QUALITY MANAGEMENT FOR A WATER AND WASTE BUSINESS UNIT

G Mitchell
Dunedin City Council

ABSTRACT

In March 2011 the Dunedin City Council (DCC) delivered a bespoke Quality Management System (QMS) to its Water & Waste Business Unit (WWSBU) staff. This paper focuses on the rationale behind the decision to implement the system, the challenges, benefits and lessons learnt during the development process.

In early 2008 the WWSBU underwent major change to its organisational structure. Traditionally the water, waste and solid waste businesses operated as stand alone entities each with independent management. The merge of the entities, coupled with the inception of a new Asset Planning team was a key driver to review business priorities and approaches. Against this backdrop of change, the business unit joined 46 other water utilities in an international asset management process benchmarking exercise. The benchmarking comparison highlighted an opportunity to strengthen business processes and documentation - so the creation of a centralised QMS began.

The QMS has emerged as a key driver of improvement. The journey has included the development and implementation of in-house intellectual property. It has involved collaborative working, challenged traditional thinking and promoted an information sharing culture. The outcome, a suite of robust business quality documents and support reference material, hosted on a web based Quality Management Framework tool.

KEYWORDS

Quality Management, Consultation, Intellectual property, Stakeholder

1. INTRODUCTION

In 2007 an in-depth review into the delivery of water and waste services for the city of Dunedin concluded. The review was undertaken as a result of workshops held with staff which identified a need to develop the Water and Waste departments from reactive operational service providers into proactive, customer focused, efficient utility businesses.

With agreement gained on the need to improve strategic direction, a structural re-organisation to amalgamate three disparate teams, a new business model and overall improvement plan were developed. The intent, to deliver existing services and implement the new strategic direction and long term planning identified as a requirement to improve the businesses.

As a result, in 2008 the new integrated Water & Waste Services Business Unit (WWSBU) was launched to manage the 3 Waters (Water, Stormwater and Wastewater) and Solid Waste businesses for Dunedin City. To enable effective management of the 3 Waters framework, the new business model needed to satisfy not only the technical diversity of each group's decision-making processes but build consistency between the activities. To drive the improvement and develop the long term planning and strategy implementation, a new Asset Planning group was formed.

Concurrently, the WWSBU took part for the first time in the International Water Association - Water Services Association of Australia (IWA-WSAA) 2008 benchmarking exercise with 46 other water utilities from 7 countries. The Dunedin City Council (DCC) benchmarking results in the Policy and Business planning functions reinforced the need to focus the WWSBU drive for business improvement over the next 3-4 years. A key component to the improvement plan was developing Quality Management strategies. The scores relating to Quality Management and Policy and Business planning can be seen in Figures 1 and 2. The white dots represent the group average for each comparison area with the bar graphs representing the DCC's scores.

