A LOGIC MODEL BASED EVALUATION FRAMEWORK TO ASSESS PROGRESS WITH INTEGRATED CATCHMENT MANAGEMENT PLANNING IN THE AUCKLAND REGION

***Hellberg, C**., Auckland Regional Council; **Davis, M.**, Auckland Regional Council; **Feeney, C.**, Environment and Business Group**; Allen, W.**, Landcare Research*

ABSTRACT

The Auckland Regional Council (ARC) has provided contributory funding assistance (i.e. subsidies) to territorial authorities (TAs) to prepare Integrated Catchment Management Plans (ICMPs) since the 2004-2005 financial year. The objective of these subsidies is to help improve the quality (i.e. "raise the bar") for the future management of stormwater and wastewater management and outcomes through improved planning by TAs.

The ICMP workstream can be divided into three categories for the purposes of evaluation:

1) Funding

   Availability of funding is one contribution to successful and timely completion of quality Integrated Catchment Management (ICM).

2) Good Plans

   ICMPs are successful if they contribute to good environmental outcomes. The quality of the outcome generally depends in part on the quality of the plan and its implementation.

3) Building relationships, awareness, linkages and alignment

   Good relationships and shared understanding built up through personal and organizational contact are needed for quality plans and outcomes.

A logic model was developed for the ICMP workstream that shows details about these categories containing a situation analysis, vision, inputs, outputs and outcomes based on an orders of outcome classification (short, medium and long term outcomes). This paper describes the logic model based framework to enable ongoing assessment of progress on the ICMP workstream.

KEY WORDS

Integrated catchment management plans (ICMPs), evaluation method, logic model

1. INTRODUCTION

Stormwater is recognised as having a large impact on the Auckland region's freshwater and marine ecosystems with flow-on adverse impacts on the social, cultural and economic values of the regional community (Boston consulting Group, 2004). Growth and urbanisation in the Auckland region can increase the volume of stormwater run off and the quantities of contaminants and sediment accumulating in receiving environments. One of Auckland's greatest challenges is to enable growth to occur in the region while maintaining and enhancing the quality of life and the

environment. This is a challenge to the whole Auckland community and will require an integrated approach if a sustainable and successful outcome is to be achieved.

The ARC through the Stormwater Action Plan has been providing contributory funding assistance (i.e. subsidies) to TAs for the preparation of ICMPs since the 2004-2005 financial year. The objective of these subsidies is to improve the quality (i.e. "raise the bar") for the future management of stormwater and wastewater and it outcomes through improved planning by TAs.

The definition of an ICMPs in the *Proposed Auckland Regional Plan: Air, Land and Water (PARP:ALW)* states that ICMPs are:

"A plan for management of stormwater and wastewater discharges, diversions and associated activities within the catchment or District which is prepared in accordance with this Plan (PARP:ALW) and identifies:

- *(i) the stormwater or wastewater issues facing the catchment and the range of effects from those discharges, diversions and associated activities;*
- *(ii) strategic objectives for the management of stormwater and wastewater discharges, diversions and associated activities within the catchment or District;*
- *(iii) a range of management options and the preferred management approach for avoiding, remedying or mitigating environmental effects and risks;*
- *(iv) roles and responsibilities for implementation of the management approach; and*
- *(v) a process for review."*

Now that several ICMPs have been prepared by TAs in the region, the ARC considers it timely to evaluate how well the ARC has been able to assist their development, how well they meet the relevant statutory and non-statutory requirements, and how well they meet the objectives set in the ICMP Workstream Strategy (ARC, 2005). Therefore an evaluation programme was needed to monitor and evaluate completed ICMPs and inform improvements to future ICMPs.

2. Logic Model

The evaluation programme developed for the ICMP workstream is based on best practice examples for logic models (Treasury Board of Canada (2001), Taylor-Powell and Ellen (2002), W. K. Kellogg Foundation (2004), Watson et al. (2004), and Waitakere City Council (2006)).

Logic models illustrate a sequence of cause-and-effect relationships, or in other words, a systems approach to communicating the path toward a desired result. Logic models can help summarise challenging programmes that cut across many workstreams and departments and/or agencies: they can help people find ways to articulate and guide planned activities, especially those aiming to disseminate information and encourage its use. Logic models can do this by encouraging people to plan for results by envisioning a 'big picture' view of a project's scope of work and key outcome areas. They also allow for ongoing checks on the internal logic of a programme; that is, whether assumptions and causal links are valid.

Logic models set out the logical linkages among programme resources, activities, outputs and audiences, and highlight different outcomes aimed at addressing the specific and defined problem or situation. Importantly, once a programme has been described in terms of the logic model, critical measures of performance can be identified (Feeney et al., 2008).

3. Orders of Outcomes

Outcomes that take time to become evident have been classified into orders of outcomes (Olsen, 2003 and UNEP/GPA, 2006) that acknowledge the temporal dimension of successful integrated catchment management. The orders enable the measurement of outcomes over long periods of time through the sequence of institutional, behavioural and social/environmental changes that can lead to more sustainable development (Feeney and Allen, 2007).

Identifying the range of outcomes that support evidence of good policy and practice in complex social and environmental situations is challenging, not least because results in these areas often

take some years to materialise. Accordingly it is good to visualise outcomes that can be seen to form a logical sequencing over such time periods. One such approach for grouping the outcomes of an integrated governance initiative is known as the Orders of Outcomes model. It highlights the importance of changes in state (such as better environmental or social outcomes), but recognises that each change in state is associated with changes in the actions of key human beings. Importantly, the model helps plan activities in sequence so they build on each other over time, as shown in Figure 1.

