



Consultant/Developer Specifications for the  
Delivery of Digital Data to  
Asset Managers and Owners

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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 Governments, 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 government/utilities/water authorities) processes for receiving, handling and storing of 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 drainage information held in council, utility and water authority systems for audit and financial requirements, as well as operational and business requirements;
- **Provide a structure** for the consistent recording of all council, utility and water authority 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 border (across State or national/International boundaries) applications.

# A-SPEC Members

Victoria	WA	NSW

## A-SPEC Standard

A-SPEC currently comprises of seven specialised specifications; B-Spec (Buildings), D-Spec (Stormwater Drainage & Telecommunications-Optical Fibre). The Telecommunications & Optical Fibre specifications will soon to become T-Spec), O-Spec (Open Spaces), R-Spec (Roads), S-Spec (Wastewater) and W-Spec (Water).

Each spec was created to enable Local Government, Utilities and Water Authorities around 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 Land Development and Industry Consultants in relation to subdivision developments and capital works programs within their local jurisdiction.

The standard specifications have been developed to streamline the processes undertaken to display all new 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 data for assets 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 and Industry consultants by removing the need to maintain separate processes, standards and software tools for numerous Councils, Utilities and Water Authorities.

Each standard specification will enable consultants to provide **"Survey Enhanced As – Constructed"** information as digital data with the specific characteristics required for each asset type as GIS ready data to comply with the relevant specification.

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

## Use of the Specification

Each **A-SPEC** 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.

**These specifications are 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. Be it Australia, New Zealand or another country. It is the responsibility of the consultants to understand the specific requirements of their local government, utility or water authority clients. Assistance will be provided wherever possible to clarify any issues or concerns.

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. Each asset has been catalogued in Section 1.3 and cross referenced to the specific specification that details can be found describing the key requirements for their capture and attribution.

Please note the changes in the specifications 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

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## 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 the works, as GIS Ready digital data of newly constructed assets as defined by the **A-SPEC Consortium** members in Australia.

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.

The project to determine the suitability of the **A-SPEC** standard specifications 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.

## Submission of “As Constructed Information” as GIS Ready Data

The key objective of the specifications is to record and provide “As Constructed Information” as digital data of newly created or retrospectively captured assets in a GIS ready format to the **A-SPEC Consortium** members.



**D-Spec** outlines the specifications for digital files containing stormwater drainage data: pipe, pit, property connections and Water Sensitive Urban Design Elements (**WSUD**).



**R-Spec** outlines the specifications for digital data of authorities’ assets within the Road Reserve.



**O-Spec** outlines the specifications for digital data of Public Open Space and Recreation assets.



**S-Spec** outlines the specifications for digital data containing sewerage/waste water asset data.



**W-Spec** outlines the specifications for digital data containing Water supply assets..



**B-Spec** outlines the specifications for the delivery of digital data relating to Buildings Assets.



**T-Spec** outlines the specifications for the collection of digital data relating to optical fibre/telecommunications assets. It is planned to further develop it from its current format within **D-Spec**

## 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](http://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 email [info@gissa.com.au](mailto:info@gissa.com.au) or your local point of contact with the organisation you are dealing with.



## Industry Consultants Responsibilities

### Victoria

#### Responsibility of the Developer/Consultant

The developer/consultant or his representative shall be responsible for:

- ✓ ensuring that any information provided by the consortia members is verified prior to any works being undertaken.
- ✓ ensuring that the **“As-Constructed Information”** as shown on approved Engineering Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a **Statement of Compliance**.
- ✓ ensuring that the **“As-Constructed Information”** as shown on approved Landscape Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a Certificate of Practical Completion.
- ✓ ensuring that the data supplied to the **A-SPEC** member is **correct, accurate, and complete**.
- ✓ ensuring the data is supplied within 15 working days of work being completed unless otherwise agreed with the relevant Consortium member.
- ✓ ensuring that the information provided is relative to the cadastral information being recorded in the Information Services Branch (a business unit within DEPI) digital cadastral map base.

In the event that the **Developer engages a surveyor** separately to record the **“As-Constructed Information”** of the works, then the surveyor will be responsible for:

- ✓ ensuring that any information provided by the consortia members is verified by prior to any works being undertaken.
- ✓ ensuring that the **“As-Constructed Information”** as shown on approved Engineering Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a **Statement of Compliance**.
- ✓ ensuring that the **“As-Constructed Information”** as shown on approved Landscape Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a Certificate of Practical Completion.
- ✓ ensuring that the data supplied to the **A-SPEC** member is **correct, accurate, and complete**.
- ✓ ensuring the data is supplied within 15 working days of work being completed unless otherwise agreed with the relevant Consortium member.
- ✓ ensuring that the information provided is relative to the cadastral information being recorded in the Information Services Branch (a business unit within DEPI) digital cadastral map base.

In the event that the **Developer engages a consulting engineer** to supervise all works including those of a surveyor to record the **“As-Constructed Information”** of the works, then the consulting engineer will be responsible for:

- ✓ ensuring that any information provided by the consortia members is verified by prior to any works being undertaken.
- ✓ ensuring that the **“As-Constructed Information”** as shown on approved Engineering Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a **Statement of Compliance**.
- ✓ ensuring that the **“As-Constructed Information”** as shown on approved Landscape Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a Certificate of Practical Completion.
- ✓ ensuring that the data supplied to the **A-SPEC** member is **correct, accurate, and complete**.
- ✓ ensuring the data is supplied within 15 working days of work being completed unless otherwise agreed with the relevant Consortium member.
- ✓ ensuring that the information provided is relative to the cadastral information being recorded in the Information Services Branch (a business unit within DEPI) digital cadastral map.