Figure 1: IWA-WSAA 2008 Benchmarking Results for DCC

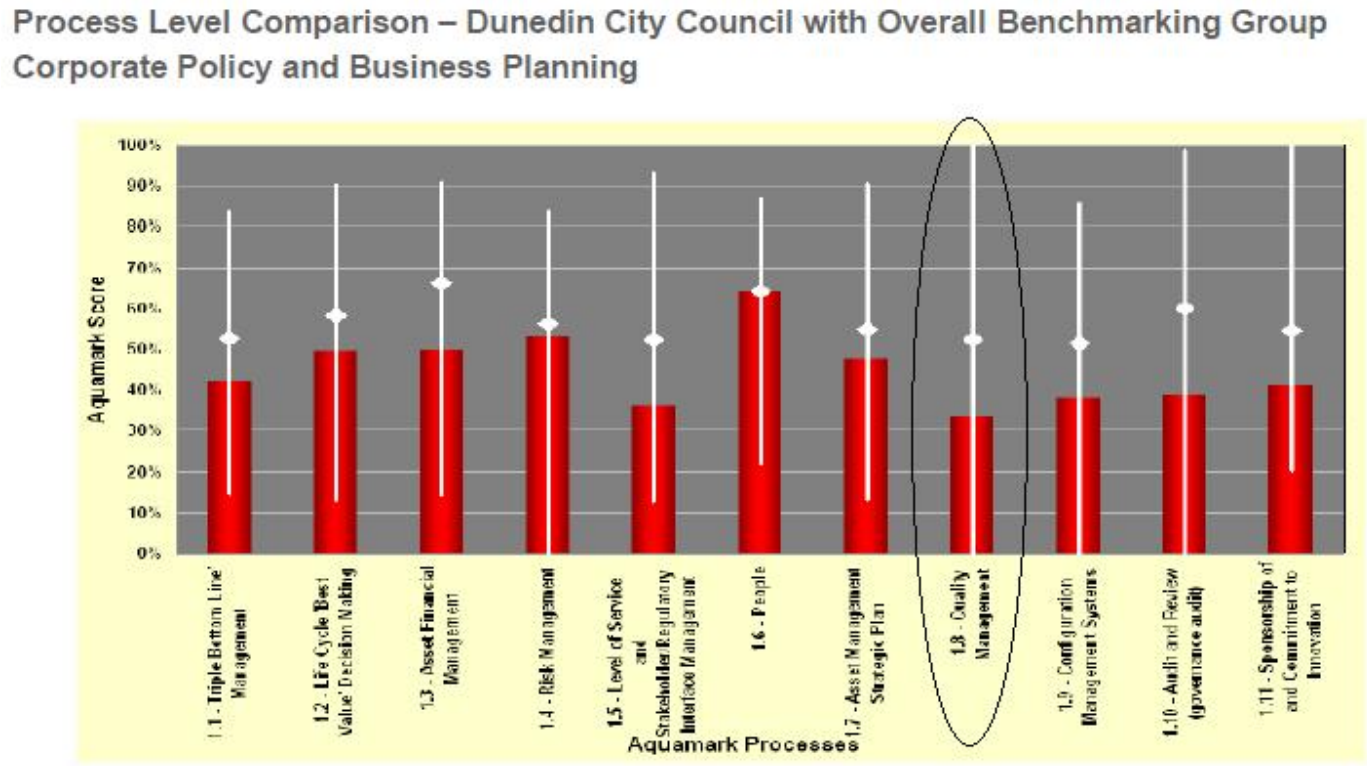
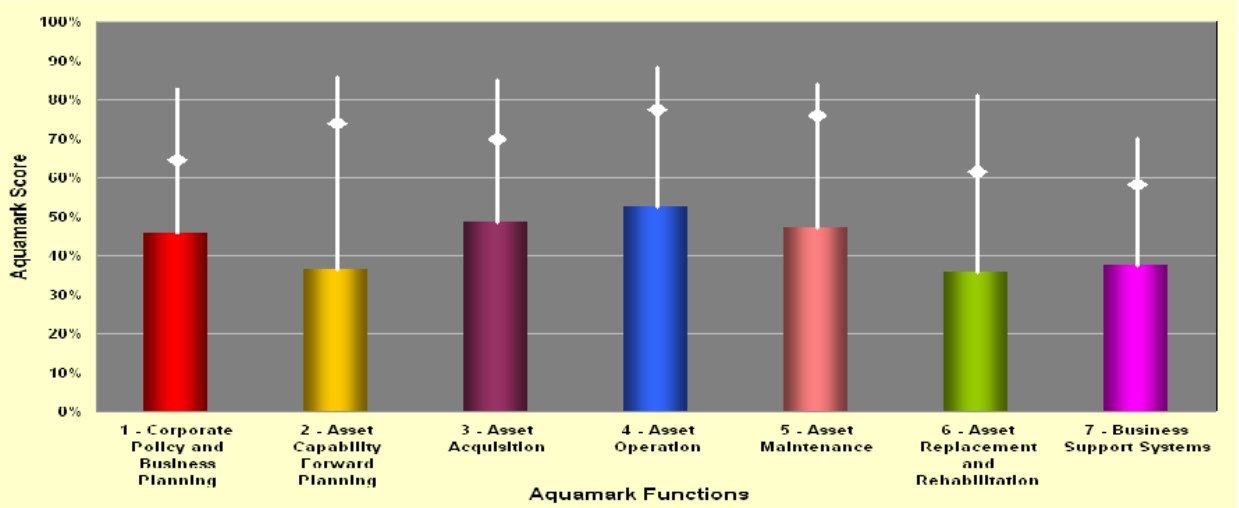


Figure 2: IWA-WSAA 2008 Benchmarking Results standing New Zealand Groups



In March 2009, the DCC engaged with an external consultant to assist with the formation and implementation of a WWSBU framework for Quality Management. Using the consultants' experience with similar organisations, the results of the IWA-WSAA survey, and initial discussions with key DCC staff, the consultant delivered the Quality Management Framework (QMF). The QMF was an intranet based electronic repository tool which could be hosted on an internal DCC Information Technology (IT) system. It would be used to house the Quality Management System (QMS) documents for the WWSBU and to drive business systems improvement.

