OAKURA SEWERAGE SCHEME – SOCIAL CHALLENGES – GETTING THE LOCALS ON SIDE

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ABSTRACT

On January 18 2010 the first residents in Oakura began discharging sewage into the new Oakura sewerage scheme. Costing $23.8 million and taking over two years to construct, this was a technically challenging project. Sewage is screened before being pumped via two pump stations and over 160m head, 11 km to New Plymouth for treatment. In addition, gravity sewers had to be retrofitted into a developed township built on challenging terrain. Understandably these technical issues occupied the minds of the engineers during the feasibility and design stages of this project. However, as construction progressed, it became evident that managing the social concerns of the community would occupy as much time and effort as overcoming the technical issues. This paper focuses on the social challenges and addressing complexity in public consultation, and how better to engender community involvement.

Early during the design process, public open days were held with the aim of explaining the proposed scheme and how it would affect individuals (e.g. despite being able to service most properties using gravity, around 60 properties would need private sewer pumps to connect). Following this process, 573 of 705 properties within the township opted to connect to the scheme. Throughout the project the level of community engagement waxed and waned.

In addition, a designation was sought over the sewer reticulation and areas occupied by the pump stations. The designation process involved public consultation and a public hearing. The designation was successfully obtained. However this process was being undertaken concurrently with the detailed design of the pump stations and reticulation. Late design changes were required to the main pump station due to poor ground conditions. Again the extent of the NIMBY syndrome was not initially evident. Neighbours that had not taken an active interest in the designation process at the construction stage then decided that they had strong objections to elements of the proposed scheme. During this time letters to the editor become a defacto version of events and gained acceptance from certain sections of the community as truths. The events took a political turn when councillors then became involved even though internal Council workshops had been undertaken. This was mitigated by providing site tours for media representatives and key community personnel. A project website was also established to ensure we could publish facts without spin.

Large complex projects take time to build and time to engage with the community. As part of a good project plan, a robust communication plan that will endure for the life of the project is needed. Specific items to address include controlling the release of information. This needs to be controlled and recorded. Presentation of technical information to the public must be critically reviewed. Buy-in by councillors, and establishment of a project control group is recommended. Given the sensitivity of costs, rigorous examination of cost estimates should be undertaken before the ‘cost’ becomes public.

Finally, the best technical option might not always be the best overall option in terms of public acceptance.

KEYWORDS

Communication, cost estimation, consultation, political, NIMBY

1 INTRODUCTION

The notion of a community sewer scheme for Oakura had been bandied about since the early 1980s, with the first report on the options and costs produced by consultants in 1987 for the then North Taranaki District Council. That report recommended a gravity sewer reticulation for Oakura, a seaside township on the north-west Taranaki coast of some 1200 population and a popular destination for campers and holiday makers in summer.

Oakura has approximately 700 properties nestled on steep sandy dunes and undulating volcanic soils over a 116 ha area abutting the sea. Most homes were on septic tanks with some of the more recent houses having installed on-site treatment systems, mainly due to soil type or proximity to the beach or limited area available for effluent disposal. Further, Oakura was experiencing residential growth through subdivision and infill housing.

A subsequent report by consultants in 1998 investigated treatment options including an oxidation pond, local package plant and land based disposal and pumping to the existing sewers in New Plymouth for subsequent treatment in New Plymouth's wastewater treatment plant (WWTP); the latter became the preferred option. It is worth recalling that local body amalgamation in 1989 resulted in Oakura being included in the New Plymouth District.

In 2003/04 New Plymouth District Council canvassed the Oakura residents by way of a survey to determine the level of support for a sewer scheme. The response was overwhelmingly in favour of the sewage scheme. The presented option consisted of gravity sewer reticulation draining to a central pump station before being pumped to New Plymouth: 80% of the 357 respondents wanted the scheme. The consultants conducting the survey reported the response and updated their estimates for the capital and operational costs of the scheme. On the basis of the favourable report it received, the Council decided to go ahead with the scheme in their first draft LTCCP (2004-14) and budgeted $7.0M in capital.

