

31 August 2016

Haydn Read, WAGG
Programme Director
LINZ

Dear Haydn,

Submission on draft 3-Waters Metadata Standards

This submission letter is in response to the feedback sought against the recently released draft metadata standards for 3-waters. Water New Zealand is a national not-for-profit sector organisation comprising approximately 1500 corporate and individual members and is the principal voice for the water sector in New Zealand. Core priorities for Water New Zealand are sector leadership and advocacy, promoting and enabling the sustainable management and development of the three waters environment, skills development and training. Our submission below is in support of the Metadata Standards project and summarises views expressed by the membership.

Context & Purpose

The National Metadata Standards have been developed since January 2016, utilising the input of experts from a variety of local authorities across New Zealand.

Initial draft metadata standards for each water network were issued in late July 2016, comprising two volumes per network;

- Volume 1 – As-constructed Asset Data (ie, core asset “master” data)
- Volume 2 - Asset Management Schemas (ie, data and/or information related to assets)

Our members have participated in the development of these standards, and now seek to provide feedback on these drafts. Water New Zealand has undertaken a review and collated comments from our members which are summarised in this submission. Several of our members will also provide their individual submissions.

Water New Zealand confirms its support for the creation of a National Standard in relation to asset data, and generally feels that the development of Volume 1 to date is a key step to achieve this. The Standard promotes standardisation of core data across New Zealand allowing consistency between councils.

The LINZ publishing site confirms previous reassurance that LINZ and MBIE have worked closely across local government organisations in the production of these standards however there is apprehension amongst some members that the draft standards do not accurately reflect the industry’s contributions and views.

We acknowledge the request for review comments to be limited to the content of each volume and to refrain from comments on implementation. However given the importance and status of this project believe this limitation to be unrealistic.

Structure and Scope of the Standard

The production of three separate volumes on as-built data (water, wastewater and stormwater) and another three for asset management performance is considered to be adding unnecessary volumes and complexity. There is also an overlap of data that is repeated within the volumes. This creates ambiguity and loses transparency of the data structures.

The working group considered that a single document focussed on as-built data be produced. Fundamentally the structures under 3-waters are identical but for the physical properties of the media being transported through each system and some minor structural differences. The working group proposed hierarchy, selection lists and the allowance for some open fields negates the need for separate volumes.

This is particularly relevant when considering that the documents will be used by consultants and contractors to provide data back to relevant water authorities; it should be a key objective to make them as useable as possible by all stakeholders.

The two volumes seek to differentiate between derived data and field captured data, however there is confusion between the locations of the data sets between the volumes. A number of derived data sets are found in the as-built set and similarly design data and financial data, captured at delivery, is incorrectly listed in the derived data set.

The scope of the volumes produced has been extended beyond the scope of the working groups. This project was originally presented as an as-built data set for industry that can be used to collect field data.

Volume 2 for derived data has had limited industry input and is not considered ready to be published. Further work on this volume is therefore required.

The structure of the standard should also be “normalised” to take into account common data attributes across all asset classes and preferably a tool provided to reflect this “normalised” view and to make it simple for contractors to enter relevant data.

We note that the creation of a **normalised** data standard was a key input provided during the workshops into the development of these standards. The risks associated with a “de-normalised” structure include errors and inconsistencies in entering the ‘same’ data in multiple fields. This, in turn, can lead to a lack of confidence in the data.

Also there is much confusion regarding the proposed Volume 3 – Intervention Methodologies, 4 – Decision Making analytics and 5 – Asset management Frameworks. Are these volumes part of this project, confirmation that they will be produced and if so who is making that commitment? Also there is no “Volume 6 – Implementation Plan” that would allow Volumes 1 & 2 to be useful. Further definition and clarity around this is also required.

Hierarchy and Definitions

It’s a positive development to see the emergence of a common hierarchy across water assets. However:

- **Greater Clarity and Definition** is required to determine the scope of each asset class defined within the Standard – the focus group workshops uncovered examples where practitioners were uncertain as to where particular assets should be located.
- The current **Wastewater Standard** has no allowance for “Civil Structures” at all, nor “Tunnels”, both of which exist in practice.
- **Same Hierarchy:** A key part of the input provided at the working sessions was that the same hierarchy should be applied to ALL networks, recognising that there may be a small

number of non-populated asset classes in some networks. This approach seems to be supported by the diagram inserted in the preamble to each Standard, but is at odds with how the Standards are structured into 3 volumes, and missing some asset classes.

The data hierarchy is essential in producing a cohesive data structure to organise data for the purpose of common elemental mapping across organisational systems. The hierarchy also bind the data together which has unfortunately been separated by the three volumes based on a network type. The hierarchy that has been setup is not correctly represented and has not been carried through to the data attribute tables.

The development of this standard sought to normalise the data across New Zealand. In order to achieve normalisation the data needs to be understood in common definitions. Common definitions across the organisations need further development.

Data Relationships

The linkages between Volume 1 and 2 are shown in the specification related to each asset class; however, this can be more easily represented by creating a simple relational data model at the front of the standards, with each element of the table then referring users to the appropriate standard sub-table for further definition. This would show users how different elements of asset and asset-related data & information are related to each other, and help to overcome some of the issues related to definition discussed above.

Graphical representation and its accuracy

Each of the current three documents makes broad statements about the recording of data within a GIS application. GIS is a critical methodology for how a utility chooses to represent asset data. The role of the Standards is to define as-constructed spatially aware data; spatial data should form a part of the data specifications in Volume 1. It is not agreed that it is the role of this document to determine how spatial data is represented within individual organisations (eg, symbology).

