

Draft Utility Location Standard

Decision Report

following consultation on draft standard

Objective ID: A4714937

Office of the Surveyor-General

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Summary of the consultation process

Consultation began in September 2020. Preliminary ideas about a standard were discussed by a Reference Group of 10 participants from a range of sectors and working in the fields of engineering, GIS, asset, and information management.

A draft standard was published in December 2020. Interested organisations and individuals were invited to provide feedback via direct contact, articles in stakeholders' publications and the website of Toitū Te Whenua Land Information New Zealand.

In addition, an on-line forum was held in January 2021 to answer questions, and hear views and suggestions. 75 participants registered to attend this webinar from stakeholder organisations involved in utilities, local government, engineering, survey, and infrastructure development and maintenance. The conversations were meaningful and the feedback useful.

Submissions on the draft Standard closed in February 2021, and fourteen written submissions were received.

Submitters were generally supportive of the Standard which included the following comments:

- Support the development of a National Utility Location Standard for recording the location of utility assets. We agree that consistency and confidence in positional information of assets is important and that this will improve relocation of assets and design planning.
- It will facilitate use by a wide range of users and varying technical abilities
- The standard seems to cover all the relevant areas
- This standard is long overdue
- The standard is clearly defined and easy to understand
- Easy to read and succinct format
- Some councils are already collecting or requesting this information, but having a formal standard will make it simpler and consistent nationally
- Agree with the approach acknowledges that each asset manager/company will have their own industry/company asset feature code and asset name libraries

Response to submissions

The main issues raised through submissions have been grouped into themes in the following sections. The Surveyor-General's decision is reported at the end of each.

Several submitters expressed concerns which were not considered suitable for inclusion in the Standard. As an initial publication it has been kept deliberately simple, offering flexibility as to how the standards can be met in practice. Application of the Standard may reveal the need for enhancements or clarifications which will be considered for a future version or for addressing through guidance.

Horizontal Accuracy

Three submissions commented on the horizontal accuracy standards of H1 at 0.10 m and H2 at 0.30 m. Two of the submissions thought H1 should be reduced, one to 0.02 or 0.03 m, and the other to 0.05 m. A third submission suggested H1 should be increased to 0.15 m to allow for taped offsets. One also thought H2 should be reduced to 0.15 m.

The primary purpose of the Standard is to support the accurate and reliable relocation of the asset. It is not intended to support detailed engineering design that might require a higher level of accuracy. With a higher standard of accuracy comes increased cost. We have therefore concluded that the proposed standards provide the best overall balance and achieve the primary objective.

SG Decision
No change.

Vertical Accuracy

Five submissions related to the proposed vertical accuracies. Most of the submissions related to the V1 standard for invert levels. One agreed with the 0.02 m proposed, while the other four felt the accuracy was too high and not easily achievable with GNSS.

The purpose of this Standard is to enable the ready identification and relocation of assets. Some councils, particularly with areas of flat topography, have specified invert levels to be accurate to 0.01 m. Councils wishing to ensure that a constructed asset meets a design specification at such a high level of accuracy should separately specify the relative accuracy between two points.

The Standard, however, prescribes levels to be determined in terms of the third order vertical control network. The specifications for that network are set at an accuracy of

about 0.04 m over the expected distances. This means that an errorless determination of a level from two different control marks could be 0.04 m apart.

An accuracy of 0.05 m is therefore considered achievable in terms of the network, and sufficient for relocation and general design purposes. Where higher accuracies are required for the design of new assets, it is likely a new survey of key points would need to be undertaken.

Two submissions suggested the use of a 'null' height value for assets where they consider it less important. One submission specifically mentions assets above the ground such as streetlights, power boxes and distribution pillars. Requiring a height value for such assets recognises the future demand is 3D - whether for Smart Cities, Digital Twins, Building Information Modelling, City Modelling, or the 3D Cadastre. The cost of adding the third dimension to a horizontal determination of the position is not considered significant using modern techniques. It is therefore considered important to record these height values as mandatory in the Standard.

One submission proposed amending the vertical class to give an indication of the type of instrumentation used (e.g. a level; GNSS). The use of a particular instrument is not necessarily an indication of the accuracy achieved. The Standard is deliberately set to simply require the accuracy to be met regardless of the technology used; whether now in in the years ahead.

SG Decision

V1 vertical accuracy standard changed from 0.02 m to 0.05 m.

Application of Accuracy Class

Four submissions raised questions around the application of accuracy classes.

