13 July 2017

Original: English

**Eleventh United Nations Conference on the
Standardization of Geographical Names**
New York, 8-17 August 2017
Item 12 (b) of the provisional agenda*
Toponymic data files and gazetteers: Data management and interoperability

A Nationally Consistent Australian Feature Catalogue

Submitted by Australia**

UNGEGN Paper: Australia

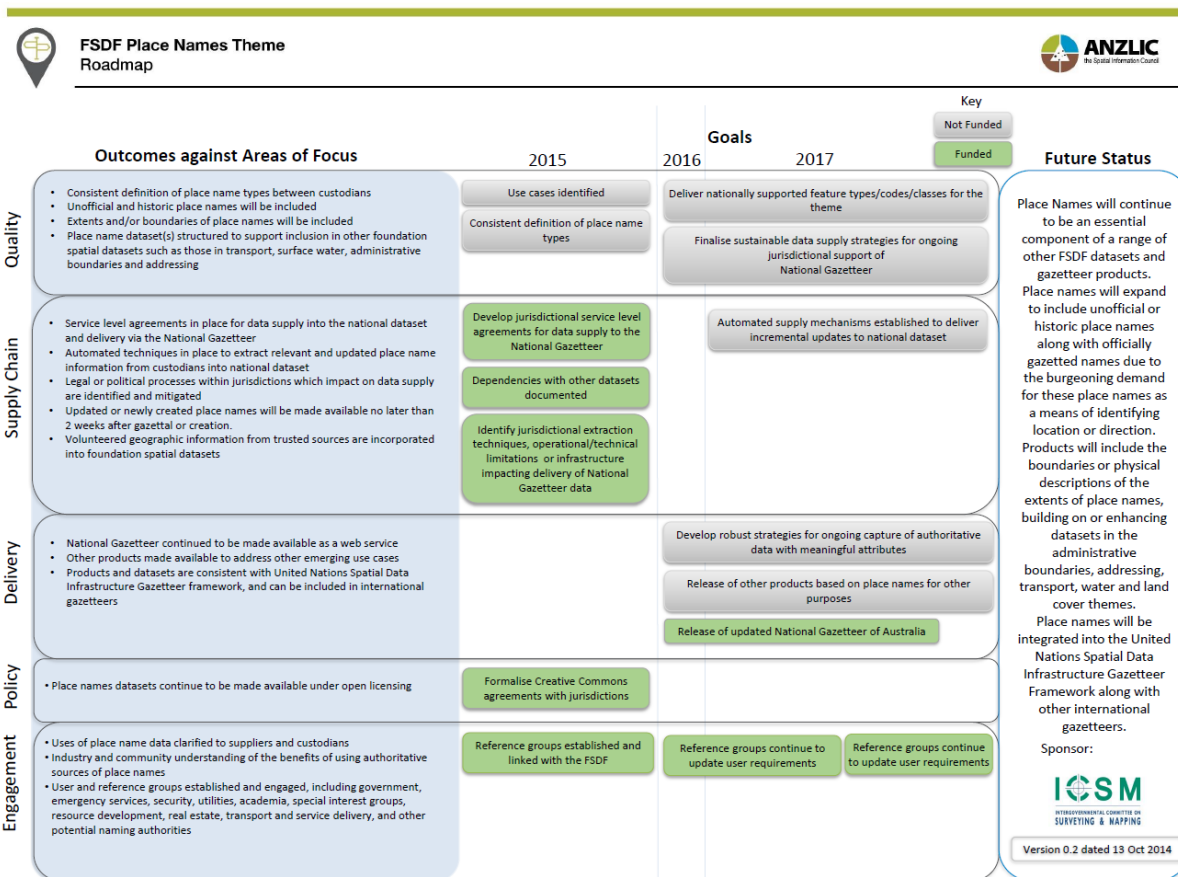**A Nationally Consistent Australian Feature Catalogue**

Summary

The paper outlines the process taken to create a nationally consistent Feature Catalogue in Australia. Creation of a nationally consistent Feature Catalogue will enable all Australian jurisdictions to upload or link data to a central portal. The project is an important component in the supply chain and aggregation methods which will create the Composite Place Names Gazetteer of Australia.

Currently place names are delivered by each jurisdiction, with a national coverage being supplied by the Permanent Committee on Place Names (PCPN) through Geoscience Australia as the National Gazetteer of Australia. The data was typically updated yearly by all jurisdictions which includes States and Territories, Australian Antarctic Division, Australian Hydrographic Office and the Great Barrier Reef Marine Authority.

