ENVIRONMENT BAY OF PLENTY
RIVERS AND DRAINAGE SCHEME REVIEW

Environment Bay of Plenty

Environment Bay of Plenty Rivers and Drainage Scheme Review

Prepared By: Rob Steel
Strategic Management
Services Manager

Clive Tozer
Environmental Project Manager

Reviewed By:
Peter Askey
Principal Environmental Engineer

Approved for
Issue for Client: Mark Townsend
Business Group Manager

Approved By:

Ken Tarboton
Group Manager Rivers & Drainage

Opus International Consultants Limited
Whakatane
Concordia House, Pyne Street
PO Box 800
Whakatane, New Zealand

Telephone: +64 7 308 0139
Facsimile: +64 7 308 4757

Date 17 April 2009

Reference: 2-34037.00:
Report #: 09/017

Status: Final

Contents

Executive Summary

Background

Environment Bay of Plenty (EBOP) is seeking assistance with a review of their River and Drainage Schemes as part of a proposed rationalisation of costs leading into the forthcoming Ten Year Plan. Council has requested a review of the indirect charges and cost allocations to schemes. This aspect of the work has been carried out by Deloitte and is under separate report.

Opus have been asked by Environment Bay of Plenty (EBOP) to:

a) Review the management of the rivers and drainage schemes specifically - appropriateness of scheme related investigations in terms of best river and drainage management practices.

b) Provide high level comments on the current system for obtaining input to river and drainage scheme management through liaison groups. Suggest alternative models for better representation that can be investigated in the future.

c) Provide high level comments on operational management processes and their efficiency and steps to improve effectiveness.

Appropriateness of Scheme Related Investigations

The report summarises the EBOP Rivers and Drainage Group's approach to delivering scheme related investigations and determines the appropriateness of investigations charged to schemes.

The 2 key scheme related investigations under review are the Asset Management Plan (AMP) and the Floodplain Management Strategy (FMS) plus a range of subsidiary investigations that feed into each of these key documents.

<u>Asset Management Plan</u>

EBOP is required under the Local Government Act to manage the river and drainage scheme infrastructural assets in line with its AMP(s). It is noted that:

- Council has made substantial progress in the past twelve months to update and align its AMP to meet best practice standards and Audit New Zealand requirements.
- The revised AMP is now at a commendable intermediate level and the foundation exists for this to be taken to an 'intermediate –advanced' level.

It is recommended that:

- With a view to minimising targeted (scheme) ratepayer administrative costs, that Council carefully assess the relative costs, merits and value to the scheme ratepayers of maintaining the current intermediate level versus moving beyond this to an intermediate-advanced level AMP.

- Council considers the merits of a technical peer review of its updated AMP following the comprehensive review by Audit NZ.

The Rivers and Drainage AMP is essential for the effective operation of the rivers and drainage schemes. The primary beneficiary is the scheme ratepayer and the proposed ongoing 100% charge to the schemes for AMP development and updating is considered fair and reasonable. Scheme related investigations associated with the AMP include surveys, lakes level monitoring, condition assessments, stability and seepage assessments and capacity reviews. These have each been reviewed in terms of their appropriateness and are all deemed to be necessary activities. The methodology currently employed by EBOP in undertaking each of these investigations is considered appropriate rivers and drainage best practice. The proposed 100% charge to the schemes for these scheme related investigations is also considered fair and reasonable.

Floodplain Management Strategies

Floodplain Management Strategies (FMS) have been a feature of the EBOP flood risk management tool kit for several years. Their aim is to reduce the susceptibility and exposure of people and property to flooding using both non structural (for example setting of minimum floor levels) and structural (physical works such as stopbanking) options. FMS have been developed for two of the five major schemes.

FMS are not statutory documents and strictly speaking are not a 'necessary activity' from a scheme/scheme ratepayer perspective. However they can provide a more integrated and effective approach to managing flood risk. The primary beneficiaries are judged to be EBOP itself and the District Councils (for example FMS Flood Maps are of particular importance to District Councils and emergency managers). There are also a wide range of other beneficiaries.

It is noted that:

- EBOP has chosen to initiate and drive FMS development.
- The methodology used is considered appropriate hazard management best practice
- Until now Council has not charged the schemes directly for this investigation activity. However a 50% charge to relevant schemes is now proposed. No formal process was used by EBOP for deciding this proposed charge. However it is readily acknowledged that there is a significant degree of subjectivity about cost apportionment.
- A rigorous and detailed analysis, beyond the scope of this report would be needed to provide a more objective breakdown of who benefits from an FMS and to be able to justify the selected apportionment.
- The proposed charge raises issues of equity and fairness. Some schemes now have FMS in place while others for various reasons do not.
- Based on professional opinion, knowledge of the river schemes and discussions with other regional councils, it is considered that the rationale for the proposed 50% charge is not proven. We suggest that until work is done to derive a more transparent cost apportionment, then the status quo (FMS fully funded from general regional funds as per the 2006-2016 TYP) should remain.

Scheme ratepayer Representation

The existing Scheme Liaison Group model of ratepayer representation has been assessed and their purpose and role considered.

Seven other regional and unitary councils were interviewed about their current approaches to ratepayer representation and engagement.

Most Councils surveyed had a similar liaison group model to EBOP and there were few examples of alternative approaches. However several local government ratepayer engagement models have been evaluated including Community Boards, River Scheme Committees, Advisory Boards and Ratepayer Interest Groups.

It is recommended that the existing Liaison Group model be substantially re configured and improved. It is recommended that a range of improvements be implemented that have the capacity to substantially lift the effectiveness of these groups and to improve the level of engagement with scheme ratepayers. These recommended improvements draw upon the best features of the alternative models looked at. Of critical importance is the need for a written terms of reference to tighten up the Group's role and membership/representation; a triennial public meeting to ratify membership, inclusion of volunteer technical appointees and improved systems of reporting back to the wider ratepayer base based upon web and email. A framework for "River and Drainage Scheme Advisory Groups" is provided for further discussion and investigation.

Operational Management

Opus has worked with the Rivers & Drainage Group management team to understand what they do. The focus was to prompt and encourage the management team to ask themselves whether they were doing the right things (effectiveness) to achieve the Ten Year Plan levels of service and Council's contribution towards the Community Outcomes. With the aid of process maps it was possible to gain an understanding, at a high level, of what the Rivers & Drainage Group do and how well it is being done (efficiency).

The outputs were a number of recommendations which are summarised below:

- The Rivers & Drainage Group develop additional process maps of their remaining key activities, to drive improvements in operational efficiency and ensure effectiveness in achieving levels of service.
- The Rivers & Drainage Group develop a matrix to assess what level (or degree) of checking is required following a capacity review
- The Rivers & Drainage Group implement a prioritisation process and tools across all the rivers and drainage schemes to ensure an effective maintenance and capital works programme is created to support efficient delivery
- The Rivers and Drainage Group review how they procure services from contractors

1 Introduction

Environment Bay of Plenty (EBOP) is seeking assistance with a review of their River and Drainage Schemes as part of a proposed rationalisation of costs leading into the forthcoming Ten Year Plan. In particular the council is proposing to shift some indirect river scheme costs currently funded from the regional general rate, to the river schemes, to be funded by targeted scheme rates. Council is implementing a new overhead cost allocation methodology (new Service Level Agreements (SLA's)) which will also affect scheme charges. This proposed redistribution of costs to the schemes will not change the level of service.

In addition to a review of indirect charges to the River and Drainage Schemes, EBOP is seeking a review of the appropriateness of scheme related investigations in terms of best river and drainage management practice; high level comment on operational management processes and comment on scheme representation options.

Council's scope with respect to this review work is set out in the EBOP Terms of Reference (revised) dated 17 February 2009. Deloitte (principal consultant) and Opus have been contracted to undertake this work. Opus will:

Firstly – (quoting from the terms of reference and scope)

"Review the management of the rivers and drainage schemes specifically –
Appropriateness of scheme related investigations in terms of best river and drainage management practices (e.g. flood modelling, floodplain management strategies, capacity reviews, asset management planning etc).

Secondly –

Provide high level comments on the current system for obtaining input to river and drainage scheme management through liaison groups. Suggest alternative models for better representation that can be investigated in the future with input from scheme liaison groups and ratepayers.

Thirdly –

Provide high level comment on operational management processes and their efficiency and steps to improve effectiveness.

2 Background

2.1 Rivers and Drainage Group Structure and Functional Roles

The Environment Bay of Plenty Rivers and Drainage Group (under the directorship of the Group Manager Rivers and Drainage) has regional responsibility for a range of operational and technical functions associated with flood protection, rivers and drainage management and associated natural hazard management.

The main focus of the Group is managing and servicing on behalf of ratepayers, the 5 major rivers and drainage schemes (Kaituna Catchment Control Scheme, Rangitaiki-Tarawera Rivers Scheme, Whakatane-Waimana Rivers Scheme, Waioeka-Otara Rivers Scheme and the Rangitaiki Drainage Scheme); and 34 minor communal pumping and 3 minor rivers and drainage schemes. These schemes provide benefits of flood protection to people and property, channel edge stability and drainage to selected areas of the region. The greatest scheme benefits accrue to the more populated and more intensively used flood plain areas in the mid to lower catchment reaches.

The River and Drainage Group is comprised of 2 sections:

The Operations Section under the direction of the Operations Manager with approximately 20 staff has the operational ('dirty boots'!) responsibility for the maintenance, construction (renewals and new project works) and day to day management of the River and Drainage Schemes listed above.

The Engineering Section under the direction of the Engineering Manager with approximately 12 staff, has responsibility for professional engineering and technical support services (including civil, environmental and river engineering and works design, hydraulic modelling and land surveying). The Engineering Section is largely responsible for undertaking the more specific 'scheme related investigations' (including capacity reviews, flood modelling, floodplain management strategies and asset management planning). A review of the appropriateness of these scheme related investigations is the subject of the first of the terms of reference items outlined in Section 1.0 above. These investigation services are largely provided to the Operations Section (internal client) who in turn administers the Rivers and Drainage Schemes. The Engineering Section also provides some engineering design and technical advice/services to other EBOP internal clients such as Consents and Compliance and to a limited extent external clients.

There is strong staff interconnectivity between the Operations and Engineering Sections particularly at the management and professional staff level and this helps ensure appropriate communication and promotes efficiencies with respect to scheme management.

Historically EBOP has carried out most of its Rivers and Drainage Scheme renewals and capital works by contract (works/projects over $50k are tendered) or services and plant hire (purchase/works order for smaller jobs). Certain specialist work (such as hydraulic

modelling) is often sourced from external consultants. EBOP plans to continue this approach during the 2009-2019 Ten Year Plan (TYP) period.

EBOP only owns the minimum of specialist plant items. These include two weed cutter boats tailor made for use in the scheme canals; some specialised spraying equipment and a long reach digger. The long reach digger allows effective clearing/excavation and placement operations in and around waterways where standard reach diggers can not operate and is particularly useful in flood emergency situations. Other plant items needed during emergency operations such as flood pumps are also retained in house. EBOP plant rates (with full on-costs) for these specialist plant items are monitored and are competitive with external contractors.

While most of the Rivers and Drainage Group staff work from Whakatane and Edgecumbe, a small number are stationed at Te Puke and Opotiki to minimise travel cost and respond to local scheme ratepayer needs and flood events.

Rivers and Drainage Group staff are trained and experienced in managing flooding and flood emergencies. The EBOP Flood Warning Manual, sets out the operating procedures, triggers for flood warnings, communications protocols etc for each major river system. An experienced Rivers and Drainage Group Flood Manager is rostered on a monthly basis. Rivers and Drainage staff have well honed capabilities in flood prediction, hydrometric monitoring, issue of regional flood warnings, emergency response, operation of flood pumps, flood gates and other specialist equipment, emergency mitigation works and event recovery.

While some staff from other areas of Council do assist in emergencies, the Rivers and Drainage Group see it as vitally important to have a core of experienced operational and engineering staff with practical skills and local site knowledge able to respond to flood emergencies. Flood response is coordinated from a dedicated 'flood room' in the Whakatane building while field response staff are available and on standby at Edgecumbe, Te Puke and Opotiki

2.2 River and Drainage Schemes - Historic Perspective

Structural flood protection within the 5 Rivers and Drainage Scheme areas developed in a somewhat adhoc and localised manner and was often initiated soon after land clearance and development (for example by local river boards known for their 'stopbank wars' in the post WW1 era).

The major river and drainage schemes were established from the mid 1960's onwards, primarily under the provisions of the Soil Conservation and Rivers Control Act 1941. Central government funds for this purpose (via the Ministry of Works and Development – National Water and Soil Conservation Authority) were made available through the Regional Council's predecessor organisation the Bay of Plenty Catchment Commission during the 1960's, 70's and 80's. The funding allowed the Catchment Commission to put in place the five comprehensive catchment and river schemes. Central government also assisted with

maintenance of these schemes until the late 1980's when this responsibility fell to the Catchment Authority and the local ratepayers. At that point Government required ratepayers of the scheme to commit to funding rivers and drainage scheme asset maintenance in perpetuity.

Today the costs of capital works and maintenance are borne primarily by the scheme ratepayers under separate differential rating systems (targeted rates) refined in the period between 1998 and 2002. The rating areas generally follow river catchment boundaries.

Environment Bay of Plenty currently funds 20% of the schemes costs (except drainage schemes where EBOP does not contribute) through Regional General Funds (general rates paid by all regional ratepayers and investment income) in recognition of the wider environmental, economic, social and other benefits provided by the schemes. The remaining 80% of scheme costs is paid by scheme ratepayers via the targeted rate.