The IWA-WSAA recommendations to the WWSBU were used as the basis of the consultants' initial scoping brief. The recommendations included assigning overall responsibility and accountability for procedural documentation, framework implementation and system maintenance to one role within the business and to formalise responsibilities from within each group for documentation development where appropriate. The need for a quality management champion had already been identified in the new business model and in June 2009 the position of Quality Systems Officer (QSO) for the WWSBU was appointed. The QSO joined the Asset Planning group to provide a dedicated resource to drive the business unit's quality management and business systems improvement initiatives.

2. DISCUSSION

Initially the QSO worked with the consultant to get up to speed with the scope of work already undertaken with key management staff and to learn the mechanics of the QMF tool. While the QSO was gaining the required knowledge of the tool and populating it with documents gathered from the different groups, progress was being made by the consultant on preparing a "Gap List". This list included processes, procedures and tasks that were identified as being undertaken within the groups but for which information was not fully documented.

In August 2009 a pilot QMF, populated with a selection of documents of variable quality was launched to the WWSBU Management Team and to some groups in the business unit. At this point the consultancy scope of works was completed and the time was right for the business to use in house expertise to define the guidelines around how the new quality management system and the framework would work. The emphasis of work moved from filling identified documentation gaps and populating the QMF to setting and agreeing the systems 'rules of engagement'.

Setting the criteria for the governance documents of the QMS took some time to decide, agree and establish. These documents were vitally important to get right as they formed the foundation of the QMS management and operation. The documents had to be unambiguous and concisely inform system users of what does and doesn't constitute a quality document and what will and won't be hosted on the QMF. There were a variety of non-negotiable components that were factored into the quality document

development early on to ensure consistency in how the quality management system would look and operate. Conventions around document numbering, approval, access, updating and audit regimes all had to be developed, consulted, documented, and approved.

Quality Management had not been widely formalised at Dunedin City Council nor holistically practiced within the Business Unit. There were numerous documented policies and procedures that were managed by the different groups across the business, however; there was no coherent quality management of these documents. Indeed, much of the management of any documentation was ad hoc and specific to a function or task. The Water Treatment section did have Quality Management ISO 9001 accreditation for several of the Water Treatment plants and time was spent looking at how the QMS in Water Treatment would be incorporated into the expanded scope of the QMS for the entire WWSBU.

At this point, the IT constraints of the intranet based pilot QMF were becoming obvious. The Water Treatment team had no access to the hosting platform for the QMF and there was no common IT platform across all groups within the business. The existing DCC IT options could not provide for the overview required for the integrated business.

IT system incompatibilities had developed as a consequence of geographic work arounds and the cost factor to centrally align systems. WWSBU staff are based over seven different sites throughout the City and some frequently spend part of their working days off site or at other Water & Waste localities. Alternative IT options were adopted within the disconnected groups to manage information. The separate entity focus and lack of system compatibility were identified as the greatest risk to consistent service delivery and progression of the 3 Waters strategic direction. A clear overview was crucial for alignment of the business unit objectives and to drive improvement. A permanent solution was required.

The formation of the Asset Planning group had required specialist recruiting in the areas of advanced asset management, strategic planning, applied technology and operations management. The group recruited a staff member to one of the newly formed roles who had specialist IT and web development skills. Agreement was gained with the DCC IT department to use the skills of this staff member in house to develop a cost effective business wide system, and to host the QMF with an external web hosting provider on a New Zealand Virtual Private Server.

Confidence in the security of the WWSBU and DCC information was a major consideration when the decision to allow the business unit to host this key information on an off DCC site, IT network server was made. All security measures around authentication of site users, access to the site and files or records needed to be signed off including the exchange of information from the DCC servers to the site. Once external hosting was signed off, the task to develop the QMF and build in the requirements for the QMS and documents began. The framework was developed using intellectual property tailored to suit not only the business need but also the skill set of the quality system administrator. Not only is the QMF original and creative work, it has been developed with extensive stakeholder collaboration. The business unit has been delivered a robust and comprehensive QMS and document hosting platform as well as the other systems and tools the website now contains.