## Western Australia

### Responsibility of the Developer/Consultant

The developer or his representative shall be responsible for:

- ✓ ensuring that any information provided by the consortia members is verified by the consultant prior to any works being undertaken.
- ✓ ensuring that the **Survey Enhanced "As-Constructed Information"** and details of the Works as shown on the approved Engineering Plans are recorded and certified by the Surveyor in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and receiving a **"Clearance"**.
- ✓ ensuring that the **"As-Constructed Information"** as shown on approved Landscape Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a Certificate of Practical Completion.
- ✓ ensuring that the data supplied to the **A-SPEC** member is **correct, accurate and complete**.
- ✓ ensuring the data is supplied within 15 working days of work being completed unless otherwise agreed with the relevant Consortium member.
- ✓ ensuring that the information provided is relative to the cadastral information being recorded in LANDGATE's digital cadastral map base.

In the event that the **Developer engages a surveyor** separately to record the extent of the **"As Constructed Information"** of the works, then the surveyor will be responsible for:

- ✓ ensuring that any information provided by the consortia members is verified by the consultant prior to any works being undertaken.
- ✓ ensuring that the **Survey Enhanced "As-Constructed Information"** and details of the Works as shown on the approved Engineering Plans are recorded and certified by the Surveyor in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and receiving a **"Clearance"**.
- ✓ ensuring that the **"As-Constructed Information"** as shown on approved Landscape Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a Certificate of Practical Completion.
- ✓ ensuring that the data supplied to the **A-SPEC** member is **correct, accurate, complete** and on the projection requested by the **A-SPEC** member
- ✓ ensuring the data is supplied within 15 working days of work being completed unless otherwise agreed with the relevant Consortium member.
- ✓ ensuring that the information provided is relative to the cadastral information being recorded in LANDGATE's digital cadastral map base.

In the event that the **Developer engages a consulting engineer** to supervise all works including those of a surveyor to record the extent of the **"As Constructed" Information** of the works, then the engineer will be responsible for:

- ✓ ensuring that any information provided by the consortia members is verified by the consultant prior to any works being undertaken.
- ✓ ensuring that the **Survey Enhanced "As-Constructed Information"** and details of the Works as shown on the approved Engineering Plans are recorded and certified by the Surveyor in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and receiving a **"Clearance"**.
- ✓ ensuring that the **"As-Constructed Information"** as shown on approved Landscape Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a Certificate of Practical Completion.
- ✓ ensuring that the data supplied to the **A-SPEC** member is **correct, accurate, complete** and on the projection requested by the **A-SPEC** member.
- ✓ ensuring the data is supplied within 15 working days of work being completed unless otherwise agreed with the relevant Consortium member.
- ✓ ensuring that the information provided is relative to the cadastral information being recorded in LANDGATE's digital cadastral map base.

## New South Wales

### Responsibility of the Developer/Consultant

The developer/consultant or his representative shall be responsible for:

- ✓ ensuring that any information provided by the consortia members is verified prior to any works being undertaken.
- ✓ ensuring that the **“As-Constructed Information”** as shown on approved Engineering Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared, to receive a Completion Certificate **or sign off** for Capital projects.
- ✓ ensuring that the **“As-Constructed Information”** as shown on approved Landscape Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a “Certificate of Practical Completion”.
- ✓ ensuring that the data supplied to the **A-SPEC** member is **correct, accurate, and complete**.
- ✓ ensuring the data is supplied within 15 working days of work being completed unless otherwise agreed to with the relevant Consortium member.
- ✓ ensuring that the information provided is relative to the cadastral information being specified by the relevant authority.

Please note this will be further clarified following the convening of the technical working group for NSW

## Tasmania

### Responsibility of the Developer/Consultant

The developer or his representative shall be responsible for:

- ✓ ensuring that any information provided by the consortia members is verified prior to any works being undertaken.
- ✓ ensuring that the **“Survey Enhanced As-Constructed Information”** and details of the Works as shown on approved Engineering Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a **“Statement of Compliance”** or **“Certificate of Practical Completion”**.
- ✓ ensuring that the **“As-Constructed Information”** as shown on approved Landscape Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a **“Certificate of Practical Completion”**.
- ✓ ensuring that the data supplied to the **A-SPEC** member is **correct, accurate, and complete**.
- ✓ ensuring the data is supplied within 15 working days of work being completed unless otherwise agreed with the relevant Consortium member.
- ✓ ensuring that the information provided is relative to the cadastral information being maintained in Department of Primary Industries, Parks, Water and Environment’s (DPIPWE) digital cadastral map base.

In the event that the **Developer engages a surveyor** separately to record the **“Survey Enhanced As-Constructed Information”** of the works, then the surveyor will be responsible for:

- ✓ ensuring that any information provided by the consortia members is verified by prior to any works being undertaken.
- ✓ ensuring that the **“Survey Enhanced As-Constructed Information”** and details of the Works as shown on approved Engineering Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a **“Statement of Compliance”** or **“Certificate of Practical Completion”**.
- ✓ ensuring that the **“As-Constructed Information”** as shown on approved Landscape Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a **“Certificate of Practical Completion”**.
- ✓ ensuring that the data supplied to the **A-SPEC** member is **correct, accurate, and complete**.
- ✓ ensuring the data is supplied within 15 working days of work being completed unless otherwise agreed with the relevant Consortium member.
- ✓ ensuring that the information provided is relative to the cadastral information being maintained in Department of Primary Industries, Parks, Water and Environment’s (DPIPWE) digital cadastral map base.

In the event that the **Developer engages a consulting engineer** to supervise all works including those of a surveyor to record the **“Survey Enhanced As-Constructed Information”** of the works, then the consulting engineer will be responsible for:

- ✓ ensuring that any information provided by the consortia members is verified by prior to any works being undertaken.
- ✓ ensuring that the **“Survey Enhanced As-Constructed Information”** and details of the Works as shown on approved Engineering Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a **“Statement of Compliance”** or **“Certificate of Practical Completion”**.
- ✓ ensuring that the **“As-Constructed Information”** as shown on approved Landscape Plans are recorded and certified in accordance with this document and forwarded to the **A-SPEC** Consortium member prior to works being accepted and cleared to receive a **“Certificate of Practical Completion”**.
- ✓ ensuring that the data supplied to the **A-SPEC** member is **correct, accurate, and complete**.
- ✓ ensuring the data is supplied within 15 working days of work being completed unless otherwise agreed with the relevant Consortium member.
- ✓ ensuring that the information provided is relative to the cadastral information being maintained in Department of Primary Industries, Parks, Water and Environment’s (DPIPWE) digital cadastral map base.