3 Managing Flood Risk

3.1 Flood Risk Management Process – Expectations Upon Regional Councils

EBOP is the lead authority for the Bay of Plenty region's river management. In conjunction with the 7 Bay of Plenty District Councils, EBOP has responsibility for flood management and flood risk reduction throughout the region. Council has this mandated responsibility under a suite of legislation and derivative plans including the RMA 1991 (the Regional Policy Statement, Regional Plans), the Local Government Act 2002 (Ten Year Plan, Annual Plans), the Land Drainage Act 1906 and the Soil Conservation and Rivers Control Act 1941.

In an ideal, 'green fields' situation, flood risk would be managed by EBOP (and other Regional Councils) in the following manner and sequence:

- Collect catchment based data – obtain latest hydrometric data, land survey, natural and social system data.
- Carry out flood hazard analysis – use hydrological assessment, hydraulic modelling
- Produce flood hazard baseline maps
- Assess flood risk in the catchment - by incorporation/overlay of risk assessment data (population/property/infrastructure)
- Identify flood reduction/mitigation options and evaluate these flood risk treatment options (non structural and structural). Assess and refine in terms of economic, environmental and social criteria. Ensure community is involved in decision making.
- Select optimum flood management solutions
- Decide how to implement and fund agreed solutions with community and key stakeholders such as district councils.
- Synthesise the above into a report. This report can be called a Floodplain Management Strategy' (FMS) or a 'River Management Plan'.
- Gain Council and stakeholder approval. Agreed non structural flood mitigation measures can then be incorporated into key regional and district planning documents. This may result in rules to keep people, dwellings and infrastructure away from flood hazards.
- Consider need for a river scheme. If the FMS demonstrates that programme scale, works complexity and funding are likely to be substantial, this may require the set up of a formal river/flood protection scheme along with an appropriate rating facility and asset management plan.
- Request establishment of a scheme if necessary. Community/potential scheme ratepayers make submission to the regional council Ten Year Plan requesting establishment of a river scheme. Set up following approval.
- Treat the flood problem and communicate the residual risk.

The above is known as the Flood Risk Management Process. This has become recognised and more formalised nationally in the past two to three years. "Managing Flood Risk – A Process Standard" (NZ Standard 9401:2008) was released by the Standards Council in

October last year (2008). Local authorities and regional councils in particular are now expected to develop their flood management framework in line with this NZ Standard. EBOP has already incorporated this Flood Risk Management philosophy and approach particularly in terms of its development and use of Floodplain Management Strategies.

The reality is that this Flood Risk Management Process (or the equivalent FMS methodology), has not been followed in sequence in situations where flood hazards have been dealt with over many decades as has been the case in the Bay of Plenty. In fact structural solutions (such as stop banks) were often put in place as a first step in the Bay of Plenty (and many other regions throughout NZ for that matter) before any comprehensive attempt was made to take a holistic risk based approach to management of flood risk. Consequently land use intensified on the land protected by the banks, greatly increasing flood risk and loss when banks fail. Use of formal Floodplain Management Strategies that follow a flood risk management process have been a more recent development adopted by EBOP and other Councils. In other words they have been a late addition to the process rather than what should ideally have been a starting point!

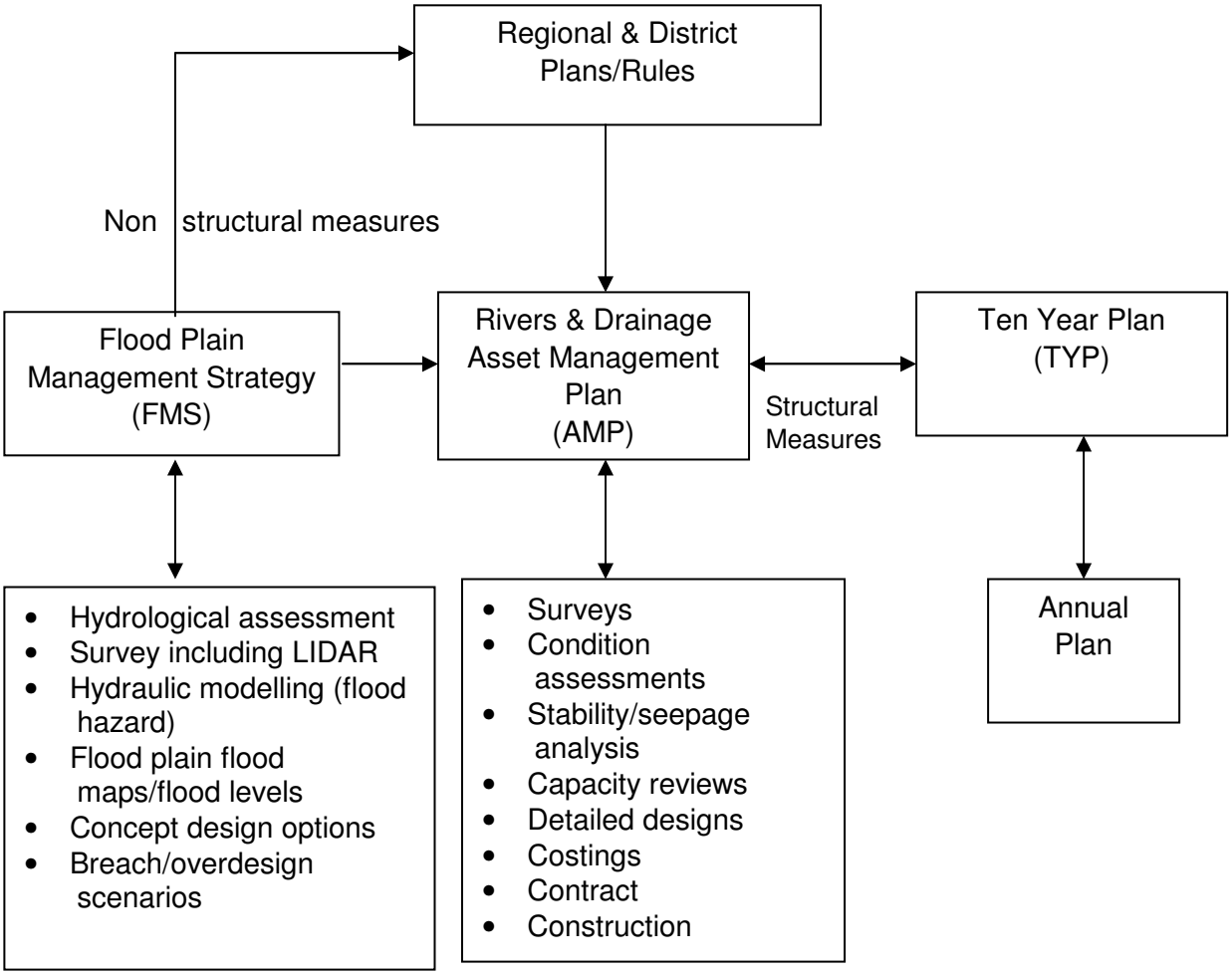
Following the government's recent review of flood risk management in NZ and the introduction of the NZ Standard, the government has also started to develop a 'National Policy Statement (NPS) on Flood Risk Management'. This will help clarify regional and territorial council roles, responsibilities and priorities. The draft NPS is likely to direct local authorities and other users and developers of land to follow the Flood Risk Management Process. It is also likely that regional councils will be required to prepare catchment and river flood risk assessments to assist territorial authorities to develop appropriate land use controls that avoid, remedy or mitigate flood and stormwater risks. The draft NPS is expected to be formalised in the next 12 months.

3.2 Managing Flood Risk in the Statutory Plan Framework

EBOP as the agency responsible for regional flood risk management including the river and drainage schemes, has an obligation to meet certain statutory plan requirements.

Figure 1 below shows the relationship between Floodplain Management Strategies, the Ten Year Plan/Annual Plan, Asset Management Plan(s) and regional and territorial authority plans. As already mentioned, EBOP and the Rivers and Drainage Group in particular have responsibility for meeting these statutory requirements. The Engineering Section is focused on delivering key 'scheme related investigations' referred to in the above flood risk management process and as seen in figure 1.

Figure 1 – EBOP Rivers and Drainage Group Approach to Delivering Scheme Related Investigations (2009).



4 River and Drainage Scheme Related Investigations

The two key 'scheme related investigation' documents are the Asset Management Plan (AMP) and the Floodplain Management Strategy (FMS). Several additional scheme related investigations lie within the ambit of these 2 key documents. For example capacity reviews and stability/seepage analysis are both investigation requirements spelt out in the AMP. Hydraulic modelling (flood hazard) is an example of an investigation requirement set out in the FMS. Refer figure 1 above.

4.1 Asset Management Plan

Background

As previously mentioned EBOP is the manager of the region's 5 river and drainage schemes and 37 minor schemes. Until very recently there were separate Asset Management Plans (AMP's) for each of the 5 major schemes. These AMP's set out how EBOP as the scheme manager is to manage the infrastructural assets on a long term sustainable basis (AMP time horizon is 50 years – although the scheme as a whole is assumed to have an indefinite life). Scheme assets include stopbanks, floodgates, floodwalls and other structures, pump stations, canals and drains, rock edge protection and plantings. The total value (Optimised Replacement Cost as at 1 July 2008) of all assets owned and managed as part of the Rivers and Drainage activity (essentially the 5 major schemes) is in excess of $190 million. Stopbanks account for 73% of this figure. The scheme manager is responsible for ensuring scheme benefits are effectively delivered, the required level of service is met, that the maintenance, renewal and eventual replacement of the asset is financially accounted for - all in line with the AMP.

The first comprehensive AMP's for the 5 main schemes were developed in the mid to late 1990's and were updated thereafter on a 5 year cycle. No AMP's have been developed for the 37 minor schemes because EBOP does not own the assets.

Statutory Requirement

Councils are required to prudently manage any infrastructural assets including those of rivers and drainage schemes under their jurisdiction, in line with the Local Government Act 2002, best practice and Audit New Zealand requirements and expectations. Audit NZ see AMP's as 'foundation documents for the Ten Year Plan'. EBOP like many Local Authorities has been under pressure to improve their AMP's in line with these requirements.

River and Drainage Scheme AMP's are therefore a statutory requirement. The 5 pre December 2008 AMP's were assessed as being at the 'basic level' by Audit NZ in 2006. In the past twelve months EBOP has put considerable effort into up dating and aligning its AMP's to meet best practice standards. Substantial progress towards the 'intermediate level' has been made. Using assistance from consultants GHD, EBOP has taken the separate stand alone AMP's for each of the major schemes and consolidated and combined these into one document. This updated 2008/2009 Rivers and Drainage AMP (December 08) has been reviewed such that it has now been integrated into the

forthcoming Ten Year Plan and Annual Plan. It is now also synchronised with and aligned to the Ten Year Plan review process. Subsequent reviews of the AMP will dovetail to the Ten Year Plan reviews and will occur every 3 years.

Audit NZ has conducted a review of EBOP's Asset Management Planning (February 09) including the updated Rivers and Drainage AMP. The overall quality was assessed as 'good'. Audit NZ made a total of 11 recommendations, 5 of which are to be addressed prior to finalisation of the draft TYP. The Auditor's draft comments indicate that the AMP for the Schemes has moved from 'basic' to 'intermediate' and the foundation now exists for this to be taken to an 'intermediate-advanced' level.

As outlined in the National Asset Management Standards (NAMS) manual, basic or core level AMP's simply meet minimum legislative and organisational requirements for financial planning and reporting and provide basic technical management outputs (such as statements on current levels of service, forward replacement programmes and associated cashflow projections). Basic river scheme asset management planning has generally relied on operational officer knowledge and has a strong operations perspective. Most NZ regional council river schemes would be at or about this level. Audit NZ are suggesting that the basic or core level AMP's are not best practice and are now being found wanting.

'Advanced' asset management planning and advanced AMP's are strongly integrated with corporate policy and financial systems right across the organisation. They have a corporate perspective as opposed to just an engineering perspective. There is much more rigorous analysis of individual asset/component information to enhance system knowledge; life cycle (optimised) decision making using predictive modelling; more cost/risk/performance optimisation; strategies are risk based, with use of predictive methods; there is more advanced stakeholder consultation on options for levels of performance etc. Audit NZ are indicating that advanced AMP's are necessary best practice for Councils with substantial assets with high risk and big growth demands (for example significant river and drainage scheme assets associated with larger cities).

Audit NZ confirms the EBOP combined and updated AMP is largely in compliance with the LGA 2002 (including Schedule 10 requirements relating to information that must be included in the Ten Year Plan) and the National Asset Management Standards (NAMS). The new combined AMP has clear levels of service, provides for asset life cycle management of all 5 rivers and drainage scheme assets and has direct linkages to the EBOP Geographical Information System (GIS) and financial systems. Audit NZ have told EBOP that their new combined AMP is now a benchmark for other regional councils to aspire to. The updated Asset Management Plan will be available for public scrutiny as part of the Annual Plan and Ten Year Plan consultation process. Council expects to ratify and adopt the AMP on 30 June 2009 in conjunction with the TYP.

It is obvious that the Rivers and Drainage Group are well versed in their new updated AMP and have 'ownership' of it. An experienced engineering staff member has been dedicated to manage the Rivers and Drainage AMP on a day to day basis. It is a living document and is providing strengthened direction and control.

Best practice

The Rivers and Drainage AMP is a fundamental tool of flood protection and drainage. A well structured and maintained AMP is clearly essential to ensure River and Drainage Schemes deliver the best outcomes for their ratepayers. It is also a critical document for the Rivers and Drainage Group to be able to efficiently handle their scheme management responsibilities.

There is however a potential for conflict of interest (within EBOP and between EBOP and scheme ratepayers) over the level of AMP sophistication considered necessary. To quote from the draft Rivers and Drainage AMP December 2008, 'Asset Management is now seen as a priority to the Council'. Achieving 'advanced' AMP status would put EBOP in a favourable light with Audit NZ, other government agencies and other Councils. However scheme ratepayers who carry the majority of the cost, may have a different perspective. Most will simply want a no frills AMP that delivers efficiencies and meets statutory requirements, no more no less. They will certainly want to know what additional value an 'advanced level' AMP can provide from their perspective.