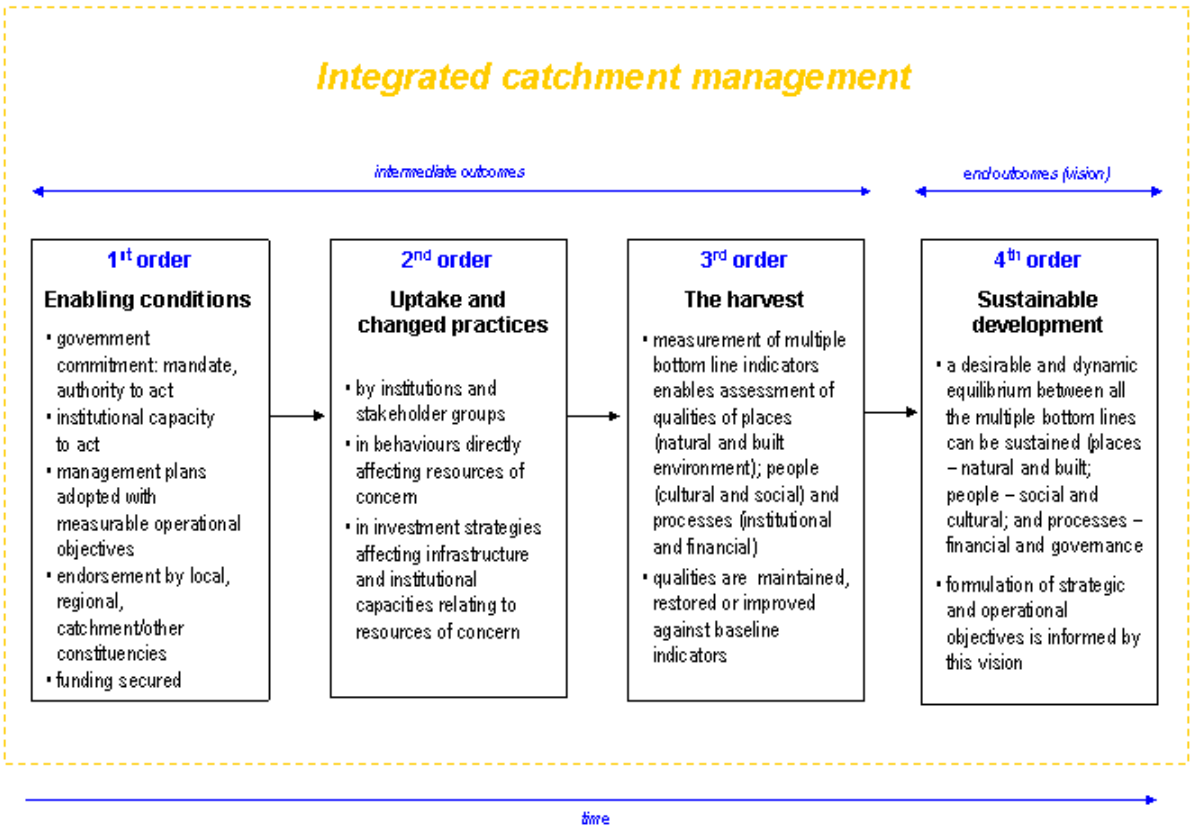


Figure 1: Orders of outcomes approach to monitoring and evaluation
Source: Adapted from Olsen (2003) and UNEP/GPA (2006)

Enabling conditions (First order)

First order outcomes are the organisational conditions that must be present at the start of any programme to successfully bring about a change, such as those envisaged by ICMPs. First order outcomes include the institutional and societal conditions that must be present for a plan to succeed in establishing a sustained plan of action carried out to influence the course of events in an ecosystem. The setting of clear, measurable goals is a key element.

Changes in practice (Second order)

Second order outcomes are evidence of successful plan implementation such as collaboration among institutions or funding provision. These outcomes reflect stakeholder uptake as evidenced by observable changes in practice by institutions, stakeholder groups and individuals.

The harvest (Third order)

Third order outcomes are the socio-economic, structural and environmental results that define the ultimate success or failure of the programme. These must be defined in unambiguous terms early

on in any management process: vague or conflicting goals produce inefficiency and ineffectiveness and make it difficult to assess a programme's effectiveness.

Third order outcomes characterise the achievement of identified human and ecosystem objectives or targets, or the rewards of the sustained behavioural change by the institutions, groups and people concerned. Indicators of third order outcomes include multiple bottom line indicators that enable assessment of the qualities of places (natural and built environment); people (cultural and social) and processes (institutional and financial) – the considerations listed in the Resource Management Act (RMA) and the four Local Government Act (LGA) well-beings. Termed "the harvest", improved third order outcomes show that qualities are maintained, restored or improved against baseline indicators of the state of the environment, quality of life and other multiple bottom line indicators.

Sustainable development (Fourth order)

In the end all of the different activities and policies collectively contribute towards an enhanced future. This ultimate vision or goal of sustainable (urban) development is recognised as a fourth order outcome. Rather than being seen as rather than a state that we are currently able to define and achieve in measurable terms, sustainability is better viewed as a desirable and dynamic relationship that can be sustained amongst all the multiple bottom lines, including people and the environment. Formulation of strategic and operational objectives can be informed by this vision, as it is sometimes useful as a goal. In this sense, then, we come full circle and acknowledge policy development as an ongoing iterative process, with continuous policy cycles.

4. ICMP Workstream Strategy

The ARC's ICMP workstream strategy (ARC, 2005) sets out the context for the ICMP workstream. It acknowledges the ICMP Funding Guideline (ARC, 2006) and the importance of committed partnerships and potential hindrances to success, and as well as the objectives listed below, describes target audiences and team links; key outcomes and measures of success; and resources and activities.

The strategy states that the key objectives of the ICMP workstream are to:

1) raise the bar with respect to stormwater planning and future stormwater management and to increase awareness of water quality and aquatic habitat issues;
2) ensure a consistent approach to and standard of integrated catchment management planning across the region;
3) allow the ARC to provide assistance, in the form of funding and technical guidance, to TAs to ensure that the first two points are met; and
4) form the technical basis for future network discharge consents; and
5) form the basis of implementation of stormwater management for each TA in a co-ordinated manner.

The ICMP workstream undertakes a large number of activities to meet the workstream objectives. These activities can be grouped in three main categories:

1) Funding

   Availability of funding is one contribution to successful and timely completion of quality Integrated Catchment Management (ICM)

2) Good Plans

   ICMPs are successful if they contribute to good environmental outcomes. The quality of the outcome generally depends in part on the quality of the plan and its implementation.

