habitat.</p> <p>§ Passage of juvenile and adults of the species throughout the entire mainstem reaches of the river from headwater streams, hill valley streams and lowland rolling streams to the river mouth;</p> <p>§ Sufficient deep pool habitat throughout the mainstem reaches of lowland rolling streams, especially during low flows.</p>	<p>Develop Guidelines for developers and Council to ensure stream works, rehabilitation, weed removal and earthworks adjoining streams do not cause damage to stream habitat, or remove habitat of high value to banded kokopu.</p> <p>Need an assessment of fish passage through the catchment study area, and to the Tamaki estuary.</p> <p>Discuss requirements for ecological enhancement of instream habitat with ARC to determine whether works are required to meet objectives, and whether resource consents are required.</p> <p>Implement proposed planting programmes for lower catchment as soon as practicable after Council has assumed control of environmental corridors. Planting to be in accordance with requirements in CMP.</p> <p>Carry out check of streams for fish passage as above.</p>
<p>To manage the mainstem lowland rolling streams of the Otara Creek Catchment in such a manner to maintain and enhance the viability of a viable eel (shortfin and longfin) population.</p>		

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
<p>To manage the headwater and hill valley streams of the Otara Creek Catchment in such a manner to sustain habitat suitable for a diverse Ephemeroptera, Plecoptera and Trichoptera (EPT) communities, generally greater than three species types.</p>	<ul style="list-style-type: none"> <li>§ Habitat heterogeneity including runs, pools and riffles, as well as moderate instream woody debris;</li> <li>§ improvement of water quality to reduce oxygen depletion, reduce high water temperatures, and excessive algal production; and</li> <li>§ improvement of bank stability to minimise excessive siltation of stream substrate and to reduce infilling of pools and the smothering of available substrates.</li> </ul>	
<p>To promote the enhancement of riparian areas in the lower and upper catchment to provide a habitat with a diversity of species.</p>	<ul style="list-style-type: none"> <li>§ The control of introduced fish species;</li> </ul>	<p>Develop control programme for introduced fish species in catchment. Provide education information to residents about the aims of the Council in protecting fish species, and need to avoid introduced fish.</p>
	<ul style="list-style-type: none"> <li>§ Self-colonisation of other native fish species by providing suitable instream habitat;</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Establishing a range of native species as riparian planting to provide habitat, shading and bank stability;</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Ensuring future management and maintenance of the environmental corridors and associated local reserves (and other land use practices) does not create the potential for lethal risk to the instream habitat or fish populations.</li> </ul>	<p>Develop Environmental Management Plans for maintenance of environmental corridors, which must form part of any contract for works within corridors, including forming parts of maintenance contracts.</p>
	<ul style="list-style-type: none"> <li>§ Education measures which ensure future communities of the East Tamaki area are aware of the importance of land management (e.g. correct disposal of hazardous household wastes) to instream values.</li> </ul>	<p>Develop education material, programmes, possibly in conjunction with ARC.</p>

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
	<ul style="list-style-type: none"> <li>§ Recognising the importance of the transition period (approximately 20 years) in managing stream bank stability and its relationship with other sediment generating activities (i.e. development).</li> </ul>	
<p><b>Stormwater Management Objectives</b></p> <p>To manage the volume and peak flow rate of stormwater runoff to avoid flood risk and limit stream erosion.</p>	<ul style="list-style-type: none"> <li>§ manage storm flows such that runoff from 25mm of rainfall can be retained and released over 24 hours, and the 2 year Average Recurrence Interval (ARI) storm is significantly reduced;</li> <li>§ manage storm flows such that larger events (10 through 100 year ARI) are no greater than those from the existing (predevelopment) catchment;</li> <li>§ identify appropriate riparian corridors and protect the primary drainage paths and provide for riparian cover;</li> <li>§ identify flood plain areas, and put in place rules to avoid inappropriate development in those flood plains.</li> <li>§ Design key or strategic arterial roads in the catchment to provide protection from inundation in the 100 year ARI flood.</li> <li>§ Incorporation of the proposed development rules for stormwater management purposes (contained in the 'Implementation Section of the CCMP') in the draft variation, or their consideration through the 'Section 32' process where other more cost effective or efficient means are available.</li> </ul>	
<p>To ensure contaminants in runoff are managed and appropriate measures to prevent those contaminants reaching high value receiving environments implemented.</p>	<ul style="list-style-type: none"> <li>§ appropriate measures for both primary (on-site control) and secondary (off-site back-up) management of erosion and sediment runoff during the development phases;</li> <li>§ providing for both targeted source control and contaminants and general catchment-wide removal of contaminants in stormwater.</li> </ul>	