The costs of AMP updating, servicing and associated management of scheme assets including asset condition assessments, stability assessments, asset revaluation and capacity reviews (see section 4.1.2 below) for all 5 major schemes was $317k in the 2007/2008 year (this included some of the new AMP document development cost); an estimated $289k in the current 2008/2009 year (during which the majority of the new AMP development cost was expended) and the budgeted cost for the first year of the new TYP (2009/2010) is estimated at $230k.

Scheme managers are concerned about the very significant time demands placed upon them (amounting to many months per year) to meet AMP/Ten Year Plan, LGA and Audit processes and associated best practice requirements. This is an issue being debated throughout the country as was reported in the NZ Herald on 16th March 2009. These substantial administrative costs are charged to the Schemes. The scheme managers are asking - "but does this make the boat go faster?!" Moving to, and maintaining an advanced level AMP, would likely place even greater administrative costs on the schemes.

As part of the AMP update and TYP review, EBOP river scheme managers have also been very focussed on providing the most cost effective service to the scheme ratepayers. Scheme ratepayers repeatedly ask the scheme managers to contain/rein in all costs that do not result in 'real work', improvements in the field or delivery on agreed levels of service. Staff have gone back to first principles and asked what is absolutely necessary.

For example while the issue of climate change/sea level rise is recognised, mitigation measures to account for climate change/sea level rise have intentionally been pushed out beyond the near to medium time horizon in the AMP. Over the next 10 years some provision for climate change is factored into the EBOP AMP process in accordance with MFE Guidelines (such as when producing capacity reviews). The Rivers and Drainage Group contend that as more data comes to hand, then modifications to policy and approach can be made if necessary. Fortunately the predominantly earth structures

(stopbanks) can be raised (retrofitted) if required. Nevertheless for assets like pumping stations, any current design incorporates projected climate change for the full life of the asset. For example if the pump has a 70 year life expectancy, EBOP uses the 2080 climate change predictions. This is a commendable pragmatic attempt by EBOP to rein in ballooning scheme costs on top of many years of very significant rate rises due to flood damage recovery costs and associated debt servicing.

A challenge to this approach to climate change may come from the draft National Policy Statement on Flood Risk Management which suggests that impacts of climate change on flood frequency and severity (and associated matters of sea level rise) must be addressed in a nationally consistent manner. However in terms of the need to meet the customer value of 'affordability' while meeting agreed design levels, the Rivers and Drainage approach is considered appropriate best practice in the local circumstances.

Asset management planning should enable the relationship between levels of service and the cost of service (the price/affordability/quality relationship) to be determined. The question remains – are the scheme ratepayers satisfied with the existing levels of service and delivery cost? If not, what levels do they want currently (and in the future) and what are they prepared to pay for? These questions are also inherent in Flood Plain Management Strategy development (Section 4.2 below). Council by its own admission in its AMP Executive Document (pages 9/10) recognises it needs to do more in terms of understanding its scheme ratepayer customer perspectives and knowledge base and has a programme in place to achieve this. In addition, the Ten Year Plan public process will again allow ratepayers to provide feedback on levels of service and cost. Council's intention and approach to understanding its ratepayer customer's perceptions is appropriate.

Not withstanding the above comment, the updated 2008/09 Rivers and Drainage AMP is commendable from the point that is a significant improvement on the previous basic level plans and should help ensure that acceptable levels of service can be provided in the most cost effective manner and will contribute to the achievement of the EBOP Ten Year Plan.

While the AMP has been comprehensively reviewed by Audit NZ, it has not been technically peer reviewed. Council may want to consider the merits of this.

4.1.1 Review of AMP in Terms of Reference Review Questions:

The following questions relate to the agreed project brief.

Is the scheme related investigation (in this case the Rivers and Drainage AMP) a 'necessary activity' from a scheme perspective? (does it provide outputs essential to the operation of the scheme or not?; is it a statutory requirement?

In summary the AMP is a fundamental document for the river and drainage schemes. Asset Management Planning is a 'necessary activity' and provides outputs essential to Scheme operation. The AMP is the schemes "management manual" and provides a systematic approach to the long term management of

scheme assets. It gives direction and a framework without which the schemes could not operate and deliver the levels of service performance promised. AMP's are a statutory requirement under the Local Government Act. Audit NZ has provided an assessment of compliance of the Rivers and Drainage AMP 2008 with the LGA 2002 which it has rated as 'good'.

Is the scheme related investigation considered necessary/appropriate best practice and if so is it an appropriate means for EBOP to meet its river and drainage scheme management obligations?

The AMP process and resulting Rivers and Drainage AMP have moved from a basic level to an intermediate level over the past year. This reflects current best rivers and drainage management practice and it is a necessary and appropriate means for EBOP to meet its river and drainage scheme management obligations.

Who is the beneficiary and which parties gain (the scheme ratepayers, the wider district or region, other stakeholders?).

The primary beneficiary is the river and drainage scheme ratepayer. The EBOP Rivers and Drainage Group as scheme (asset) manager is also a key beneficiary but is obviously serving the scheme ratepayers. As mentioned, EBOP as a statutory authority with its role in managing the regions flood risk, is also a significant beneficiary. The updated AMP allows Council to meet the LGA/Audit NZ provisions particularly in relation to the TYP. Other stakeholders potentially include government agencies such as MCDEM, MFE, MAF, the District Councils, commercial and industrial interests, service providers and contractors and developers.

If the scheme related investigation is appropriate is there a process of deciding how costs are apportioned to scheme or general ratepayers?

EBOP has no formal process of deciding how costs are apportioned. It is essentially a judgement based approach based on an understanding of who benefits from the scheme related investigation. The proposed cost apportionment or split between the 5 schemes as set out in the draft TYP needs to be revisited, as the Kaituna appears to be charged 33% and other schemes 17% each. This is considered inequitable.

Asset Management Plan development and updating including asset revaluation has historically been a 100% charge to the scheme. This is reflected in the current TYP. EBOP proposes that this will be repeated in the (draft) 2009-2019 Plan. It can be argued that the AMP is an essential and integral prerequisite for management of each of the major River and Drainage Schemes. In principal the 100% charge to the schemes (appropriately apportioned) for AMP development and updating, is therefore considered fair and reasonable. This assessment is based on professional opinion, knowledge of the river schemes and their scheme related investigations and discussions with other regional councils.

The challenge of course is to keep the quantum of costs of AMP development and updating, under control.

Conclusion – The Rivers and Drainage AMP is a statutory requirement, is essential for the effective operation of the river and drainage schemes and meets appropriate rivers and drainage best practice. The primary beneficiary is the scheme ratepayer and therefore the proposed 100% charge to the schemes for AMP development and updating is considered fair and reasonable.

4.1.2 Review of Specific 'Scheme Related Investigations' Contributing to the AMP

Appendix 1 – Table showing proposed apportionment of Ten Year Plan charges from 2009/2010, provides further information.

Refer also to Figure 1 Section 3.

Survey – LIDAR survey costs have not historically (TYP to 2008) been a charge to schemes. Council's (draft) 2009-2019 TYP has proposed that the status quo is retained. The beneficiaries of LIDAR are a range of stakeholders including numerous internal EBOP users (for natural resource mapping; and state of the environment monitoring); district councils, developers, government and non government agencies such as DOC and Fish and Game NZ. The proposed 0% charge to schemes is considered fair and reasonable. If however LIDAR was ordered specifically for scheme asset management related activity, then it would not be unreasonable for the scheme to be charged.

River Scheme (land) surveys of assets (generally cross section and long section surveys of river channels and waterways) as allowed for in AMP's have historically been a 100% charge to the Schemes. This work is carried out by the Engineering Section Survey Team and was until recently carried out every 5 years. The minimum requirement is that this now be done every 10 years (unless there is a major flood which may result in earlier resurvey) prior to a hydraulic capacity review. In fact the cross section and long section data is integral for the computer model (MIKE 11) used for capacity reviews.

The draft TYP indicates that the estimated survey costs have been split equally between schemes. It should be possible to charge each scheme the true costs. This would avoid smaller schemes with fewer cross sections and long sections paying proportionally more than they should be.

As this survey work is largely specific to scheme assets (although may also assist in state of the environment reporting and managing other resources), EBOP proposes that this continue to be a 100% charge to the relevant Scheme(s). This is considered fair and reasonable.

Conclusion – Survey is a necessary activity and produces essential data which helps make it possible to maintain AMP defined levels of service. The methodology and frequency of survey undertaken by EBOP is considered appropriate rivers and drainage best practice. The primary beneficiary is the scheme ratepayer and the proposed 100% charge to schemes for scheme asset specific survey is considered fair and reasonable.

Lakes level monitoring and associated control gate raising/lowering (Lakes Rotorua and Rotoiti) within the Kaituna Catchment Control Scheme is not strictly a 'scheme related investigation'. However the monitoring is a requirement set out in the AMP (and is also a requirement of resource consents for the lake level control structures held by the scheme). The monitoring is carried out by Engineering Section staff and allows EBOP to keep the lake levels within an agreed narrow range. The monitoring and gate control processes are well managed given the at times conflicting stakeholder expectations and is considered appropriate best practice. At the request of some sectors of the Kaituna Catchment community, Council is exploring the environmental consequences of removing lake level control and the benefits or otherwise that these gates provide as part of a forthcoming resource consent renewal process.

In the draft TYP Council is proposing that this monitoring (largely a semi-automated process) continue to be a 100% charge to the Kaituna Scheme. Beneficiaries include the scheme ratepayers (particularly lake edge residents who enjoy a stable lake level with corresponding lake/jetty access for boating and fishing, aesthetics/views and flood control); wider scheme ratepayers including the residents of Rotorua and Rotoiti who have lake levels conducive to recreation, fishing and amenity; recreational and commercial rafting users of Okere Falls; lower Kaituna landowners who gain some level of flood control. Lake level monitoring and level control also provides benefit to people who reside outside the Kaituna catchment (visitors and tourists, visiting recreationalists). The outcome of investigation into the benefits of the lake level control gates (and who benefits) will be an important driver in judging the level of charge to the scheme deemed fair and reasonable.

Conclusion – Lake level monitoring and associated control gate operation is a necessary activity in the Kaituna Catchment Control Scheme to meet AMP defined levels of service and is currently a statutory requirement. The current operation is considered appropriate rivers and drainage best practice.
Beneficiaries include scheme ratepayers, visitors, tourists and stakeholders beyond the scheme boundaries. The 100% charge to the Kaituna Scheme for lake level monitoring/gate control is considered fair and reasonable in the interim (short term). This level of charge to the scheme needs to be reviewed as soon as possible in line with findings of current investigations on the benefits of lake level gate control

Condition Assessments - these involve specific visual checks of the assets – for example stopbank condition (to check for damage by livestock or rabbits or machinery or inappropriate placement of structures or services). Condition assessments of river edge protection and structures are also carried out on a regular basis. These assessments help ensure service reliability standards can be met. It is a form of preventative maintenance. Condition Assessments for stopbanks are carried out every 12 months. These assessments involve a walkover by Engineering Section staff to check overall condition of the scheme assets. This has proved to be appropriate best practice in the Bay of Plenty. Historically the charge to the relevant scheme for these assessments has been 50%. Council propose that this move to a 100% scheme charge. Given that these assessments directly involve scheme assets and benefit the scheme/scheme ratepayers and are in line with the AMP requirements, the 100% charge is considered fair and reasonable.

Conclusion – Condition Assessments of key scheme assets are a necessary activity to ensure the ongoing efficient operation of the schemes in line with the levels of service outlined in the AMP. The current methodology is considered appropriate rivers and drainage best practice. Beneficiaries are primarily the scheme ratepayers and the proposed 100% charge to schemes for Condition Assessments is considered fair and reasonable

Stability and or seepage assessments – these involve specialist geotechnical investigations to determine structural integrity of stopbanks. Geotechnical engineers (externally sourced consultants) use hand auger or drilling equipment to take stopbank soil and fill samples to analyse potential seepage paths, compaction and other characteristics. EBOP recognises that with the history of stopbank failure due to seepage and piping that these assessments are critical and a priority. Assessment methodology must be best practice and to the highest NZ standard. Council engages some of the most appropriate and experienced geotechnical engineers available in NZ. The Bay of Plenty has extremely challenging soil conditions with respect to earth embankment stability. These stability and seepage assessments directly benefit the scheme ratepayers. A schedule of stability assessments based on risk and observations during flood events has been developed by Council and incorporated into scheme maintenance and renewals works projects. Substantial resource has been expended on stability assessments since 2004, particularly on the Rangitaiki River. Historically the cost of assessments has been a 100% charge to the relevant schemes and the Council proposes that this charge remain at 100% which is considered fair and reasonable. .

Conclusion – Stability and Seepage Assessments of stopbank assets are an essential activity to ensure ongoing efficient operation of the schemes in line with the levels of service outlined in the AMP. The current methodology is considered appropriate rivers and drainage best practice. Beneficiaries are primarily the scheme ratepayers and the proposed 100% charge to schemes for Stability and Seepage Assessments is considered fair and reasonable.

Capacity Reviews – these involve hydrological assessments (assessing rainfall, flow and river level data and consideration of climate change data including sea level rise and increased rainfall frequency and intensity) and hydraulic modelling (using MIKE 11 software or similar) of river channels, canals, floodways and other scheme waterways.

The findings of capacity reviews show whether a watercourse is able to safely convey the flood waters 'within channel' in a design flood in line with the level of service set in the scheme AMP. Capacity can change over time. Stopbanks for example can sink/settle due to the peat and ash soil conditions in the Bay of Plenty. Loss of freeboard and therefore loss of capacity may necessitate stopbank top ups. Gravels and sediment may collect in waterways and floodways also reducing channel capacity. Sea level rise can impact channel capacity. Capacity reviews are also undertaken when scheme channel infrastructure is upgraded (for example when a floodway is to be widened to improve flood water conveyance).