2) Building relationships, awareness, linkages and alignment

   Good relationships and shared understanding built up through personal and organisational contact are needed for quality plans and outcomes.

5. Evaluation Framework for ICMP Workstream

Four logic models were developed: one for the ICMP programme as a whole, and one for each of the three activities listed above (funding, good plans, and building relationships). Together, these four logic models provide a comprehensive but simplified overview of the range of activities undertaken within the ICMP workstream. Each model includes an analysis of the enabling conditions resulting from each activity, the uptake by TAs and other stakeholders and the short, medium and long term outcomes.

For each logic model specific evaluation questions were defined in regard to 'situation analysis, vision and objectives', 'project inputs', 'project outputs and outcomes', and 'assumptions and external factors'. To answer these questions several methods such as internal and external reviews and questionnaires can be used.

5.1 Logic models for the ICMP workstream

The logic models developed for the ICMP workstream are shown in Figures 2 to 5. Figure 2 describes the overall ICMP workstream while the following figures schematize the categories: 'preparing good plans', 'funding plan preparation', and 'building relationships and increasing awareness and alignment'. Details about these categories contain a situation analysis, vision, inputs, outputs and outcomes based on an orders of outcome classification. These details are derived from Feeney and Allen (2007) and are summarized below.

Situation Analysis

The situation analysis draws on the ICMP workstream strategy developed in 2005 (ARC, 2005).

It acknowledges that stormwater is recognised as having the largest single impact on the quality of the receiving environments in the Auckland region. At the same time Auckland is growing, and growth and urbanisation contribute to increase stormwater runoff, sedimentation and contaminants, as well a compromising ecological quality. This also notes that an integrated management approach is called for and that ICMPs can help develop this. New sustainability strategies mean the situation is constantly evolving, and along with other players, the ICMP workstream team needs to continually adjust and adapt to this.

The wider range of matters that need to be addressed in an ICMP is challenging for the industry. More guidance is needed on how a good ICMP should be prepared (internal logic), what a good ICMP should contain (scope) and the quality of the information provided (depth). There is also a shortage of capacity in the industry generally to support the development of plans to the desired standard. Better information sharing and knowledge management is also needed (Boston Consulting Group, 2004).

Funding is one of the key activities in the ICMP workstream: because TAs have limited resources for integrated catchment planning, improvements in receiving environments are being achieved more slowly and less cost-effectively than is desirable given the pressures of growth on the region.

Building relationships, awareness and alignment is acknowledged as a cornerstone of the effort (ARC, 2005): managing environmental outcomes such as integrated catchment management requires all the key stakeholders to work together in a co-ordinated and concerted manner. Better understanding of and buy-in to regional planning processes is needed (Boston Consulting Group, 2004). However, it is also recognised that this calls for new approaches towards working across departmental areas within both the ARC and the TAs, and across agencies and governance scales.

Vision

The visions for the four logic models are drawn from a workshop with a range of internal ARC stakeholders and views expressed by external TA stakeholders during one on one interviews. The workshop and interviews formed part of the development of the evaluation framework for the ICMP programme. The visions derived from this are:

1) A catchment management approach to planning in which excellent ICMPs promote streamlined regional/territorial land use/asset planning and management that delivers a unique and outstanding environment and other community benefits across multiple bottom lines.

2) An industry with the capacity to produce good ICMPs that address Multiple Bottom Lines (MBL), that traverse the four wellbeings of the Resource Management and Local Government Acts. These wellbeings are social, economic, environmental and cultural. The plans enable evaluation of their implementation and outcomes, in line with New Zealand and international best practice.

3) Good awareness of water quality and aquatic habitat and a consistently high standard of integrated catchment management planning are enabled by well-targeted ICMPs.

4) A joined up Auckland: catchment planners and managers working together help to deliver cost-efficiencies and improved MBL outcomes for the region as a whole.

The visions are draft statements and represent Olsen's (2003) fourth order outcome of sustainability.

Strategic objectives

The model recognises that the main driving strategic objectives for the ICMP workstream come from the Resource Management Act, Local Government Act, Regional Policy Statement, Proposed Regional Plan Air, Land and Water (PARP:ALW), the Auckland Sustainability Framework, and other statutory and non-statutory documents. In addition at a more immediate scale the activities are driven by the strategic objectives from the ICMP workstream strategy (ARC, 2005).

Inputs

Inputs include staff time, funding, equipment, other resources, and inputs from other workstreams of the Stormwater Action Plan Programme.

Workstream outputs and Activities

Outputs comprise workstream activities and the stakeholders involved with these. Activities are the link in the logic chain by which outcomes are achieved.

Several key activities aim to promote the preparation of good ICMPs. The ARC ensures that it keeps up to date with best research and practice in the area, including undertaking and commissioning local research, and by meeting visitors from overseas, attending conferences and keeping up to date with local and international literature. This enables preparation of a number of technical tools and guidance documents for TAs and their consultants to use. Another set of activities aim to investigate the monitoring needed to identify the achievement of third order outcomes, help provide accountability and ensure the ICMP workstream is continuously improving.

Funding-related activities fall into the following broad categories:

- To maintain and secure funding,
- working with TAs to set yearly and long term TA ICMP work programmes,
- working with TAs to identify priority catchments,
- receiving and processing TA funding claims in a timely manner, and
- reviewing the funding eligibility guideline.

The regular meetings between TA staff and the ARC are one of the key relationship building activities. The ARC also attends stakeholder consultation meetings and provide feedback on documents and reports, as well as taking opportunities to raise awareness of multiple bottom line outcomes for ICMPs. As a result of these and other activities the ARC is also developing partnerships with other government departments and programmes.

Outcomes

It is important to note that the overall workstream logic model and its three companions do not represent a linear approach to ICMP development. If this were the case, it could be expected that all the desired enabling outcomes would be fully established at the outset of the programme in 2005 and now in 2009 the region could expect to see delivery of the consequent first and second order outcomes. The reality, however, is that the process is iterative. In practice, industry capacity (including that of the ARC) is developing more rapidly in some aspects of plan preparation than in others, while ICMPs are continually being developed by many different players, including new entrants to the workforce and market. These players have different strengths and the development of strengths in some aspects of ICMP preparation inevitably highlights other areas where everyone can do better. Areas where plans and working relationships can be enhanced will thus always be shifting, and the activities will thus always need to focus across all orders of outcomes.

