

# STORMWATER MANAGEMENT PLANNING FOR A NEW TOWN

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## ABSTRACT

As part of its District Growth Strategy the Franklin District Council identified the Pokeno Township as a growth area. A partnership was formed with a consortium of landowners in the area to realise that growth. This public/private partnership was based on a Memorandum of Understanding that established responsibilities for a variety of tasks required to enable the growth to proceed.

A key outcome prior to allowing growth was the production of a Stormwater Catchment Management Plan. The primary responsibility for production of the CMP was vested in the development consortium. However, the document was to become a Council document, hence making it very much a collaborative effort. The CMP process was further complicated by the Local and Regional Council's not having finalized Comprehensive Discharge Consents for the District nor had they agreed how Climate Change was to be addressed.

This paper will consider the process followed for the development of the Pokeno Stormwater Catchment Management Plan. Some of the pitfalls discovered through the process, how they were overcome and how things might be done differently next time.

## KEYWORDS

**Stormwater Management, public/private partnership, District Growth, CMP, Catchment Management**

## 1 INTRODUCTION

As part of its District Growth Strategy the Franklin District Council (FDC) identified the Pokeno Township as a potential growth area. A partnership was formed with a consortium of landowners in the area to realise that growth. This public/private partnership was based on a Memorandum of Understanding (MOU) that established responsibilities for the variety of tasks required to enable the growth to proceed.

A key outcome prior to allowing growth was the production of a Stormwater Catchment Management Plan (CMP). The primary responsibility for production of the CMP was vested in the landowner consortium. However, the document was to become a Council document, hence making it very much a collaborative effort.

The purpose of the CMP was to: identify stormwater issues within the catchment; identify potential options to address these issues; and set out recommendations for the long-term stormwater management within the catchment. It was initially envisaged that the CMP would be used as the basis for a Comprehensive Stormwater Discharge Consent application, but this use of the CMP was later modified following discussion with Environment Waikato (EW).

In August 2006 work started in earnest on the production of the CMP for Pokeno. The CMP needed to consider the runoff from approximately 1,500 hectares of catchment as well as the effects of rezoning approximately 440 hectares of rural land to various urban landuses including mitigating the effects of the proposed landuse intensification on the hydrology of the existing urban zoned land in Pokeno.

The CMP development followed a reasonably standard process including: initial background research; preliminary calculations; preliminary issues and options reporting; review; obtaining more detailed input information; refinement of calculations and more detailed reporting; review and updating of report leading to finalization, publication and adoption/approval of the CMP by the regulatory authorities.

This paper will not look so much at the technical detail of the CMP and its outcomes, but the process followed in its development, the issues addressed through the process and how these were addressed.

## **2 PROCESS**

### **2.1 BACKGROUND RESEARCH**

The Pokeno area has not been subject to significant rezoning and growth for some considerable time. As such, background research of FDC and EW files and discussions with Council officers revealed very little background information in terms of historical stormwater issues within the catchment or information on which to base verification of flow or flood level calculations within the catchment and stream systems.

A CMP had been developed during 2002 which was being used as the basis for a comprehensive discharge consent application for the Pokeno area. This CMP concentrated on the existing township area and did not account for landuse changes as being envisaged in 2006. The discharge consent process was ongoing and was not finalized until immediately prior to the new Pokeno CMP being finalised.

A variety of other studies (typically of limited scope) were found, supporting various development proposals and these were considered as appropriate in the later work. In particular, studies of the Helenslee block (a significant potential development area) and work done to support the relatively recent application by Winstone Aggregates to establish a quarry near Pokeno were relevant.

### **2.2 Initial Analysis and Reporting**

Preparation of a significant landuse change is a complex process with a number of inter-related activities, the outcomes of which all affect each other, sometimes in unforeseen ways. The details of the proposed changes are also not always known until the end of the process. At the start of the Pokeno CMP process it was not even known what the aerial extent of the landuse changes might be or what proportions of industrial and residential landuses might eventuate.

In this case while there was a general understanding of the desired landuses there was no understanding of the existing extent of stormwater management issues, how they would impact on the proposals or how the proposals would impact on them.

To address this lack of information and to meet timeframes imposed by the client for initial information it was decided to carry out some very preliminary analysis based on site reconnaissance, overview assessments of landuse proposals and limited hydraulic information. A short preliminary report summarising the outcomes of this study in particular in terms of issues and options was then published and made available to other

team members (in particular the urban designers and land development specialists) as well as to the regulatory authorities for review.