## A-SPEC Consortium Member's Responsibilities

Each participating member shall be responsible for:

- ✓ Correctly inserting the data provided by the certifying company into their respective GIS environments (**A-SPEC** Consortium members are NOT responsible for scaling, rotating or manipulating the data supplied by the consultants).
- ✓ Providing extracts of existing data from their GIS in a timely manner.
- ✓ In Victoria – providing acknowledgment of the receipt of Certified "**As-Constructed Information**" of the Works from the Developer or their representative.
- ✓ In Western Australia – providing acknowledgment of the receipt of Certified "**Survey Enhanced As-Constructed Information**" of the Works from the Developer or their representative.
- ✓ In Tasmania – providing acknowledgment of the receipt of Certified "**Survey Enhanced As-Constructed Information**" of the Works from the Developer or their representative.
- ✓ Processing the data in a timely manner in accordance with the **A-SPEC** specified timeframes or as otherwise arranged with the consultant.
- ✓ Informing Consultants of non-conformance in accordance with the **A-SPEC** specified timeframes.
- ✓ Application of quality control programs relevant to the respective **A-SPEC** Consortium member.
- ✓ Undertaking random in-house testing of the data.

## Acceptance

Each of the **A-SPEC** Consortium members has independent processes that will take the digital files and place them in their respective GIS and Asset Management Information Systems. At the same time quality control programs will check the validity of the data, and maps may be printed.

Where applicable, this document includes suggested data validation checks for attribute fields. It is strongly recommended that each consultant implement and run these prior to the submission of data to the **A-SPEC** Consortium member. The **A-SPEC** Consortium members will undertake random in-house testing to ensure compliance. The **A-SPEC** Consortium members will carry out acceptance testing within the following guidelines or from time to time as otherwise arranged with the consultant.

- |    |              |             |                 |
|----|--------------|-------------|-----------------|
| 1. | Developments | < 10 lots   | 5 working days  |
| 2. | Developments | 10 -50 lots | 10 working days |
| 3. | Developments | 50 + lots   | 15 working days |

Following the acceptance of the data and the provision of a "**Statement of Compliance**" or "**Clearance**" or "**Certificate of Practical Completion**" or "**Compliance with s224C**" the ownership of the data will revert to the relevant **A-SPEC** Consortium member.

## Errors and Omissions

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.

## 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 **A-SPEC** suite of standard data 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.

## Deliverables

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

- ✓ Email files to **A-SPEC** member representative.
- ✓ USB memory device, portable hard drive
- ✓ Cloud Mediums (FTP, Dropbox, Google Drive etc.)

## 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.

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

<b>Label</b>	<b>Description</b>	<b>Example</b>
<b>COMPANY</b>	Company name taking responsibility for the data	<i>GISSA International</i>
<b>CONTACT</b>	Contact name for this project	<i>George Havakis</i>
<b>TELEPHONE</b>	Telephone number	<i>(03) 9877 6972</i>
<b>FACSIMILE</b>	Facsimile number	<i>(03) 9878 2819</i>
<b>EMAIL</b>	Email address (as applicable)	<a href="mailto:george@viccadd.com.au">george@viccadd.com.au</a>
<b>MAILING ADDRESS</b>	Mailing address	<i>Suite 10, 476 Canterbury Rd, Forest Hill VIC 3131</i>
<b>PHYSICAL ADDRESS</b>	Physical business address	<i>'As Above'</i>
<b>A-SPEC MEMBER</b>	Participating Authority	<i>City of Gosnells Wyndham City Council</i>
<b>DATE SUBMITTED</b>	Date the digital data submitted to A-SPEC member	<i>31/1/2008</i>
<b>DOCUMENT VERSION</b>	Version of the document used	<i>D-Spec v9.1.0</i>
<b>SOFTWARE FORMAT &amp; VERSION</b>	The software used to create the digital data	<i>QGIS</i>
<b>PROJECT or SUBDIVISION</b>	Project or Subdivision name	<i>Wyndham Estate</i>
<b>STAGE</b>	Subdivision Stage Name	<i>Stage 3B</i>
<b>DESIGN COMPANY</b>	Design Company Name	<i>Fred Charles &amp; Associates</i>
<b>PLAN NUMBER</b>	As Constructed Plan Number	<i>6080R212</i>
<b>CONSTRUCTION COMPANY</b>	Construction Company Name	<i>Jamieson Construction</i>
<b>CONSTRUCTION DATE</b>	Date of Construction	<i>12/03/2017</i>
<b>COORDINATES/DATUM</b>	The coordinate system the data is in	<i>GDA94 Zone 50</i>
<b>DATUM</b>	Vertical Height Datum	<i>AHD71</i>
<b>TRANSFORMATION</b>	The coordinate system the data was transformed from	<i>Perth Coastal Grid to GDA94 Zone 50</i>
<b>TRANSFORMATION BY</b>	Who carried out the transformation from the original coordinate system to the relevant system	<i>City of Gosnells – Jack Dowling</i>
<b>SOURCE OF DATA</b>	The type of capture used	<i>Field Asset Capture</i>
<b>NOTES/COMMENTS</b>	Important notes or information to be included here.	<i>Information provided in this submission is a combination of data picked up in the field along with confirmation by the contractor responsible ICANDOIT Pty Ltd</i>

# 1 Graphical & Technical Specifications

The key principle of this specification is to provide a standardized structure to record the characteristics/attributes of each graphical element. Where data is being supplied in a GIS format, it can be assumed that this is already the case.

It is an expectation from the A-SPEC Consortium that all consultants providing data will be required to conform to the current ~~R-Spec~~ **A-SPEC** standard **specifications**. Therefore it is of vital importance that the release date of the specification is known in the event that an update is issued specifying any variations.