There was initially widespread support for the scheme (to put this in context the Council had committed in the same LTCCP to capital for two other significant sewerage schemes for other local communities) and everyone was happy.

Little was appreciated of the saga to come; and the points of contention which surfaced, such as:

- Gravity sewers versus pumped sewers.
- The need for pumping stations (their location, possibility of overflows, odour treatment options).
- Concept of risk.
- Lack of engagement in processes such as the designation.
- Difficulty in understanding technical engineering details, and
- The difference between the original LTCCP budget and the final construction cost.

Ultimately however the scheme was completed some five years after the approval of the scheme at a capital cost of $23.8M and with over 573 property owners electing to join. It was commissioned in January 2010 and has operated as intended since then with some 230 houses having connected by June 2010 with the balance to connect by January 2011. In this latter regard the project can be regarded as successful.

Throughout the five years of implementation though, the scheme did attract its share of critics and nay-sayers, primarily it seems driven by the significant cost escalation from that 2003 estimate of $7.1M. Much of the negative publicity associated with the scheme required massive amounts of staff (and consultant) time and in itself added cost, as well as the sullied reputation of the Council. As engineers we tend to downplay many of the softer aspects of project management and as a result of our experience on this project we seek to share some of the lessons learned.

2 OVERVIEW OF SCHEME

The Oakura sewerage scheme consists of gravity reticulation draining to a main pump station located the centrally located Shearer Reserve. There are also three minor pump stations which pump to the Shearer Reserve pump station. From Shearer Reserve sewage is pumped to a booster pump station (called Corbett Park) from which it is pumped though to New Plymouth discharging into the New Plymouth reticulation at Botany Place. The sewage is ultimately treated and disposed of at the New Plymouth wastewater treatment plant.

The transfer distance from Oakura to New Plymouth is about 11km. To help minimize retention times in the trunk main and to assist with more efficient pumping, twin 150mm diameter rising mains were installed. Under current peak flows only one rising main is needed. However under ultimate peak flows both mains will be used (although only one is needed for ultimate average daily flows).

Figure 1: Rising main alignment SH45

The main pump station in Shearer Reserve consists of a circular underground concrete structure with an above ground building housing controls, screens and a ventilation fan. The wet well is located centrally surrounded by a detention tank. The detention tank provides 500 cubic metres of emergency storage in the event of failure of the pump station. It will also be used to attenuate flows during ultimate peak wet weather flows.

Incoming sewage firstly passes though a grit trap before being screened and discharged into the wet well. The logic control and variable speed drives attempt to match the discharge with the inflow (currently not all houses are connected and more pump cycles are being observed). Shearer Reserve pumps the sewage approximately 3.5km to Corbett Park against a maximum operating head of approximately 80m. Corbett Park pumps the sewage the rest of the way to New Plymouth against a maximum operating head of approximately 180m.

3 PLANNING

Initial consultation to satisfy the intent of the LTCCP under the 2002 Local Government Act was conducted by way of a residents survey conducted in 2003.

Once the Council had decided in 2004 to build a sewer scheme for Oakura there was a need to affirm the scheme concept and define the scope. This included selecting the drainage district to be served by the scheme which included all of the residential-zoned area in Oakura plus an allowance for future growth. From this information using historical data and the Council's code of practice the wastewater flows and system loads were determined.

Preliminary design commenced in 2005 with the letting of a professional services design contract. The primary task was for the design consultants to develop the layout of the sewer reticulation in the township. Preliminary survey of all properties to map the location and depth of each household's sanitary drainage fixtures (gully traps, septic tanks) was initially done from aerial photography and Council records, with physical survey for properties near the grade line. All property owners and occupiers were contacted and invited to join the scheme. For all formal contact written letters were preferred. Of interest was the fact that between 3 and 4 separate letters were sent to each of the 700 property owners, however 42 of these owners have never responded, despite repeat attempts to contact them (including telephone calls and site visits).

Public meetings were held in April 2005 and again in February 2006, once a draft sewer layout was available to enable property owners to ascertain where and how they could connect, and to what extent the project construction would affect them. At this point those properties requiring private sewer pumping stations were identified. Approximately 60 properties were identified as requiring private pump stations, almost half of which were houses located along the beach front below road level. Residents of these properties would latter voice their discontent at this proposal.