As it is an iterative process the evaluation programme needed to be designed to include both formative (how can improvements be made to what is occurring) and summative (have the end outcomes been achieved) aspects. Because formative evaluations look at how things are done rather than what is achieved, they mostly focus on first and second order outcomes. However a key measure of the effectiveness of ICMPs is how well they achieve the desired third order outcomes in terms of catchment and coastal environmental quality, which require a summative (results-based) evaluation. Summative evaluations assess the impacts of a programme on the desired outcomes that are the focus of their effort.

Short-term (first-order) outcomes

As illustrated in Figure 2 - 5, the first order (or enabling) outcomes are those most directly attributable to outputs, and consequently are those over which the ARC can reasonably be assumed to have the most control and responsibility. These outcomes include supportive constituencies, the development of long term funding mechanisms, long term governance arrangements that support ICMP development and implementation, resources to support preparation of ICMPs and institutional capacity to develop them to an appropriate level.

The ARC continues to develop tools and guidance documents which are based on best practice. These will both be delivered by the ARC, as well as getting contributions from national and international experts in various areas. The team will also attend conferences and seminars. In turn, the guidance derived will be provided to TAs and consultants in a number of ways, including giving advice and the development of tools.

Best practice is also developed by TAs and their consultants as they tackle particular issues in their catchments. Another important ongoing activity will therefore be developing forums and networks that encourage information sharing amongst all regional players.

A key short-term outcome is good agreement, guidance and feedback on plans, in terms of their internal logic, scope and depth. Another key short term outcome is the beginning of dialogue to initiate the development of programmes for integrated and co-ordinated monitoring by the ARC and TAs of ICMP implementation and the outcomes mandated under both the Resource Management Act and Local Government Act, including the possible development of an environmental report card.

Short-term outcomes anticipated within 1-2 years include maintaining funding and processing claims in a timely manner in accordance with the Guideline (ARC, 2006). They also include an ongoing process of preparing yearly work programmes, identifiying priority catchments and revising the funding eligibility guideline as required.

One of the key outcomes these activities have already produced in the ICMP workstream's first two years is getting to know TA teams on a personal basis. This has begun to encourage more contact and information sharing between the ARC and TAs. Note, however, that relationship building is an ongoing process, and hence will continue to remain a first-order outcome, to

overcome turnover-induced loss of key people and also to maintain and further build good relationships among colleagues of long standing.

A crucial outcome is that ICMP and other ARC staff develop a better understanding of stakeholder needs and constraints. This will enable more targeted assistance in a range of appropriate forms. Defined stakeholders are TAs, councilors, council utilities and local authority trading enterprises, consultants, researcher, other disciplines including planners and roading engineers, communities, etc.

The ARC will have developed information and awareness strategies on the value of MBL ICMPs, targeting professional engineering and wider audiences such as policy/ planning, consenting/compliance, environmental research and asset management staff. Community groups and the wider public also want to know more about catchment and asset management processes and how they can take part in these under both the Resource Management Act and Local Government Act.

Medium-term (second-order) outcomes

The second order outcomes represent the results of observable changes in uptake and practice that will support changes in how catchments are managed. These include elements such as how TAs prepare and implement ICMPs and how different agencies (including consultants) work together and collaborate in these initiatives, and whether appropriate infrastructure is funded and built as proposed in the ICMPs.

A programme of dialogue and consultation around information-sharing/knowledge management and co-ordination for improved monitoring of the implementation and outcomes of plans should also have been completed, and monitoring programmes developed and put into operation. This will enable catchment managers to show how ICMPs contribute to the LGA's four wellbeings and other objectives and outcomes specified in the RMA and other strategic documents.

Outcomes anticipated in 3-5 years include benefits of using a plan assessment process. This will be evidenced by a more consistent standard of ICMPs across the Region, even if they take somewhat different catchment-specific approaches. Such responsiveness to the needs of funding recipients is also a desirable outcome.

ICMPs will have addressed all priority catchments and receiving environments within 3-6 years (work programmes prepared and being implemented), and ICMPs will be completed.

Medium term outcomes anticipated within 3-5 years include the development of strong collaborative working relationships with both internal and external stakeholders, including:

- greater consensus and working together of ARC and TA planning, engineering and other staff, with improved links to land use planning processes;
- enhanced consideration of catchment-related issues across all bottom lines in regional strategies;
- mutual trust and respect among all parties; and
- the ongoing facilitation of information-sharing activities.

Long-term (third-order) outcomes

The third order outcomes represent the "harvest" – the environmental and other outcomes catchment managers and land use planners hope to achieve from the catchment planning process. These results are dependent on achievement of first and second order outcomes, and thus often take some years to fully emerge. They should manifest in observable changes across the multiple bottom lines, including social, cultural and economic dimensions as well as the environmental aspects of water quantity, water quality, receiving environment quality, freshwater ecology, marine ecology and the associated terrestrial ecological values and other outcomes that ICMPs need to address.

In the long-term it is envisaged that good ICMPs support sustainable management of growth and urbanisation across the region taking into account relevant associated activities. Monitoring and

evaluation programmes should have been developed to support iterative planning and assessment of implementation to improve integrated catchment management outcomes. Outcome monitoring would be done across multiple bottom lines, with environmental and other multiple bottom line outcomes of ICMP implementation being picked up in the relevant state of the environment and quality of life monitoring programmes.

Long term outcomes that could take 5-10 years or more to become evident include the development of a good understanding amongst all regional stakeholders of the need for adequate and secure resourcing if good integrated catchment management outcomes are to be gained. It should also be possible to document that ARC funding has resulted in better stormwater outcomes or the potential for this. The completion of ICMPs in a consistent and timely manner will have been shown to allow planned regional growth and development to proceed in an orderly fashion.