**All graphical information is to be projected in accordance with the preference of each individual A-SPEC member. It is requested that the height datum and coordinate system used is recorded within the Certification Form to be provided with each submission of data.**

The digital data provided to the A-SPEC Consortium must conform to the following specifications:

## 1.1 Datums

### 1.1.1 Australia

Australia and New Zealand have aligned their spatial coordinates with international systems. As part of this process, public and private sector organisations in both countries are adopting a geocentric datum for the spatial information they use and generate. These are the New Zealand Geodetic Datum 2000 (NZGD2000) and Geocentric Datum of Australia (GDA94)

#### 1.1.1.1 The Geocentric Datum of Australia ~~(GDA94)~~

All graphical information is to be projected in accordance with the preference of each individual **A-SPEC** member.

The Geocentric Datum of Australia (GDA94) is the new Australian coordinate system, replacing the Australian Geodetic Datum (AGD). GDA is part of a global coordinate reference frame and is directly compatible with the Global Positioning System (GPS). The map projection associated with GDA94 is the Map Grid of Australia, 1994 (MGA94), a Transverse Mercator projection, which conforms to the internationally accepted Universal Transverse Mercator Grid system.

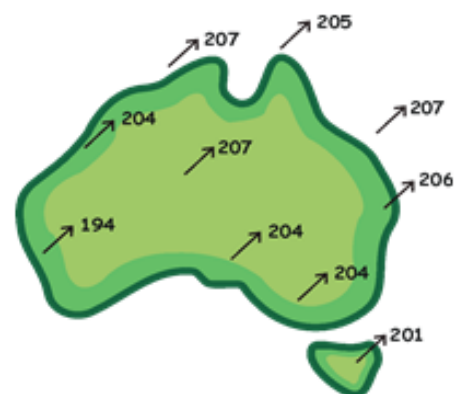
GDA replaces the Australian Geodetic Datum (AGD) which has been in place since 1966. The AGD provided a reference system that best fitted the shape of the earth in the Australian Region but its origin did not coincide with the centre of mass of the earth. National datums were commonly non-geocentric before satellite based navigation systems were established in the early 1970's.

The distance between the origin points of GDA and AGD is approximately 200 meters. When the coordinates of a point on the Earth's surface are converted from AGD to GDA this translates to a coordinate difference of approximately the same amount. The difference varies slightly depending on where you are in Australia.

[Geocentric Datum of Australia Technical Manual](#)

[Frequently asked questions on Australia's Datum Modernisation](#)

**DIAGRAM TO BE REMOVED**



Over the next few years, users of Australian spatial datasets will have the opportunity to transition from using coordinates referenced to the Geocentric Datum of Australia 1994 (GDA94) to the Geocentric Datum of Australia 2020 (GDA2020).

<sup>1</sup> Referenced from the ICSM website

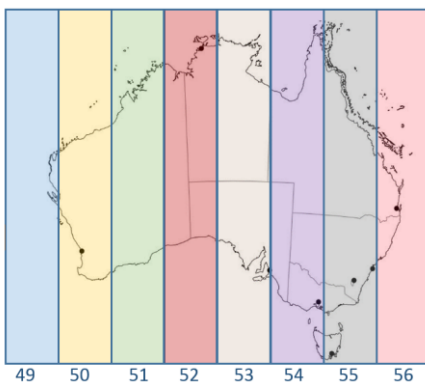


The technical information that covers the use of both national datums can be found on ICSM website page <http://www.icsm.gov.au/datum/gda2020-and-gda94-technical-manuals>.

The technical information provided on the page includes:-

- Technical Manuals for GDA94 & GDA2020
- Technical Fact Sheet GDA94 to GDA2020 transformations
- Examples to assist with conversions
- GDA2020 online Forum and sub Forums

The Map Projection to be used is Map Grid of Australia. The applicable zones are 49, 50, 51, 52, 53, 54, 55 & 56.



Map Grid of Australia

Source of map of Australia - Geoscience Australia

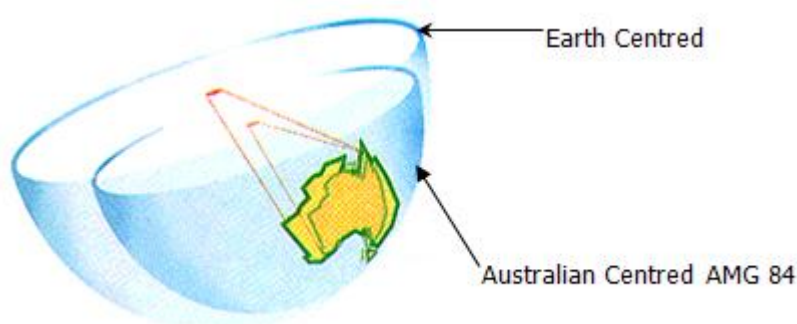
### 1.1.1.2 Australian Height Datum (1971)

The term AHD is used to refer to both the Australian Height Datum 1971 (AHD71; Australian mainland) and Australian Height Datum (Tasmania) 1983 (AHD-TAS83).

Please refer to the ICSM website for further details. <http://www.icsm.gov.au/australian-height-datum>

The Australian Height Datum (AHD71) is based on an extensive network, 97230km (Luton, Johnson) of accurate two-way leveling adjusted to zero at Mean Sea Level (MSL) at 30 tide gauges around the mainland.

The Australian Height Datum (AHD) will not be affected by the adoption of GDA.



## Victoria

Please note that in accordance with the guidelines outlined by the Information Services Branch (formerly Spatial Information Infrastructure) group within the Department of Environment and Primary Industries (DEPI), GDA 94 became the official datum in Victoria in June 2005.

The Map Projection to be used is Map Grid of Australia. The applicable zones will be 54 & 55 (MGA Zone 54/55, GDA94).

## Western Australia

The Western Australian Cabinet approved the adoption of the Geocentric Datum of Australia during 2000. The Western Australian Land Information System (WALIS) Council has been made responsible for the oversight and introduction into Western Australia of the Geocentric Datum of Australia 1994.