Separately an open day was held in respect of the Council's designation lodgement of application – 130 people attended. The designation application proceeded in parallel with the development of the detailed scheme design. However at the designation hearing in March 2007 some details were still not able to be confirmed and were in outline only. An example is the odour filtration bed required for the main pumping station sited in Shearer Reserve. The designation was approved by the independent commissioner in May 2007 with the concluding words, *"Overall, the provision of a sewerage scheme for Oakura will result in environmental benefits which will outweigh any localized adverse effects which in themselves are able to be appropriately avoided, remedied or mitigated such that they will be no more than minor."* Over two years after this decision, and close to completion of the works, this issue would be raised by neighbours, some of whom wanted the whole scheme reconsidered.

Ten reports in total were presented to the Council for the Oakura sewerage project in the years 2003-10. This constituted a significant portion of Council officers' time. Three of these related to the issue of private pumping stations versus gravity sewers as raised by a residents group, including subsequent challenges and appeals.

Ultimately the considerable physical works were constructed over a 2.5 year timeframe, with completion of the last structures (major and minor pumping stations) and testing in December 2009, with commissioning in January 2010.

4 ISSUES

With a construction on this magnitude affecting an entire township both in public and private property, there is great scope for potential discontent and complaints, both due to genuine dissatisfaction or to personal agenda. To illustrate the issues faced by engineers that needed to be overcome, three examples are presented;

- The "budget blow out" from the original $7 million estimate to the final $24 million estimate;
- The private pump station issue where a group of residents wanted the Council to build a public sewer and pump station within their properties and on the beach instead of installing private pumps;
- The Aarcon versus bark filter odour control debate.

4.1 "BUDGET BLOWOUT"

4.1.1 COST ESTIMATES

The budget approved for the project in the 2004/14 LTCCP was $7.1M. The total cost at completion of the scheme was $23.8M. This raises obvious questions regarding the quality of the original cost estimation for this project which many "Council observers" (including the local newspaper The Daily News), scheme opponents and the politically minded honed in on and made great mileage of.

The original cost estimates included in the LTCCP were prepared by consultants in 2003 based upon a concept plan prepared by those consultants. Once this was approved, the professional services contracts (design and supervision) were let and the design developed.

During detailed design it became obvious that the cost of the scheme would exceed budget. This was conveyed to the Council in a report in November 2006 which put the revised estimate at $15M. This estimate was further revised to $19.2M in a report to the Council in 2007.

In mid 2007 the first contracts were let. Prices received for these contracts were significantly above the estimates prepared. By the time the final construction contracts were let in 2008 the estimated cost of the scheme was $24.27M (there were still some significant unknowns at this stage, the main pump station still had to be redesigned for example to accommodate poorer than expected ground conditions).

4.1.2 WHY DID THE COSTS INCREASE?

There are several reasons why the actual cost of the scheme exceeded the original $7.1M estimate. These include:

A significant period of inflation in the construction industry between 2004 and 2008, pipe laying rates for 150 PVC pipe increased from typically $60 to $164 per metre and diesel increased from 59.6 cents per litre to 169.2 cents per litre over the same period. During 9 months in 2008 alone, the main contractor for the pump station work reported an increase in steel prices of 47%. In fact the contractors refused to give a set rate for steel but demanded that it be adjusted by cost fluctuations as they were receiving monthly rate reviews and steel was being rationed. The overall increase in the Cost Construction Index (CCI) during this period was 30%.

The scope of the main pump station increased significantly, for example emergency storage was provided, this resulted in not only the cost of materials for storage itself, but required a larger excavation (expensive given the ground conditions and high water table) plus the redesign other detail such as pipe work. Unfortunately the design was not transferable and when the depth of the structure had to be reduced, this resulted in the need to totally redesign the pump station (at additional cost).

Some cost items were not included in the estimate (possibly because of the concept nature of the design - some of which were noted). For example easements were not included in the original cost estimates (85 were required). These amounted to close to $1M. If more detailed design had been prepared these costs may have been identified (but this would have required more expenditure on design before the scheme had been approved by Council – a chicken and eggs situation).