Long term outcomes that could take 5-10 years or more to become evident include:

- greater awareness of MBL ICMPs across wider stakeholder groups, as evidenced by indicators such as involvement in resource care initiatives and submissions on Long Term Council Community Plans and other processes by those affected by flooding, contamination and other catchment management issues; and
- a genuine collective regional consensus amongst professionals and the public on the purpose, processes and integration of ICMP-related work.

Vision (fourth-order) outcomes

The measurable MBL outcomes can be checked against the vision (see above) and used to inform its ongoing development, ensuring the ICMP workstream stakeholders are continually asking themselves how well their efforts are progressing the Auckland region towards sustainable development.

Assumptions

Assumptions are implicit in the way programme managers frame issues, objectives and solutions. Logic models and programme evaluation can help reveal assumptions when things do not happen as anticipated. There were a number of key assumptions identified within the ICMP workstream approach. These assumptions are made on the basis of social research, but their practice in any particular situation still needs to be closely monitored.

One key assumption is that working more closely with TAs and encouraging engineers, planners and other relevant practitioners to work more closely together will build positive working relationships and raise awareness of catchment planning issues and solutions, hence resulting in more understanding and ownership and uptake of catchment planning tools (eg Reed, 2008). It is then assumed or hoped that such uptake will yield better outcomes. Hence, TAs prepare good ICMPs; good ICMPs enable better land use and stormwater planning to occur at regional and territorial level; and better planning will produce better multiple bottom line outcomes for the TAs, the ARC and their region-wide constituencies.

Another assumption, also validated by research (Ericksen et al, 2003), is that the quality of the environmental and other outcomes of ICMPs enables assessment of the effectiveness of the plans and their implementation. This may be expressed as:

plan quality + implementation quality = environmental quality (PQ + IQ = EQ)

Much effort will need to be invested in assessing each of the three components of this equation in order to check the identification of good ICMPs (or their components) as identified in the assessment process.

The ARC (2005) notes that provision of funding is one contribution to the success of the ICMP programme. So the funding of plans helps to complete quality ICMPs in a timely manner.

External influences

External influences include factors or events beyond the control of the ARC which may enhance or impede the success of its programmes.

Synergies (positive external factors that are congruent with and/or operate to support the activities and intended outcomes of the ICMP workstream) include things such as:

- the need for councils to obtain network discharge consents under the RMA, because ICMPs can help with identifying effects and management tools to help prepare the assessment of environmental effects in support of the applications;
- pressure to shift the metropolitan urban limits, resulting in a demand for more catchment-related infrastructure;
- the requirement to engage in other planning processes under the LGA and RMA driven by growth and the need to review key regional and territorial statutory plans; and
- increased public awareness of environmental issues and infrastructure costs.

Synergising factors also include the cutting edge best practice being developed and disseminated by the PUCM (Planning Under Co-operative Mandates) programme – this can offer significant benefit to ICMP stakeholders in the region. At the same time there is also growing awareness of need for sustainable development and the role of good plans generally in delivering this.

Furthermore synergies include the good experiences built up over the last two or more years, which have improved the level of trust and openness amongst key players and contributed to a sense of collegiality. The pressure of growth has also focused the minds of the relevant professions on the need for improved environmental analysis and planning as a key input to other planning processes, as evidenced by the goals and indicative strategic responses in the Auckland Sustainability Framework (Regional Growth Forum, 2007).

Confounding factors (negative external factors that tend to compete, conflict or operate in opposition to the activities and intended outcomes of the ICMP workstream) include things such as:

- the lack of capacity in the wider industry, meaning that staff of councils and consultancies are increasingly busy;
- organisational changes and staff turnover at the ARC and in the TAs and the wider regional and national industry; and
- loss of continuity of staff and institutional knowledge in the industry in the region.

Another confounding factor is the lack of industry capacity – a real shortage of enough skilled staff – to produce good ICMPs. The good plans activity aims to overcome this by fostering skills within the local industry.

A number of external influences are at work. Chief among the confounding factors is that competition for funding is increasing and the current economic downturn. However, there is also growing public acceptance of the need for good planning and regulations to support environmental planning, and this provides some good synergies.