The following parameters apply for the Universal Transverse Mercator (UTM) projections

- 6° wide zones
- Central Scale Factor 0.9996
- False Easting 500,000 m
- False Northing 10,000,000 m

There are a number of local grids that are used within Western Australia e.g. Perth Coastal Grid. In all instances where data has been transformed by the consultant it is mandatory to state the local grid the data was originally based in.

The Map Projection to be used is Map Grid of Australia. The applicable zones will be 49, 50, 51 and 52.

## New South Wales

GDA94 (2010) refers to a new realisation of the Geocentric Datum of Australia 1994. Coordinates in GDA94 (2010) are derived through direct connections to the [Australian Fiducial Network \(AFN\)](#) – see [Regulation 13 certification](#).

The NSW Survey Control Network is based on [GDA94 \(1997\)](#), an earlier realisation which was adjusted in 1997.

Coordinates in GDA94(1997), including those for CORS, are available through [SCIMS](#) and are sometimes referred to as local coordinates – see [Local Tie Survey](#).

Although GDA94 (1997) coordinates also stem from the AFN, most of them are only linked indirectly through many layers of measurements and adjustments.

To connect to GDA94 (1997), and [AHD71](#) for elevation, using CORSnet-NSW, it is necessary to perform a localisation or site calibration.

The Map Projection to be used is Map Grid of Australia. The applicable zones will be 54 & 55 (MGA Zone 54/55, GDA94).

## Tasmania

The levelling network in Tasmania was adjusted on 17 October 1983 to re-establish heights on the Australian Height Datum (Tasmania). This network, which consists of seventy two sections between fifty seven junction points is based on mean sea level for 1972 at the tide gauges [GIF 6KB] at Hobart and Burnie. Mean sea level at both Hobart and Burnie was assigned the value of zero on the AHD (Tasmania).

The Geocentric Datum of Australia is the recommended Datum for all spatial information in Tasmania.

The coordinates of the geodetic survey stations used as the origin points for GDA were published in the Commonwealth of Australia Government Gazette on 6 September 1995. These coordinates are referenced to the International Terrestrial Reference Frame 1992 at epoch 1994.0

GDA coordinates were propagated throughout Australia via a series of national geodetic campaigns and a national geodetic adjustment that produced a network of approximately 80 geodetic stations with a nominal spacing of 500km. These stations are known as the Australian National Network (ANN). There are five ANN stations in Tasmania, their station IDs are: ST770, ST556, SPM9089, SPM9261 and AU016.

GDA geographic coordinates (latitude & longitude) are known as GDA94, and the equivalent UTM grid coordinates are known as MGA94.

Further information about the GDA is available from the Geocentric Datum of Australia Technical Manual.

## The Australian Height Datum (Tasmania) AHD83

The Australian Height Datum (Tasmania) is based on mean sea level for 1972 at the Hobart and Burnie Tide Gauges. It was propagated throughout Tasmania via third order differential levelling and an adjustment computed on 17 October 1983. Mean sea level at both Hobart and Burnie was assigned the value of zero in this adjustment.

Height values based on this, and subsequent adjustments, are labelled AHD83 in the DPIPW Survey Control Marks Database.

The Map Projection to be used is Map Grid of Australia. The applicable zone is 55.

### **Flinders Island Local Datum (Tasmania)**

Datum used for topographic mapping of the Furneaux Group islands which carried out in 1972 is considered the mean sea level by the division of national mapping. Heights of Brougham Sugarloaf (ST343) and Vinegar Hill (ST354) are held fixed in a trigonometry height adjustment which used to propagate heights through the Furneaux Group Islands.

## 1.2 Format

**Format** relates to the **data exchange format** e.g. MIF/MID, ESRI Shapefile, Intergraph native, LandXML etc. and is **flexible**. It is not used in this specification with any other meaning.

The requirement of consultants is to provide data in a GIS Ready Format and is flexible.

Whilst **A-SPEC** does not specify any one format over another it should be noted that each member may have a preference.

Therefore all data is to be supplied in a **GIS READY Format** or as otherwise arranged with the individual **A-SPEC Consortium member**.

## 1.3 Theme/Layer Structure

The level/layer structure provided in each **A-SPEC Standard Specification** 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 must be delivered on a separate level/layer and the files must be clearly labelled in accordance with the “**File Name**” as indicated in the table provided in each digital data standard specification.

Asset Type	Universal File Name	Data Type	Description	Attribute Table
<a href="#">Area of Work Extent</a>	Graphics	Polygon	Polygon representing the extents of the subdivision development or capital works	<a href="#">Yes</a>

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

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.

### 1.3.1 Asset Types and their Relevant Specifications

There may be instances where assets other than the ones documented in the particular specification will need to also be provided.

Where this occurs please refer to the relevant **A-SPEC** standard specifications listed to ensure compliance with the delivery of the digital data of the “**As Constructed**” information required.

Please note this list will be updated from time to time.

Asset Type	Specification to Refer to
Abutments	R
Access Point / Manhole / Pit	D, S, W
Amenities	O
Area of Work Extent	B,D,O,R,S,W
<b>Bar Tables &amp; Stools (see Amenities)</b>	O
Basin, Sump, Pond, Swale (areas), Wetland, and Lake	D
BBQ (see Amenities)	O
Bins	O
Bio retention Swale / Swale (linear)/ Buffer Strips and Rain Gardens	D
Boardwalks	O
Boat Ramps	O
Bollards (see Traffic Management Device – point)	R
Breakwaters	O
Bridge / Major Culvert	R
Bridge / Major Culvert Component	R
Building Floor Plan	B
Building Footprint	B
Building Space	B
<b>Channel Drain (see Pipes)</b>	<b>D</b>
Car Parking	R
Cathodic Protection	W