Following further consideration of the technical issues during the detailed design process, twin rising mains were installed for the trunk main. These increased the costs for things like valves (twice as many air and isolation valves were now needed) and the air valve chambers had to be significantly larger to accommodate them.

Some processes are notoriously difficult, if not impossible, to estimate, e.g. consenting processes, hearings, requests for information.

The original estimates for some elements were unrealistic, for example the original estimate for the transfer pump station was $0.7M compared to a final costs of around $7.7M (although in fairness the pump station finally built was significantly different to the one originally envisaged).

Also underground civil works on a large scale over a large area are inherently risky, although geotechnical investigation was undertaken, it is impossible to investigate all the sites. This in itself resulted in some increases in costs.

4.1.3 PUBLIC PERCEPTION

Unfortunately many local Council observers focused on the increase in the cost and not on the reasons for it. Opponents of the scheme seized the opportunity to criticise the Council. A local newspaper seemed particularly willing to publish the views of opponents.

One outspoken critic of the scheme took the opportunity to express his displeasure of the Council, its officers and its ability to undertake such a scheme. Phases such as “quagmire of ineptitude” and “shambolic litany of civil engineering” summed up his opinion of the project in letters to the editor, submissions to the Council at annual plan review and emails to large audiences including elected councillors and Council officers.

This particular individual was given much print space by the local newspaper and quoted as being a consultant engineer, thereby giving his comments validity.

4.1.4 OUTCOME

The final cost of the scheme is $23.8M. To put this in perspective this equates to $33,800 per existing property. However the pump stations and trunk main (which account for approximately $14M) are designed for the ultimate case - double the current population. Therefore based upon ultimate development this equates to approximately $23,800 per property. By comparison the original budget equated to $10,100 per current property. In hind sight this was obviously inadequate.

Estimates provided in the Ministry of Health 5-year review publication of the sanitary sewer subsidy scheme indicate an approximate cost of $23,100 per property.

Information available on similar schemes around New Zealand at the time indicated similar costs per property e.g. Riversdale Beach $17,200 per household and up to $41,300 for commercial premises (originally estimated much lower).

The final cost therefore, although on the high per property for current development, is of the same magnitude as other schemes for the number of properties that can be serviced.

4.2 PRIVATE PUMP STATIONS

4.2.1 BACKGROUND

Despite being able to service most properties using gravity, around 60 properties needed private sewer pumps to connect to the scheme (a requirement that was made clear during public open days). Approximately 22 of these properties were in a group along the beach front below the road. At the other end of the same road a gravity sewer had been installed four years previously (taking advantage of the renewal of a sea wall at the same time). This sewer went as far as the topography allowed to enable fall towards the end of the road. The residents whose properties required private pumps were not happy with this proposal and requested the Council consider a gravity sewer for them. To provide a gravity sewer which complied with the Council code of practice required a very deep pipe line which would be impossible to build due to lack of access and space. Other options, including a pipeline along the face of the steep slope facing the sea did not comply with the Council’s code of practice. In addition, any option was going to require a pump station located effectively on the foreshore.

In March 2008 a report to the Council recommended that the original private pump option proposed by the Council should remain.

4.2.2 RESIDENTS PERSPECTIVE

A group of residents did not accept the findings of this report and approached the Council again requesting a review of the possibility of installing a gravity sewer. They initially supported this with a brief report from a contractor based in Christchurch who claimed it would be easy (and relatively cheap) to build a gravity pipeline along the slope of the bank (although his report was silent on the matter of the pump station). The proponents of this scheme lobbied other neighbouring property owners into joining them and christened themselves the Oakura Residents Group.

Fundamentally this group felt it was unfair that the residents at the western end of the street could get a gravity system, but they would need to install, operate and maintain private pumps.

They also felt that a gravity main to a single pump station operated by the Council would be a more environmentally safe option than 22 individual pump stations.

They felt the bank on which the pipeline would be built was safe as it was protected by a boulder wall.

