

WALKING THE 'ROAD MAP' OF GLOBAL STORMWATER MANAGEMENT FOR URBAN CATCHMENTS

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ABSTRACT

Seven years on from obtaining a global network consent for discharging stormwater from the urban catchment in Hastings, has the 'road map' adopted for the Hastings District Council, resulted in better environmental, and compliance outcomes?

Through the success of a Project Steering Group which helped the councils navigate the development of the stormwater catchment management plan, to the ongoing compliance and annual reporting required as part of the global consent, the 'road map' experienced a number of successes for the management of the global stormwater consent.

We learnt that a working compliance and consent holder relationship, founded on an agreed 'Terms of Reference' paved the way towards a practical and focused development of a stormwater catchment management plan.

A 'collaborative' approach was adopted, albeit that the respective authorities have a compliance and consent holder role to play.

Stretching across stakeholder and community engagement, resource management planning and education, the Hastings District Council faces challenges and opportunities as they head towards a new global consent regime to be in place by May 2022.

Further to the success of the Hastings experience, along with 'lessons learnt', the approach is now being used to 'inform' a similar approach for the Central Hawke's Bay District Council.

KEYWORDS

Road map, Project Steering Group, relationship, engagement, 'lessons learnt'.

PRESENTER PROFILE

Grant is a Senior Environmental Consultant for Stantec NZ, based in Hawke's Bay. With over 20 years' experience, Grant has worked on a vast range of planning, resource management and infrastructure consenting projects, involving a myriad of disciplines.

As a Planner, Grant has to constantly balance the needs of environmental and engineering disciplines, with the lofty goal of ensuring collaborative and engaged people manage our natural resources and infrastructure needs in a sustainable fashion while aiming for acceptable environmental and compliant outcomes.

1 INTRODUCTION

The Hastings District Council ('HDC') has a broad vision for the management of stormwater generated from urban catchments, and has adopted a 'road map' approach among other planning, reporting and education initiatives, which is aimed to protect and enhance (where appropriate) inland waterways.

We have used the learnings from this to 'inform' Central Hawke's Bay District Council (CHBDC) management of stormwater under their recently obtained stormwater network consents.

Both Councils are aware of the 'connectiveness' of urban stormwater to the main receiving environments - the Karamu Stream for Hastings, and the Waipawa and Tukituki Rivers for Central Hawke's Bay, and they see the 'road map' approach as a means to improve the overall management of stormwater discharges from the urban catchments. The 'road map' is an adaptive management process to align a toolbox of statutory and non-statutory measures that can be used to sustainably manage the discharge of stormwater from the urban catchments of Hastings and Havelock North, and Waipawa and Waipukurau.

The 'road map' is tied to the stormwater network consents for stormwater that expires in 2022 for Hastings and 2037 for Central Hawke's Bay.

All 'roads' need a solid foundation, and for Hastings District Council and more recently Central Hawke's Bay District Council, a Project Steering Group is one mechanism that will be that foundation to guide and implement this 'road map'.

1.1 BACKGROUND

To plan for the future it is important to firstly understand the past. From the onset of approaching the complexity of obtaining comprehensive network discharge consents for stormwater, an understanding of the past suite of permits and consents for discharging stormwater was required.

Previously Councils were never required by the Regional Council to keep detailed stormwater quality nor quantity records. As a result, the Councils retained very limited comprehensive stormwater discharge information. When the process started for the comprehensive discharge consent the Councils were not in a position to provide any detailed stormwater quality and quantity data. As such, the Councils did not hold any detailed monitoring information to quantify the extent of potential adverse effects on the environment associated with the discharge of stormwater from the urban catchments.

1.2 STATUTORY PLANNING

The Regional Resource Management Plan for Hawke's Bay generally provides for the discharge of stormwater from any constructed open drainage system or piped stormwater drainage system as a Permitted Activity or a Controlled Activity. This infers that based on the information that was available at the time the Regional Resource Management Plan was developed it was considered that the actual and potential adverse effects on the environment from the discharge of stormwater from urban reticulated stormwater systems will be no more than minor. This may be one of the reasons why specific sampling, monitoring and reporting have not been required in the past.

Nonetheless, to support a comprehensive discharge consent, robust and validated information must be provided to the decision makers. This enables the decision makers to make informed and reasoned decisions on managing stormwater discharge activities.

With stormwater discharge information lacking, prescriptive conditions were prepared and accepted by the Councils. To better understand these conditions, among other things, a degree of interpretation was required. To facilitate this process, a Project Steering Group was established and is discussed in detail further in this paper.

