Sample Extract of Consultant/Developer Specifications for the Delivery of Digital Data to Local Government and Authorities

A-SPEC Members

Victoria	WA	NSW

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EXECUTIVE SUMMARY

Introduction

A-SPEC Program

A-SPEC is the acronym for the program involved in developing specifications for the delivery of newly constructed assets as Digital Data in a GIS ready format to Asset Owners and Managers in Local Government, Utilities and Water Authorities around the world.

The **A-SPEC** management model enables Local Governments, Utilities and Water Authorities around the world to participate in the development and use of the standard specifications developed under this program.

The key objectives of the **A-SPEC** initiative is to streamline stake holders' (local governments/utilities/water authorities) processes for receiving, handling and storing of ~~underground infrastructure~~ data related to newly constructed infrastructure assets either from subdivision developments or internal programs (e.g. capital works) in their GIS and AMIS.

This process will increase the efficiency of information access and result in greater customer satisfaction when dealing with inquiries from engineering consultants, surveyors, developers and prospective residents.

➢ **Eliminate duplication of effort.** Significant duplication of effort exists in the digitising of as constructed information. This duplication exists between the private sector (who capture as constructed information), and council, utility and water authority staff (who may digitise that information from paper plans);

➢ **Improve process efficiency**, in the process of accepting and processing lodgements, and in checking existing data against design criteria and/or design plans;

➢ **Improve customer service** to both internal and external customers of asset information;

➢ **Improve the quality** of Open Space information held in council systems for audit and financial requirements, as well as operational and business requirements;

➢ **Provide a structure** for the consistent recording of all council owned assets, including those created through internal programs such as capital works and renewals.

➢ And ultimately **manage assets better** to reduce the need for capital works and/or to reduce ongoing maintenance costs.

A-SPEC data is characterised by having an infrastructure role by:
- functioning as reference data - which means that other kinds of information can and will be linked to the core data
- being of interest for many different kinds of applications (and being a common denominator and integrator between different data suppliers and product and service providers)
- containing information of specific interest for the public sector in its role to support asset management, efficient transportation, traffic safety, to handle environmental and social planning, etc.
- having a structure that is stable over time (even if parts of the data content changes due to user input)
- having specific interest for cross boarder (across State or National/International boundaries) applications.

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O-Spec Standard Specification

The **O-Spec** standard specification (Open Space) was created to enable Local Government, Utilities and Water Authorities around ~~Australia and New Zealand~~ the world to participate in the use of a single specification when dealing with the creation of new Councils, Utilities and Water Authorities' assets. This enables Councils, Utilities and Water Authorities to deal more efficiently with the Land Development and Industry Consultants in relation to subdivision developments and capital works programs within their local jurisdiction.

The **O-Spec** standard specification was developed to streamline the processes undertaken to display all new Open Space assets within each **A-SPEC** member's geographic information systems (GIS) and asset management information systems (AMIS).

A common specification for the supply of digital open space data was identified as a major opportunity for the members to achieve efficiency and cost savings in the process of maintaining their corporate GIS and AMIS. Moreover, a common specification shared between Councils, Utilities and Water Authorities would also provide efficiencies to the Land Development Industry by removing the need to maintain separate processes, standards and software tools for numerous Councils, Utilities and Water Authorities.

The **O-Spec** standard specification will enable consultants to provide **"As–Constructed/As Built"** data with the specific characteristics required as GIS ready data to comply with **O-Spec**.

The framework will consist of specifications for data content enabling data exchange. **O-Spec** will enable data to be collected and available in a harmonised, interoperable and quality assured way.

Use of the Specification

This standard specification is for use by Private Developers, the representatives of Private Developers, engineering consultants and surveyors (hereafter referred to as "Consultants") who undertake Land Development or Capital Works activities for one or more members of the **A-SPEC** Consortium.

This specification is not to be used for any other purpose.

Where applicable please refer to the section of the document that stipulates the specific requirements of the relevant region that you are conducting your business in within Australia ~~or New Zealand~~. It is the responsibility of the consultants to understand the specific requirements of their local government, utility and water authority clients. Assistance will be provided wherever possible to clarify any issues or concerns.