The residents also proposed a STEG (septic tank effluent gravity) system in which they retain their septic tanks and Council builds a small bore (63OD) main to a common pump station which the Council would own and operate.

The Residents Group actively lobbied the councillors and Mayor, made two deputations to Council meetings, provided interviews for the local paper, showered Council officers with emails and produced a "Blue Book" containing information in support of their proposal which was disseminated to selected parties.

The Residents Group subsequently prepared a draft design and obtained engineering advice from a local engineer on both the pipeline and the rock wall. These parties conditionally endorsed the residents' proposal.

4.2.3 COUNCIL PERSPECTIVE

The gravity main would need to be built on a steep sand embankment on an actively eroding coastline. It was considered by both Council engineers and consultants that this pipeline could not be built to comply with basic Council design codes and would present several considerable risks, including health and safety risks to workers, the risk of erosion causing pipe breakage and subsequent spillage into the environment and operability risks as the pump station was located at the toe of the bank quite literally on the beach. There was even uncertainty regarding whether or not the pipeline could be built expressed by the residents own professional advisors (comments such as *The installation of the pipeline will not be easy but if practical should…* and *Pipe material should carefully considered as the slope to the beach is always going to be at risk of severe storm damage*). Lack of access meant that construction access would be along the beach.

Following further review, the Council discounted the STEG option as it did not address many of the basic issues such as access for construction and operation and a pump station was still needed in approximately the same location as for the conventional gravity system.

4.2.4 OUTCOME

Three reports (which extended to 26 pages excluding appendices) were prepared on this issue and submitted to the Council. In addition there were several supplementary reports and meetings with the Residents Group. Five consulting engineering firms were separately engaged by either the Residents Group or the Council.

After occupying the media and Council meetings for 9 months, the Council rejected the residents request in December 2008. These residents were given the option of not connecting to the scheme or connecting via s STEP (septic tank effluent pumping system).

The lesson here was partly the difficulty in conveying technical information to lay people, and also over coming suspicions by members of the community that their concerns are not being listed to.

Throughout this process the residents claimed that they were not consulted with. Given the number of meetings, engineering consultants, and Council time spent on this issue this does not stand to reason. An issue faced by Council engineers is that if a decision goes against an interested party, then they may claim that they were not consulted with properly, i.e. unless the Council agrees to their point of view, the Council must have an alternative agenda. This was finally overcome by exhaustively reviewing every option. Unfortunately this occupies significant Council officer time and resulted in additional costs.

4.3 AARCON VERSUS BARK FILTER DEBATE

4.3.1 DESIGNATION

The location of the main pump station was a contentious issue, there were few technically feasible options. Following a review of the options the centrally located Shearer Reserve site was chosen. This is a high profile, popular reserve next to the beach.

Following selection, the site of the Shearer Reserve pump station was designated for "Installation, operation and maintenance of a sewerage reticulation scheme and trunk pipeline". A publicly notified process was followed including a public hearing chaired by an independent commissioner. The intention to use part of the reserve for a sewage pump station had been flagged earlier in 2006 when the Parks Management Plan was adopted, also via a publicly notified process, which noted that "This reserve may be used for the purposes of sewerage reticulation infrastructure, including a pump station".

The designation process was publicly notified and 9 submissions were received – and only 2 of these were from neighbouring residents. This is a relatively low number and is indicative of people's disinterest and apathy during planning stages. Once construction had commenced however, and the pump station became more real, the amount of interest grew exponentially. Much of the interest came from residents who had not submitted during the planning process.

A condition of the designation was the need to prepare an Outline plan prior to construction. This outline plan was approved by the planning officer appointed to review it and construction was commenced.

4.3.2 THE COUNCIL'S VIEW

Because of the large storage capacity at the pump station, the potential for odour generation was recognized during design. It had always been the Council's intention to install a bark filter for treating odours from the pump station. Early plans submitted with the Notice of Requirement for the designation obtained for the pump station site included a bark filter and the designation boundary was shaped to accommodate this.