2 LOCAL CONTEXT – HASTINGS AND CENTRAL HAWKE'S BAY

From a wider urban catchment perspective, the Council operated over a number of years under a suite of ad hoc stormwater permits, without any comprehensive or integrated discharge permit for stormwater within the urban catchments of Hastings and Havelock North, and for Central Hawke's bay – Waipukurau and Waipawa. Further to this, there has been no statutory requirement or identified need to gather environmental information on the quality and quantity of stormwater discharges from these urban areas. However, this position has changed from both the viewpoint of the Regional Council and the respective Councils. The new stormwater management approach is now being seen as an opportunity to put in place a new regime of practical stormwater management in the urban areas of both Councils. It has guided the Regional Council to issue a discharge permit for Central Hawke's Bay, albeit a rather prescriptive one. It is now with the respective Councils to implement a 'road map' as the most efficient and effective tool to achieve the environmental and compliance outcomes anticipated for managing urban stormwater discharges.

3 ADAPTIVE MANAGEMENT

To achieve smart environmental and compliance outcomes and to provide for the ever changing world of stormwater management an adaptive management process is required. A plethora of information is available that purports to define the meaning of 'adaptive management.' This paper is not about examining the intricate

nature of its meaning, suffice to say that (Holling 1978) states that; “adaptive management, is a structured, iterative process of optimal decision making in the face of uncertainty, with an aim to reducing uncertainty over time via system monitoring”. Holling goes on to say that; “in this way, decision making simultaneously maximizes one or more resource objectives and, either passively or actively, accrues information needed to improve future management”. Adaptive management is a tool which should be used not only to change a system, but also to learn about the system.

Furthermore the Urban Productivity Commission (February 2017) notes that; “adaptive-management and real-options approaches will protect the parts of the natural environment most at risk from cumulative effects and other pressures”. It further notes that; “... that adaptive management has the potential to better deal with uncertain future impacts and cumulative effects...”

As adaptive management is based on a learning process, it improves long-term management outcomes. The challenge in using adaptive management lies in finding the correct balance between gaining knowledge to improve management in the future and achieving the best short-term outcome based on current knowledge.

The Hastings District Council found that stormwater monitoring and annual compliance reporting ensured that the consent was able to be ‘adapted’ to align with both compliance and environmental outcomes. This meant firstly, that the results guided the first generation Catchment Management Plan, and secondly, it informed the change of conditions to the network consent. With that background we are in a good position to pass these learnings onto the network consent held by the Central Hawke’s Bay District Council.

Our ‘road map’ accepts the fact that the discharge of stormwater must proceed even if we do not have all the information we would like, or we are not sure what all the effects of discharging stormwater might be. It views adaptive management not only as a way to achieve objectives or smart outcomes, but also as a process for interrogating and probing to learn more about the resource or system being managed. Thus, learning is an inherent objective of adaptive management. As we learn more, we can adapt our policies and actions to improve management success and to be more responsive to future conditions (Johnston B.L. 1999). To that end we have used the Project Steering Group as a ‘vehicle’ and forum to query the results of sampling, monitoring and reporting and to further interrogate the intent and context of the network consent conditions.

The Project Steering Group model has aided in changing the conditions of consent for the Hastings District Council by, among other condition changes, reducing the scale and frequency of sediment and water quality monitoring. The Project Steering Group model will now be used to further develop a ‘pathway and programme’ for Central Hawke’s Bay. It is highly likely changes to the Central Hawke’s Bay network consent will eventuate overtime.

4 TOOL BOX OF REGULATORY AND NON-REGULATORY APPROACHES

Along with the conditions within the network consent, a suite of complimentary regulatory and non-regulatory approaches have been used in the past and will continue to be used in the future to manage urban stormwater discharges. These include but are not limited to the following:

- Adherence to the Council's Engineering Code of Practice for Subdivision and Land Development;
- Designing and constructing stormwater detention basins;
- Designing and constructing 'coherent' pipe and groundwater systems as an infiltration gallery (when conditions are suitable);
- Compliance with the Council's Water Services Bylaw (stormwater);
- Development and ongoing review of the Stormwater Asset Management Plan;
- Protocols, policies and procedures for spill management;
- Treatment systems, for example sumps or primary treatment;
- Stormwater outlet maintenance and upgrades;
- New urban development and subdivision consent intervention; and
- District Plan mechanisms, including hazardous substances and subdivision objectives, policies and rules.