It should also be noted that if there are similar elements in **O-Spec** that also appear in **D-Spec**, **R-Spec, W-Spec, B-Spec** and **S-Spec**, then the standard specification for those ~~asset types~~ asset classes are to be used to prepare the **As-Constructed/ As Built information** digital data to be delivered along with the open space digital data requested.

This document, along with the accompanying A-SPEC document, includes a specification of common features (feature types, attribute types and attribute value domain). It also contains generalisation rules for the graphical representation of the features i.e. assets within open space or recreation reserves, geodetic reference system and rules for validating the data supplied to ensure compliance.

The **As Constructed/As Built Information** is to be supplied as features and attributes. Storing the information as attributes means attaching the information directly to the features. This document is a guide on what features to supply and which attributes to attach to the various features.

O-Spec will lay the foundation for open space and recreation reserve data infrastructure built on identified user requirements through a specification framework.

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Please note the changes in this specification are indicated as follows:

1234	Blue highlighted text and text struck out	Text to be deleted
5678	Green Highlighted text	Existing attribute moved to another table
9101	Yellow highlighted text	New or modified text

An attribute which is specified as "Conditional" means, it is to be populated if certain conditions are met.

Example: The attribute 'Source' is to be populated in the Area of Work Extent table only if the 'Source' of the information is the same for the whole project. If the asset doesn't meet this condition, then the Code 'REFER', is to be used and each table is to be populated accordingly.

Read attribute descriptions carefully to ensure the conditions are met before populating.

In Summary

The key objective of this standard specification is to provide information to the Consultants that will be dealing with **A-SPEC** Consortium members. This document outlines the specific requirements for the submission of **"As-Constructed/As Built Information"** of works as GIS Ready digital data of newly constructed Open space assets as defined by the **A-SPEC** Consortium members in Australia and New Zealand.

Whilst all care has been taken with the preparation of this document it is the responsibility of the consultants to confirm that all details are current and relevant. For example there are specific references in this document that **only** relate to particular jurisdictions.

E.g. WAPC refers to a requirement for Western Australian only. Therefore does not need to be an included field for other jurisdictions.

Note the requirement for Western Australian A-SPEC users to record the WAPC reference number "WAPC_No" , is now accommodated within the "Permit_No" attribute field as the "WAPC_No" attribute field was renamed to "Permit_No".

The project to determine the suitability of the **O-Spec** standard specification was developed and is being managed by GISSA International Pty Ltd.

The Atrium Suite 10, 476 Canterbury Road, Forest Hill Victoria 3131.

All material is subject to copyright.

Emergency Markers

The Emergency Marker Program commenced prior to the 2006 Commonwealth Games with four targeted environments identified – Lysterfield, Albert Park Lake, Alexandra Gardens and Birrarung Marr within the City of Melbourne.

Emergency markers are used to clearly identify the location of the emergency when a caller calls Triple Zero. The alpha-numeric identifier is linked to ESTA's Computer Aided Dispatch system (CAD) and specifies relevant location, GPS coordinates, road access route or navigational data for the expedient dispatch of emergency services

The two most important pieces of information required when calling Triple Zero are the location of the emergency (where is it?) and the nature of the emergency (what is it?).

When an emergency marker is quoted, ESTA's Triple Zero Dispatcher can then provide specific directional information to the responding emergency services, saving time and potentially saving lives.

Emergency Markers are uniquely identifiable signs strategically placed in open space locations such as National, State and Regional Parks, linear trails, rail trails and other public open space locations.

Emergency Markers look similar to a street sign, have three letters and three numbers and have a green background and white text. They are unique alphanumeric signs which are easy to identify
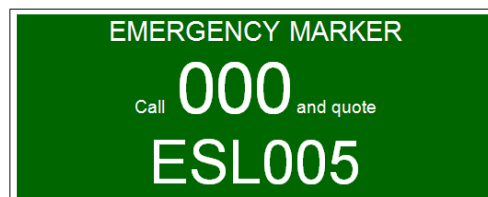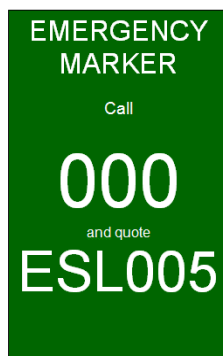
Markers are more than just signs. They are supported by GPS co-ordinates and directional instructions enabling ESTA operators to provide directional information to police, fire, ambulance and VICSES advising of obstructions such as locked gates, road closures and quickest access points

ESTA's ability to direct an emergency response team to precise emergency caller locations is a critical and core component of the Call and Dispatch management process for all 000 emergency calls. It is an essential element to ESTAs ability to delivering services to the Victorian Community

The introduction of Emergency Markers as part of **O-Spec** has been identified as a fundamental requirement to engage with Local Governments and the industry at large.