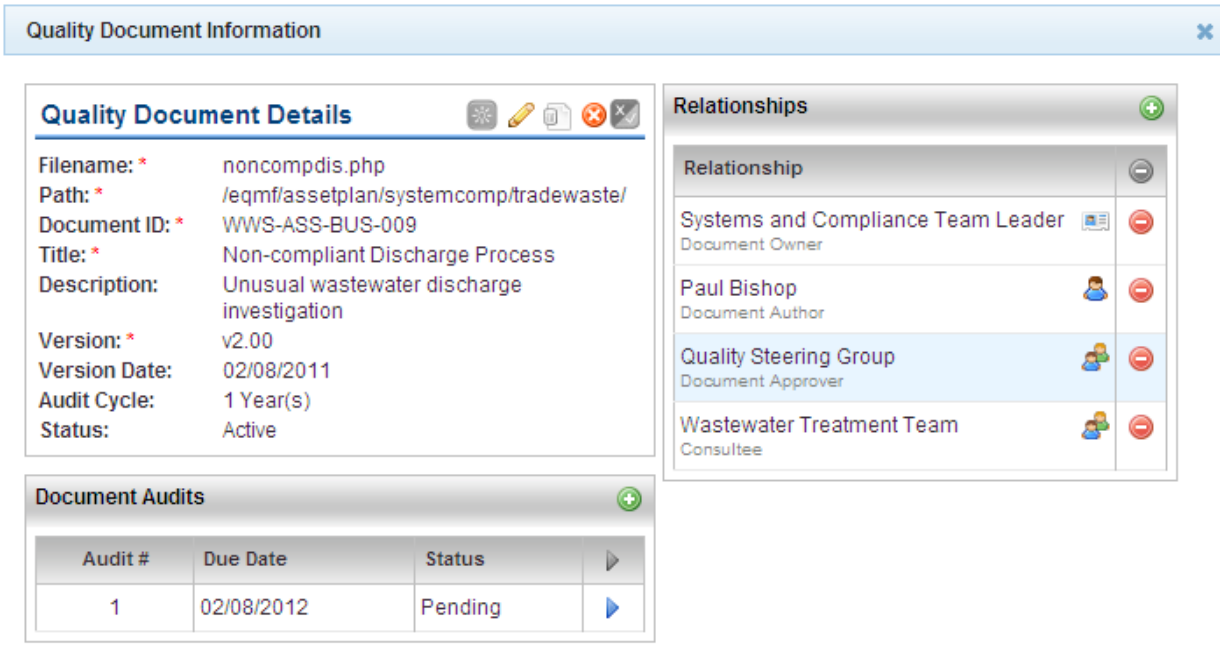
The QMF presented a myriad of opportunities and challenges for the QSO and the business. For the business the greatest challenge in some areas was cultural acceptance that the QMF was a tool that would be of any practical use for business as usual operation. The greatest opportunity for the QSO was the chance to develop a bespoke QMS from scratch. With no pre-determined path on how the QMS would look, work or be managed, the development options were limitless. The only 'non negotiables' related to the standard requirement of any good Quality Management System - understanding of process management, control of documentation and system checking processes. What emerged during the initial project planning stage was more about eliminating options – being clear on what was not wanted.

The current version of the QMS contains only documents which have gone through the relevant approval process. The decision was made to preserve the integrity of the QMS and the quality managed documents contained within by only populating the QMF with live documents (See Figure 3). These quality managed documents are consistent in look and ownership and consultees are clearly identified. The approval path is defined and audit information can be easily tracked (See Figure 4).

Figure 3: QMS Document Header

Document Title:	Non-compliant Discharge Process	**Reference:**	WWS-ASS-BUS-009
Document Owner:	Systems and Compliance Team Leader	**Version:**	2.00
Document Author:	Paul Bishop	**Release Date:**	02/08/2011
Approver:	Quality Steering Group	**Consultees:**	Wastewater Treatment Team

Figure 4: Quality Document & Audit Detail



A separate plan is managed to track conversion of existing documents to the required standard for QMS inclusion. This plan also contains the source gap list information which is used to prioritise development of both the 'cross business' documentation for creation, and those operational group documents identified as requiring Quality Management.