Capacity reviews are undertaken in-house by EBOP environmental engineers whenever possible or by external contracted professionals when no in-house resources are available. The more technically challenging and more critical reviews are contracted out.

Capacity reviews have traditionally been triggered by large floods or done every 5 years. As part of the AMP review, Rivers and Drainage have now scheduled capacity reviews every 10 years. This is in line with NZ best practice.

Beneficiaries of these investigations include the scheme ratepayers; infrastructure managers including district councils (roading, bridges, culverts), New Zealand Transport Authority (NZTA), utility service providers, river users, DOC, Fish and Game NZ. There may be opportunities to charge utility service providers (particularly roading) for key flood level information if the timing of capacity review coincides with design/building of a new highway bridge for example

Historically (current TYP) the charge to the relevant scheme for capacity reviews has been 25%. Council has recommended that this charge be increased to 100%. Given that the capacity reviews are scheme specific, are a necessary activity and appropriate best practice set out in the AMP, it is fair and reasonable to increase the charge.

Conclusion – Capacity Reviews are a necessary activity to ensure the ongoing efficient operation of the schemes in line with levels of service outlined in the AMP. The current methodology is considered appropriate rivers and drainage best practice. Beneficiaries are primarily scheme ratepayers but may also include key utility managers such as roading authorities. The proposed 100% charge to schemes for Capacity Reviews is considered fair and reasonable.

4.2 Flood Plain Management Strategies

Background

EBOP has been forward thinking in terms of developing Flood Plain Management Strategies (FMS's). The first of these was compiled in 1998 for the Waioeka/Otara floodplain. During 2006 and 2007 a FMS was developed for the Whakatane Waimana floodplain and last year (2008) a FMS (Stage 1) was completed for the Rangitaiki Tarawera floodplain. FMS development is scheduled for the Kaituna Catchment Control Scheme in the next 2 years.

The FMS process is more fully described in Section 3 above. The underlying aim of floodplain management planning is to reduce the susceptibility/exposure to flooding of people and property. FMS aim to provide sustainable long term flood risk management which integrates non structural and structural options. Ideally it is a blueprint which proposes the level of protection or service that the community wishes to adopt. It estimates costs, proposes who will pay and how the work will be prioritised and timed.

FMS are developed 'in house' by the Engineering Section. Strategy development is carried out in line with Floodplain Management Planning Guidelines (MFE 2001) and more recently with guidance from the NZ Standard 9401. This is considered best practice. EBOP has been producing each FMS in 3 stages with 3 separate reports. Stages 2 and 3 involve significant community and stakeholder involvement. This is a time and resource consuming approach – sometimes taking 2-3 years or more to complete. The challenge is to streamline the approach wherever possible to reduce cost. The cost of producing the Rangitaiki-Tarawera FMS to date is $48k (Stage 1 and part Stage 2) with final Stages 2 and Stage 3 estimated to cost a further $159k. The expected cost of producing the Kaituna FMS is $203k over 5 years

It needs to be appreciated that FMS's are not statutory documents. They are of particular relevance to and aimed primarily at district and regional council planners, resource managers, hazard managers and river engineers. They provide substantial inputs to district plans and EBOP regional plans. FMS's also provide direction and input to the Ten Year Plan and the EBOP Rivers and Drainage AMP. (Refer Section 3 figure 1 above).

4.2.1 Review of FMS in Terms of Reference Review Questions:

Is the scheme related investigation (in this case Floodplain Management Strategy) a 'necessary activity' from a scheme perspective? (does it provide outputs essential to the operation of the scheme or not?; is it a statutory requirement?

Strictly speaking a FMS is not a 'necessary activity' from a scheme perspective. The River and Drainage Schemes have been set up and have been operating without them. That said, there is a move nationally, driven by Government, to have regional councils compile FMS's for their river systems (reference the NZ Standard 9401:2008, the draft NPS (November 2008), Floodplain Management Planning

Guidelines December 2001 (an MFE/Opus publication). While FMS outputs are not 'essential' to the operation of an existing River and Drainage Scheme there is no doubt that they provide scheme managers and the catchment community with a more integrated, broader and effective approach to managing flood risk through non structural, structural and other measures. Nevertheless it is not yet a statutory requirement. EBOP has chosen to take the lead and until now has funded the development of FMS's.

Is the scheme related investigation considered necessary/appropriate best practice and if so is it an appropriate means for EBOP to meet its river and drainage scheme management obligations?

Compiling a FMS for river floodplains where flood risk exists, is appropriate best practice from a Regional Council perspective and is an appropriate means for EBOP to meet its river and drainage management obligations and should be followed.

Who is the beneficiary and which parties gain (the scheme ratepayers, the wider district or region, other stakeholders?).

A primary beneficiary is EBOP itself. FMS's substantially assist the Regional Council in its statutory regional flood management role. FMS's enable Council to understand and communicate existing and developing flood risks and how these are being managed. They provide direction and input to the EBOP Strategies and Regional Plan(s) and allow EBOP to provide information of critical importance to the Territorial Authorities and other stakeholders.

District Councils are also a primary beneficiary. FMS provide direction on the use of appropriate non structural (such as the setting of minimum floor levels) and planning measures (policies and land use rules) to mitigate flood risk and associated input into District Council Plans and Emergency Management Plans (Civil Defence).

Flood maps with flood extent and flood levels developed as part of the FMS are particularly important to District Councils for planning purpose and for developers, commercial and industrial interests and landowners. Flood maps and breach scenario/overdesign event information are also important for emergency managers.

Other FMS beneficiaries, often stakeholders beyond scheme ratepayers, can include central government departments and agencies such as MCDEM and MFE, utility service providers, river users, DOC, Tangata Whenua, relevant NGO's.

River Scheme ratepayers including catchment landowners are also beneficiaries (although it could be argued that these are largely occupiers on the lower floodplain) as the FMS provides the latest information and science on catchment flood risk and allows for more effective scheme planning and management.

If the scheme related investigation is appropriate is there a process of deciding how costs are apportioned to scheme or general ratepayers?

Until now there has been no charge to the schemes for FMS development. EBOP has rationalised this on the basis that FMS outputs and recommendations are very significant to both EBOP and the District Councils and their respective statutory planning and natural hazard risk mitigation roles. Additionally beneficiaries are much wider than just the scheme ratepayers.

River and drainage scheme ratepayers have not requested FMS's. They have been initiated and driven by EBOP. Scheme ratepayers have been generally accepting and appreciative of the FMS approach due in significant measure to the fact that they have not been funding them. While it can be argued that FMS provide benefits to scheme ratepayers it is another matter to impose such a requirement and attendant expense on them. Furthermore some schemes have access to completed FMS at no direct cost. Other scheme ratepayers, depending on Council policy in the forthcoming TYP, may now be required to fund FMS associated with their catchment floodplain.

The FMS's proposed for the Rangitaiki-Tarawera and Kaituna Schemes were, according to the current TYP, to have been developed and adopted by the conclusion of this the 2008/09 financial year. While the Rangitaiki-Tarawera Scheme FMS is under development, it is not clear why these were not completed as scheduled. To now propose charging these schemes for their FMS development could be viewed as inequitable by Rangitaiki-Tarawea and Kaituna scheme ratepayers.

Council is proposing that for the draft 2009 - 2019 TYP there be a 50% charge to the relevant rivers and drainage schemes for the cost of FMS preparation and the associated scheme related investigations (survey, hydraulic modelling, flood map compilation). No formal process was used by EBOP for deciding this proposed charge. However it is readily acknowledged that there is a significant degree of subjectivity about cost apportionment. A rigorous analysis, beyond the scope of this report, would be needed to provide a more objective picture.

The proposed charge raises the question of who will fund FMS for non scheme catchment areas? The Uretara Catchment near Katikati or similar catchments for example. While the Uretara does not yet have a FMS, a capacity review has been completed for this catchment at a cost to the general ratepayer. Who will pay for FMS in this and similar non scheme catchments where there is no targeted rating area?

Existing scheme ratepayers may argue that the cost of FMS can be unfairly imposed upon them because the targeted scheme rating system makes them an easy target.

The existing differential rating classifications were set up by the classifier for the schemes before funding of FMS by scheme ratepayers was contemplated. Upper catchment and non floodplain landowners in particular, may therefore view such proposed charges as inequitable.

FMS is essentially a risk assessment tool and process. EBOP conducts risk assessment for other natural hazards. If Council is proposing a 50% charge to the river and drainage schemes for a FMS, should not other risk assessments be 50% funded by targeted ratepayers? For example ongoing Tsunami hazard assessment on the Bay of Plenty coast. Are the landowners occupying low lying land near the coast to be targeted to pay the cost of this risk assessment?

All Regional Councils spoken to recognise this disjunct on who should pay for FMS. Most Councils spoken to who are preparing FMS, are covering the cost from general funds.

As stated earlier the proposed 50% scheme charge apportionment is subjective and without substantial analysis (which may prove to be inconclusive) it is not possible to justify the apportionment selected. Based on professional opinion, knowledge of the river schemes and discussions with other regional councils it is considered that the rationale for the proposed 50% charge is not proven. We suggest that until the work is done to define a more transparent cost apportionment, then the status quo should remain.

Conclusion – A FMS is not a statutory requirement but is considered appropriate hazard management best practice. FMS help EBOP to meet its wider flood risk management statutory obligations. The primary beneficiaries are EBOP and District Councils. There are many other beneficiaries including central government departments, utility service providers, commercial interests and developers, river users, Tangata Whenua and scheme ratepayers. It is recommended that until work is done to define a more transparent cost apportionment then the status quo (FMS fully funded from general funds as per the 2006-2016 TYP) should remain

4.2.2 Review of Specific Scheme Related Investigations Contributing to the FMS

Appendix 1 – Table showing proposed apportionment of Ten Year Plan charges, provides further information.

Refer also to Figure 1 Section 3.

Survey – EBOP does not usually commission specific surveys for FMS. It is usual to use existing photogrammetric or existing LIDAR information. However the Rivers and Drainage Section does forward-plan and request access to LIDAR surveys in anticipation of future flood mapping projects. Surveys for FMS have not historically (TYP to 2008/09) been a charge to schemes. Council through the draft 2009-2019 TYP has proposed that there continue to be a 0% charge to schemes for LIDAR survey. The beneficiaries are EBOP, district councils, river users, utility service

providers, commercial and industrial interests, DOC, Geological and Nuclear Sciences (GNS), non government agencies such as Fish and game NZ, Tangata Whenua and scheme ratepayers.

Conclusion - access to and use of LIDAR survey is appropriate best practice when developing FMS. The beneficiaries of this technology are wide both within EBOP and throughout the district and regional communities. The proposal by Council to continue to meet the full cost of LIDAR survey is considered appropriate

Hydraulic Modelling (flood hazard) – With appropriate hydrological information (rainfall, river flow/level data, climate change/sea level rise information) river engineers use Mike 21 or Mike FLOOD software (2D modelling) to develop floodplain flood maps for the catchment (depth and extent). From flood maps flood hazard can be readily identified and after overlaying settlement, infrastructure, property and social factors, an assessment of flood risk is possible. The information can for example be used to set minimum floor levels.

Hydraulic modelling is also used to gain an understanding of how specific stopbank breaches will inundate parts of the floodplain (flow paths and inundation depths). This is of special use in emergency planning and district planning.

It should be recognised that scheme ratepayers are charged for the cost of hydraulic modelling associated with scheme AMP driven and related investigations such as capacity reviews (refer section 4.1.2 above).

Hydraulic modelling (2D) using outsourced expertise (as is the case with EBOP unless the ability is to be held in-house) is appropriate best industry practice

Hydraulic modelling associated with FMS has not historically (TYP to 2008) been a charge to schemes. Council is proposing that there be a 50% charge to relevant schemes.

Conclusion – Hydraulic modelling (flood hazard) specifically for the development of FMS, is considered appropriate hazard management best practice. Hydraulic modelling (flood hazard) helps EBOP to meet its wider flood risk management statutory obligations. The primary beneficiaries are EBOP and District Councils. There are many other beneficiaries including central government departments, utility service providers, commercial interests and developers, river users, Tangata Whenua and scheme ratepayers. It is recommended that until work is done to define a more transparent cost apportionment then the status quo (fully funded from general rates as per 2006-2016 TYP) should remain.

5 Models for Scheme Ratepayer Representation

5.1 The current Liaison Group approach

Define the current liaison group system of ratepayer representation and provide a summary of the pros and cons of the existing approach. Summarise other models used by EBOP in the past and their success or otherwise.

Four of the five major rivers and drainage schemes have an established Liaison Group which is purported to represent the scheme ratepayers. There is no formal Liaison Group for the Rangitaiki Drainage Scheme although both the Rangitaiki Tarawera and Whakatane Waimana Rivers Scheme Groups have a number of landowner representatives who have interests in both schemes. These 4 groups (of approx 10 persons in each on average) have been in place for about 15 years. They essentially grew from the scheme flood wardens group who historically had roles geographically spread across the catchment and the flood plain in particular. The existing Liaison Groups are somewhat unrepresentative of the rating base and are dominated by rural landowners. Membership is by way of internal nomination and thereafter by consensus of the existing members in discussion with Rivers and Drainage managers. There is no public process (formal or informal) to select members. The Liaison Groups are not formally constituted, are not elected and are volunteers. Their role is to be the eyes and ears of the scheme ratepayers; to be the conduit for the scheme ratepayer issues; to provide advice and to be a sounding board for the EBOP scheme managers. The Liaison Group is also consulted annually on the Annual Plan scheme budget and the associated rates impact; on all key scheme policy and plans including the TYP, Flood Plain Management Strategies, AMP and Bylaws.

