

DEVELOPMENT AND IMPLEMENTATION OF THE LICENSE TO OPERATE SYSTEM

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ABSTRACT

Matamata Piako District Council (MPDC) operates a large number of water treatment and wastewater treatment plants. Following a review of operator training and competency assessment in early 2016, a number of issues were identified:

- Poor records of formal and informal operator training for specific plants;
- Incomplete, missing or out of date operating manuals;
- No clear plan to train and on-board new staff;
- No records of staff competency with respect to operating specific plants;
- Inconsistent practise between operators;
- Lack of resilience in the event of resignation or illness.

In order to address these issues, a project to develop site specific operator training and assessment was initiated. It is called License to Operate (LTO).

One of the key requirements was to develop a system that operators had easy access to via smartphones, tablets and PCs and thus a web based system was selected. The training material is largely video based with a focus on short clips of "how to do a task" and "how to respond to an event". Operations and plant controls (SCADA) are covered and where possible the operators themselves are the ones "starring" in the videos.

There are many positives to video based training with the key benefits for us being ease of access, consistent messaging and it caters for different styles of learning. We think it is an innovative approach that supplements the old style of on-boarding new operators whereby they were buddied up with an old hand and "shown the ropes".

LTO has four levels. The first qualifies a staff member to assist with plant operation under supervision. The second qualifies a staff member to operate the plant for short periods without supervision (e.g. callout cover). The third level is a plant expert, someone who understands all operations and key maintenance activities and is able to optimise the process; finally, the fourth level is someone who is qualified to assess the performance of others on the plant. To qualify for each level, a staff member has to complete the entire training material, pass some online tests and demonstrate competencies to an assessor.

The LTO scheme was initially piloted on the Matamata WTP and has since been rolled out across the organisation to cover all our larger water treatment plants. It is now being developed for our wastewater treatment plants.

Having developed a state of the art training system, our leadership group was faced with the challenge of making fundamental changes to ingrained behaviour. This paper will focus on the challenges and learnings from the implementation phase of the LTO system and will report on the measured benefits which have been realised.

KEYWORDS

Operations Training, Assessment, Competency

PRESENTER PROFILE

Fiona has 20 years' experience in local government. Her career with local government began in the Far North where she was responsible for a number of infrastructural projects. Currently, she is the Group Manager Service Delivery for Matamata-Piako District Council and leads a team of dedicated engineers, operators and customer service staff to deliver a wide range of infrastructural services to the community.

1 INTRODUCTION

In 2014, Matamata-Piako District Council (MPDC) initiated two projects that focused on training and development for the organisations contracting unit. The first was a Skills Pathway Project that focused on the skills required by each staff member to do their job. The second project was the development of Standard Operating Procedures for Water and Wastewater Treatment Plants and Pumpstations Project. This focused on creating common operating procedures throughout all treatment plants and pumpstations, facilitating training of new staff and cross training of existing staff. In 2016, a further review of water and wastewater operator training led to the License to Operate (LTO) - site specific operator training and assessment. This paper discusses the implementation of LTO, the challenges, learnings and benefits to date.

MPDC water and wastewater infrastructure includes 7 Water Treatment Plants with 294 kms of reticulation and 5 Wastewater Treatment Plants with 188 kms of reticulation. Each plant has an operations manual and Standard Operating Procedures documented in the quality management system (Promapp). These are actively developed and reviewed annually. MPDC water and wastewater infrastructure serves a population of thirty three thousand and industry including Fonterra, Greanlea Meats, Inghams, Open Country Dairy and Silver Fern Farms.

Water treatment processes vary across plants. Water is collected from various stream intakes and bores across the district. Each plant has varying treatment processes including clarifiers, filtration, coagulation, flocculation, ph adjustment, chlorination, uv disinfection and sludge dewatering. Once treated, the water is delivered via the reticulation to the community and industry.