2.1 CHALLENGES AND OPPORTUNITIES

The Asset Planning group has been a leader of the change in the WWSBU. The group has influenced and fostered the cultural adjustment needed to drive cross group and team collaboration. The QSO's challenge was dual, not only was the position new in a group whose worth was just becoming recognised by the existing groups, but Quality Management was an entirely new concept for the majority of the WWSBU. The objective of this business wide support role was to focus on ensuring appropriate policies, standards and procedures were identified and developed to meet the existing requirements, especially to aid the gap in succession planning information and to support the integrated three waters asset management approach. This challenge was significant as the different groups had been managing their own information and systems effectively but all in a slightly different way. It was part of the QSO's mandate to identify where process should be aligned and implement adoption of the best practice option across the whole group. The opportunity to explore the process differences and align the procedures has been educational and at times required extensive people management skills.

The Quality Management journey has provided an opportunity to help 'gel' the business as a unit. It has required a considerable amount of collaborative working both in the development of the framework and with representatives of the operational groups to identify group requirements. Sometimes these discussions lead to the discovery of other processes which should be documented or defining the roles and responsibilities uncover another stakeholder who should be consulted. Collaborative working and

being consistent with the quality management message are key requirements to the success of the information sharing and stakeholder acceptance on the Quality Management journey.

Managing embedded cultural thinking has been a challenge in itself especially the lack of understanding with what the QMS is going to provide at the operational level. Indeed the change associated with implementing a new system can sometimes be perceived as threatening. In general terms within the Water Industry the operational workforce is aging; Dunedin's no less than others in the industry. Part of this challenge is the issue of vast amounts of institutional knowledge at risk of disappearing if it is not documented or captured formally. Many of the operational functions performed by staff are carried out intuitively, learned over years of on the job experience. Some of this inherent knowledge could never be effectively documented but quality management is about ensuring the steps that must consistently be followed or considered throughout every job are captured. Re-enforcing this message and the requirement to capture the high level information helps to open the information sharing pathway as well as challenging business performance and driving continuous improvement. This cultural thinking coupled with managing 'just another requirement' on top of business as usual workloads means progress on writing and improving documents is a slow and steady process rather than a project with quick momentum.

2.2 BENEFITS

The journey is helping to deliver a better understanding of processes that cross over different parts of the business. It clarifies who has ownership of the process, and defines the responsibility for consultation with stakeholders. The continuous improvement culture is nurtured by the bringing together of the groups and this provides a greater opportunity to share best practice across the business. With the relationship between document, process and personnel clearly defined a whole series of system and process improvements in the way the business operates has been established. This improvement is supported by the clear QMS guide lines.

The development of a robust audit program and reporting tool has also ensured the documents included in the QMS are being regularly reviewed. Owners of documents are regularly informed of the documents due for audit in the QMS. This reporting keeps information on quality documents to the forefront of document owners' minds and often prior to an audit, a review is conducted and changes are made to not only the document up for audit but to some of the related documents.

The WWSBU took part in the IWA-WSAA benchmarking exercise again in 2012. In almost all categories the preliminary results show there was improvement over the 2008 results (see Figure 5). The improvement in the Quality Management category was significant and has moved the WWSBU from the lower performance end of the peer group to leading practice (see Figure 6).