These existing measures will be complimented by the 'road map' and will ensure that the Councils continue to adopt a coherent and integrated response to urban stormwater management. The stormwater management 'journey' that the respective Councils and communities is on is constantly evolving and subject to wider public consultation processes. A key 'driver' behind the community uptake of stormwater management is set out in the Long Term Plan, which will positively impact on the long-term management of stormwater. Recently Central Hawke's Bay District Council invested in a community wide consultation and engagement exercise to hear the views of their community. Under the brand of 'The Big Water Story' stormwater is addressed by references to resilience in the infrastructure network, better protection of property during heavy rainfall events, dealing with stormwater so there is least impact on our rivers as possible.

5 KEY PHASES TO ROAD MAP COMMITMENT

While a bundle of regulatory and non-regulatory methods exist they need to be aligned to ensure a coherent approach is adopted.

The 'road map' provides this coherent approach and is delivered by five key phases:

Phase One	Information Gathering
Phase Two	Ongoing Monitoring
Phase Three	Education
Phase Four	Catchment Management Plan
Phase Five	Ongoing Implementation, Monitoring, Feedback and Effectiveness

Some of the timelines for the implementation of the phases will overlap in the delivery of their key outputs.

The 'road map' provides a commitment by the Council in Phase One to conduct a series of stormwater investigations and assessments, to document Council processes and procedures on stormwater management, and to collate data to assess and prioritise industrial and trade premises classified as 'high risk' facilities in terms of potential adverse effects to the quality of stormwater and ultimately to the downstream receiving environments.

Developing and carrying out comprehensive stormwater monitoring in Phase Two will ensure a robust monitoring protocol and programme is established and agreed upon prior to conducting field work. Water quality, sediment and aquatic ecological monitoring will inform the Council and Regional Council on the state of the environment of the receiving environments for stormwater and to gauge over time the potential adverse effects of stormwater discharges.

Under Phase Three education, a focus on sustainable stormwater management will be developed and implemented to ensure community awareness is raised about sustainable stormwater management and stormwater flows ('kerb to stream to sea'). Leverage of existing programmes, messages and branding from other Council's in Hawke's Bay will result in an efficient and effective stormwater education and awareness campaign is carried out. It is assumed that stormwater 'acts' in the same manner no matter where it falls?!!

The preparation of the Catchment Management Plan under Phase Four will largely provide for and document the management initiatives, operational procedures and implementation methods used to manage stormwater discharges. The nature and scale of the discharge activities along with any criteria determined to be appropriate for preparing the Catchment Management Plan will be informed by a number of supporting technical reports that will be pulled together into a Catchment Management Study Issues and Options document. Overall, the Catchment Management Plan will generally assist the Council to achieve the conditions of consent.

Implementation, monitoring, feedback and effectiveness will be an ongoing commitment under Phase Five. This will be achieved through both regulatory and non-regulatory methods. These include the implementation of the conditions of consent, the stormwater monitoring programme, putting into action any stormwater education strategy and the ongoing implementation, among other mechanisms, of the respective Councils District Plan, the Engineering Code of Practice and the Bylaw dealing with stormwater.

The feedback loop and 'road map' effectiveness will be documented in the Annual Compliance Monitoring Compliance Report and the Catchment Management Plan.

The 'road map' and adaptive management process is a long term strategic approach to urban stormwater management. To help achieve this approach the establishment of a Project Steering Group is pivotal.

6 PROJECT STEERING GROUP AND TERMS OF REFERENCE

In simple terms, the vision for the Project Steering Group is to provide a framework and process for interaction leading to the successful management, and this includes adaption, implementation and compliance of the network consents.

The Group is guided by an agreed terms of reference, bearing in mind the regulatory and compliance roles and responsibilities of the respective Councils and Regional Council. The Group's collaboration and engagement approach is couched against, among other matters, with a direction to:

- Discuss and agree overall process, tasks and programme, development issues and agree on updates of programme for review and/or change of conditions to the network consent.
- Discuss and agree on task plans for various tasks required for the review and/or change of conditions to the network consent.
- Facilitate information identification and sharing for the various items held by each Councils and assess feedback on various tasks carried out by its contributors.
- Keeping the Council updated on the review and/or change of conditions to the network consent development, and seeking senior management/council resolution of any strategic decisions that are required to align with the review and/or change of conditions to the network consent.