There is at least one Liaison Group meeting with EBOP Rivers and Drainage Group managers and key staff per year (currently Nov.). This coincides with AP/budget preparation. Another has been held in March of this year because of the scheme review that is taking place and the implications on the TYP. Meetings are chaired by the Operations Committee Chairperson who currently happens to be one of the local elected members. The groups themselves do in some cases have their own chairperson. The regional council chairman and councillors are invited to attend. It is usual for the relevant regional council constituency councillors to be present.

Each Liaison Group also has an invited District Council representative. Again this is often a constituency district councillor.

In recent years local iwi have sought a voice on the Liaison Groups and have representation in differing forms on the Whakatane Waimana, Rangitaiki Tarawera, Waioka Otara and Kaituna Schemes. Iwi have particular interest in issues around gravel extraction, gravel resource ownership, cultural sites on the rivers and treaty related rights (Statutory Acknowledgements). Local iwi are now represented through their own river committees

The Liaison Groups are not decision making bodies. That role clearly remains with EBOP (the elected Councillors). However they do make formal recommendations which are taken

to the Council Operations Committee and potentially to full Council. The Group Manager Rivers and Drainage reports these recommendations to Committee and Constituency Councillors frequently talk in support or otherwise.

It is reasonably common for the Liaison Groups to make a submission on behalf of scheme ratepayers to the TYP. The Liaison Group chair will also verbally submit to Councillors at the TYP hearing where issues are considered of importance or concern.

Liaison Groups are frequently asking to see more detail of the scheme budgets. In recent years they have been given increasingly more information and it has been suggested that they now receive more detail than the councillors.

Pros of the existing Liaison Group system:

- several of the schemes key movers and shakers are represented
- there is a strong rural – particularly dairy farming voice
- landowner individuals who are paying the high per hectare rates are well represented
- district councils have a voice
- constituency regional councillors are in attendance and get first hand feedback
- costs of the liaison groups to the schemes are minimal
- Council recognises the Liaison Groups and gives them due regard
- local iwi are now represented
- representatives generally have a good practical understanding of the issues
- representatives are prepared to ask the hard questions

Cons of the existing system:

- lack of feedback communication channel from Liaison Group to the wider ratepayer base and no mechanism to do this
- lacks clarity of purpose and mandate. A terms of reference (TOR) only exists for the Kaituna group.
- wider ratepayers don't feel they have 'ownership' of the process
- urban reps are poorly represented and complacent yet collectively may be paying a large portion of the targeted scheme rate (eg 65% in the case of the Waioeka-Otara Scheme).
- dominance of rural landowners
- can sometimes be parochial (interest in local back yard issues rather than wider scheme matters) – squeaky wheel with pet issues or frustrations
- perception by Liaison Group that they are dealing with a feit a compli and lack the power to change things.

The only alternative approach to the Liaison Group meetings attempted by EBOP to date has been to hold regular full public meetings for each scheme (usually annually). This was the norm prior to set up of the Liaison Group system. These public meetings were advertised and were held in the local community hall in the scheme area.

If there was a controversial agenda item the turnout could be substantial. The meetings in such cases were frequently fiery affairs where a few dominant speakers held the floor and it proved difficult to have a rational debate or discussion. Local media would also be present and this gave further opportunity for grandstanding by a small vocal minority. By contrast if there was nothing especially controversial on the agenda, the meeting turnout could be negligible. The full scheme public meeting approach was considered of limited benefit. When scheme ratepayers need to be approached or consulted on mass, a scheme 'open day' run over several hours at suitable times is set up for ratepayers to talk one on one with staff and councillors. This has proved far more productive.

5.2 What is the role of the Liaison Group?

In deciding 'where to from here' with ratepayer representation the first question to ask is whether Liaison Groups are actually needed. Given that there are constituency regional councillors who represent their ratepayers and that there is already opportunity for ratepayers to be able to have their say individually or collectively through the TYP and AP process, is the Liaison Group an unnecessary extra? EBOP in its TYP has made a commitment to the scheme ratepayer community that it will be involved with its Scheme Liaison Groups as part of Council's stated Community Outcomes. Given the substantial targeted scheme rate involved, this commitment to the Liaison Groups or their equivalent is seen as appropriate best practice.

Assuming that scheme ratepayers wish to have ongoing representation from within their ranks, the most important question to ask is, what is the purpose and role of the Liaison Group or its equivalent? Is it to be a 'governance group', an advisory and oversight group or simply an information exchange group? A Terms of Reference for the schemes is necessary and would spell out the group's purpose.

Should this group hold any real decision making powers? Should representatives be accountable for any decisions they make? Is there any liability attached given the link to matters of flood risk? Should the group be legally constituted with elected members? The Liaison Group or an alternative is unlikely to have such governance functions as Council elected representatives have that role and responsibility.

Recommendation

That the Group have:

1. An advisory and oversight role
2. Communication role
3. Recommendation responsibilities

5.3 Alternative Approaches

Investigate where alternative approaches (including their strengths and weaknesses, opportunities and threats) are currently being used by other regional and unitary councils for their schemes throughout NZ. Discuss with selected scheme liaison group reps (chairs)

and other representative ratepayers, options that would best serve the schemes and allow realistic ratepayer input to scheme decision making.

Make recommendations to Rivers and Drainage for alternative models that can be investigated more fully and thereafter put before the ratepayers

Several regional and unitary councils have been contacted and asked about their current approach to ratepayer representation. Examples are as follows.

Marlborough District Council (Unitary Council) does not have any formal scheme liaison groups or equivalent. This Council uses short term focus groups or community consultation panels to canvas Wairau Scheme ratepayers when necessary.

Wellington Regional Council operates scheme "Advisory Committees" on the Wairarapa side of the range where there are 13 river and 15 drainage schemes. These Advisory Committees are similar in structure to EBOP liaison groups. Membership is by nomination. There are approx 10 members per committee including an iwi rep and there is also Councillor representation. The chair is independent. There are annual scheme meetings to elect members. The Advisory Committees are able to make recommendations to the Council's Landcare Committee. These recommendations are taken seriously by Council.

For the Hutt River scheme Greater Wellington has established a formal Council (advisory) sub committee with nominated reps from the City Councils, Greater Wellington and the community. The Committee has powers of recommendation only. Membership and terms of reference are revised every three years following local body elections.

Horizons have 1 River Management Committee (Whanganui – where there is a significant Iwi role and presence) and 22 Liaison Committees (for 32 schemes). The Liaison Committees are 'informal', do not have decision making powers (are able to put forward recommendations) but are set up under a terms of reference. All function slightly differently depending on the people involved. They were first formed in the early 1990's. There are at least 2 meetings per year plus an annual meeting. Annual meetings are used to review and confirm membership. There is no fixed membership number. The constituent councillor and chair of the Council Operations Committee attends. Recommendations from the Committees are taken seriously and it is rare for Council to move against these recommendations.

Hawkes Bay Regional Council has 20 river and drainage schemes. A number of these have only one or a few major landowners. There are 3 Liaison Groups of long standing which are informal and are made up of primarily directly affected landowners. Hawkes Bay Regional Council relies largely on its Ten Year Plan and Annual Plan to gain feedback from its wider scheme ratepayers.

Gisborne District Council (Unitary Council) does not currently have active scheme liaison groups or equivalent.

Environment Waikato has 7 river and catchment "Liaison Sub Committees" (for 5 Waikato zones and the Waihou Piako and Coromandel). These are formal committees of council although they have recommendation powers only. Membership is by selection and nomination (landowners) and confirmation is by Council. Makeup of the Liaison Sub Committees includes reps from landowners, iwi, power companies, DOC, district councils and Chair of the Catchment Services Committee (and Council Chair and Deputy). The Committees have full Terms of Reference and landowner reps receive standard meeting remuneration. The Liaison Sub Committees have an oversight, lead and supporting governance role and provide liaison/communication between the Council and local community. Recommendations are taken seriously.

Environment Canterbury (ECan) – Operate approx 35 "Liaison Committees"; There are Terms of Reference and Committees have advisory only responsibilities. Every 3 years there is a public meeting to elect/re-elect the members. Representatives include landowners (between 4 and 12 depending on scheme) and invitees such as DOC, iwi, Fish and Game, district council reps. The ECan constituency councillor frequently chairs. In other cases the chair is not a politician. At least one meeting is held per year.

Within the selection of Councils talked to and described above, most had a similar liaison group model to EBOP and there were few examples of alternative approaches or models to river and drainage scheme ratepayer engagement. Local government in its wider sense does however provide some alternatives.

5.3.1 The Community Board Model (a 'Rivers and Drainage Community Board')

Community Boards are considered to represent the voice of the local people. They essentially are expected to deal with grass roots governance issues. In the Whakatane District they are under scrutiny. Some contend that these Boards are a duplication of governance in the urban area in particular. Others suggest that Community Boards are appropriate where the community is spread out such as in wide geographic rural areas. Boards can have a broad scope/mandate within their defined geographic area.

Table 5.3.1 : Community Board Model

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Formal governance structure	Cost to the ratepayer (elections, admin, member allowances (etc)	Council can be very transparent about future works	Fear of council control
Democratically elected	Requirement to hold meetings at scheduled intervals even if no business	Wider ratepayers may be better informed of scheme merits	Takes away the voluntary commitment
Attract people who have a real interest	Excludes specialist appointees	Gives council greater control	Over expectation of delegated authority
Have delegated authority (although limited)	Possibility that elected Board members may only have limited expertise	Builds future council governance capacity in individuals (succession planning)	Resistance of ratepayers to support a formal governance structure
Have support and structures/admin of Council		Membership can be structured to represent the entire scheme community	Negative perceptions of Community Boards
Operate under due meeting protocol and code of conduct			
Transparency and accountability			
Regular meetings			
TOR can dictate representation and structure			

5.3.2 River Scheme Committee

The River Scheme Committee would be an elected and formal committee of the Regional Council. Members are paid. They are formal Council representatives. Generally such committees are focused on a specific matter of interest (for example an individual rivers and drainage scheme or schemes). The committee can only make recommendations, not resolutions, so it has no delegated authority.

Table 5.3.2 : River Scheme Committee Model

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
As per Community Boards – although without delegated authority	As per Community Boards	As for Community Boards	In part as for Community Boards
Would only deal with Scheme matters	No delegation		
Possibly gives more kudos to schemes and their governance/ratepayer			

5.3.3. River and Drainage Advisory Board

These are structured committees with a TOR. Formal minutes are recorded and form part of Councils minutes and record. These groups are more strategic and consider technical/operational matters and concepts which support/assist the Council in its governance role. Membership is by invitation (formal appointment) and the members have specialist skills, knowledge or interest. Councillors with special skills or interest are also appointed.

Table 5.3.3: River and Drainage Advisory Board

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Expert appointments	Not democratically elected	May lead to improved technical input	Expert representation at the expense of community representation
No significant cost to the schemes (no remuneration)	No delegations	Council may save cost	Members may lack sense of empowerment
Formal TOR			Lack of payment may de-motivate members
Council admin support			
Minutes go to Council			
Recommendations go to Council			
Formal committee meeting protocol			

5.3.4. Ratepayer Interest Group

An informal group of scheme ratepayers and stakeholders, (who collectively gather at least annually) consider issues of mutual interest and or concern. While not a Council initiated or Council mandated approach, ratepayer interest groups may provide scheme managers with important feedback and issues that need to be addressed.

Table 5.3.4: Ratepayer Interest Group

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
No cost to ratepayers	Council has no control	Council could use to raise awareness and knowledge of how schemes function	Threats of a standoff with Council because of groups unrealistic expectations
Opens opportunities for all ratepayers to have a say	Can be 'captured' by enthusiasts		Lack of understanding by group of how schemes work
	No formal representation to Council		Lack of support from Council
	Council have no accountability to group		

5.3.5. Fonterra Shareholders Council and the 'network'.

The Fonterra Shareholders Council is composed of elected ward representatives who report up to the Fonterra Board and down to shareholders (farmers). There are approximately 35 Council representatives from throughout the dairy wards of NZ. They are a non governance body charged with representation which involves monitoring and communication. Supporting and reporting to each Shareholders Council representative is a team of local 'networkers' and every one of these networkers has approx 10-12 shareholder farmers to liaise with. There are regular emailed newsletters, local meetings to discuss issues and annual conferences to assist shareholder information flow. The strength of this model is that all shareholders are linked back to the Fonterra organisation and communication channels are open in both directions. There is a strong reliance on email for information dissemination. This is a model that works well for the rural sector but in a river and drainage scheme situation would be less effective for the urban sector. This network is primarily an information channel rather than an advisory body.

5.4 Proposed New Group Structure (Rivers and Drainage Scheme Advisory Group)

Following a general assessment of other council approaches, the alternatives to the Liaison Group model are seen as limited.

Despite there being some concerns with the existing Liaison Group model, it is functioning and Council takes the groups seriously. However there are key 'improvements' that would greatly lift the effectiveness and standing of the Groups.

Specifically the following is identified:

1. A written Terms of Reference for all groups is needed. It is expected that TOR would set out the key oversight/advisory/communication/liaison role. It would also clearly set out scheme membership and representation.
2. Membership should be ratified at an open (public) meeting at least triennially.
3. Membership to include rural and urban landowner ratepayer reps (nominated and elected); constituency regional councillor(s), an appointee from the relevant district council; iwi rep and provision for say 2 technical appointees. It is recommended that these volunteer technical appointees be professionally trained experts in (river) engineering and finance/asset management. It may for example be possible to attract retired professionals who are interested in the schemes and their management. For the Whakatane Waimana Scheme it may be appropriate for EBOP to ask WDC to recommend a suitable technical appointee. For the Waioeka Otara Scheme EBOP could ask the Opotiki District Council to similarly recommend. Bringing in these technical experts is a way of capturing the key advantage of the Advisory Board model.
4. At least 2 meetings should be held per annum (Nov and March/April).