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
<p>To retain stormwater in the catchment to assist in enhancing low flows.</p>	<p>§ Staging the development phase to reduce the potential for significant sediment run-off across different or 'unprotected' parts of the catchment.</p>	
	<p>§ Ensuring that stormwater ponds are provided ahead of development to act as a backup to the standard requirements of the ARC TP90 guidelines which developers will be required to observe.</p>	
	<p>§ Enhancement of groundwater and interflow to assist in maintaining stream base flows.</p>	
	<p>§ Reduced Impervious areas</p>	
	<p>§ Maximum use of soakage and infiltration for disposal of stormwater.</p>	
	<p>§ The protection of the important qualities of streams, including habitat values and provision for fish passage.</p>	
	<p>§ Suitable planning mechanisms to secure access to corridors to enable stormwater management and enhancement.</p>	
	<p>§ A suitable financial framework which will ensure catchment enhancement works (such as fencing, and replanting) within corridors occurs, ideally paid for by development contributions.</p>	
	<p><b>Terrestrial Ecology Objectives</b></p> <p>To protect and enhance terrestrial ecological values and investigate and action opportunities to create linkages between areas and re-establish native habitat where appropriate.</p>	<p>§ Purchase/protection of significant areas of terrestrial ecology as public open space.</p>

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
To enhance the existing terrestrial ecological values and biodiversity of the East Tamaki area.	<ul style="list-style-type: none"> <li>§ Stock exclusion and fencing around significant areas of native vegetation or wildlife habitat areas (current and future) threatened by domestic animals.</li> </ul>	<p>Advocate fencing to existing landowners to avoid stock access, especially in the Stage 2 area, where development (and hence vesting of environmental corridors) will take a longer time.</p>
	<ul style="list-style-type: none"> <li>§ Undertaking and promoting plant pest control for both public and private property, both present and future.</li> </ul>	<p>Develop pest management strategy for entire catchment.</p>
	<ul style="list-style-type: none"> <li>§ Undertaking and promoting animal pest control for both public and private property, both present and future.</li> </ul>	<p>Identify areas where pest management contracts are required. Provide education, other information to landowners with significant plant or animal pest problems</p>
	<ul style="list-style-type: none"> <li>§ Buffer zones surrounding areas of significant ecological value, such as Murphy's Bush, to minimise the potential effects of the urbanisation process, and subsequent effects arising from close proximity of centres of population (e.g. domestic pets).</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Maintenance or enhancement of hydrology e.g. with regard to kahikatea stands.</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Set-back distances for urban areas and roadways.</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Provision of vegetated linkages between key areas of native vegetation;</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Determination of optimum size of future native vegetated 'blocks' (i.e. a few large or several small areas).</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Provision of a range and diversity of habitat types e.g. upland game species; rough scrubland.</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Enhancement, such as planting food species, aimed at particular species e.g. kereru.</li> </ul>	
<ul style="list-style-type: none"> <li>§ Retention of typical amenity plantings, both native and exotic.</li> </ul>		

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
To ensure that adequate information is available when making detailed decisions on the management and enhancement of existing and future terrestrial ecological areas of significant natural value.	§ Gaining a greater understanding of terrestrial ecological values and species diversity through field surveys.	
	§ Requiring development applications to provide assessments of ecological values, significance and management measures where appropriate.	Ensure Consents Processing Team for East Tamaki are aware of ecological issues when processing subdivision consents.
<b>Land Use Objectives</b> To provide for a range of land use types within the study area whilst ensuring that the effects of urbanisation can be managed in a sustainable manner.	§ The range of land uses densities identified in concept plan which modelling and technical investigations have confirmed through the catchment planning process as being able to be managed appropriately.	
	§ Ensuring land use management through the District Plan provides controls on impervious coverage associated with each land use type.	Ensure Consents Processing Team for East Tamaki are aware of impervious and other limitations (identified in the CCMP) when processing subdivision or land use consents.
	§ Ensuring the staging objectives are met by supplying a range of development opportunities at any particular point in time.	Monitor the uptake of development opportunities within the staging areas. Monitoring timeframes should be 3 monthly or 6 monthly.
	<b>Landscape and Amenity Objectives</b> To identify and protect key landscape features and elements to retain a sense of identity for the East Tamaki area.	§ The protection of the stream network within publicly owned land, and its enhancement through weed and pest control, replanting, and where necessary recontouring.
§ The protection of the integrity of significant areas of existing native vegetation (such as Murphy's Bush and the Gracechru Road block);		
§ The protection of ridgelines which frame the catchment from inappropriate development;		Ensure subdivision or land use consents in the upper catchment protect significant views or ridgelines where appropriate.