This process in theory enabled an initial assessment to be made that could be used as the basis for more detailed land-use decisions. It also highlighted at a very early stage the likely issues to be addressed and the options likely to be utilised to address these issues. A key outcome sought as to ease the path through the regulatory authorities by allowing early discussion on these matters, prior to more detailed work being initiated.

### **2.3 Detailed Analysis**

Following comments being received on the preliminary report more detailed work was carried out. This included the acquisition of detailed survey data and hydraulic information. More detailed landuse planning was carried out based on the preliminary modeling outputs and the rather broad brush stormwater management options suggested at that time.

This more detailed analysis identified the flood hazard areas in more detail, modeled the proposed landuses without the mitigation to test the catchments sensitivity to the proposed changes and to fill in more detail from the preliminary work. Modeling of the proposed mitigation options to confirm their feasibility was also carried out to enable them to be refined and to confirm their practicality in meeting the desired stormwater outcomes. In particular it was important to achieve a good degree of stormwater treatment and to manage flooding so as to not increase and preferably to reduce flooding problems to existing landowners.

Based on this analysis and the options developed from it the first draft Pokeno CMP was developed and submitted to both EW and FDC for review. Once comments were received the CMP was updated to reflect these comments and in this case considerable further work was carried out to add in the Climate Change scenarios sought by EW.

Once the comments had been incorporated a second draft of the CMP was submitted for comment. This was again reviewed by FDC and EW officers and FDC also engaged external reviewers to consider the document.

### **2.4 Finalisation**

Once agreement was reached on the final CMP it was bound and formally submitted to the FDC for adoption and to EW for approval in terms of meeting the requirements of the recently granted Stormwater Discharge Consent for Pokeno. This final adoption occurred in September 2008, just over 2 years from the beginning of the process.

### **2.5 Influences**

During the development of the CMP a number of influences became apparent that affected the process to a greater or lesser extent.

#### **2.5.1 CLIMATE CHANGE**

How to incorporate Climate Change effects or indeed the incorporation of Climate Change into the CMP was not brought up until well into the drafting and review process. While there had been guidelines published by the Ministry for the Environment (May 2004 and May 2008) on Climate Change scenarios there was no guidance on how these were to be interpreted. This left the implementation open to the interpretation of the various individuals involved. This interpretation was, not surprisingly influenced by the party the individual represented. This meant that a significant process of negotiation had to be undertaken to agree an acceptable approach to all parties. With landowner/developer,

district and regional council representatives involved this became a key issue for resolution.

## **2.5.2 COMPREHENSIVE DISCHARGE CONSENT**

As previously mentioned there was no Comprehensive Discharge Consent for the Pokeno catchments. A consent had been applied for and was being worked through a consent process (separate to the CMP and new Plan Change process) between the FDC and EW. It was assumed and stated in the MOU that the new CMP incorporating the proposed landuse intensifications would also form the basis of a Comprehensive Discharge Consent application.

This assumption was later modified on detailed discussions with EW. The CMP was then required to comply with the conditions of the soon to be issued Comprehensive Discharge Consent, whose final conditions were not known until immediately prior to the issue of the final CMP. This of course meant that a significant amount of liaison was required to minimize the risk of non-compliance, once the Comprehensive Discharge Consent was issued.

## **2.5.3 DEVELOPMENT FORM**

As discussed earlier in this paper, development, especially when incorporation rezoning, is an evolutionary process, the final development form was not known at the start of the process indeed it the details were still not known at the end of the CMP process. Indeed even the extent of the area to be rezoned was not finalized until very late in the CMP process. Through the development of the CMP a number of changes were made to the proposed development layout and the CMP had to be reassessed continually to confirm if there were any significant changes that would lead to a rethink of the CMP strategy or management tools.

## **2.5.4 OUTCOMES**

The CMP process started with some relatively clear outcomes that were sought to be achieved. As the process developed and progress was made other agendas came to play which meant that further outcomes were sought to be achieved. More detail was wanted out of the modeling and different types of management systems were sought to be implemented. This all had to be carefully managed through the process.

# **3 PITFALLS IN THE PROCESS**

## **3.1 RESOURCE ALLOCATION**

The process adopted for the development and review of the CMP was reasonably structured, allowing for review and check points along the way, to minimize surprises and rework. This process did however rely on all parties having the appropriate resources available and brought to bear at the appropriate time. This applied particularly to technical resources but also included procedural and political inputs. While this process was appropriate it became apparent that appropriate review resources were not always available. This led to some rework and changes in emphasis as different perspectives became involved at different stages through the CMP development. Getting early inputs from all concerned is imperative for the success of this process.