It is therefore mandatory that when a land owner is dealing with Emergency Markers that the recording requirements outlined in this document are read in conjunction with ESTA's **Emergency Marker Signage guidelines.** Please refer to ESTA's website.

The purpose of the **Emergency Marker Signage guidelines** document is
- To establish design guidelines that will enable the responsible land owners and land managers to implement Emergency Markers in a consistent manner.
- To assist land owners and managers in identifying suitable locations for the installation of Emergency Markers

Glossary of Terms and Definitions

With the introduction of additional jurisdictions there will be instances where different terms or words are used to describe identical features.

We have included this glossary to define terms; all defined words are in an alphabetical order. They are not used in this specification with any other meaning. As other terms are identified they will be added and therefore this section will be updated from time to time and provided on the relevant specification page on www.a-specstandards.com.au.

Please note that it is not the intention to detail every term in this glossary as many terms have already been pre-defined in many existing codes of practice, Land development manuals and organisations such as Standards organisations, State, Regional and central agencies who develop the policies and practice notes for areas that cover planning, design and construction.

AS CONSTRUCTED INFORMATION
– may also be referred to as **"As Builts"** or **"Work as Executed"** or **"Work as Constructed"** or **"As Cons"** or **"As Laid"**

ASSET MANAGEMENT SYSTEM (AMS)
– may also be referred to as **"Asset management Information System (AMIS)"**

Submission of "As Constructed Information" as GIS Ready Data

The key objective of the specification is to provide "As Constructed Information" as digital data of assets within an Open Space or Recreation Reserve in a GIS ready format to the Consortium of members using the **O-Spec** standard specification.

This document outlines the specifications for the delivery of digital data containing: information of assets within open spaces or recreation reserves as well as the boundary showing the extent of the works. This data is to be provided to the **A-SPEC** Consortium members as outlined in the Asset Table in *Section 1.3 Theme/Layer Structure*.

Consultant Register

The **A-SPEC** Consortium will list Consultants who have registered through the **A-SPEC** website and will provide updates or revisions as necessary. You are advised to read this specification carefully and any comments or suggestions you have regarding this specification are welcomed.

- Consultants who have registered will be shown on the **A-SPEC** website; www.a-specstandards.com.au (formerly dspec.com.au)

A-SPEC Member Contact

All inquiries relating to the delivery of the digital information should be directed to the **A-SPEC** representative of the relevant organization:

- Please either contact GISSA International on +613 9877 6972 or your local point of contact with the organisation you are dealing with

Intellectual Property

The **A-SPEC** Consortium members own the intellectual property of the developed specifications in conjunction with GISSA International and Intellectual Property rights are not to be sold, transferred or assigned to any party (other than a new participating **A-SPEC** Consortium member) without the prior written approval of the **A-SPEC** Consortium and **GISSA International**.

The **O-Spec** Standard Specifications will be available free of charge to the consulting & development industry. **A-SPEC** data structures are only to be used for the delivery of As Constructed data to **A-SPEC Consortium members only.**

All material is copyrighted and under a trademark.

Disclaimer

On occasion **A-SPEC** Consortium members may supply consultants with digital data to assist them with their planning and design phases. The **A-SPEC** Consortium accepts no liability for the accuracy or completeness of the information and it is the responsibility of the consultants to ensure that the data supplied is appropriate and applicable to the end use intended.

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Deliverables

The following are acceptable media for providing the digital data files.

- ➢ Email files to A-SPEC member representative. ~~(File size limitation is 5 megabytes)~~
- ➢ ~~CD-ROM / DVD~~
- ➢ USB memory device, portable hard drive
- ➢ Cloud Mediums (FTP, Dropbox, Google Drive etc.)