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
<p><b>Recreation Objectives</b></p> <p>To provide a diverse range of recreational opportunities in the catchment, including for active and passive recreation and leisure activities.</p>	<p>§ The development of 'Barry Curtis Park' in a manner which will ensure 'an internationally renowned park which reflects the peoples and cultures of Manukau City' and which creates a key focal point for both the catchment and the wider area.</p>	
	<p>§ Recognising the need to develop and integrate key open space nodes within the overall catchment concept where possible. This is most likely to be successful by public purchase of open space nodes, although other opportunities may be available to enable such areas to be used for passive and active recreation. Where possible such areas should be contained within or linked to the ecological corridors.</p>	
	<p>§ Walkways and cycleways along the 'green finger' network;</p>	<p>Develop standards for walkways and cycleways in the study area which are consistent across area.</p>
	<p>§ Safe and easy access to walkways through appropriate design measures;</p>	
	<p>§ Community recreation and leisure facilities within environmental corridors (provided they comply with stormwater rules);</p>	
	<p>§ Community involvement in the enhancement of riparian corridors to develop a strong sense of community ownership and protection of corridors and other ecological features.</p>	<p>Provide opportunities through community planting days for involvement. Ensure tangata whenua are involved.</p>

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
<p><b>Implementation Objectives</b></p> <p>To ensure Catchment Management Objectives and assumptions upon which these are based are translated into workable development rules.</p> <p>To secure the protection and enhancement of the environmental corridors in the lower catchment in perpetuity.</p>	<ul style="list-style-type: none"> <li>§ Protection of existing ecological, landscape and other environmental features;</li> <li>§ Protection of floodplains from development;</li> <li>§ Low Impact Design measures, where appropriate, to minimised stormwater run-off and the impact of site development on the stream ;</li> <li>§ Asset management and infrastructure development to minimise the effects of development.</li> <li>§ Acquisition of the environmental corridors, consisting of a stormwater management zone and an overlying POS zone, in the lower catchment;</li> <li>§ Ensuring the funding policy, asset management, district planning and other policies which guide the future development of the area are aligned and a co-ordinated implementation process developed.</li> <li>§ To ensure flexibility is provided in the acquisition and management of environmental corridors to enable Council to meet a broad range of outcomes.</li> <li>§ Rules in the variation which require environmental enhancement to be secured at the point of subdivision in the upper catchment;</li> </ul>	<p>Ensure areas identified within environmental corridors are protected through vesting in Council ownership. Where vesting cannot secure corridors, consider other mechanisms, such as designation.</p> <p>Ensure infrastructure upgrades required for environmental protection occur ahead of development where appropriate.</p> <p>Develop schedule of areas vested, financial contributions, and ensure enhancement programme in place as soon as practicable after acquisition.</p> <p>Identify East Tamaki expenditure in Annual Plan, against other targets, such as Growth Strategy targets.</p>

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
<p>To secure, promote and recognise the importance of environmental enhancement of the stream margins and steep slopes in the upper catchment.</p>	<p>§ Flexibility in the design and layout of subdivision in the upper catchment to ensure sufficient incentive for 'enhancement subdivision' occurs to secure the outcome over the anticipated development life-span of the catchment;</p> <p>§ Protection of the environmental corridors in the upper catchment through environmental enhancement measures combined with legal mechanisms to ensure enhancement occurs and long term protection (e.g. through covenanting) is provided.</p>	<p>Ensure consent processing staff understand the importance of securing enhancement through subdivision or land use consents through regular training sessions, and regular reporting of areas protected.</p> <p>Develop suitable covenant for use in upper catchment. Keep register of covenants.</p>
	<p>§ To require additional information at the point of subdivision in relation to the ability of the area to manage wastewater;</p>	<p>Peer review of subdivision consents in context of CMP with respect to wastewater issues.</p>
	<p>§ To develop an education and awareness programme to promote the benefits of environmental enhancement in the upper catchment, and which recognises that a certain level of subdivision has already occurred in the area.</p>	
	<p>§ Establishing a register of projects to be implemented to achieve the stormwater management policies.</p>	
<p>To ensure adequate funding is provided to provide for implementation of stormwater management policies.</p>	<p>§ Including in the register an up to date assessment of the costs of projects, including actual costs of projects completed.</p>	
	<p>§ Establish a ledger of financial contributions received. The ledger is also to record the value (contract or agreed cost) of projects undertaken by developers and vested in council.</p>	
	<p>§ Establish a ledger of stormwater growth expenditure. The ledger is to record actual cost of projects undertaken, interest charged on borrowings, value of land purchased or vested, and legal, consulting and management costs.</p>	