## **3.2 TIMEFRAMES**

Project timeframes are always an issue. It became apparent through the CMP process that the partnering organizations were not always working to the same priorities. Having different priorities can lead to perceptions of late feedback, inadequate information supply, changes in emphasis and inappropriate resource allocation. The melding of these

priorities into a “project good” philosophy needs to be dealt with early in the process to provide a commonly agreed programme and commitment to provide the resources to meet the programme. Timeframes and resource allocation are inextricably linked.

### **3.3 EVOLUTION**

Structure Planning and Catchment Management Planning in a greenfields environment is an iterative and evolutionary process. Tasks and outcomes are reliant on inputs from a variety of disciplines and areas of professional expertise. These inputs have the potential to delay or stall the CMP, just as inputs and constraints from the CMP have the potential to stall or delay progress in these other areas. This means that all parties need to work in an interactive manner with a high level of communication. Changes in detail in the landuse scenarios for example need to be considered in the CMP process. Questions need to be asked like: Do these affect the management systems being proposed and how do they affect them? Is there a need to re-evaluate the stormwater or can work proceed as the changes are minor? Do the stormwater issues present a fatal flaw to the proposed changes and how should these fatal flaws be managed?

In the case of the Pokeno CMP the modeling could have been repeated and updated many, many times if rational decisions were not made along the process to decide whether proposed changes were in fact significant enough to remodel. Having said this, all decisions need to be reviewed prior to finalization of the CMP so that the net result of the evolution is reflected in the final CMP.

### **3.4 COMPETING PRIORITIES**

What works from a stormwater context may not work in a planning, urban design, traffic or ecological context and vice versa. Testing against the other disciplines involved is necessary throughout the CMP development process. Bearing in mind that these disciplines are also unlikely to know the detail of their final solutions or even all the constraints that will apply to them. Constant communication, flexibility and testing is required throughout the process. Stormwater engineers, scientists and regulators do not have all the answers on their own.

### **3.5 MODEL DETAIL**

Hydrological and hydraulic models can be constructed to varying detail. The more detailed the output requirements then the more detailed the input requirements and the more time and money needed to setup the model and test options. Understanding the level of detail required for the purpose and communicating the level of detail being produced is key. Requests through the process for more detail need to be carefully considered and the need to update the model to reflect any increased requirements need to be carefully thought through. Many clients (and indeed some regulators and practitioners) do not understand this fundamental of modeling and once again communication is key.

### **3.6 TRUST**

In any private/public partnership the partners will have different drivers they need to address. For private parties this would generally be the commercial imperatives and for public bodies this could broadly be described as the public good. To achieve an overall successful project outcome the parties while acknowledging the different drivers must trust each other to work together to for the greater project good. When there is a breakdown of this trust, or the perception of a breakdown the project is in trouble. Once again communication over a range of hierarchical levels is a vitally important factor in project success.

### **3.7 RESPECT OF EXPERTISE**

In a project such as this where multidisciplinary teams are brought together it is imperative that agendas are left outside the project meeting rooms and that the relevant expertise is respected. We all have our own views on a variety of topics that we are not necessarily expert in. It is a waste of time if for example a planner starts to argue with specialist freshwater ecologist or a stormwater engineer tries to dictate urban design outcomes. However it is entirely appropriate for the planner to raise planning issues with the ecologists recommendations or the Stormwater engineer does the same with the urban designer. Sometimes there is a fine line, has communication been mentioned yet?

## **4 CONCLUSIONS**

In conclusion the bringing together of a Stormwater CMP for a proposed growth area is a complex and evolutionary process. The number of variables to be considered in the CMP process are enormous and in practical terms it is not possible to fully detail the outcomes, even up to finalization of the CMP. Despite everyone's best efforts the final detail of the solutions will not be known until the contractors get into the detailed construction of the actual developments. As such care needs to be taken how much detail is expected from the CMP.

A high level of commitment and communication is needed from all parties involved, across the full spectrum of hierarchical levels.

The development of the Pokeno CMP, while not without its moments, was the successful outcome of a lot of work and co-operation from a variety of people including development /landowner representatives, a range of consultants and council officers from a range of disciplines. At the time of writing it is still to be tested through the statutory process.

## **ACKNOWLEDGEMENTS**

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A number of people provided key inputs to the Pokeno CMP. The modeling for the CMP and the CMP preparation itself was carried out by a number of past and present staff from the Water Resources Management Team at Harrison Grierson, inputs were also provided from Harrison Grierson's planners, urban designers, landscape architects and land development engineers. Ecological inputs were provided by Dr Brian Coffey. Development aspirations and context were provided by the landowner consortium. Review comments were provided by Franklin District and Waikato Regional Council staff and their consultants. This was a truly collaborative effort.