~~The CD or DVD is to be labelled in the following way.~~

~~*Estate Name and Stage or Project Name:*~~ _____

~~*Property Description (prior to subdivision):*~~ _____

~~*Individual Council, Utility and Water Authority Approval Number:*~~ _____

~~*Signed by:*~~ _____ ~~*Date:*~~ _____

~~*Name:*~~ _____

~~*Consultant Company Name:*~~ _____

~~**A-SPEC DATA**~~
~~**WATTLE BLOOM ESTATE**~~
~~**123 Main Road, Jacksonville**~~
~~**Flatsville City Council Approval No.: 123RR**~~

~~**Signed:**~~

~~**John Smith 12/12/2015**~~
~~**Potter Consultants Pty Ltd**~~
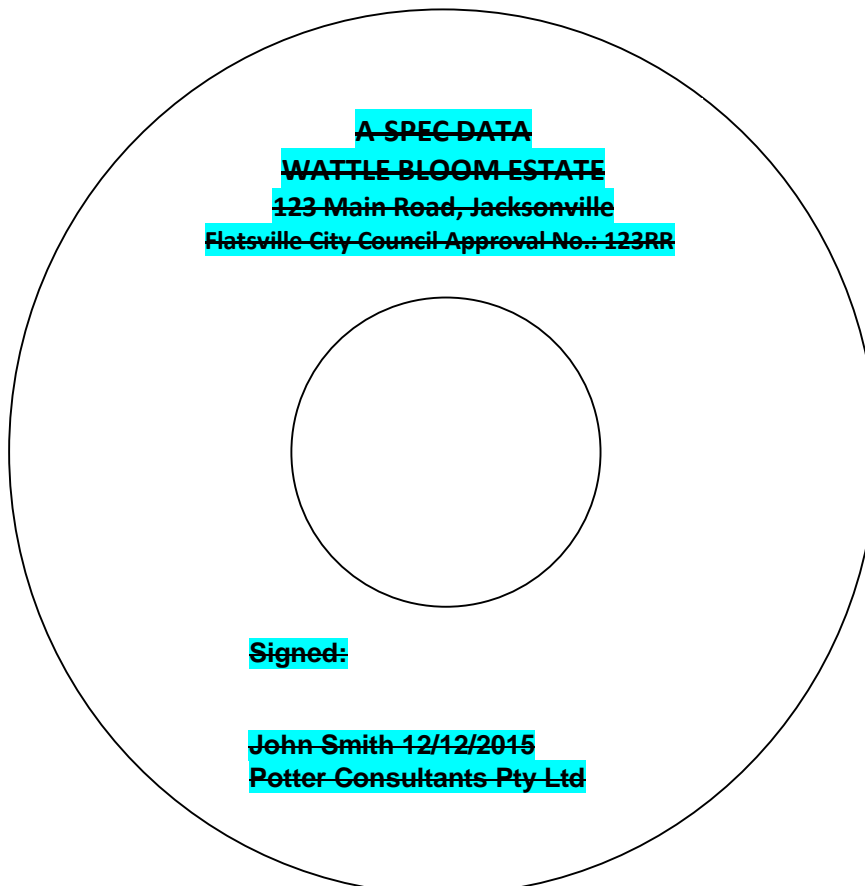
Figure 1 - Sample CD Label – **DIAGRAM TO BE REMOVED**

Certification Form - Readme / Metadata File

The readme.txt is a simple text file that contains information about the project the digital data is being provided for and must accompany **EVERY** digital data submission.

==It is an expectation of the **A-SPEC** Consortium that all data be verified by the developer or their representatives (consultants) with relation to its completeness and graphical accuracy prior to submission.==

==Errors and omissions will result in the data being returned to the consultant for correction and may result in a non-conformance being placed on the data submission.==

The following information may also be used as part of validating the data submission.