During the detailed design stage the design consultants proposed an alternative method of odour control – Aarcon Units (a proprietary activated carbon system). As the designation process proceeded many revised plans were produced and at some stage the plans showing Aarcon units were disseminated. By the time the hearing was conducted the plans incorporated in the planning reports showed Aarcon units, although the area of the designation had not changed, and was still shaped to allow for the bark filter. The reason for the change on the plans submitted during the hearing is not documented, however it was always accepted that significant landscaping would be planted to screen the site. This dissemination of plans and the lack of documentation are examples of the need to carefully control the distribution of drawings and poor drawing revision control.

Due to poor ground conditions the main pump station had to be redesigned. During this redesign a comparison was made of the biofilter versus the Aarcon unit. The conclusion of which was that a biofilter should be used (this was made on the basis of life cycle cost, operating experience – NPDC have 5 other biofilters and no Aarcon units, and visual impact on the reserve – the biofilter is a low structure easily screened whereas the Aarcon units required another structure on the site). The planning officer who reviewed the outline plan agreed

with the proposal, and acknowledging the change to a biofilter, stated that *the proposed works are in accordance with the purpose of the designation* and that *the proposal is generally in keeping with the designation decision.* As this activity fell within the purpose of the designation, the planning office did not require a formal change to the designation, therefore negating the need for further public consultation.

4.3.3 THE RESIDENTS VIEW

Once the outline plan had been approved, construction commenced on the pump station. For the next 12 months neighbours to the reserve had to put up with construction noise, visual impacts, dust and the inconvenience of no access to part of the reserve. It is understandable that their patience would be wearing thin. Some of these residents were also unsupportive of the scheme (and made this widely known) and were of the opinion that the pump station should have been built somewhere else. There was also a general distrust of the Council's technical ability, largely borne from the escalation in costs issue, although much of this distrust was promoted by individuals with both political and NIMBY motives. This all came to a head in the last two months of construction of the pump station when the foundations for the bark filter were started.

As with many constructions, the foundations looked large and it was hard to see beyond the current condition of the reserve to picture what it would look like once construction was completed. The residents initially thought that this was going to be a large above ground structure.

A couple of these residents compared the plans they had from the designation process with the construction being undertaken before them. The obvious difference was the biofilter which they interpreted as an example of the Council changing the design to meet its budget. They were upset that the Council did not consult with them prior to the "change" and they were concerned about the final landscaping planned for the site. They believed the biofilter would be visually more intrusive and they also did not trust the Council's motives for selecting the biofilter.

A part of the issue was also a fear of the unknown. Residents were also suspicious of the nature of a biofilter and started spreading misinformation (often of a pseudo-technical nature) to bring about more people (and councilors) to their opinion. Examples of the type of comments circulated included; "the bark will float out of its containment … and contaminate the surrounding site" and "methane gas has the propensity to explode given the concentrations expected in the bark filter". It is believed much of this information came from unauthenticated sources on the internet.

During the designation process the community wanted significant storage incorporated into the design to minimize the risk of overflows (in fact they want to eliminate the chance of overflows – and example of unrealistic expectations). The large storage requirement resulted in a larger structure which further aggravated the neighbours. To top it all off, an over flow pipe was still required and constructed.

The NIMBY syndrome was also at play, during discussions with neighbours, two of the most vocal requested that the pump station be moved further up valley or moved into a different park located in an adjacent valley. One of their fundamental concerns was the effect of the pump station on the residents' property values.

4.3.4 WHAT HAPPENED

To address the residents request the Council (the project manager and a horticulturist from the parks department) visited all neighbouring landowners to view the site from their properties. A draft landscape plan was then prepared and sent out to these residents plus anyone else who requested one (many of the councillors requested a copy) along with an invitation to provide comment on the plan.

The residents also requested a public meeting to discuss the odour control options; one person wanted a wider review of the scheme; input into the landscape plan and general reassurance that the selected option was the best option.

A meeting was held and it is estimated that over 100 local residents attended. This did demonstrate that the level of interest in this issue was high. The meeting was chaired by the chairperson of the Kaitake Community Board (which includes Oakura).