Asset Type	Specification to Refer to
Collection pipes for swales - Stormwater	D
Communication and Data Equipment	B
Communication and Data Cabling	B
Conduits	B, S, W
Conveyance Systems	B
Conveyance Paths	B
Detention Chambers	D
Doors & Windows	B
Electrical Cabling	S, W
Electrical Equipment	B, S, W
Electrical Lines	B
Emergency Markers Linear	O
Emergency Markers Point	O
Escalators (part of Conveyance System)	B
Fences/Walls	O
Fire Protection Equipment	B
Fire Protection Lines	B
Fittings & Fixtures – Areas	B
Fittings & Fixtures – Lines	B
Floor Plan Lines	B
Gates	O
Grandstand	B
Gravity Pipe	S
Gravity pipe Miscellaneous Text	S
Gross Pollutant Traps (see Pits)	D
Ground Water Bores	O
Head/End Walls	D
HVAC Mechanical Systems	B
HVAC Equipment	B
HVAC Lines	B
Infiltration Chambers (see Water Harvesting Device)	D
Instrumentation	S, W
Irrigation (Linear)	O
Irrigation (Point)	O
Jetties, Piers and Marinas	O
Kerb / Kerb & Channel and Shoulder	R
Landscaping	O
Lifts (part of Conveyance System)	B
Lighting	R
Mechanical Equipment	S, W
Minor Structures	O
Moving Walkways (part of Conveyance System)	B
OSDS Linear Centreline	D
Open Space	O
Other Network Structure	S
Pathway Centreline	R
Pathways	R

Asset Type	Specification to Refer to
Pavement - Road	R
Piles	O
Pipe - Stormwater	D
Pipe – Stormwater Miscellaneous Text	D
Pits - Stormwater for Swales	D
Playground and Exercise Equipment	O
Playgrounds	O
Playing Fields	O
Plumbing Equipment	B
Plumbing Lines	B
Poles - <b>PROPOSED FUTURE UPDATES</b>	R
Pram Ramp (see Pathways)	R
Pressure Pipe- <b>PROPOSED FUTURE UPDATES for 'D'</b>	D, S, W
Problems with matching to existing data	B,D,O,R,S,W
Property Connection	D, S
Public Art / Memorials	O
Public Toilets	B
Pump Station Site- <b>PROPOSED FUTURE UPDATES for 'D'</b>	S, W
Pumping Station- <b>PROPOSED FUTURE UPDATES for 'D'</b>	S, W
Pumps- <b>PROPOSED FUTURE UPDATES for 'D'</b>	S, W
Recreation Reserves (see Open Space)	O
Reservoir	W
Retaining Walls	O
Road Reserve	R
Road Safety Barriers	R
Seal / Surface – Road Surface (Sea)	R
Security Equipment	B
Services (Linear)	O
Services (Point)	O
Sewer Fitting	S
Sewer Pump	S
Sewer Pumping Station	S
Sewer Rising Main/ Pressure Main	S
Sewer Valve	S
Shelters	R
Signs	B, R
Stairwell (part of Conveyance System)	B
Steps (see Pathway)	R
Stormwater Fitting - <b>PROPOSED FUTURE UPDATES</b>	D
Stormwater Pump - <b>PROPOSED FUTURE UPDATES</b>	D
Stormwater Pumping Station - <b>PROPOSED FUTURE UPDATES</b>	D
Support Structure	S, W
Surface (Seal) Centreline	R
Table Drain	R
Tactile Ground Surface Indicators	R
Tanks (see Water Harvesting Device)	∅
Tanks	W

Asset Type	Specification to Refer to
Toilets in Buildings (see Building Space)	B
Traffic Management Devices – Areas	R
Traffic Management Devices – Lines	R
Traffic Management Devices – Points	R
Traffic Signals	R
Treatment Plant- <b>PROPOSED FUTURE UPDATES</b>	W, S
Trees	R
Tunnels - <b>PROPOSED FUTURE UPDATES</b>	R
ITS (Intelligent Transport Systems) – Lines	R
ITS (Intelligent Transport Systems) – Points	R
ITS (Intelligent Transport Systems) – Polygon	R
Underground Conduit Pits–Telecommunications	D
Underground Conduits –Telecommunications	D
Vehicle Crossing (Driveways)	R
Walls (see Fence/Walls)	R
Water Fitting	W
Water Harvesting Device	D
Water Hydrant	W
Water Meter	W
Water Pressure Main	W
Water Service Main	W
Water Valve	W

This table 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](http://www.a-specstandards.com.au).



## 1.4 Graphical Data Construction Principles

This section details the graphical data construction principles that consultant must adhere to for all linework, polygons and points provided. Where practicable, the alignment of all data; whether “As Constructed Measurements” in Victoria or Survey Enhanced “As Constructed Measurements” data in Western Australia and New South Wales, must be related to the title/property boundaries abutting the road reserve.

Please use sound CAD practices when recording data, such as snapping to lines and closing polygons.

### 1.4.1 Text & Miscellaneous Graphics

- All Text provided in the graphics files will generally be used for cartographic representation only. This may also include offsets to show relativity to property boundaries.
- If offset distances are provided to assist with the location of the asset, they are to be quoted to two decimal places of a metre.
  - Please note that only licensed surveyors are authorized to establish the location of a title boundary

### 1.4.2 Area of Work Extent

This feature is to represent either the extents of the sub divisional development **or** area of work undertaken on a capital works project. It will be used specifically to identify where works have been or are intended to be.

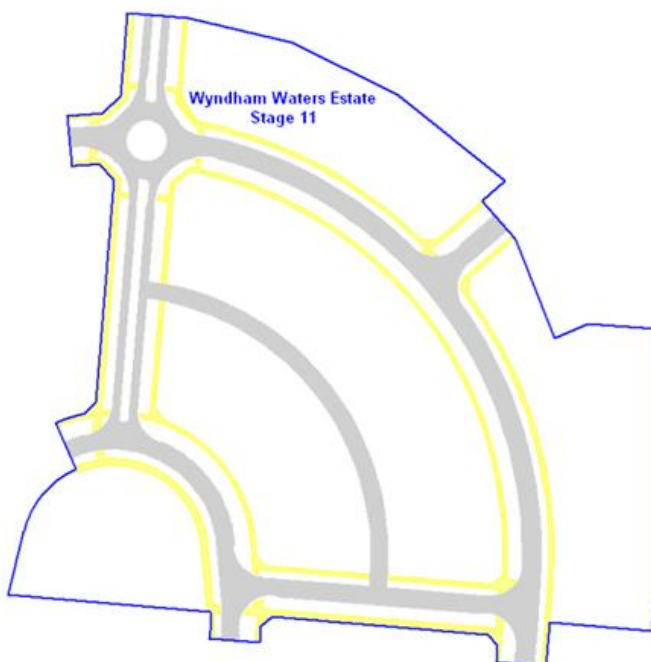
Consultants are to supply the “**Area of Work**” as a polygon on a separate layer.