Wastewater treatment processes also vary across plants. Wastewater is received at the various plants via reticulation and septage from both the community and industry. Each plant has varying treatment processes including Membrane Bioreactor (MBR), Sequencing Batch Reactors (SBR), filtration, uv disinfectant, oxidation ponds and sludge dewatering. Treated wastewater is discharged into various streams and to land.

The teams that operate and maintain the water, wastewater and reticulation systems consist of 6 fulltime equivalents (FTEs) for water treatment, 5 FTEs for wastewater treatment and 6 FTEs for reticulation. They are a well-established team with the majority of staff having more than thirty years' experience. The age profile of the team and losing that experience is a risk to current operations.

2 LICENSE TO OPERATE

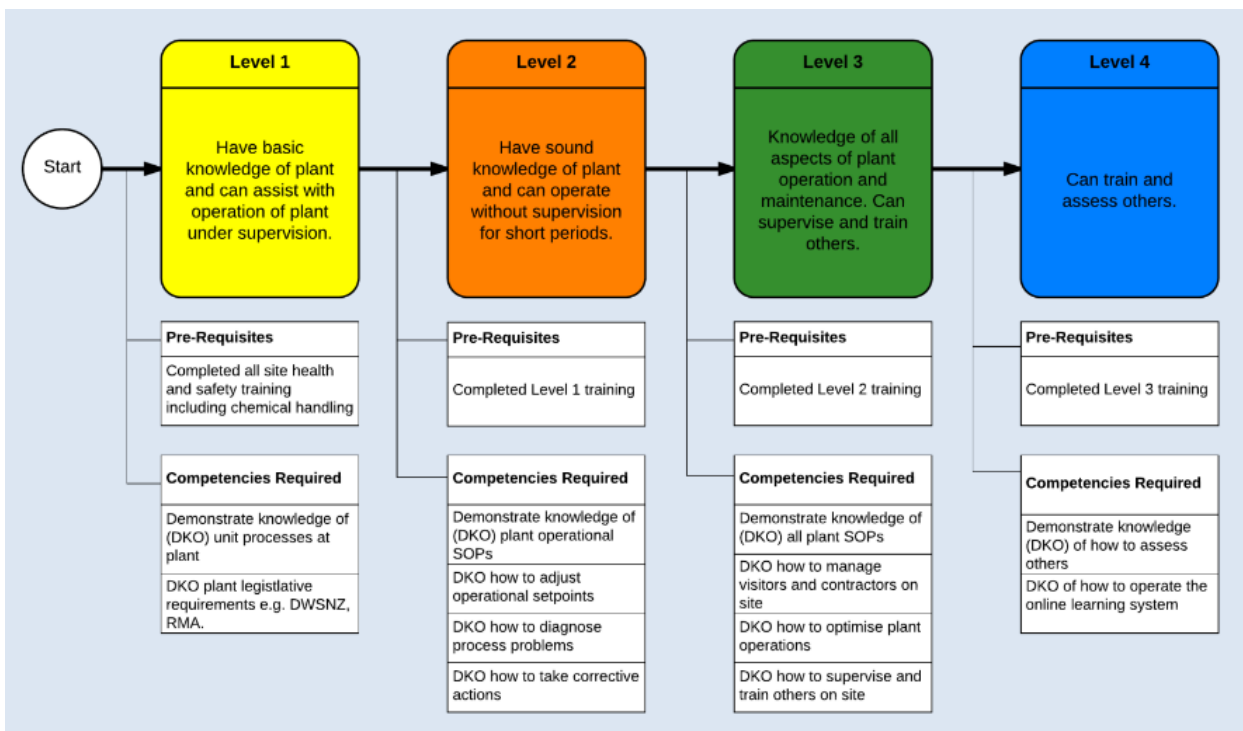
License To Operate (LTO) is designed to build on the National Certificate and Diploma qualifications for water and wastewater treatment. In 2016, MPDC identified a need for more formal water and wastewater treatment plant operator training. While some operator training had been undertaken informally, its content, format and documentation had been ad-hoc which exposed council to increased risk of non-compliances in terms of drinking water standards and/or resource consents. The concept of LTO specific training and assessment for operations staff helps to effectively qualify them to operate specific plants.