Underpinning the terms of reference the Project Steering Group has key objectives to:

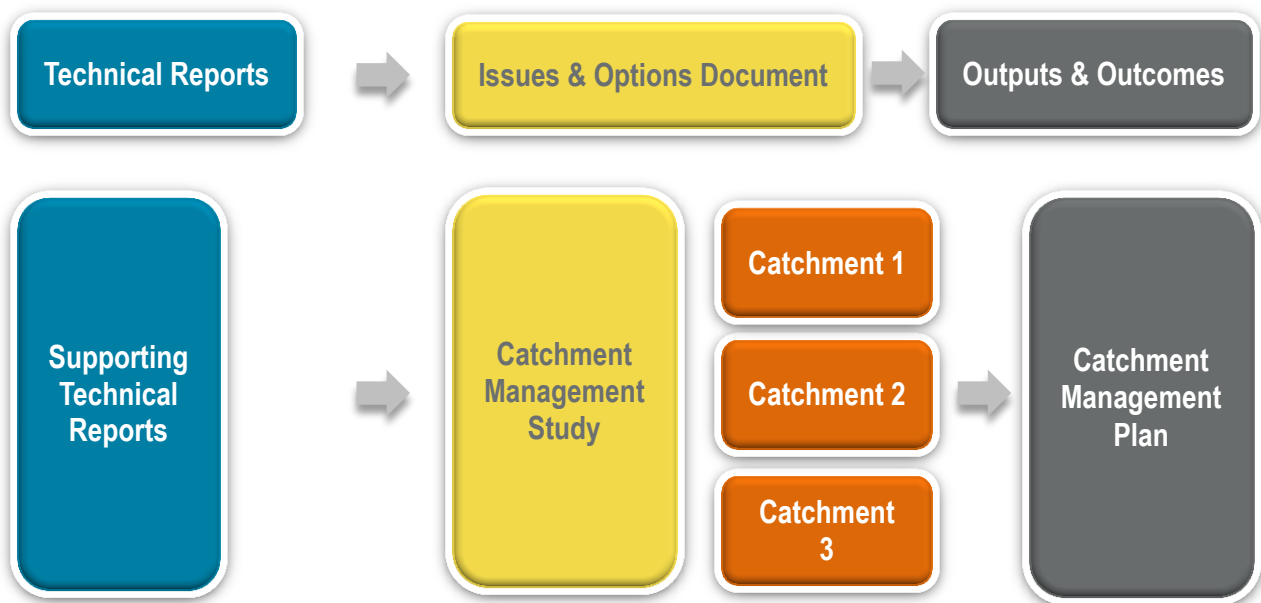
- facilitate and lead the process for the Catchment Management Plan development and implementation;
- adapt the network consent to ensure it is effective and efficient while meeting the overall environmental goal to protect and enhance (where appropriate) inland waterways; and
- ensure the revised network consents environmental effects associated with stormwater discharges are being appropriately managed in a way that meets community expectations and is integrated with other Council activities, both for existing and future stormwater discharges.

7 NAVIGATING THE CATCHMENT MANAGEMENT PLAN

One of the key steps of the 'road map' commitment is the development and implementation of the Catchment Management Plan. To ensure a collaborative approach to the development of the Catchment Management Plan the establishment of a Project Steering Group was agreed too. As noted above, the main objective of this Group is to facilitate and spearhead the process for the development and implementation of the Catchment Management Plan. This approach will also be used to navigate Central Hawke's Bay network consent through a similar 'pathway and programme'.

An early outcome of the Group, and one which will be 're-used' to inform the Catchment Management Plan for Central Hawke's Bay, was an agreed high level 'structure' to prepare the Catchment Management Plan. The Catchment Management Plan was developed under the following structure.

Figure 1: Broad approach to developing the Catchment Management Plan.



It shows the supporting technical reports feeding into an issues and options document called the Catchment Management Study and the outputs and recommendations of this Study document becoming the Catchment Management Plan.

A number of questions will need to be addressed during the development of the Catchment Management Plan: are multiple Catchment Management Plan required? Is one required for each of the catchments or catchment types or is it appropriate to produce one Catchment Management Plan for the consented area? Will the Catchment Management Plan be catchment focused or technical area focussed?

As a result of the above Catchment Management Plan approach and 'inquiry' the Central Hawke's Bay network consent adopted a Catchment Management Plan definition that states:

".... a plan prepared for a catchment or catchments to show how that system will be managed for stormwater runoff. The CMPs are not the traditional CMP dealing with the entire catchment but just the sub-catchment areas pertaining to the industrial sites....."