Figure 5: Preliminary results comparison 2008 & 2012 for DCC

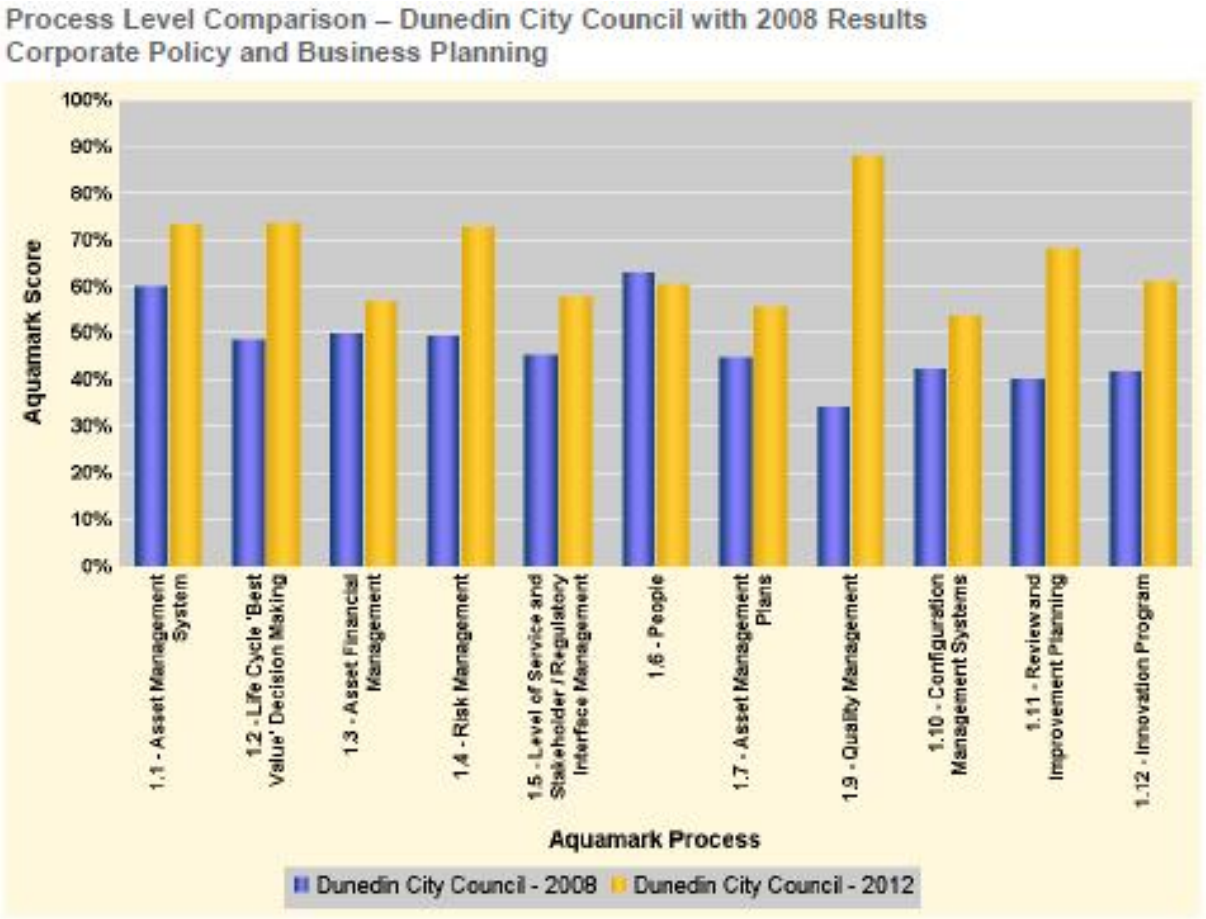
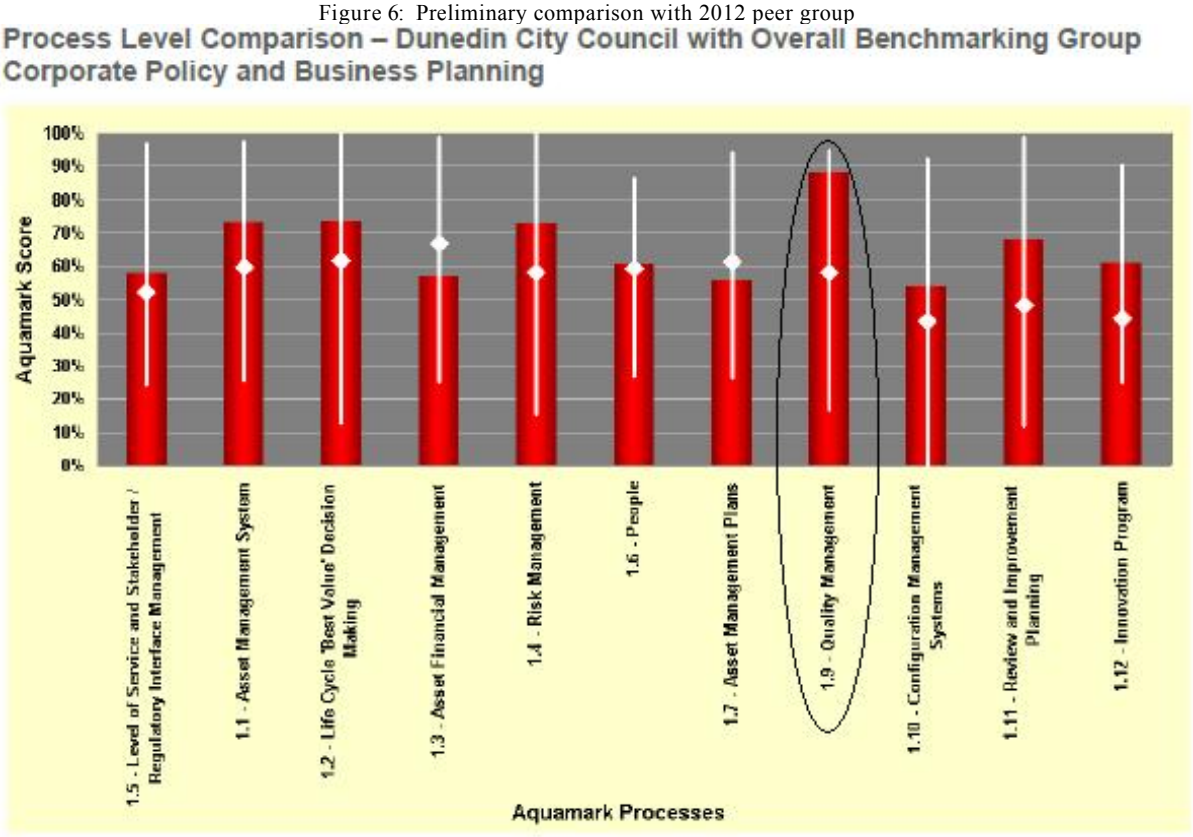