Label	Description	Example
COMPANY	Company name taking responsibility for the data	*GISSA International*
CONTACT	Contact name for this project	*George Havakis*
TELEPHONE	Telephone number	*(03) 9877 6972*
FACSIMILE	Facsimile number	*N/A NA*
EMAIL	Email address (as applicable)	*george@gissa.com.au*
MAILING ADDRESS	Mailing address	*Suite 10, 476 Canterbury Rd, Forest Hill VIC 3131*
PHYSICAL ADDRESS	Physical business address	*'As Above'*
A-SPEC MEMBER	Participating Authority	*Wyndham City Council*
DATE SUBMITTED	Date the digital data submitted to A-SPEC member	*31/1/2014*
DOCUMENT VERSION	Version of the document used	*O-Spec Digital Data Specifications – V2.6.1*
SOFTWARE FORMAT & VERSION	The software used to create the digital data	*MapInfo v7.5 / AutoCAD Map 2008 QGIS*
PROJECT or SUBDIVISION	Project or Subdivision name	*Rockbank Rise*
STAGE	Subdivision Stage Name	*Stage 3B*
DESIGN COMPANY	Design Company Name	*Fred Charles & Associates*
PLAN NUMBER	As Constructed Plan Number	*6080R212*
CONSTRUCTION COMPANY	Construction Company Name	*Jamieson Construction*
CONSTRUCTION DATE	Date the asset was constructed/ built/ installed	*12/03/2017*
COORDINATES/DATUM	The coordinate system the data is in	*GDA94 Zone 49*
DATUM	Vertical Height Datum	*AHD71*
TRANSFORMATION	The coordinate system the data was transformed from	*Perth Coastal Grid to GDA94 Zone49*
TRANSFORMATION BY	Who carried out the transformation from the original coordinate system to the relevant system	*City of Gosnells – Jack Dowling*
SOURCE OF DATA	The type of capture used	*Surveyed*
NOTES/COMMENTS	Important notes or information to be included here.	*Any other relevant information that the data custodian needs to be aware of.*

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1.3 Theme/Layer Structure

The following level/layer structure is intended as a guide to assist Consultants when arranging their graphical information for members of the **A-SPEC** Consortium. The key principal is that each ~~asset type~~ asset class must be delivered on a separate level/layer and the files must be clearly labelled in accordance with the "**Universal File Name**" indicated below.

Depending on the asset to be captured, not all the levels/layers indicated here may appear in the submitted data.

It is important to note that each level/layer should only contain the listed features; any other features present will impede the acceptance testing and may result in non-conformance with the requirements.

Asset Type	Universal File Name	Data Type	Description	Attribute Table
Area of Work Extent	~~Graphics~~ Area_Extent	Polygon ~~/Shape/Region~~	Perimeter of extents of subdivision development or capital works	Yes
Open Spaces	Space	Polygon ~~/Shape/Region~~	Perimeter of Open Space. **EG:** Park	Yes
Playing Fields	Fields	Polygon ~~/Shape/Region~~	Perimeter of Playing Field. **EG:** Football, Tennis	Yes
Playgrounds	Playground	Polygon ~~/Shape/Region~~	Perimeter of Playground. **EG:** Skate Park	Yes
Minor Structures	Structures	Polygon ~~/Shape/Region~~	Perimeter of Structure. **EG:** Pergola, Toilets	Yes
Fences /Walls	Fences	Line / Polyline	Line indicting the position of fence and walls	Yes
Amenities	Amenities	Point	Central location of Amenity. **EG:** BBQ	Yes
Gates	Gates	Point	Central location of Gate	Yes
Bins	Bins	Point	Central location of Bin. **EG:** Wheelie	Yes
~~Public Toilets~~	~~Toilets~~	~~Polygon/Shape/Region~~	~~Perimeter of Toilet Structure~~	~~Yes~~
Services (Point)	Service_Pt	Point	Supply of Power, Water and Gas – Meter and/or outlet Location	Yes
Services (Linear)	Service_Ln	Line / Polyline	Power, Water and Gas "lines"	Yes
Public Art/Memorial	Art	Point	Centre of Artwork. **EG:** Statue	Yes
Landscaping	Lscape	Polygon ~~/Shape/Region~~	Landscaping Areas. **EG:** Garden Beds, lawns	Yes
Bore/Ground Water	Bores	Point	Ground Water Bores	Yes
Irrigation (Point)	Irrig_Pt	Point	Location of feature. **EG:** ~~sprinklers~~ Solenoid	Yes
Irrigation (Linear)	Irrig_Ln	Line / Polyline	Irrigation line location	Yes
Emergency Markers (Point)	Marker_Pt	Point	Central location of the marker	Yes
Emergency Markers (Linear)	Marker_Ln	Line / Polyline	Linear representation of the pathway leading to the marker	Yes
Boardwalks	Boardwalk	Polygon ~~/Shape/Region~~	Perimeter of the Boardwalk	Yes
Playground and Exercise Equipment	PlayEquip	Point	Central location of Playground Equipment.	Yes