The approach to LTO was to initially develop a structure of what the training would look like and to trial it at the Matamata Water Treatment Plant. The success of the trial led to further development of training material for the Morrinsville and Te Aroha Water Treatment Plants. We have now begun the development of training material for the Wastewater Treatment Plants.

2.1 TRAINING STRUCTURE

License to Operate (LTO) provides a structured approach to operator training specific to MPDC’s water and wastewater treatment plants. The training is structured across four levels. Level begins with a pre-requisite. The pre-requisite for Level 1 is Health and Safety training which includes chemical handling. The pre-requisite for subsequent levels is passing either a test or competency assessment before proceeding up to the next level.

Figure 1: License to Operate Structure



Level 1 is aimed at ensuring the operator has a basic knowledge of the plant and can assist with the operation of the plant under supervision. It covers drinking water standards and resource consent requirements as they relate to the plant. It also covers process description, chemical batching and instrumentation.

Level 2 provides the operator with a sound knowledge of the plant so that they are able to operate the plant without supervision for short periods. It covers process control, diagnosing problems, corrective actions and instrument calibration.

Level 3 ensures the operator has knowledge of all plant operations and maintenance and is able to supervise and train others. It covers procedures and optimization.

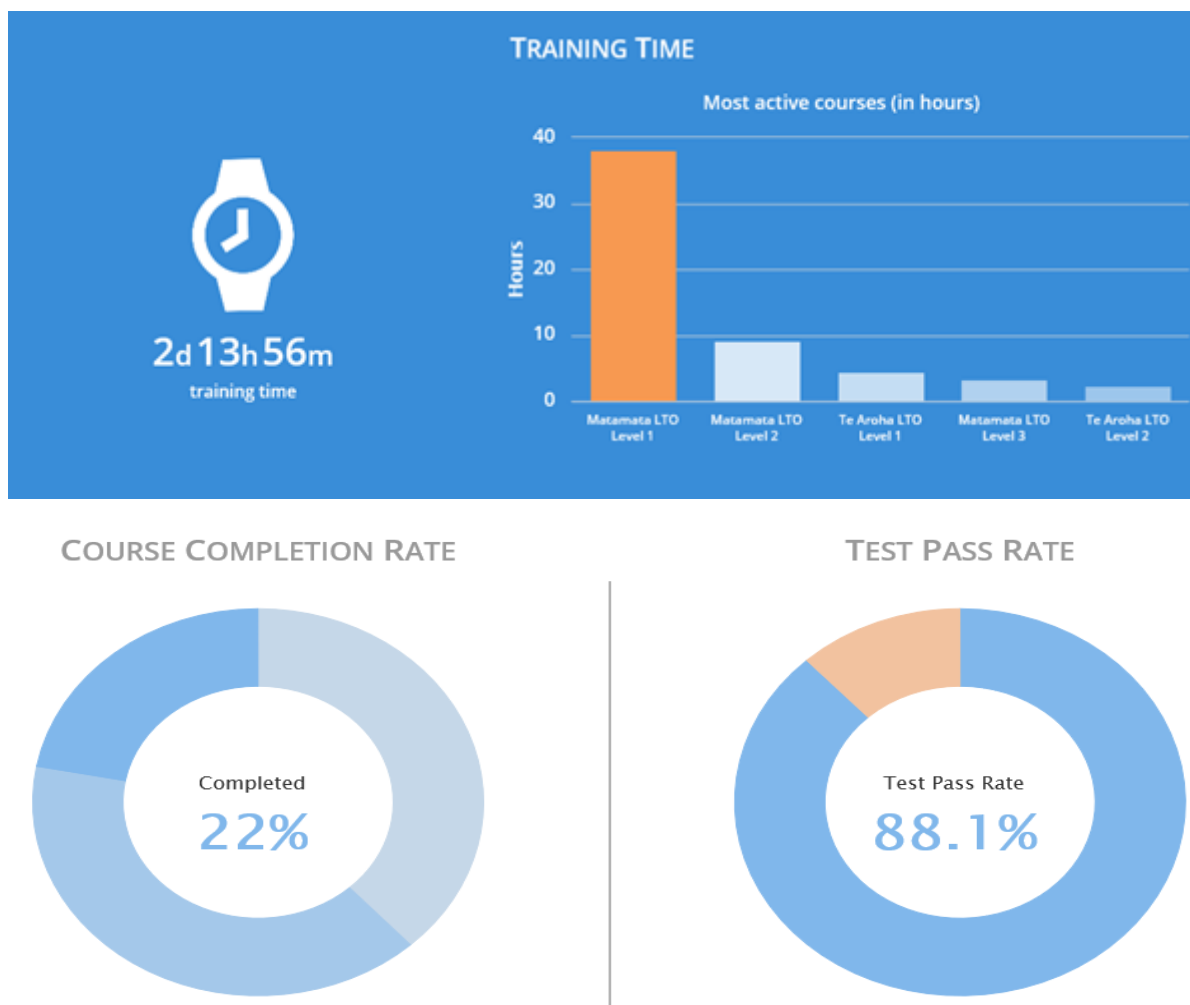
Level 4 covers training, assessing others and using Talentlms which is the eLearning software the training is delivered through.