The project manager for the construction of the scheme made a presentation to the meeting covering the following: listed the residents' concerns; summarised the planning process which lead to the designation and the use of the biofilter; summarised the odour issue (why odour control is needed and options for controlling odour) and presented the draft landscaping plan. Several councillors attended this meeting along with the Mayor and Chief Executive, demonstrating the seriousness with which the Council took these complaints. Despite the odd heated comment, the general mood of the meeting attendees was positive, with supportive comments from several people after the meeting. This helped the public with their understanding of the proposal.

The landscape plan was then finalized incorporating the feedback from the residents (although there was conflict between the comments from different neighbours, e.g. one wanted screening in a particular area, whilst another wanted the area kept clear to maintain his view shaft. The planting planned for the pump station site was extensively expanded following this process.

A conservative estimate of the extra cost of the public meeting and associated staff time on this one issue is in the order of $25,000

4.4 COMMUNICATING ENGINEERING DETAIL TO LAYPEOPLE

Oakura is an established township, with over 500 houses. Progressive planning allowed smaller and smaller sections to be developed, down to 500m^2. Many residents regard the town as paradise unspoiled and want it kept that way.

Retrofitting into the existing township meant disruption; the need for easements though private property (some well developed with mature trees). Many easement agreements were obtained 3 to 4 years prior to construction actually being undertaken. Owners memories faded, Council officers originally involved in negotiating and obtaining the easements had left. This loss of continuity meant some of the details agreed were also lost, leading in turn to a miss-match of expectations, i.e. owners claiming that the pipe was going to be under-bored and that disturbance would be minimal when in fact to access drilling sites still required destruction of landscaping to provide access for plant. Also if the house connection was on the drilled pipe then excavation to the pipe was going to be required at that point anyway.

Properties also changed hands and new owners were not always as agreeable to the works as previous owners (despite the easement remaining in place).

Agreeing to the location of connections with the need to talk to 570 people in detail was a logistical challenge with the scope for misunderstandings. Although perhaps the least technically challenging aspect of a sewer scheme, laterals are very important as they are the interface between the Council's scheme and the individual property owner. Get it wrong i.e. install a lateral too high, and owner will consider the whole scheme a failure (which it is from their point of view). It is recommended that a clear message is needed along with the time to talk to every individual about their needs. A good system is required to record the agreements with each property owner. In this case a connections database was maintained recording visits, agreements and photographic records of lateral locations.

Finally nearly 60 properties were required to be served by a private pumping station – despite the Council facilitating four separate open days on the options for private pump stations for these owners there was still the major campaign (noted previously) early in 2009 by a 'residents action group' to decry the reliability of sewage pumps and to seek to get a gravity sewer laid over tortuous steep sandy terrain in the coastal margin to avoid the need for pumps. This was no doubt prompted in some measure because of the higher outlay for those owners in purchasing a pump (as compared to those connecting their private drains by gravity).

4.5 THE RISK OF OVERFLOWS AND THEIR IMPACTS

Risk can be a difficult proposition to quantify – ask anyone what risk means and you will get varying responses. The AS/NZS 31000 standard defines risk as *"effect of uncertainty on objectives"* and notes that risk is often expressed as a combination of the **consequences** of an event and the associated **likelihood** of occurrence.

Risk in one regard is like matter– it cannot be destroyed, however it can be shifted or shared. There is a cost attached to that risk and one of the parties will be carrying the risk cost. If we consider the case of the major pumping station in Shearer Reserve, it was made clear at the designation hearing (March 2007) that the possibility (risk) of sewage overflows from that pump station, given its proximity to the sea and Oakura Beach was intolerable by many, including initially the local Community Board. It was explained through the Hearing that there would always be some potential for overflows, no matter how well engineered the system, nonetheless the engineered result was an increase to both operational and emergency storage to the effect of 8.8 hours dry weather flows for the ultimate design capacity of the scheme ie; a future population of 3,600 compared with current of 1,200. The capital cost of the below-ground tank designed and constructed as part of the pump station came to more than $1M of the $6.2M pump station contract.

Additionally to mitigate the risk of interruptions to the transfer pumping Oakura to New Plymouth two mains were proposed by the designers – this solution had the additional benefit of enabling one to cater for current hydraulic loads, with both ultimately needed at some point in the future. Again this is a well engineered solution for many risks, however the added cost was not insignificant.