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Asset Type	Universal File Name	Data Type	Description	Attribute Table
Breakwater	Breakwater	Polygon/Shape/Region	Perimeter of the Breakwater	Yes
Jetties, Piers and Marinas	J_P_M	Polygon/Shape/Region	Perimeter of the jetty, pier or marina	Yes
Piles	Piles	Point	Central location of the step	Yes
Boat Ramps	BRamps	Polygon/Shape/Region	Perimeter of the boat ramp	Yes
Retaining Walls	Ret_Wall	Line / Polyline	Linear representation of Retaining Walls	Yes
Matching to Existing Infrastructure	Problems	Polygon/Shape/Region	Circle of radius 10m and associated comments listing all problems with a unique number (i.e. 1,2,3 etc.)	Yes

1.3.1 Other Asset Types that may be found in an Open Space or a Recreation Reserve

The following assets may also be found in an "Open Space" precinct and are covered in other specifications developed by the **A-SPEC** Consortium.

Where this occurs please refer to the relevant **A-SPEC** standard specifications to ensure compliance with the delivery of "As Constructed" Information. The table below lists the relevant standard specification to refer to.

Stormwater Pipes and Pits and other infrastructure	Please refer to **D-Spec** for requirements
Car Parking	Please refer to **R-Spec** for requirements
Pathways (including steps/stairways)	Please refer to **R-Spec** for requirements
Signs, Trees, Lighting	Please refer to **R-Spec** for requirements
Sewer Pipes and Pits and other infrastructure	Please refer to **S-Spec** for requirements
Water Pipes and Pits and other infrastructure	Please refer to **W-Spec** for requirements

This will be updated from time to time so please do not hesitate to contact GISSA International on +61 3 9877 6972 or refer to the website on www.a-specstandards.com.au.

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1.4 Graphical Data Construction Principles

Each of the following sections details the graphical data construction principles that must be followed for all linework, polygons and points provided. Where practicable, the alignment of all data, whether "As Constructed" or "As Built" measurements, must be related to the title/property boundaries abutting the road reserve.

It is requested to use sound computer-assisted design (CAD) practices when recording data, such as snapping to lines and closing polygons.

1.5 Graphical Representation Principles

Each of the following sections details the requirements for how the graphics for each asset is to be provided. As mentioned in the previous section all data that is provided is to be a:
- o Point
- o Line (Polyine where multiple vertices are required) or a
- o Polygon

1.6 Acceptance Testing

All graphical information will be checked against the Attribute file/table. Please refer to **Sections 2** for guidelines designed to assist Consultants when putting together attribute information.

It is mandatory that each Consultant implement checks to ensure that their plans and data conform to the specification and that they run these checks prior to the submission of data to an **A-SPEC** Consortium member. Members will undertake random in-house testing to ensure compliance.

Following the acceptance of the digital data, the relevant Certificates will be issued and the ownership of the digital data reverts to the **A-SPEC** Consortium member.

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2   Attribute & Validation File Specifications

All coordinates will be provided in the preferred datum of each individual **A-SPEC** Consortium member as specified on the **A-SPEC** website www.a-specstandards.com.au or as otherwise agreed to with the respective consortium member.

Coordinate fields[1]

The key objective of storing this information is to ensure that the practice of collecting the "As Constructed Information" meets the accuracy requirements of the **A-SPEC** Consortium. The accuracy of the information must be relative to the property boundary.

As all new cadastral information is placed on the MGA (Map Grid of Australia) grid it is an expectation that all data provided by consultants will be representative of this level of accuracy.

Where significant discrepancy occurs between Vicmap property and the coordinates of the cadastral development as a result of the unavailability of the connection to the MGA grid then the consultant will notify the consortium member so that steps can be taken to record the adjusted coordinates.