In addition to providing site specific training and assessment for operators, LTO allows managers to track progress on course work. The assessments demonstrate that operators have the knowledge and skills required to operate and maintain specific water and wastewater treatment plants.

2.2 COURSE MANAGEMENT

The training courses for LTO have been developed in talentlms. Talentlms is an eLearning portal used to deliver operator training. It is an easy to use online training and learning system with simple messaging via videos, presentations, animation and graphics. Dashboards and infographics are used to present results and an extensive range of reporting is available for individual users and managers.

Figure 2: Dashboards and Infographics



The online delivery of the training provides many benefits to the organisation including courses that are fit for purpose, specific to individuals and plants, cost efficient and can be delivered anywhere and at any time. The system also provides comprehensive reporting so that managers can see at a glance person by person or plant by plant the training that has been completed.

Adopting digital technology in the fast paced environment we operate in is a simple and effective way forward in building both capacity and capability across the teams. The online training is supported with face-to-face opportunities for the team to learn together. We are building a learning and improving culture to take us into the future and beyond.

3 IMPLEMENTATION

The development and implementation of LTO has been a voyage of discovery and involved all operations staff. The planning and set-up began with workshops to determine content requirements. The content was then developed based on plant manuals, standard operating procedures and with the knowledge and experience of operators. Training videos were then created using simple handheld devices and with the stars of the video's being the operators.