FIGURE 2 OVERVIEW LOGIC MODEL FOR THE ICMP WORKSTREAM STRATEGY

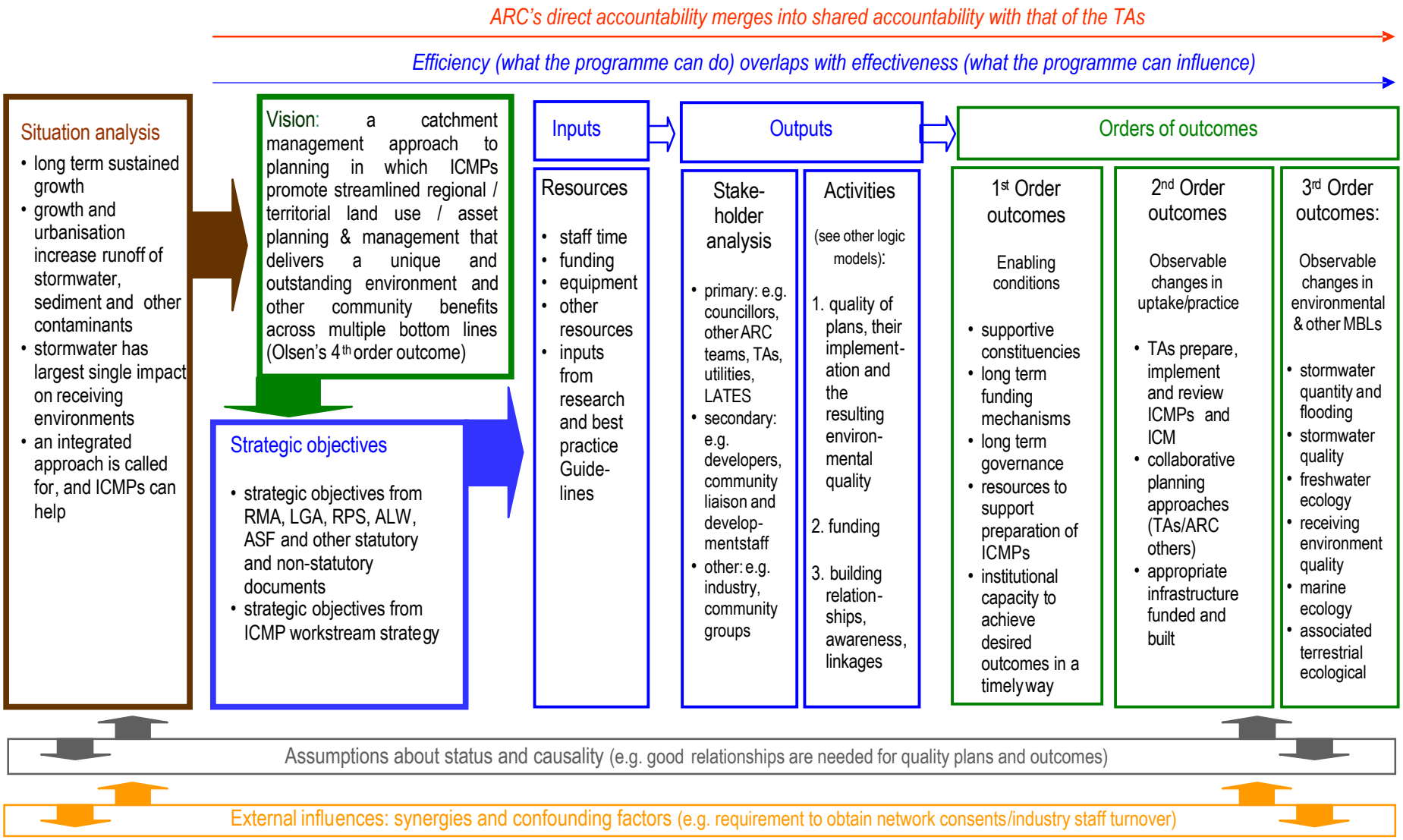


FIGURE 3 LOGIC MODEL FOR GOOD PLANS