It is this learning and interrogating process that will adapt the actions to improve stormwater management to be more responsive to future conditions. In other words, a key element in the framing of the Catchment Management Plan outcomes will be the development of the goals sought to be achieved by the Catchment Management Plan actions. These goals will be informed by the preceding investigation processes and supporting technical reports and the Catchment Management Study. The outcomes in the Catchment Management Plan will cover a range of activities including:

- Processes that are in place or need to be put in place, refined or documented for managing the effects of development activities.
- Practices for the improved or continued management of stormwater discharges and its effects and receiving environments.
- Short, medium and long term monitoring activities that are required for monitoring the effects of the stormwater discharges.
- Maintenance activities that may be required or required to be modified for the operation of the stormwater system.
- Physical works that may be required to improve the efficiency, safety or environmental performance of the stormwater system.
- A programme for the implementation of the Catchment Management Plan outcomes. It is likely that many of the outcomes (especially in terms of processes) will be documented or actioned during the development of the Catchment Management Plan. It will be important that these changes are also picked up in the documentation of the Catchment Management Plan so that they can be monitored as well.

In line with both networks consents, and using a risk based approach to identify, prioritise and implement a management response, the Catchment Management Plans put in place a series of practical steps and measures to ensure, as far as practicable, a collaborative approach between the Council and property owners is undertaken.

Following the above steps, the 15 sub-catchments for Hastings over a period of five years while the Catchment Management Plan was being developed and stormwater information was being gathered and reported upon, resulted in focusing on two sub-catchments – Ruahapia and Awahou-Riverslea, being selected as the first sub-catchments subjected to the Hastings catchment management plan. For Central Hawke's Bay any 'high risk' sites located within industrial sites will inform the development and implementation of its Catchment Management Plans.

As the respective Councils move through the Catchment Management Plan development and implementation process adaptive management will be crucial to converting new information and learnings to providing improved stormwater management responses.

8 MEASURING OUTCOMES - FEEDBACK AND EFFECTIVENESS

Measuring the effectiveness of the 'road map' hinges on two key outputs – the Annual Compliance Monitoring Report and the Catchment Management Plan.

The outcomes of the Annual Compliance Monitoring Report, in terms of the consent conditions, will inform the overall development of the Catchment Management Plan. The challenge will be to respond to the outcomes of annual compliance monitoring in conjunction with the development and the implementation of the Catchment Management Plan.

It is important to note that monitoring of stormwater effects generally can only be carried out late in the process. This is because stormwater effects tend to be both intermittent and cumulative. This means that some effects only occur as a result of an infrequent event (such as flood or high intensity rainfall events) and cannot be continuously monitored. Other effects can only be monitored as long term trends, such as the effects on the aquatic ecology of receiving environments and are likely to be subject to other activities rather than just the urban stormwater discharges.

Based on the outcomes of annual compliance monitoring, a feedback loop would involve the following steps:

- i. The monitoring programme requires modification;
- ii. Additional or reduced monitoring is required;
- iii. The reporting requirements require modification, and with that a change to the conditions of the network consent; and
- iv. The Catchment Management Plan needs to be amended to include additional management initiatives and implementation methods.

The overall Catchment Management Plan programme, driven by the consent conditions resulted in the Hastings District Council Catchment Management Plan being approved and subsequently implanted since July 2015. Its first review is due in mid-2018. For Central Hawke's Bay, the development and implementation of the first Catchment Management Plan is June 2022, i.e. five years after the commencement of their network consent. Ongoing monitoring of the effectiveness of the respective Catchment Management Plans will form part of the ongoing and regular monitoring of the outcomes of the annual compliance monitoring results. This will be further validated by the Project Steering Group assigned to measures outcomes derived from those monitoring results and responses and the desired outcomes of the Catchment Management Plan.

9 CONCLUSIONS

Faced with a suite of ad hoc stormwater consents, and in the absence of useful local stormwater information, the respective Councils adopted a 'road map' that sets out a commitment to ensure that a comprehensive and programmed approach to the management of urban stormwater is achieved into the future.

The 'road map' demonstrates what the Councils intend to commit to over the short, medium and long term for urban stormwater management. This 'road map' underpinned by adaptive management, paves the way forward for information gathering, monitoring, reporting, education and management processes to form part of the ongoing and committed urban stormwater management programme.

Technical information and processes will be packaged into an Issues and Options Catchment Management Study. In turn the outputs and recommendation of the Catchment Management Study will become the Catchment Management Plan.

The Project Steering Group will be a pivotal group to ensure a collaborative, engaged and transparent relationship is fostered to navigate the stormwater network consents road maps for the respective Councils.

The 'road map' is a pathway and programme towards integrated management. It is a collaborative and adaptive management approach based on smart environmental and compliance outcomes derived from monitoring results and responses, comprehensive conditions and catchment management plan outcomes.

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