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
<p>To ensure adequate funding is provided to provide for implementation of reserves and recreational facilities supporting the growth community.</p>	<p>§ Establishing clear policies and guidelines for consenting officers to manage costs of works undertaken by developers on behalf of council. The purpose is to ensure transparency in accounting for meeting the costs of growth.</p>	
	<p>§ Undertaking frequent (at least 3 yearly) reviews of the status of anticipated expenditure and contributions received.</p>	
	<p>§ Undertaking frequent (at least 3 yearly) reviews of the amount of the financial contribution to be charged.</p>	
	<p>§ Implementation of clear policy statements in the District Plan and guidelines for consenting procedures that require implementation of subdivision practices that conform to the “low impact design” philosophy.</p>	
	<p>§ Establishing a register of land purchases and projects to be implemented to meet the reserve development requirements.</p>	
	<p>§ Including in the register an up to date assessment of the costs of projects, including actual costs of projects completed.</p>	
	<p>§ Establish a ledger of reserve contributions received. The ledger is also to record the value (contract or agreed cost) of projects undertaken by developers and vested in council.</p>	
	<p>§ Establish a ledger of reserve growth expenditure. The ledger is to record actual cost of projects undertaken, interest charged on borrowings, value of land purchased or vested, and legal, consulting and management costs.</p>	
	<p>§ Establishing clear policies and guidelines for consenting officers to manage costs of works undertaken by developers on behalf of council. The purpose is to ensure transparency in accounting for meeting the costs of growth.</p>	
	<p>§ Undertaking frequent (at least 3 yearly) reviews of the status of anticipated expenditure and contributions received.</p>	

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
<p>To establish a staging regime that assists in managing the adverse effects of development, promotes good financial management, and ensures development proceeds in a manner which will achieve the range of outcomes sought for the area.</p>	<ul style="list-style-type: none"> <li>§ Undertaking frequent (at least 3 yearly) reviews of the amount of the financial contribution to be charged.</li> </ul>	
	<ul style="list-style-type: none"> <li>§ An adequate supply of land is available to cater for population growth, including choice of housing types.</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Suitable environmental mitigation measures are in place so that urban development will not compromise important values within, or downstream of, the catchment;</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Ensuring specific land use standards are met, such as appropriate densities.</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Ensuring any costs of growth incurred by Council can be recovered.</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Minimising construction related sediment.</li> </ul>	
	<ul style="list-style-type: none"> <li>§ Minimising general disruption to the community from an uncontrolled staging programme.</li> </ul>	
	<ul style="list-style-type: none"> <li>§ The development of a monitoring programme to meet the combined requirements of:                             <ul style="list-style-type: none"> <li>– monitoring compliance with any consents granted by the ARC,</li> <li>– monitoring the effectiveness of the CMP, District Plan and any other asset management strategies or plans for East Tamaki,</li> <li>– gathering environmental information on the effects of urban development in the catchment to enable the aforementioned; and</li> <li>– regular reporting to inform the community on the success of implementation.</li> </ul> </li> </ul>	

Objective	Key Success Factors and Actions	Additional Implementation Actions Required / Comments
To establish a robust monitoring framework which contributes to the management of the East Tamaki Catchment in a sustainable manner.	<p>§ Providing sufficient resourcing, in conjunction with other organisations with particular interests or responsibilities for monitoring in the area, to enable the monitoring programme to be implemented in a robust manner.</p> <p>§ Provide for regular review of progress and success of implementation, with a particular focus on reviewing the environmental outcomes being achieved, potentially on an annual basis.</p>	Develop monitoring plan which identifies parameters, frequency, responsibility for monitoring in the catchment. Regular reporting to ensure environmental outcomes sought are met.