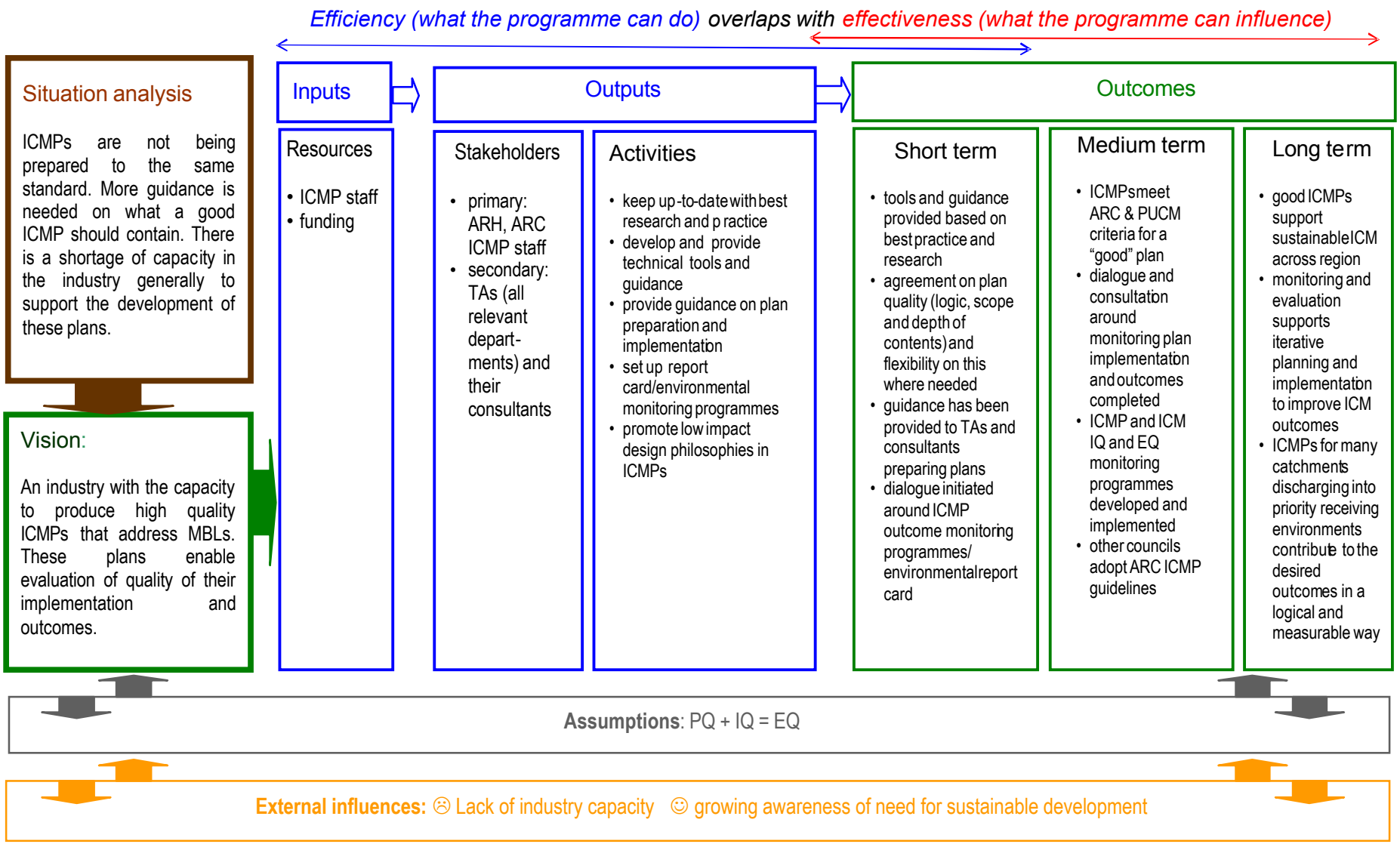


FIGURE 4 LOGIC MODEL FOR FUNDING THE PREPARATION OF ICMPS

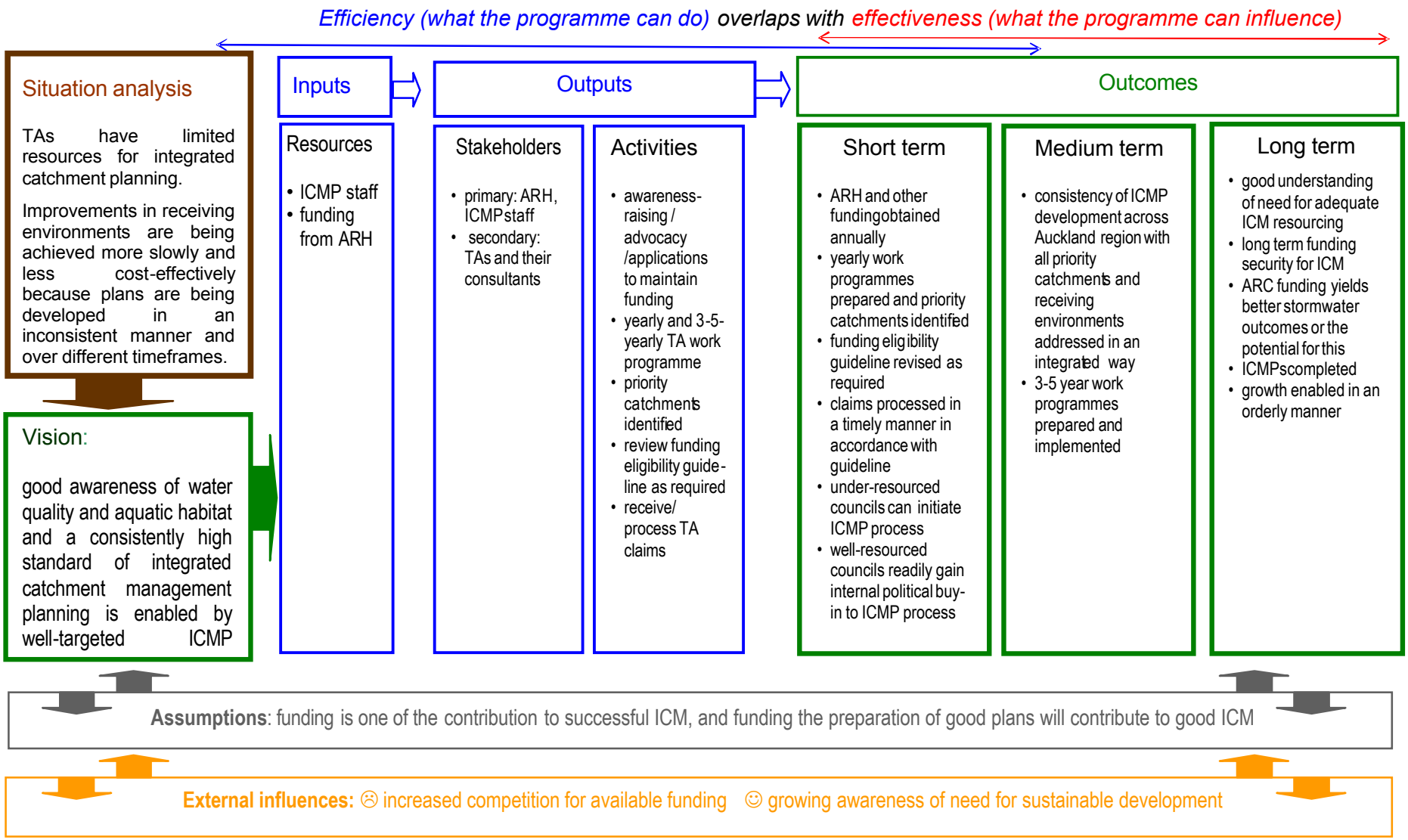
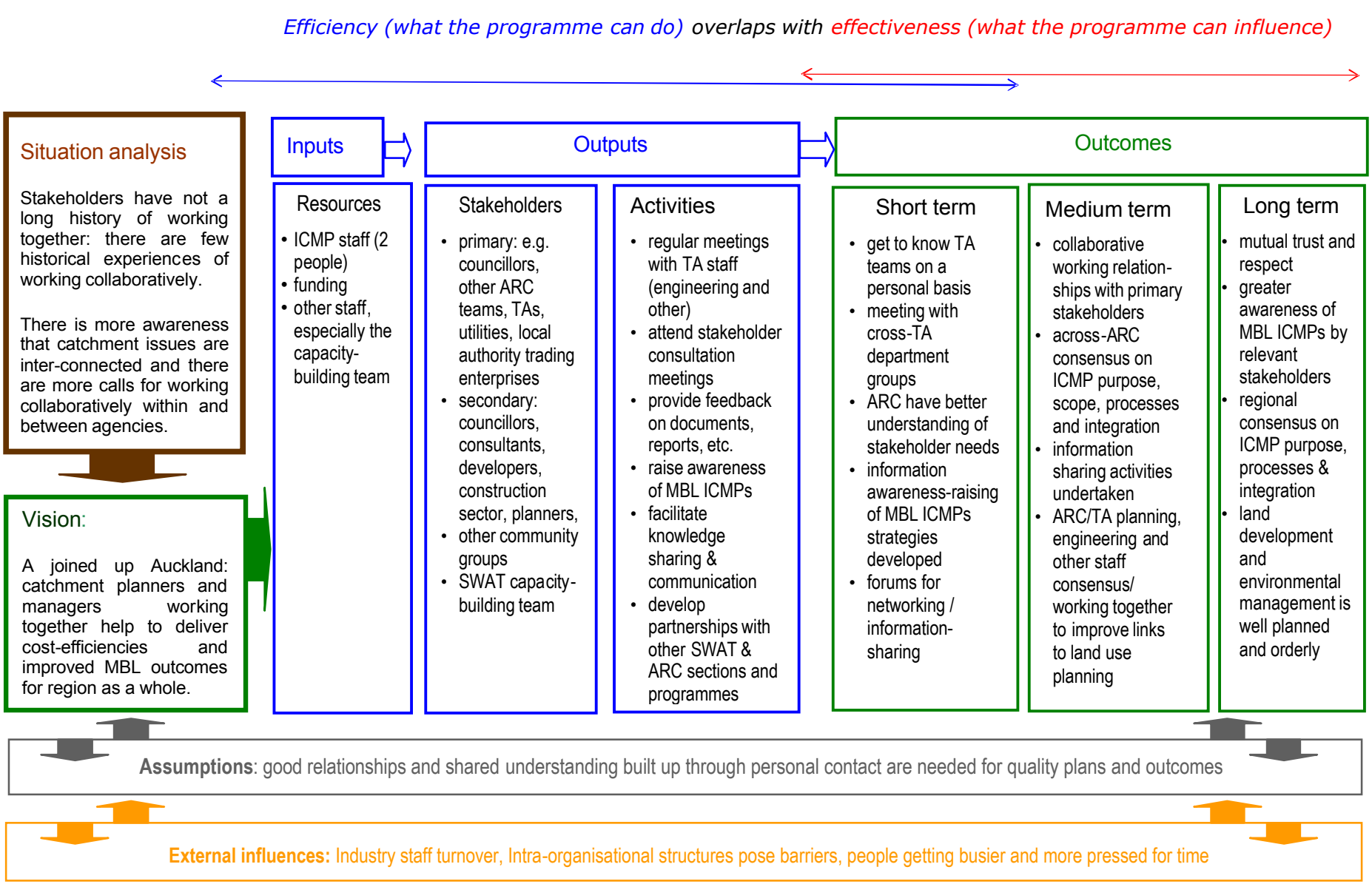