The key objective of having this notification in place is to take into consideration occurrences where the cadastral mapbase exceeds a particular accuracy. This is to ensure that if required the assets can be located via means of a GPS or other distance measurement equipment.

In Australia – All Z coordinates (levels) will be provided in AHD metres in accordance with the jurisdictional requirements.

In New Zealand – All Z coordinates are to be provided in NZTM projection (NZVD2016 datum)

Attribute Data Fields

Maximum field widths are specified for Alpha / Numeric and Alpha data.

For floating point decimal data the number of characters after the decimal point are specified.

Dates are to be provided as dd/mm/yyyy, EG: 07/06/2001.

All fields are to be populated in accordance with the notes supplied for each field.

All Attribute Data files are to use the Column Names and structures in order as set out in Section 2 – Attribute & Validation File Format Instructions.

Validation checks for each data field have also been provided in Section 2 – Attribute & Validation File Format Instructions.

A set of code lists CODELISTS are provided to standardise the capture of information in the Attribute files. They can be found in Section 3 – O-Spec CODELISTS. The **A-SPEC** website will also contain the most current code list CODELIST.

Fields that are highlighted in grey are common to all tables.

Please take note of default values for specific fields. These have been provided for the relevant fields.

Please note that every attribute name is case sensitive. Use the given name format when creating your fields to supply the data.

Attribute Data Validation Requirements

Please note the column **QA Validation** stipulating the Validation Check is to be carried and is provided as a guide to assist Developer/Consultants when collating information for submissions.

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[1] Discussions held with Land Victoria (Victoria) and Landgate (Western Australia) have confirmed that the coordinated cadastral information provided by surveyors is generally adopted and data of lesser accuracy is "massaged / modified" to suit. i.e. where the surrounding data, for example is based on 1:10,000 accuracy, then that data will be manipulated to "fit" with the survey accurate data.

3 O-Spec CODELISTS~~Code Lists~~

CODELISTS~~Code lists~~ are used to standardise terminology by providing a range of item descriptions relating to a particular attribute. A number of attributes specified in the ASCII file require the input of a ~~code list~~ CODELIST entry number.

Consultants please note that should an entry not exist within ~~the~~ a CODELIST~~code list~~ please ~~contact you're **A SPEC** Consortium contact to make arrangements for its inclusion.~~ Use the **'SeeComment'** value.

CODELIST~~Code list~~ entries will be constantly reviewed by the Consortium and additions and amendments made as the need arises.

Amenity Material – NEW

Amenity Type

Asset Status

Base Material – NEW

Bin Material – NEW

Bin Type

Bin Use – NEW

Boardwalk Material – NEW

Boat Size – NEW

Bore Cover Material – NEW

Bore Type – NEW

Breakwater Material – NEW

Breakwater Purpose – NEW

Deck Material – NEW

Drainage Mechanism – NEW

Face Material – NEW

Fence/Wall Purpose – NEW

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Fence/Wall/Gate Material – NEW

Fence/Wall Type – NEW

Gate Types

Health and Safety Issues – NEW

Irrigation Line Material – NEW

Irrigation Point Type – NEW

JPM Feature Type – NEW

Landscaping Material – NEW

Landscaping Type

Material

Minor Structure Material – NEW

Minor Structure Type

Open Space Type

Pile Material – NEW

Pile Type

Playground and Exercise Equipment

Playground and Exercise Equipment Material – NEW

Playing Field Type

Play Surface Material – NEW

Position – NEW

Post Material- NEW

Public Art/Memorial Material – NEW

Public Art / Memorial Type

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Rail Material - NEW

Rail Type – NEW

Replacement Cost Type

Retaining Wall (Above/Below) Type – NEW

Retaining Wall Foundation Type – NEW

Retaining Wall Restraint Type - NEW

Retaining Wall Structure Type – NEW

Retaining Wall Tie System Type – NEW

Roof Material – NEW

Seal Material – NEW

Services (Linear) Type – NEW

Services (Point) Type

Source

Surface Material – NEW

Unit of Measure Reference – NEW

Valve Control Type – NEW

Valve Power Type – NEW

Valve Purpose Type – NEW

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