We understand that this subject was not in the scope of this development. Currently each organisation retains its own rules and depending on the asset location the representation rules may differ i.e. a cable within a pump station versus a buried cable for cathodic protection along a pipe. It is questionable whether graphical representation should be within the document since the purpose of the standard is collecting metadata of asset physical properties. Geospatial requirements would form a standard in its own right.

Implementation Issues

We note that the text associated with Volume 1 refers to the development of specific roles and processes. While laudable, the Standards should recognise that different councils are in different places with respect to a full implementation of these standards; i.e. an implementation supported by systems, processes and people. Providing a “specific” regulatory implementation path may not allow councils to make the most of their existing investments in systems, processes and people.

We recognise a “trade-off” between a consistent structure applied by all users and “current state” systems that prescribe how asset data is collected and stored. We also acknowledge that if the Standard is not applied by all users, the outcomes and benefits that may be gained from the adoption of the standard are at risk.

However there is a preference to see flexibility within the Standards for each council to:

1. Specify their commitment to the end-state;

2. Create a roadmap to achieve that standard; this may include specific data collection programmes, ongoing “organic” improvement in data quality and specific system investment;
3. Maintain a “translation ability” within each organization to map data and information from current systems and processes to the new Standard;
4. Statements relating to the ‘cost vs benefit’ and “pace” of data collection to support the Standard’s minimum requirements should be included in the Standard.

We support the direction espoused for Volume 2 – but do not believe that the standards as produced to date are fit for purpose, and neither have they yet had an adequate level of input through workshops. Also Sections 1.5-1.8 of Volume 2 discuss analytical methods, which is not relevant to this volume and therefore should be deleted.

The document demonstrates competence in listing a large number of attributes and the purposes of data collection however it does not demonstrate what implementation should look like. All of the fields in the attribute lists are mandated. The practicality of this mandate should be considered where organisations may choose not to collect certain information for low risk assets.

An implementation strategy should reflect a data collection matrix that takes the organisation’s risk profile into consideration. The interaction of data and how an organisation will demonstrate compliance or move through the implementation phases to reach the standard’s objectives should be reflected.

How will the material in the standard be used when the material is copyright? In order for implementation to happen the standard would need to be embedded within an organisation, ultimately in the long term using field names and processes as closely as possible to that prescribed by the standard. This will require software system suppliers to adopt the material in the development of asset information and management systems without the restriction of copyrights across the content of the standard.

Degree of ‘Prescription’

The metadata schema appears to be based on an implicit assumption as to how assets will be managed, how activities will be carried out in the future and the desired outcomes. These have been effectively hardcoded into the standard and implicitly limit the Asset Management decisions and practices that can be carried out within three waters organisations.

1. Has it been demonstrated that the schemata will deliver good asset management in practice or is the delivery of benefits based on theoretical prediction from future outcomes?
2. There is an implicit assumption that life, condition and service delivery all follow the same path for all assets and so a deterministic outcome can be predicted for all assets based on observed condition. Is that correct?
3. Any Asset Management practice has improvement as a key result area. How will the metadata standards reflect changes and improvements and what is the implication for organisations that have invested in systems and processes to meet the standards; the impact of making changes to an MMS, GIS, CRM or other business systems is not trivial?

A possible solution would be to show how Asset Management processes are supported by the data standards. At present it is difficult to assess whether all the data and information requirements of asset owners, service providers and customers are satisfied.

IT Systems and Migration

It is recognised that this is not an “IT” conversation. Nonetheless, we believe the impacts of potential IT changes should be addressed in the document; if only to set appropriate expectations as to the risks associated with full-scale implementation.

In moving to a new data standard, this will likely involve the transfer of data from existing systems to another. Regardless of intent, there will be data loss and integrity issues from this process. We would expect some history and attributes to be lost or stranded in other systems.

At a recent workshop on our National Performance Review we created a partial list of software that is currently in use within local government utilities. We attach a summary table of this to indicate how many systems are involved that would need to “talk to each other” with the proposed metadata standards.

General content

“Data types” or pick lists differ from those nominated during the workshops. These have since been removed from the original documents published, directing the reader to a separate volume that has yet to be released. This will need to be reviewed and reinstated to allow constructive feedback.

Data field lengths, minimum or maximum cannot be set due to the various systems in use. These are mapping exercises that are organisational specific. It is unclear what this standard wants to achieve by setting these limits and whether the implementation will be practical.

The current drafts need additional work at the hierarchy level and better definition / guidance. Roles and responsibility assignment to contractors and consultants are not prudent in a standard. These are best left for the organisations to define under terms of contracts.

Australian examples and photos should be replaced by New Zealand examples and slang words such as “savvy” removed.

We have added comment into the Water Supply Volume 1 to illustrate some of the issues mentioned above. Similar comments would apply to the other Volume 1s.

Review comments noted above are focussed on gaining improvement to what is a very important and worthwhile exercise. We reiterate our willingness to support this initiative and to help ensure its success.

Regards



Nick Walmsley
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Applications for Data Collection

	Customer & Community Engagement	Development & Regulatory Services	Asset Management	Works Management	HR Management include H&S	Corporate Services – Finance, Rates etc	Strategic Planning	SCADA	Telemetry	Hydrological Modelling	GIS
OZONE	X	X				X					
Authority	X		X			X					
MIGIQ Software (NCS & Chameleon)					X	X	X				
Technology One	X	X	X	X	X	X					
Vault					X						
People Soft					X						
QPulse					X						
ABBIEY Systems Aspec SCADA HMI								X	X		
ArchestrA SCADA								X	X		
Asset Finda			X								
Infor EMA (Hansen8)			X			X					

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