The objective of this boundary is to provide the **A-SPEC** Consortium members an overview of the area being developed.

This will also assist the **A-SPEC** Consortium members monitoring progress of stage development.

The image below depicts a boundary where all work has been completed within a subdivision development. Ideally the boundary should be placed around the properties (i.e. using the property boundaries as a reference).

Please note: Where work is carried out through Capital Works or Renewal programs, then a similar boundary is to be provided showing the extent of the work.



**Figure 1 - Area of Work Extent**

## 1.5 Acceptance Testing

All graphical information will be checked against the Attribute file/table. Please refer to **Section 2 – Attribute & Validation File Format Instructions**. This section is designed to assist Consultants when collating the necessary data for submission.

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.

## 1.6 Matching to Existing Infrastructure

“As Constructed” digital data of the assets are:

1. to be positioned relative to the respective map bases
2. to be positioned relative (i.e. connecting with where practicable) to the existing digital Road Reserve data

The exception to this is when the position of the new assets clearly indicates a discrepancy when compared to the position of the existing assets. When this occurs the consultant is to record this discrepancy as outlined in the table in each document in **Section 1.3 Themes/Layer Structure**.

It is the responsibility of the consultant to ensure the “As Constructed” digital data of the assets are aligned to the current digital data held in **A-SPEC** Consortium members’ GIS or as otherwise agreed. If requested and available, the **A-SPEC** Consortium members will make available an extract of any digital data held in their respective GIS environments covering the specific project area.

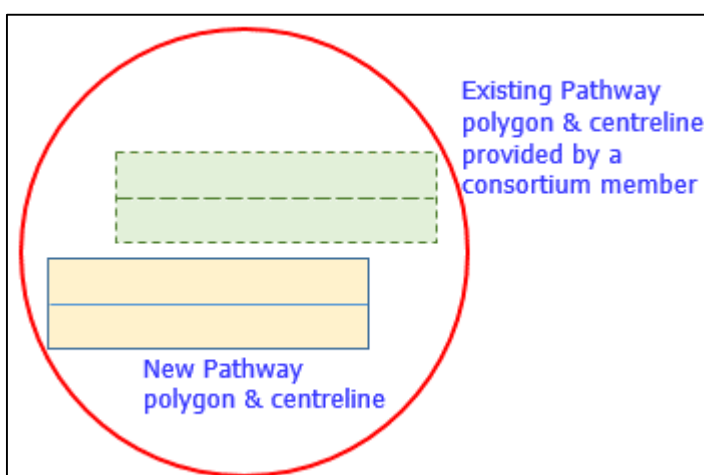
Consultants are to use **Attachment 1: Request for digital data** to obtain this extract.

Should the consultant find any discrepancies in matching to the existing infrastructure data provided by the Consortium member, a problem log must be completed as per **Problems Attribute & Validation File Format Instructions** to inform **A-SPEC Consortium** members of any discrepancies that need to be investigated and rectified by the member.

These measures will ensure that all new assets are recorded relative to the existing data sets to enable:

1. integration into **A-SPEC** Consortium members respective GIS and Asset Management environments.
2. completeness of asset management information within the **A-SPEC** Consortium members respective AMIS environments
3. confirmation of the location of the assets
4. continuous improvement process

**Example:**



## 1.6.1 Problem Attribute & Validation File Format Instructions

Assets with problems matching to existing infrastructure are to have circles of radius 10m around them.

Problems Attribute File Format Instructions					
Column Name	Data Type	Max Length	Comments	Description	QA Validation
Problem_No	Alpha/Numeric	10 chars	No commas included	Problem Number – Unique number to this project	Field cannot be empty.
Asset_Type	Alpha	20 chars	No commas included	Type of asset that has a problem	Field cannot be empty.
Comment1	Alpha/Numeric	250 chars	No commas included	Comments about the problem	Field can be empty.
Comment2	Alpha/Numeric	250 chars	No commas included	Additional comments about the problem	Field can be empty.
Photo_Ref	Alpha/Numeric	100 chars	No commas included	Reference photograph of asset. <b>EG: 12345abcd67ef.jpg</b>	Field cannot be empty. Provide photographic references for all new and existing assets. For existing assets, <b>Default=N/A</b> For additional photos, use the 'Comments' field.
Sub_Name	Alpha/Numeric	100 chars	No commas included	Subdivision or Project Name <b>EG: Rockbank Rise</b>	Field can be used for either a subdivision or capital works project
Stage_No	Alpha/Numeric	10 chars	No commas included	Subdivision or Project Stage Number <b>EG: 7 or 3B</b>	Field can be used for either a subdivision or capital works project. If no number allocated for the work stage, <b>Default=N/A</b>

### Example Problem Log:

Problems Attribute File Format Instructions		
Column Name	Comments	Description
Problem_No	No commas included	1
Asset_Type	No commas included	Water Hydrant
Comment1	No commas included	Mismatch to link with existing infrastructure – 2.3m to the south from original location.
Comment2	No commas included	
Photo_Ref	No commas included	N/A
Sub_Name	No commas included	Rockbank Rise
Stage_No	No commas included	3B

## 2 Attribute File Specifications

This section provides details of the attribute fields and their respective validation requirements for each asset table and includes the following information.

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](http://www.a-specstandards.com.au) or as otherwise agreed to with the respective Consortium member.

### 2.1 Attribute Data Field Requirements

This section details the attribute field data entry requirements that data providers are to adhere to for all data submissions.