The existing name "Liaison Group" is not appropriate. They could be rebranded as "River and Drainage Scheme Advisory Groups". At present the Liaison Group representatives are not formally feeding back to the wider ratepayers and it may be expecting too much for them to do this.

Reporting back to the wider scheme ratepayers is currently done by EBOP via the single annual scheme newsletter which is posted. Half yearly updates and other important scheme news should be available electronically via a link on the EBOP web site especially following Advisory Group meetings. In order to keep costs under control these electronic reports could simply show the last meeting agenda, the staff reports and budgets that were presented to the meeting, any significant outcomes extracted from the minutes and any recommendations that have been taken back to Council. Improving feedback to the wider scheme ratepayers in this fashion draws upon the strengths noted in the Fonterra Shareholders Council and 'network' model. Similarly the Group members should be encouraged to use email to communicate out to ratepayers (rural).

The recommended improvements would require some extra staff time and associated cost but should result in enhanced Group effectiveness and improved scheme ratepayer communication.

6 Operational Management

6.1 Introduction

As stated in section 1.0 Opus have been instructed to "provide high level comments on operational management processes their efficiency and steps to improve their effectiveness." (From the letter of instruction approved by Ken Tarboton, Group Manager Rivers & Drainage on 25 February 2009). We have identified some questions that will assist us in completing this section of the report. These are:

Phase 1 – Information gathering:

- What is the purpose of the operational process?
- Is this process mapped out? If not, the process will need to be mapped out.
- If there is a process, understand how this works and is it what the staff actually follow?
- Are roles and responsibilities clearly defined?
- How widely is the process understood and followed?
- What parts of the process work well and what parts don't? Why?
- What and how are outputs measured? Are measures benchmarked?
- How does the information inform business improvements?

Phase 2 – Analysis

- Develop a high level (i.e. key processes) process map with swim lanes to illustrate key responsibilities
- Review, interpret information, obtain feedback and amend accordingly
- Identify key issues and opportunities

6.2 Approach

In this section we explain the process Opus used to complete this Operational Management part of the report. It illustrates that Environment Bay of Plenty (EBOP) has provided considerable input into our understanding of what they do and how they do it. This robust process provides an environment for the Rivers & Drainage Group to identify where there can be improvements to operational efficiencies and effectiveness. Opus's role has been to facilitate, question and support the senior management through this process.

On the 5th and 6th March Ken Tarboton (Group Manager Rivers & Drainage), Bruce Crabbe (Operations Manager), Robbin Britton (Acting Engineering Manager), Rob Steel (Opus) and Clive Tozer (Opus) met at EBOP's office in Whakatane. They were joined for part of the 5th March by Roger Waugh (Principle Technical Engineer) and Peter Askey (Opus). The workshop's purpose was to understand what Rivers & Drainage Schemes are trying to achieve, how they operate and to illustrate some current processes. During these workshops our role was to question, understand, challenge and guide the Rivers & Drainage Group to develop their own solutions.

Ken Tarboton, Bruce Crabbe and Robin Britton reviewed the 3 process examples from the workshop and provided feedback at a telephone conference attended by Rob Steel on 11th March.

EBOP also provided the following information:

- 2006 Ten Year Plan
- Relevant sections of the Draft 2009 Ten Year Plan
- 2008/09 Rivers & Drainage Asset Management Plan (Executive Document)
- Draft Audit New Zealand report on the Asset Management Plan

This information has been used to create this report, which has been internally reviewed prior to receiving feedback from EBOP.

This section is the result from this process. The information contained within it is entirely based upon information provided at meetings or subsequently supplied by EBOP. Opus has relied upon this information in good faith to derive its analysis, observations, assumptions and recommendations.

6.3 Effectiveness

In this section we clarify what we mean by effectiveness and propose four areas for improvement. These four areas were identified by Opus following our meetings with the Rivers & Drainage Group senior management. We believe these four areas are key to improving the Group's effectiveness. The four areas we have focused on are:

1. Understanding costs versus value
2. Reviewing the work from capacity reviews
3. Prioritisation of the maintenance and capital works programme
4. The economic and social consequences of flooding

Clarification

Effectiveness is about making sure the right tasks or projects are undertaken to achieve a goal. To ensure we are being effective we need to ask questions like "are we doing the right things to achieve our goal?"

1. Understanding cost versus value

The Rivers & Drainage Group staff, and supported by other EBOP staff when necessary, provide emergency assistance during a flood event. Their knowledge helps contractors, civil defence and emergency services in the event of an emergency i.e. it saves time, ensures the right things are done at the right time, understanding the consequences of certain actions and to provide appropriate advice and warnings. This knowledge and flexibility to be on call in an emergency has a value (to ratepayers), as well as a cost.

The cost of a service is easy to quantify and does attract a lot of attention, whereas value of a service can be more difficult to quantify especially if it is less tangible. To answer this conundrum (i.e. what is the value of a service when the benefit is only realisable in an emergency, but there remains an ongoing cost) there is a need to understand the relationship between costs (of delivering the service) versus the value (benefits of delivering the service and/or risks of not delivering the service).

Where:

COST > VALUE

(Is greater than)

Look at alternative ways of service delivery or stop providing the service.

COST < VALUE

(Is less than)

Maintain service delivery but continue to look for improvements.

Some questions Council may want to consider include do the services provided add value and are they greater than the cost? Also, what would be lost (disadvantages or risks) if the work was done externally instead of being done internally?

Recommendation

We recommend that Environment Bay of Plenty assess and quantify the value the Rivers and Drainage Group add to inform Council as to whether the cost of service provision gives value for money. For example, to assess the value of having staff available to respond to a flooding event (as stated above) compared with the value of an alternative approach i.e. using an external contractor.

2. Reviewing the work from capacity reviews

From a technical perspective capacity reviews are considered elsewhere in the report. In this section we consider how effective the process is in reviewing this work. Capacity reviews provide information that determines what maintenance and capital projects are undertaken. It therefore has a direct link to future expenditure. Capacity reviews determine what needs to be done. Our questions have been around who and when is this work checked.

The Rivers & Drainage Group undertake capacity reviews. The purpose of these reviews is to check that the volume of water flowing through a channel remains within the design

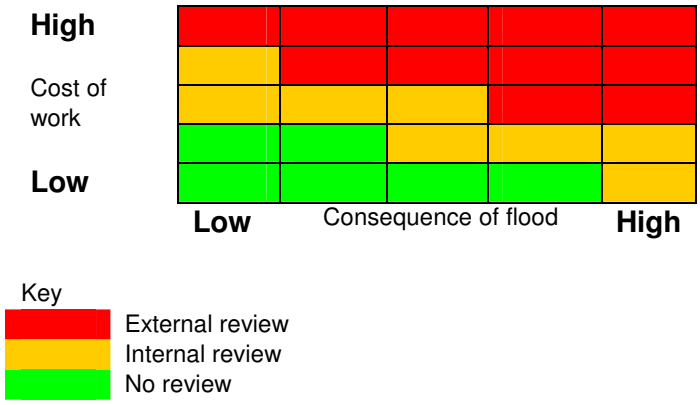
parameters. This initial phase of the work is undertaken by the survey team with the resulting information handed to a modelling engineer.

The capacity review and modelling help determine the maintenance and capital works required to maintain the levels of service within the Annual Exceedance Probability (AEP) percentage. The AEP is defined as "t*he probability that, in any one year, a flood event of a particular magnitude will be exceeded at a specified location. For example, a 1% AEP flood has a 1% probability of occurring in any one year. This is more commonly known as the 1-in-100-year event" (Flood Control and Drainage Glossary, p215; The Ten Year Plan 2006 - 2016)*. The engineers doing the modelling use their experience to determine the freeboards remaining height. The freeboard is the extra capacity built into stopbanks to allow for waves, debris and construction tolerances.

The capacity reviews and modelling are important pieces of work as they drive the timing and cost of renewals and possible capital projects. The Rivers & Drainage Group have informed us that they do not have a formal process to review the capacity reviews and modelling.

The consequence is that capacity reviews may not be adequately checked by another professional to ensure the data, assumptions and results are correct and/or reasonable. If a mistake is not identified there is a risk that works may proceed, which could be unnecessary. Alternatively there is the risk work may not be carried out, which needs to be done, resulting in a lower level of service being provided and raising the probability of a flood event.

To ensure this risk is mitigated we believe that capacity reviews should be checked. However, it may not be necessary to do this for every capacity review. Also some capacity reviews will benefit from an external review and some just an internal review. We would suggest that the Rivers and Drainage Group develop a matrix to determine what form of checking will be required. This matrix may look something like this:



We believe this will provide Council confidence that capacity reviews are being checked with a degree of vigour relative to the consequence of flooding and costs of doing the work.

Recommendation

We recommend that the Rivers & Drainage Group develop a matrix to assess what level (or degree) of checking is required following a capacity review.

3. Prioritisation of the maintenance and capital works programme

Prioritisation is about ensuring the projects or tasks will:

- Contribute towards achieving the organisation's or activity's (e.g. Rivers and Drainage scheme) strategy
- Ensure the projects align with each other (e.g. pipes under a road needing to be replaced are replaced before the road is resealed)
- Deliver what is promised (i.e. risk of non-delivery and having to do the work again)
- Provide best value for money over the assets life and including the operational benefits or costs in future plans and budgets
- Assist in planning a realistic resource management plan identifying who will do what when

Based on international research, organisations that implement a prioritisation process and tools can achieve:

i) 10% to 25% cost reductions in capital spending (Gartner,2005)
ii) Savings of 2% to 25% of annual maintenance expenditure (Capital Asset Management Review, The Treasury; Saha International, 2006).

In addition to the above research the writer has helped a business achieve a 30% saving on their capital budget, by implementing a prioritisation process.

EBOP have incorporated five asset management plans into one asset management plan. We believe this provides an opportunity to prioritise the entire maintenance and capital works programme over all 5 schemes to maximise the above benefits. We believe the Rivers and Drainage Group will achieve significant benefits from implementing a prioritisation process.

Recommendation

We recommend that the Rivers & Drainage Group implement a prioritisation process and tools across all the rivers and drainage schemes to ensure an effective maintenance and capital works programme is created to support efficient delivery.

4. Economic and social consequences of flooding

We understand the Rivers and Drainage Schemes purpose is to deliver agreed (through The Ten Year Plan) levels of service. One of these is to keep flooding events to within prescribed AEP percentage (see above for an explanation). EBOP aims to deliver these

levels of service by undertaking maintenance, renewals (replacing assets at the end of their useful life) and building new assets as prescribed by the Asset Management Plan.

Council have considered whether this level of service will achieve the Community Outcomes (as far as they relate to the Rivers & Drainage Schemes). These are:

- Healthy and safe communities
- Quality and affordable infrastructure
- A prosperous and sustainable economy

We have been informed by EBOP that they prepare Floodplain Management Strategies (FMS), which incorporate the above Community Outcomes. These FMSs also use hydraulic modelling to assess the economic and social impacts of flooding to determine the AEP. The AEP is a measure to show whether flood protection is adequate to achieve a level of service.

We understand EBOP have experienced flooding on a regular basis and EBOP know how this impacts on people and businesses. This impact is assessed and reflected in the FMS. We would suggest that the economic and social impact of flooding be more closely linked to the levels of service and AEP to support the rationale behind prioritising future maintenance and capital projects. Set out below are two examples both illustrating the consequence of different flood events.

Example 1

After a heavy rainfall event the river rises, just exceeds the freeboard and floods a rural area. After one hour the river falls below the freeboard and eventually returns to its normal flow. The consequence of the flood is short term with no significant long term economic impact.

Example 2

Prolonged heavy rain coinciding with spring tides causes the Whakatane river to flood Whakatane affecting homes and businesses over a number of days. The consequences both economically and socially are significant and affect the community for many years.

In both these examples we have assumed the river has flooded within its AEP (which varies across the schemes) but the consequences are different. We believe a link should be drawn between the number of flood events and the consequences of these events. This link will help prioritise maintenance and capital works. It will also assist Council in the development of levels of service and determine whether it is affordable.

Recommendation

We recommend that Environment Bay of Plenty continue to assess the economic and social consequences of flooding within the five Rivers and Drainage Schemes and demonstrate how this links with the AEP, prioritisation of maintenance and capital works and the cost of delivering levels of service.

6.4 Efficiency

In this section we clarify what we mean by efficiency, look at 3 processes currently used by EBOP, rockwork maintenance, stopbank renewal and a new capital work. These three processes were chosen by the Rivers & Drainage Group to be mapped as they provided good examples of how the Rivers & Drainage Group work. We facilitated these meetings, the development of these processes and drew them up. The Rivers and Drainage Group reviewed and amended the current processes. This provided an opportunity to identify possible improvements which we highlight below.

Clarification

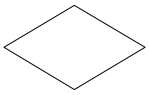
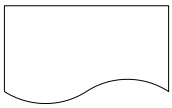
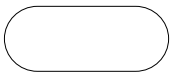
Efficiency is about doing the task or project well at minimum cost of resources (e.g. money and materials) and time to achieve its goal. To understand whether we are being efficient we need to understand what steps are taken to complete a task or project, evaluate and question each step and identify improvements to help achieve the goal more efficiently.

To help demonstrate this we have, in conjunction with Ken Tarboton, Bruce Crabbe and Robbin Britton, developed 3 process maps to illustrate some of the processes used by the Rivers & Drainage Group. The benefit of this exercise is it maps out a process people have in their minds. It also identifies discrepancies of who does what and when, and more importantly where improvements can be made.

Our approach has been to facilitate, prompt and question each step. The aim is to guide and support the Rivers & Drainage Group to identify improvements themselves, which will increase efficiency. The reason for adopting this approach is that the Rivers and Drainage Group know their business far better than Opus does and helps them take responsibility to implement any changes.