It can be difficult to attach a $ value to negative publicity and reputation risk. NPDC does have a risk assessment framework; currently we do not place a cost on this risk element but based on our experience with this project we could attribute at least $23,000 of legal fees to publicity risk. In addition is the large amount of staff time spent on such issues.

5 COMMUNICATIONS

5.1 INTRODUCTION

A key theme that repeats in a project like this is the lack of communications or the mis-match of expectations (which is a symptom of poor communication). Needless to say good communication is important and fundamental to the successful outcome of any project. A brief summary of the roles of the various forms of communication which came into play in this project is provided below. A robust communication plan addressing each of these would be recommended for any project.

5.2 MEDIA

The Council is a popular target for people to let off stream, often via the ‘Letters to the Editor’ section of the local newspaper. Self-proclaimed experts would write criticising the scheme often proposing confusing technical arguments which in many cases were incorrect but never-the-less sounded convincing. It is easy to get into an endless letter writing debate through the papers which can be a no win situation, and takes a lot of staff time.

It must be remembered that the newspaper wants a story and catchy headline – often reporting a reaction rather than the focusing on the facts. Unless you use a professional, it is hard to make facts interesting, in this regard it is advisable to make use of your communications team.

5.3 WEB SITE

This is a good way to manage the distribution of information and a means by which the Council was able to present the facts. Hits on the web-page increased particularly in the last year of construction. There does however need to be a concerted effort to keep information on the web up to date and accurate.

5.4 EMAIL

Email is a particularly effective and potent method for people who wish to disseminate miss-information and criticism to many people quickly. Large mailing lists can grow exponentially. As a respondent to emails you may not know the entire audience you are sending to, e.g. it is not always obvious from an email addresses who you are communicating with.

Email enables people to manipulate information, selecting 'sound bites' of information which supports their point of view. Also with the speed of email, multiple communications take part overnight.

The key lesson here is not to write anything in an email you would not be comfortable being printed in the newspaper.

5.5 AUDITOR GENERAL / OMBUDSMAN / LGOIMA REQUESTS

Another feature of this project was three separate complaints made to the Ombudsman (one regarding the private pump station issue and two regarding the odour control issue). In two of these cases the Ombudsman found the Council had acted in accordance with its legal requirements (no reply has yet been received on the third) and dismissed the complaints. Also several people made full use of their right to seek information under the Local Government Official Information & Meetings Act (LGOIMA). Responding to these requests occupied many hours of Council officer time.

6 CONCLUSIONS

The resulting scheme is successfully operating. A sound robust technical solution was found to address the engineering issues. Unfortunately whether we managed to bring everyone on side is not so clear cut. Despite the fact that the final cost is comparable with other schemes, and that once final design had been completed and a final cost estimate prepared, the Council stayed within this budget, the over-riding memory for many is of a multimillion dollar cost "blow out".

The Council is currently considering a number of other large sewerage infrastructure projects, including sewering of one other small town. The lessons learnt from the Oakura experience will be applied to these other projects, including:

- Primary emphasis on a communication plan, including who is responsible for communications, addressing each of the following; the media, document control (e.g. drawings – especially concepts used during consent processes); engaging people who can explain technical concepts to the general public;
- Timing of press releases (large engineering projects need strict public relations management);
- Control over the release of documents, e.g. plans, ensure the simple things are done e.g. dates, versions. Once released to the public do not change a plan without changing version and ensuring record made of reasons for release;
- Be as clear with people (as best as you can) e.g. give people right to submit and participate in the consultative procedure, however set deadlines to be maintained to ensure project program can be maintained;
- Ensure you have a firm plan before going public with it. A lot of effort goes into discussions and 'selling' an idea to the public, if you change this significantly you risk losing credibility
- Consider spending up front on design to ensure that the concept is fully understood and cost estimates are robust. Declare new costs as they arise and once they are verified.

Be flexible; remember the best technical solution is not always the best overall solution. Ultimately the solution that is the most acceptable to the community is the one that is most likely to be adopted, which also corresponds with the intent of the local government act processes.

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