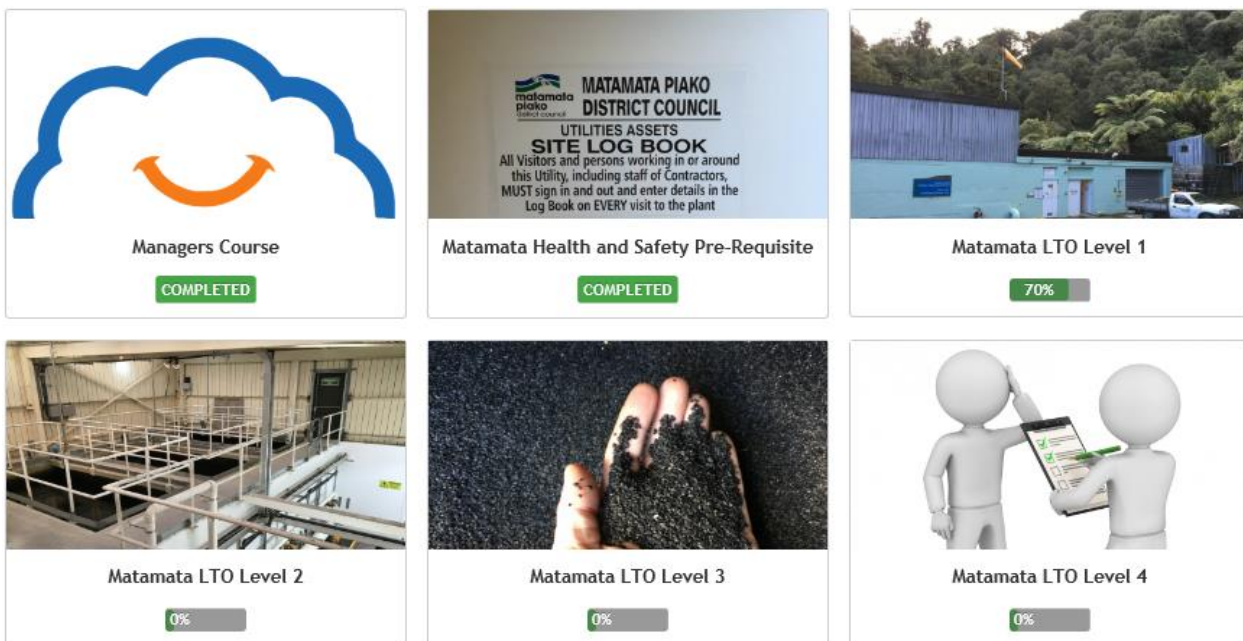
Starting in January 2017, the new License to Operate training and assessment programme is being progressively rolled out across the water and wastewater teams. Water treatment courses have been completed for the Matamata, Morrinsville and Te Aroha Water Treatment Plants. They are now available online for the operators to access. The first wastewater treatment plant course is nearly complete and scheduled to be online and available to operators in September 2017.

The new site specific training and assessment consists of:

- Health and Safety Pre-Requisite training for each plant
- Four levels of training
 - Level 1** – Basic knowledge; can assist plant operators
 - Level 2** – Sound knowledge; can operate plant without supervision
 - Level 3** – Expert knowledge; can supervise and train operators
 - Level 4** – Advanced knowledge; Assessor
- Final Test at the end of each level

License to Operate is a move away from traditional off site training, to personalized targeted site specific training that is relevant to each person.

Figure 3: Site Specific Courses



3.1 CHALLENGES

The challenge in developing and implementing LTO is moving away from the past to the future. The historical way of doing things presented a number of what can best be described as legacy challenges including:

- entrenched views and protectiveness of knowledge
- indispensable if you don't tell anyone what you know
- reluctance to be open and concerned about how information could be used
- hidden agenda associated with the project to downsize or change the way things operate i.e. plant rotations
- Aversion to using technology and documenting

Staff turnover is relatively low with the majority of water treatment plant operators having more than 30 years' experience. Operators were assigned to a specific plant and until very recently, had only experience at that plant. There was reluctance from operators to move from that model and learn other plants.

The majority of wastewater treatment plant operators have less than 9 years' experience. Wastewater treatment plant operators have a base plant that they are the expert for but rotate around all plants. Operators enjoy the variety of work and being the responsible expert for a specific plant.

Operations manuals for both water and wastewater plants were in various states of order or disorder, with operators having very little confidence that the manuals could be used to operate the plants effectively by new staff. Operators know the peculiarities of their plants but they are not well documented or understood by others, with that information only coming to light typically when things go wrong.

LTO has enabled conversations about the cross utilisation of staff at water and wastewater plants, to start to think about the level operators needed to be trained and how many we need trained at each level. It is a conversation that requires courage, strong leadership, sensitivity and commitment to work together to move forward in a rapidly changing environment.

The need for change is evident by;

- greater levels of compliance
- higher levels of public visibility
- technological advancement

The future is driving us to constantly review, learn and improve.