Please note that the Project related data needs to be provided only once.

The following are the key requirements for the structure of the data to be provided in each submission.

- Maximum field widths are specified for Alpha/Numeric and Alpha data.
  - These are to be adhered to.
- For decimal data the number of characters after the decimal point are specified.
- Date fields 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 fields are to use the Column Names and structures set out in **Section 2 – Attribute & Validation File Format Instructions**.
- Validation checks for each data field have also been provided in **Section 2 – Attribute File Format Instructions**.
- A set of CODELISTS are provided to standardise the capture of information in the Attribute files. They can be found in **Section 3 – N-Spec Codelists**. The **A-SPEC** website will also contain the most current Codelists.
- If a Code does not exist the new asset feature is to be recorded in the “**Comments**” field and a note sent via the **A-SPEC** website **ContactUs** form so a new code can be created.
- ~~Fields that are highlighted in grey are common to all tables.~~
- All fields that are common to all tables are captured in the Area of Work Extent table
- 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.

### 2.2 Attribute Data Validation Requirements

Please note the column **QA Validation** stipulating the Validation Check to be carried out is provided as a guide to assist Developers/Consultants when putting together information for submission.

## 2.3 Attribute Data Types

This section outlines the different data types used within the specifications.

Name	Technical Specification	Description
Alpha / Numeric	varchar(m)	[a-z], [A-Z],[0-9],[ Letters and digits where m is the maximum number of characters allowed, e.g. 10 chars could be "Abcdef_123" but not "Abcdef_1234"
Boolean	boolean	A data type with only two possible values: True or False
Boolean using Alpha	varchar(m)	[a-z],[A-Z],[ Alphabetical (letters only), where m is the maximum number of characters allowed. E.g. 1 char "Y"
Date	date	Format DD/MM/YYYY
Decimal	decimal	Please note this may be a negative number especially when dealing with Invert levels of pipes.  The total number of digits to be stored is not specified to accommodate different systems.
Integer	integer	Positive whole number (0 to 18,446,744,073,709,551,615)

## 2.4 Attribute Table Column Explanations

This section defines the purpose for each column in the attribute tables.

Metadata Element Name	Definition
Column Name	An abbreviated name for the attribute field adopting the "underscore_case" structure, e.g. "DS_Pipe_No"  The field name is limited to 10 characters to enable the delivery of data in ESRI Shape file format if required.
Data Type	Defines the type of data the field is to hold, for example "Alpha / Numeric". Please refer to Table in section 1.4.1 – Attribute Data Types
Max Length	Where relevant the maximum length of the Data Type is provided, for example "35 chars" (representing 35 characters).
Comment	Additional information provided to fully describe what the data type will consist of, for example "2 decimal places", "No commas included" or "Yes or No field".
Contents	Information to fully describe what the attribute field is for. For example "The current operational state of the asset".  Sometimes an example is included as a sample value. "ABN" a value from the Codelist.
QA Validation	Lists one or more rules that must be applied, for example the "Field cannot be empty." Sometimes a default value will be provided.
CODELIST Reference	A list of allowable values to be used. E.g. the list of materials that a Pipe can be described by such as "uPVC".  The field is limited to 10 characters.

## 2.5 Coordinate fields

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 in Australia 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 the relevant jurisdiction’s Vicmap property mapbase 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.

## 3 Code Lists

This section provides details for a set of Code Lists used to standardise terminology by providing a range of item descriptions relating to a particular attribute. A number of attributes specified in the attribute fields may require the input of a code list entry number.

**Consultants please note:** If a Code does not exist, the new asset feature is to be recorded in the “**Comments**” field and a note sent via the A-SPEC website **ContactUs** form so a new code can be created, ratified and distributed.

Codelist entries will be constantly reviewed by GISSA and the Consortium–A-SPEC Community and additions and amendments made as the need arises.

Refer to the A-SPEC website ([www.a-specstandards.com.au](http://www.a-specstandards.com.au)) for the up-to-date register.

## 4 A-SPEC Document Control

<b>Project Name</b>	A-SPEC Introduction for Digital Data Standard Specifications
<b>Document Type</b>	Introduction and accompanying document for all the Standard Specifications
<b>Document Number</b>	AS-2019-0005
<b>File Name</b>	A-SPEC DDS – Introduction & Overview V2.0.5 Final.docx
<b>Version Date</b>	31 <sup>st</sup> May 2019
<b>Written by</b>	Duncan Brooks and George Havakis
<b>Reviewed by</b>	Michael Wood
<b>Authorised by</b>	George Havakis

## 5 Document Revision History

Revision Number	Date	Comments
V1-Draft A	15 February 2015	Draft document to NZ TWG of new format for A-SPEC documents
V1 Draft B	6 January 2017	Updated document for distribution to Australian members
1.0.0	1 March 2017	Updated for NZVD2016 and LINZS25002 (NZ geodetic and vertical datums)
1.0.0	11 April 2017	Updated Bass Coast logo
1.1.0	5 January 2018	Addition of logos for new members and updates following updates to D & R-Specs
2.0.0	10 September 2018	Finalised Asset Types and Specifications, document number, version, and dates Changes adopted and finalised
2.0.1	15 November 2018	Incorporate feedback from members
2.0.5	31 May 2019	Incorporating Addendums and other feedback from members

## 6 Summary of Specification Changes

The following is a summary of changes made to the **A-SPEC Introduction Document** from the last official release.

Item #	Change
1	Modifications to "Certification Form - Readme / Metadata File"
2	Modifications to "Graphical and Technical Specifications"
3	Modifications to Section 1.1 to include GDA2020 and additional information
4	Modifications to Section 1.3.1 – "Asset Types and their Relevant Specifications"
5	Modifications to Section 2 – "Attribute & Validation File Specifications"
6	Addition of Section 2.3 – "Attribute Data Types"
7	Addition of Section 2.4 – "Attribute Table Column Explanations"
8	Modifications to Section 2.5 – "Coordinate Fields"
9	Modifications to Section 3 – "Code Lists"