Process maps

Process maps are used to illustrate the processes taken to achieve a task. The shapes and symbols used help to explain what happens at each step. Some of the common shapes and symbols are explained below.

Symbol	Explanation
	A process box – someone does something
	A decision is made by someone or a group of people
	A document is produced
	Information is provided
	Process ends
	Direction from one step to another step
	Direction from one step to another step and then back to the original step. This maybe continuous.

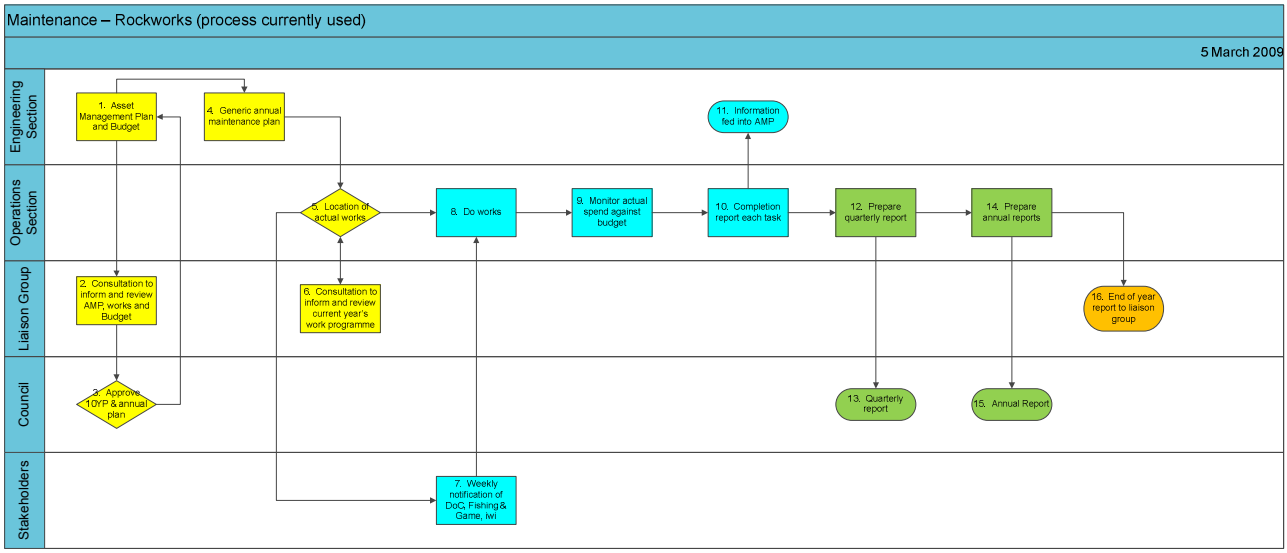
On the left hand side of the process map we have inserted "swim lanes" (rows) to illustrate who is responsible for completing that particular process step.

To help read and understand these process maps we have coloured each phase as follows:

Burgundy	-	Event (only applies to process 3 – New Capital Work)
Yellow	-	Investigations – work leading up to detailed design and construction
Blue	-	Delivery – from detailed design, construction and completion
Green	-	Reporting – reports to Council and Liaison Group

<u>Process 1 – Rockworks maintenance</u>

Below is the current process used by Environment Bay of Plenty for doing rockwork maintenance. An A3 process map plus notes explaining the process is attached at Appendix 2.



We understand the purpose of step 5 is to link what the AMP says to what is required on he ground. The AMP may identify work, which could be postponed for a year or two as a higher priority has been identified and where. Step 6 enables input from the Liaison Group who may try and influence staff and Council to keep costs to a minimum and only do, what the Liaison Group deem, as necessary work.

Whilst steps 5 and 6 focus on optimising operational performance, this approach may miss the benefits of procurement efficiencies (how the work is purchased and actually done at minimum cost). It maybe more cost effective to package larger blocks of work for contractors and giving them greater certainty of work over say a three year period (in line with The Ten Year Plan). This is an area we believe that the Rivers and Drainage Group should review.

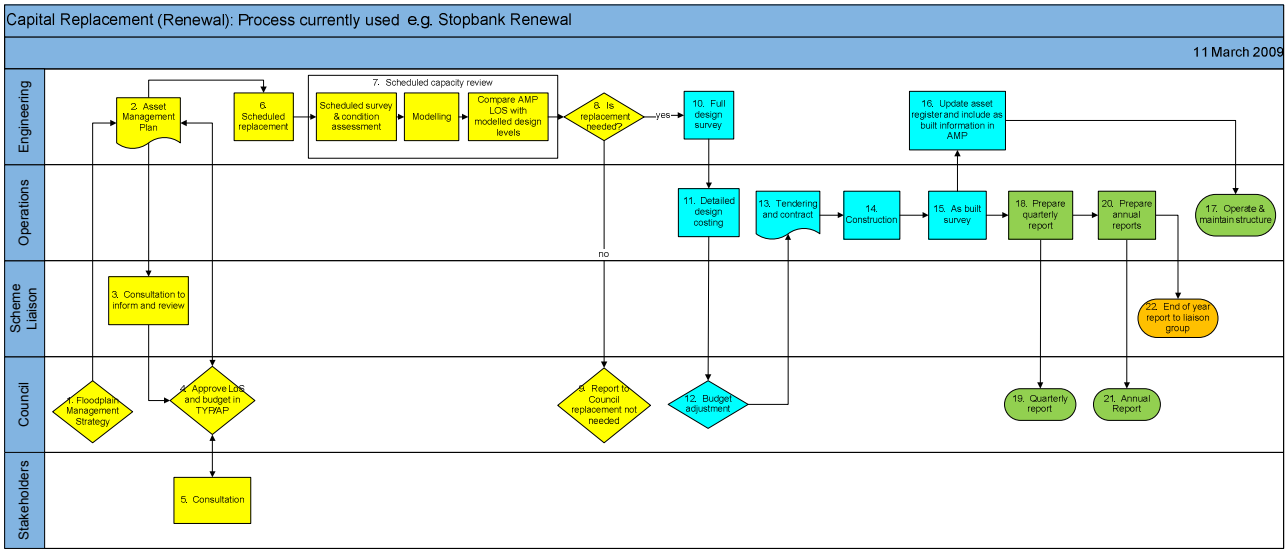
Step 16 is coloured as Rivers & Drainage Group have stated this step is being done but could be improved. The Rivers & Drainage Group are planning to provide a more informative report on the previous years work to Liaison Groups from July 2009.

Recommendation

We recommend that the Rivers and Drainage Group review how they procure services from contractors.

Process 2 – Stopbank renewal

Below is the current process used by Environment Bay of Plenty for doing a stopbank renewal. An A3 process map plus notes explaining the process is attached at Appendix 3.



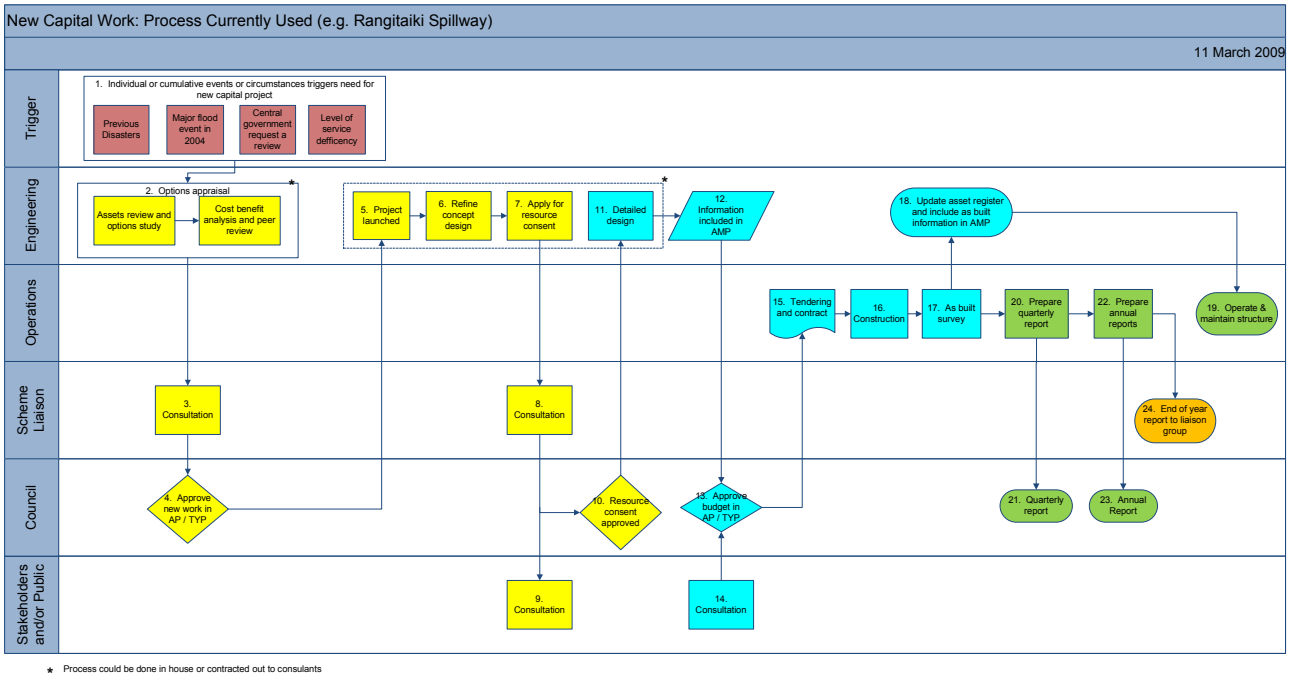
The Rivers & Drainage Group acknowledge that delays in delivery are usually around not receiving the information from the investigations phase in sufficient time to deliver the project. As mentioned earlier the benefits of process mapping are to identify the bottle necks, understand why, create a new process (solution) and implement the new process. We believe that if the Rivers & Drainage Group were to prepare a detailed process map of the investigations phase (coloured yellow) they would understand what processes are causing delays. This provides an opportunity to work together (within EBoP) to identify solutions and implement them. We have been informed that if this process was improved it would also enable better budget estimates to be made during the project lifecycle. We believe initial focus on the process step 7 will help improve delivery of projects on time and to budget.

Recommendation

We recommend that the Rivers & Drainage Group map out and review the processes in the investigations phase (coloured yellow), but initially focus on process step 7 to understand what and where the "bottlenecks" are and to identify improvements.

Process 3

Below is the current process used by Environment Bay of Plenty for doing a new capital project. An A3 process map plus notes explaining the process is attached at Appendix 4.



We understand steps 7 to 10, applying for and obtaining resource consents, can and does delay project delivery. These steps follow a legislative requirement and external process, which EBOP has to pursue with limited ability to improve. We would suggest some improvements could include:

- Identifying and managing possible contentious issues
- Engaging stakeholders and approving authorities at an early stage to discuss timing and issues
- Factoring in realistic to pessimistic timeframes in the project plan to reflect uncertainty around when resource consent will be granted

Recommendation

We recommend that project managers identify the risk of resource consent delays in the project plan and implement solutions to mitigate this risk.

Overall Comment

By going through three examples we demonstrate the benefits of using process maps to provide valuable insight into what and how Rivers & Drainage Group operate to deliver Council's agreed levels of service. We believe EBOP are capable in applying this approach to all their key activities to drive effective and efficient business improvements.

Recommendation

We recommend that the Rivers & Drainage Group develop additional process maps of their key activities to drive improvements in operational efficiency and ensure effectiveness in achieving levels of service.

6.5 Section Conclusion

The Rivers & Drainage Group do have a clear understanding of what they should be doing, in terms of delivering levels of service, to support Council in contributing towards the Community Outcomes. They have a dedicated team who understand and are passionate in serving the community. However this commitment and work behind the scenes is not necessarily understood in terms of the value it adds to ratepayers. We believe this value needs to be quantified (as best it can) so Council can understand whether the services are providing value for money.

The Rivers & Drainage Group acknowledge the need to improve the prioritisation of maintenance and capital works. We believe this will lead, based on international experience, to significant cost savings by better allocating resources on the right projects. This is an area we would urge EBOP to investigate further.

The Rivers & Drainage Group do follow processes which have evolved over time. However, these are not mapped out, and in some cases there can be confusion as to what process should be followed. We believe that using process maps can help clarify existing processes, identify problems, and create a new process which will improve efficiency. We see this as a continuous programme and would recommend focus on specific areas (as outlined in this report) rather than trying to map a process for everything the Rivers & Drainage Group do.