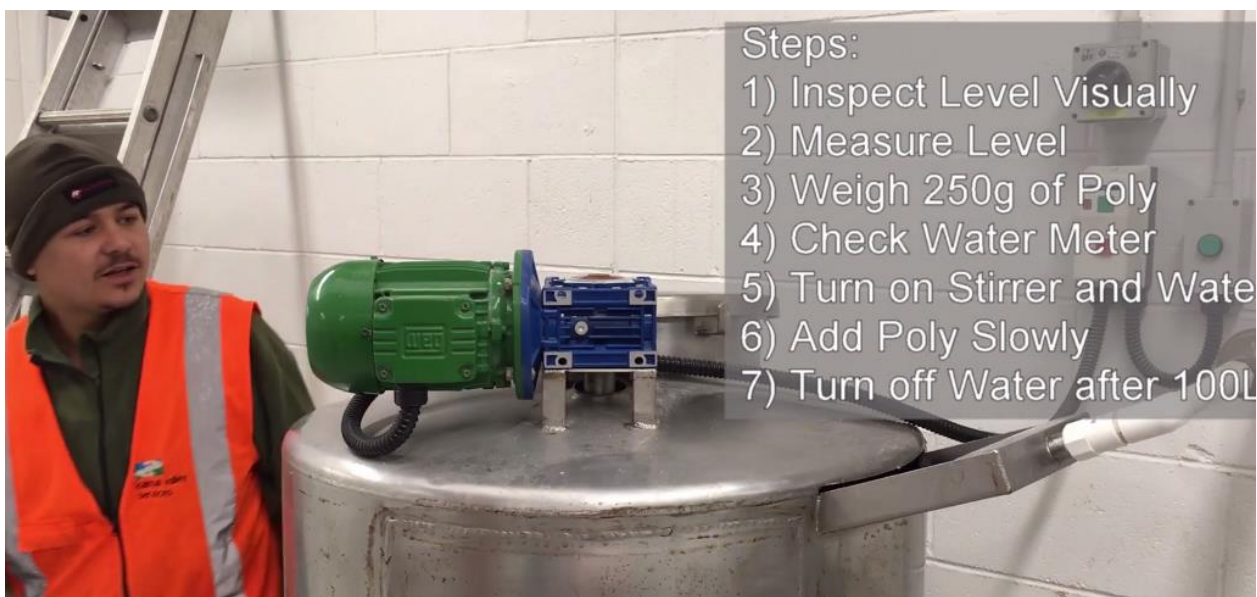
3.2 BENEFITS

The benefits of developing and implementing LTO are still being realised but the initial feedback by all is positive.

Conquering the fear of the unknown has involved bringing the team together in both water and wastewater to enable learning and improvement. It has produced better training outcomes, shared understandings and actions that have buy in, as the training was developed by those that do the work.

There is now comprehensive documented knowledge of water and wastewater plants as a result of License to Operate. This knowledge was independently captured and facilitated as part of making the videos which was fun and non-confrontational. The team have pride and ownership in what they have produced which is an innovative approach to training.

Figure 4: Poly Batching Video



We have chosen to follow the technology trend and deliver the training through devices and a web based system. There are some speed challenges in accessing the training at some of our more remote locations due to mobile connections, but that was expected and we are progressively working through those issues. Technology is the future and we have chosen this solution because it can be delivered simply and cost effectively providing both operators and managers a tool for learning and assessing competencies.

The implementation plan has actions at every level of the training and every level of management. It ensures progress is monitored, measured and reported. A wise person once told me, 'what gets treasured gets measured'. The implementation plan is staged and progress is tracked.

4 CONCLUSIONS

License to Operate provides our organisation with higher level of certainty that those operating and managing our critical services are well trained to do so. Operators now have training material that is readily assessable and up to date. Managers now have much more confidence that staff are trained to the same standard and have access to reporting that identifies each team member's level of competence.

It is vital to understand what our people do, how they think, what motivates and drives them. Technology has a large part in enabling us to learn, grow and develop in what can only be described as an ever increasing changing environment.

ACKNOWLEDGEMENTS

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