FIGURE 5 LOGIC MODEL FOR BUILDING RELATIONSHIPS, AWARENESS, LINKAGES AND ALIGNMENT



5.2 Evaluation Questions and Methods

The logic models in Figures 2 - 5 and the evaluation questions derived from them in the evaluation framework for the ICMP programme by Feeney and Allen (2007) contain far more evaluation questions than can be included in a manageable ongoing evaluation framework. A prioritised series of evaluation questions for the ICMP workstream and each of its three activities were selected. Detailed data collection tables were prepared for each question selected, including indicators, benchmarks where appropriate, data sources, data collection frequency and methods and resourcing required. An example for the overall ICMP workstream strategy is given in table 1. This shows how different questions are used to support the formative aspects of evaluation which can lead to improved programme delivery and efficiency in the way that the team provides enabling aspects that support the development of effective ICMPs throughout the wider Auckland region. Similarly, the questions also include outcome focused questions that look to measure summative aspects such as State of the Environment monitoring and other proxy indicators of stream and estuarine quality.

Data sources and methods include feedback from internal ARC and external stakeholders (questionnaires), document analysis (e.g. update of Regional Policy Statement), ARC internal reviews, records of meetings, and external ICMP reviews. The external ICMP reviews (audits) encompass technical content, plan logic and modelling. Resources needed for this evaluation process is mainly staff time.

6. Conclusion

The evaluation framework for the ICMP programme is based on a logic model which helps ensure it is robust and clearly represented. The inclusion of the orders of outcome classification (short, medium and long term outcomes) into the logic model incorporates the important time component. This recognises that quite lengthy time periods (up to a decade) can be required to achieve the desired observable changes in environmental and other MBLs.

The logic model also reflects the necessary assumptions which have to be made to set up a programme which seeks environmental and behavioral changes, and the external influences which can have synergizing positive or confounding negative effects. It also shows that the ARC ICMP team has a lot of influence over its activities to deliver the first order (enabling) outcomes. This can be seen as representing programme efficiency. However, the team has far less control over the second order (changes in practice) and third order (harvest) outcomes.

The framework of the logic model helped to clarify and simplify the various ICMP activities. Even just the process of developing the ICMP models and asking and answering the relevant questions was useful for the ARC and informed the actual conducting of the evaluation. The logic model offers considerable benefit in simplifying complex programmes, enabling more insight and rigour to programme delivery as well as evaluation.

7. Acknowledgement

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The viewpoints expressed in this paper are those of the authors and do not reflect policy or otherwise of the ARC.

Table 1: Key indicators and data sources for the ICMP workstream strategy (# Classification of MBLs (multiple bottom lines) environments: ne = natural, be = built, ce = cultural, se = social, ie = institutional, fe = financial)

Key evaluation questions	Links to objective (1-5) and MBLs ne-fe #	Indicator (and benchmark or target if relevant)	Data source/method	Frequency / date resourcing needed
1. Are the inputs of people, funding and other resources sufficient and timely?	fe, ie (1)-(5)	team funding in annual plans and budgets ARC team staff time (FTE) Team FTEs and budgets	HR, budget Information from policy/planning and environmental research (FTE/hours/days) Feedback from consents/ compliance (how well ICMPs support applications)	Annual at time preparing an budget estimates 3 and 6-yearly at tim LTCCP review As required by n plans or programmes
2. Have significant changes in policy requirements and programme activity response been documented and appropriate action taken?	ie (1)-(5)	Production of new guidelines, technical reports, research papers, strategies, plans, policies, processes, legislation or standards	Document analysis Feedback from stakeholders	Likely to require additional 5% of st time (also including t analysis of the inp needed for the thr major workstrea activities)
3. Have all stakeholders been identified and engaged with? Are there supportive constituencies?	ie (1)-(5)	Stakeholder analyses documented Numbers of TAs the team works well with and doesn't work well with Quality of internal relationships Reasons for all the above	ARC internal review	
4. How is information/research being shared amongst local stakeholders?	ie (1)-(5)	Networks, forums set up/attendance	Records of meetings, feedback from all forums	As above
5. What observable improvements occur that can be attributed to preparation and implementation of ICMPs? For example: • improved links to land use/asset planning processes • stormwater quantity and quality • receiving environment quality • freshwater and marine ecology • associated terrestrial ecological values • other bottom lines (e.g. social, cultural, financial, etc)	all (1)-(5)	All-stakeholder views on smoothness of planning processes and integration State of the environment, quality of life and other regular surveys Consent monitoring data where relevant	ICMP implementation monitoring Network and other discharge consent compliance monitoring State of the environment monitoring and/or proxy indicators All stakeholders	Staff time of releva ICMP workstream sta other ARC staff a TA/consulting staff time of annual or oth data review

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