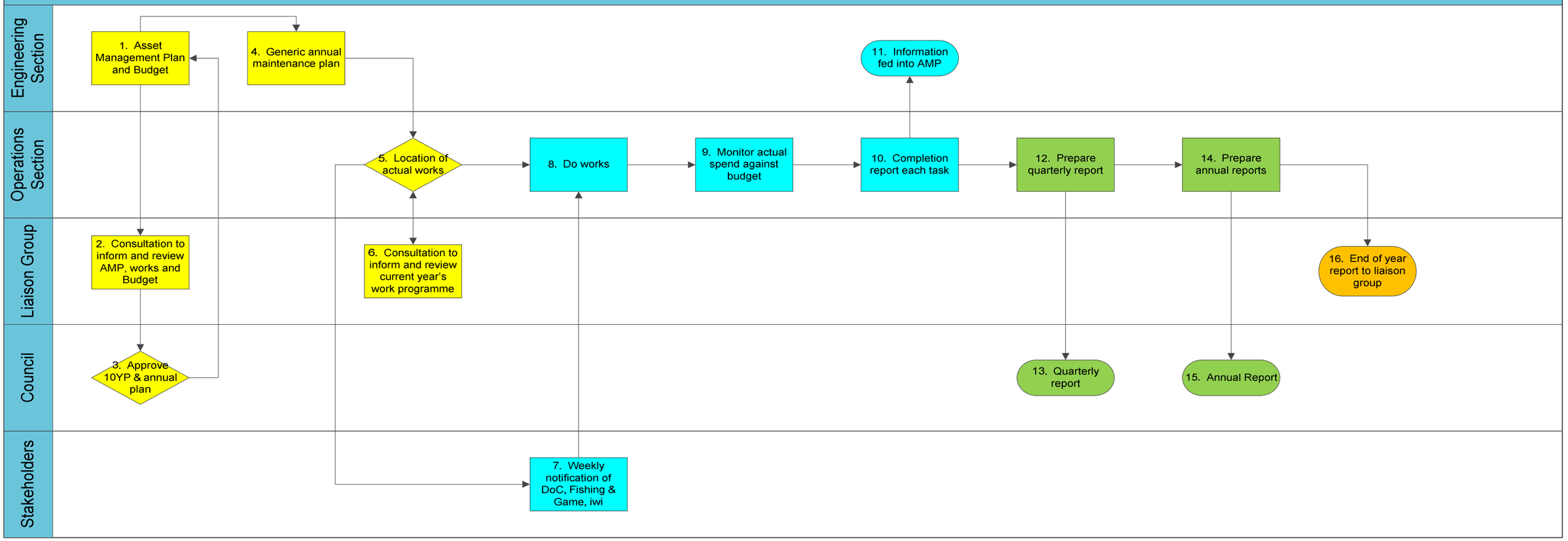
APPENDICES

Appendix 1

RIVERS and Drainage Group			To Scheme up to 30/06/09	Old Code	New Code	To Scheme from 1/07/09
070	River and Drainage Adminstration		0%			0%
071	Kaituna River		100%			100%
072	Rangitaiki-Tarawera		100%			100%
073	Whakatane-Waimana		100%			100%
074	Waioeka-Otara		100%			100%
075	Rangitaiki Drainage		100%			100%
076	Rangitaiki Pump Schemes		100%			100%
077	Opotiki Drainage		100%			100%
079	Stream Care		0%			0%
078	Engineering		See Below			See Below
780	Engineering administration	Admin	0%	540	ENGADMIN	0%
		Team, section, group meetings	0%			0%
		project planning	0%			0%
		supervision	0%			0%
		PA's and development planning	0%			0%
		Training	0%		TRDESIGN	0%
781	Provide Design advisory services	DAC's, Tech Reviews & Plan Submissions already charged to Consents & Planning	0%	542	DISTAPCO	0%
		Refer below to advice relating to projects, capital works & AMP's	0%		ALLADVCE	0%
		Provide general engineering advice as needed	0%	DIP07000, DIP37000	GENADVCE	0%
782	Provide flood warnings	flood management	0%		FLOODWAR	50%
		flood forecast modelling	50%	DIP31000		50%
		flood manual updates	0%			50%
783	Survey Programme	Initial River Scheme Surveys	0%	541	SURVPROG	100%
		LIDAR survey				0
		River Scheme surveys for AMP's	100%	DIP58000	SURVEY--	100%
		lake level monitoring	0%	DIP02000	SURVPROG	100%
		Gravel management	100%	DIP58000	SCM000--	100%
		Region-wide benchmarks survey	0%	DIP57000	SURVNERM	0%
784	Asset Management Plans	Condition assessments	50%		CONASS--	100%
		Stability and/or seepage assessments	100%	DIP41000	CAPREV--	100%
		Scheme river inspections	100%			100%
		Asset revaluation	100%		AMPREV--	100%
		Capacity reviews (includes modelling of scheme rivers, streams, canals and drains)	25%	DIP06000	CAPREV--	100%
		Updating asset management plans	100%	DIP04000	AMPPROJT	100%
785	Floodplain Management Strategies	Flood Hazard modelling (includes floodplain maps with flood levels and breach scenarios)	0%	DIP14000	FLOODHAZ	50%
		Prepare floodplain management strategies	0%	DIP10000, DIP49000,DIP6200	FMS000--	50%
786	Engineering Projects			543	ENGPROJT	
		Natural hazard evaluation	0%	DIP55000		0%
		Carry out small hydrologic/hydraulic projects	0%			0%
		Gravel Mangagement, fluvial processes	0%	DIP36000		0%
		Flood frequency analysis	0%	DIP47000		0%
		Wetland investigations	0%	DIP05000	DIP05000	0%
		Trial River Protection works	0%	DIP61000	DIP61000	0%
		Tsunami studies	0%	DIP55000	DIP55000	0%
		Sea level inundation risk	0%	DIP23000	DIP23000	0%
787	Capital works engineering	Detailed Survey	100%	DIP44000, DIP6000	ENGWRK--	100%
		Design		DIP45000		
		Contract Admin		DIP46000		
		Construction Supervision		DIP54000		

Maintenance – Rockworks (process currently used)

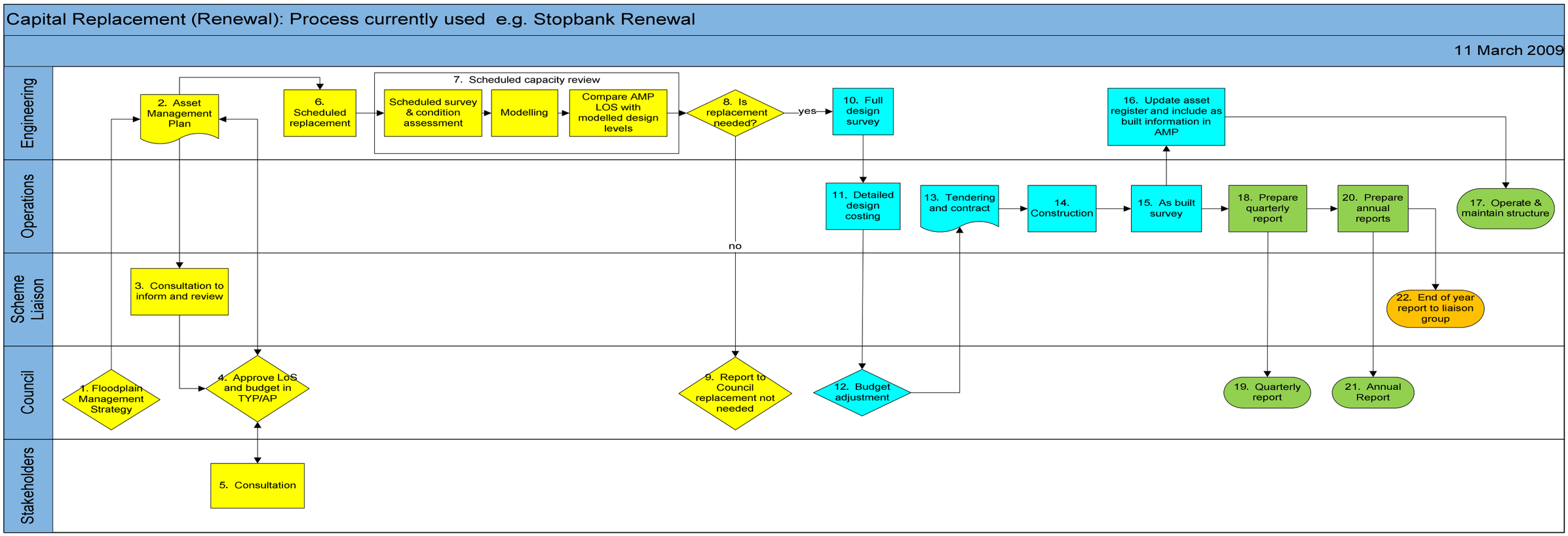
5 March 2009



Process No.	Process	Explanation
1	Asset Management Plan and Budget	Asset Management Plan and budget are prepared.
2	Consultation to inform and review AMP, works and Budget	Views and feedback on AMP and works programme.
3	Approve 10YP & annual plan	Council approve 10 Year Plan and Annual Plan
4	Generic annual maintenance plan	AMP informs development of annual maintenance plan.
5	Location of actual works	Location of where the work will take place is identified.

Process No.	Process	Explanation
6	Consultation to inform and review current year's work programme	Liaison groups are informed what and where the work will take place. Works maybe altered depending on the feedback received.
7	Weekly notification of DoC, Fishing & Game, iwi	
8	Do works	This maybe a mix of Council staff and contractors.
9	Monitor actual spend against budget	
10	Completion report each task	

Process No.	Process	Explanation
11	Information fed into AMP	
12	Prepare quarterly report	
13	Quarterly report	Report approved by Council
14	Prepare annual reports	
15	Annual Report	Report approved by Council
16	End of year report to liaison group	This is an area where it is acknowledged could be done better.



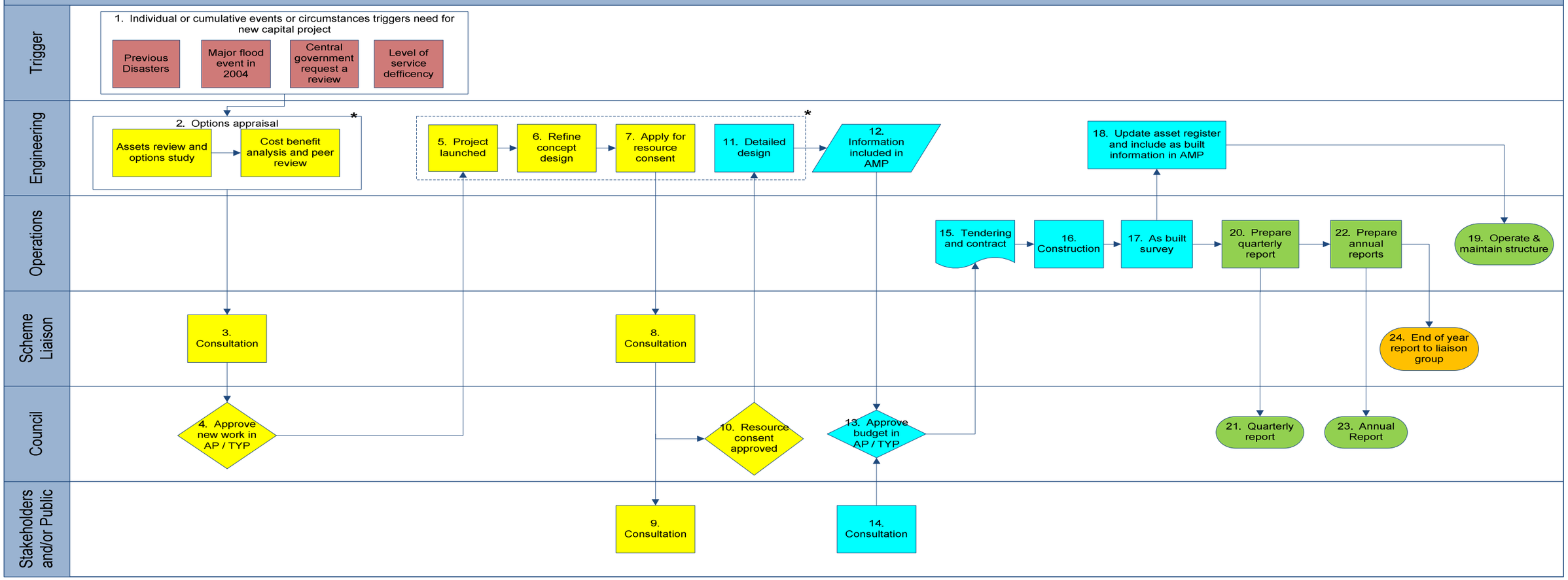
Process No.	Process	Explanation
1	Floodplain Management Strategy	Strategy approved by Council
2	Asset Management Plan	Develop Asset Management Plan including defining levels of service to achieve the Floodplain Management Strategy, maintenance plans. Renewal cycles, capital projects and risks.
3	Consultation to inform and review	
4	Approve LoS and budget in TYP/AP	Council decides on levels of service and approves budget in TYP and AP following consultation with the community.
5	Consultation to inform and review	
6	Scheduled replacement	Following approval of TYP and AP adjustments made to AMP to inform scheduled replacement
7	Scheduled capacity review	A number of processes within this review.
8	Is replacement needed?	Engineering make a technical decision

Process No.	Process	Explanation
9	Report to Council replacement not needed	Report for Council to make a decision?
10	Full design survey	
11	Detailed design costing	
12	Budget adjustment	
13	Tendering and contract	Obtain prices and award contract
14	Construction	
15	As built survey	

Process No.	Process	Explanation
16	Update asset register and include as built information in AMP	
17	Operate & maintain structure	
18	Prepare quarterly report	
19	Quarterly report	Report approved by Council
20	Prepare annual reports	
21	Annual Report	Report approved by Council
22	End of year report to liaison group	This is an area where it is acknowledged could be done better.

New Capital Work: Process Currently Used (e.g. Rangitaiki Spillway)

11 March 2009



* Process could be done in house or contracted out to consulants

Process No.	Process	Explanation
1	Individual or cumulative events or circumstances triggers need for new capital project	
2	Options appraisal	To determine possible solution
3	Consultation	On possible solution
4	Approve new work in AP / TYP	
5	Project launched	
6	Refine concept design	
7	Apply for resource consent	
8	Consultation	

Process No.	Process	Explanation
9	Consultation	
10	Resource consent approved	
11	Detailed design	
12	Information included in AMP	
13	Approve budget in AP / TYP	
14	Consultation	
15	Tendering and contract	Obtain prices and award contract
16	Construction	

Process No.	Process	Explanation
17	As built survey	
18	Update asset register and include as built information in AMP	
19	Operate & maintain structure	
20	Prepare quarterly report	
21	Quarterly report	Report approved by Council
22	Prepare annual reports	
23	Annual Report	Report approved by Council
24	End of year report to liaison group	This is an area where it is acknowledged could be done better.