One of the submissions suggested the distinction between urban and rural areas or residential property is unjustified. They agreed it was fair most of the time, but argued it wasn't the best measure to use. Rather the criteria should be how critical the asset was in respect to either cost, risk of failure or significance to the system. Consideration around the urban/rural criteria relates to a simple understanding of the area and doesn't involve someone deciding that one provider's asset is more or less critical than another's. The submitter used the example of a critical fuel pipe which caused significant disruption in 2017 when it ruptured. The accuracy of the location of the pipe with regard to both the horizontal and vertical class would likely have made no difference in preventing the disruption that occurred with this critical asset. Anyone wanting to establish assets nearby is likely to have sufficient space beyond the rural accuracies specified to work with. However in an urban context a service may need to be established between two assets that may not be considered as critical, however the space the providers have to work with demand a more accurate location. It is considered the classification specified is the most

practical, noting that the standard specifies the minimum standard and a more accurate class may be used.

One submitter suggested that criteria 6 should be amended from 'asset within residential properties' to be 'assets in private ownership within residential properties. This change has been made as we agree it clarifies some confusion around the criteria raised by others.

SG Decision

Criteria 6 updated to "Assets in private ownership within residential properties".

Role of Asset Manager

One submission recommended including scenarios describing the intended use of the Standard, and introducing the role of the asset data manager. They suggested this would clarify the purpose of the Standard being for location purposes, and not for purposes relating to the specific asset; which should be provided by an asset data manager. That point is already made in the Standard. We consider that providing these types of examples is more appropriate for asset managers to address, and including them in the Standard would add information that is peripheral to its primary purpose.

Two submissions asked why specific points on or around assets were not specified in the Standard. This is the role of the asset manager to determine, as the requirements are likely to be different for the various utilities. Many asset managers already produce specifications of the points required to be recorded, including their feature codes. With the modelling of assets as 3D objects and the potential to record those in an asset management system, it is possible for the whole object to be 'located' rather than specific points on the object.

SG Decision

No addition of examples of how the Standard could be used for purposes other than recording the location of an asset.

Attribute information/data for the location

A few of the submissions suggested requiring additional attribute information or specific formats for the data, specifically:

- Use of a standard date format
- Method of survey or equipment used
- Quality level field.

Date formats are already handled effectively by various applications including for data transfer. A requirement to use a specific format therefore seems unnecessary and may constrain the use of alternative options or methods.

The Standard is expressly designed to define and record the accuracy of the location of the utility – irrespective of the technology or method used. Over time new technologies may be used, and old technologies may not provide any useful information for a future user. The techniques chosen need to provide confidence in the data and include appropriate checks to detect differences in excess of the accuracy specified. The inclusion of information about the method or equipment adds to the cost of the work, even if marginal, and is not considered necessary for recording the positional accuracy of utility assets.

The third point relates to the inclusion of a quality level field specified in the Subsurface Utility information (SUI) framework/standard. That information is designed to be applied to historical information stored in an asset management system where the information is often of lower accuracy. However, this Standard applies to *new* determinations and requires the level of accuracy to be recorded through the 'accuracy class'.

SG Decision

No additional attribute fields to be added.

Definitions

Some submissions suggested the following terms should be defined within the Standard.

- Utilities
- Relative and Nearby

A submission seeks a definition of 'utility' and that it should include both underground and aerial, and large and small utilities. Small utilities are suggested as being gas, power and telecommunications. As the standard is not mandatory, any utility provider should be able to use the standard. Defining the term would risk limiting its application and does not appear to add much value.

Both horizontal and vertical accuracy standards specify "*tolerances relative to the nearby survey control network*". The submitter suggests providing guidance for what is meant by relative and nearby. The Standard is expressly worded to achieve the accuracy outcome, irrespective of the survey equipment and technology used. For example a position could be determined using a GNSS base station several kilometres away, provided that the resultant position meets the accuracy standard in terms of the control marks that are nearby – even though the control mark is not included in the survey. In this context 'nearby' means in preference to 'far away' control marks.

SG Decision

Examples of utility types have been included in explanatory text without spelling out a definition. No other change.

Existing Utility records

Two submissions raised issues with implementation or integration with existing records. This would include addressing disparity in the quality of existing values, sub-regional agreements and data conversions. The standard is intended to be used for new determinations of asset location, such as for a new asset or during maintenance or repair of an existing asset. Existing records may vary depending on when and how they have been surveyed and recorded. Having a standard that is consistent across all regions and utility types is intended to assist boundary issues between authorities and stop the use of local datums.

Some existing records, like consent notices around design floor levels, may not be in terms of the specified datum. These systems should be changed to use the specified national datum and projection, and relevant data records should be converted from other datums and projections. The Standard should be used by everyone to obtain consistency across authorities and regions.

SG Decision

No change.

Mandatory use

Five submissions commented on the standard not being mandatory. Two supported the standard being made mandatory. One said it should be complied with in its entirety if used. One suggested the Standard could be championed by organisations to become universally adopted and endorsed. The other submission supported in principle the standard being used nationally as far as practicable, noting a few practical considerations.

As noted at the start of the Standard, the Surveyor-General has no authority to make its use mandatory. However the benefits of its use will be communicated to utility providers and councils to encourage widespread adoption in its entirety.

SG Decision

No change