Figure 6: Preliminary comparison with 2012 peer group



2.3 LESSONS LEARNED

The lessons learned on the journey have been many. Consistency is a key point that has required regular progress reviews. Is the delivery of the Quality Management message, the look of the submitted documents, the rules of the approval process, the system development and implementation always being applied in the same way? In simple terms, are we doing what we say and saying what we do – not just in documentation terms but in how the entire QMS works.

Leadership drive is an essential component. Without management buy in or reinforcement from the top, the Quality Management path would be a very difficult and potentially unfulfilled journey. Buy-in to Quality Management has been mixed across the business unit. In some areas it has been embraced in other areas there is a grudging acceptance of the need to document key processes, but business as usual is the major barrier to forward progress. This fact must be recognized and managed with progress a step at a time.

Clear communication is essential because the QMF and the QMS are regularly updated - the nature of a dynamic system requiring frequent additions and changes. There is a requirement to communicate with WWSBU staff regularly on the information they may not note if they are logging on infrequently.

Be aware and manage where possible the risk of single point failure that a bespoke system is subject to. All the best preparation and documentation will not entirely mitigate the risk factor if incidents independent of the scope planned for occur.

Development of quality managed flowcharts and templates have proved invaluable for providing easy guidance on the expectations for documentation. This has clarified the steps involved in mapping process for system users and also helps to reduce the requirement for long word-filled documents to clearly define message.

3. CONCLUSION

The Three Water Strategy is delivering the future management vision for the Water & Waste Business Unit. The Quality Management system is enabling the development and capture of the policies, procedures and business processes that underpin the business units' strategy and business requirements. Improvements in the areas of compliance with statutory and regulatory requirement, risk management, cross activity optimised decision making, defensible engineering and asset management practices, as well as efficient delivery of business as usual service have been achieved. With quality workings from a cohesive team, Dunedin City is being delivered the best possible outcome of proactive, planned and effective service delivery.

The journey is by no means complete but the main outcome has already been achieved - the development of a centralised Quality Management System. This has enabled the business to leap forward on its path of continuous improvement.

ACKNOWLEDGEMENT

I would like to thank the following people for their assistance and guidance in development of the QMF and QMS. Kevin Wood – Systems and Compliance Team Leader, Phil Cahill – Systems and Information Development Officer, Laura McElhone – Water & Waste Services Acting Manager. To my Asset Planning colleagues who reviewed this paper – I am grateful for your input.

REFERENCES

McElhone L, Wilmott T and Osborn T (2010) *The 3 Waters Strategic Direction Statement 2010 – 2060,* Water & Waste Services Business Unit, Dunedin City Council,

IWA-WSAA (2008) *Asset Management Process Benchmarking Project Utility Report,* International Water Association / Water Services Association of Australia, October 2008

IWA-WSAA (2012) *Asset Management Performance Improvement Project VALIDATION (BENCHMARKING) REPORT FOR DUNEDIN CITY COUNCIL,* International Water Association / Water Services Association of Australia, May 2012