1.0   Context

Australia's Permanent Committee on Place Names[1] (PCPN) which resides under the Intergovernmental Committee on Surveying and Mapping[2] (ICSM) (recently, renamed from the Committee for Geographical Names of Australasia) has been working over the past three years on developing a nationally consistent Feature Catalogue. This work is part of the ANZLIC's[3] (Australian and New Zealand Land Information Council) Foundation Spatial Data Framework (FSDF)[4]. There are ten core themes one of which is a Place Names Theme[5]. The aim of the theme is to enable all Australian jurisdictions to upload or link data, via a national portal, consistent place name related data to provide a national gazetteer of place names.

The FSDF road map is viewable below:

FSDF Place Names Theme Roadmap — ANZLIC the Spatial Information Council

Key: Not Funded / Funded

Outcomes against Areas of Focus — Goals (2015, 2016, 2017) — Future Status

Quality
- Consistent definition of place name types between custodians
- Unofficial and historic place names will be included
- Extents and/or boundaries of place names will be included
- Place name dataset(s) structured to support inclusion in other foundation spatial datasets such as those in transport, surface water, administrative boundaries and addressing

2015: Use cases identified; Consistent definition of place name types
2016/2017: Deliver nationally supported feature types/codes/classes for the theme; Finalise sustainable data supply strategies for ongoing jurisdictional support of National Gazetteer

Supply Chain
- Service level agreements in place for data supply into the national dataset and delivery via the National Gazetteer
- Automated techniques in place to extract relevant and updated place name information from custodians into national dataset
- Legal or political processes within jurisdictions which impact on data supply are identified and mitigated
- Updated or newly created place names will be made available no later than 2 weeks after gazettal or creation.
- Volunteered geographic information from trusted sources are incorporated into foundation spatial datasets

2015: Develop jurisdictional service level agreements for data supply to the National Gazetteer; Dependencies with other datasets documented; Identify jurisdictional extraction techniques, operational/technical limitations or infrastructure impacting delivery of National Gazetteer data
2017: Automated supply mechanisms established to deliver incremental updates to national dataset

Delivery
- National Gazetteer continued to be made available as a web service
- Other products made available to address other emerging use cases
- Products and datasets are consistent with United Nations Spatial Data Infrastructure Gazetteer framework, and can be included in international gazetteers

2016/2017: Develop robust strategies for ongoing capture of authoritative data with meaningful attributes; Release of other products based on place names for other purposes; Release of updated National Gazetteer of Australia

Policy
- Place names datasets continue to be made available under open licensing

2015: Formalise Creative Commons agreements with jurisdictions

Engagement
- Uses of place name data clarified to suppliers and custodians
- Industry and community understanding of the benefits of using authoritative sources of place names
- User and reference groups established and engaged, including government, emergency services, security, utilities, academia, special interest groups, resource development, real estate, transport and service delivery, and other potential naming authorities

2015: Reference groups established and linked with the FSDF
2016: Reference groups continue to update user requirements
2017: Reference groups continue to update user requirements

Future Status: Place Names will continue to be an essential component of a range of other FSDF datasets and gazetteer products. Place names will expand to include unofficial or historic place names along with officially gazetted names due to the burgeoning demand for these place names as a means of identifying location or direction. Products will include the boundaries or physical descriptions of the extents of place names, building on or enhancing datasets in the administrative boundaries, addressing, transport, water and land cover themes. Place names will be integrated into the United Nations Spatial Data Infrastructure Gazetteer Framework along with other international gazetteers.

Sponsor: ICSM INTERGOVERNMENTAL COMMITTEE ON SURVEYING & MAPPING

Version 0.2 dated 13 Oct 2014

[6]

The project supports the maintenance and development of the Composite Place Names Gazetteer of Australia into the future. The proposed approach was compliant with national spatial data model developments in line with the ANZLIC FSDF, and will take advantage of accepted global data modelling a technique which enables interoperability and identifying best practice. The project

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[1] PCPN: http://www.icsm.gov.au/cgna/

[2] ICSM: http://www.icsm.gov.au/index.html

[3] ANZLIC: http://www.anzlic.gov.au/

[4] FSDF: http://link.fsdf.org.au/

[5] FSDF Place Theme: http://link.fsdf.org.au/fsdf-theme/2422

[6] FSDF Place Theme Road map: http://www.anzlic.gov.au/sites/default/files/files/Roadmap_-_Place_Names.pdf

directly relates to development of cross-jurisdictional spatial information infrastructure, and facilitation of access to data of national significance.

The development of the Feature Catalogue was previously identified as a specialised activity with a working group formed in 2014 which determined the rules for the project. The working group consisted of PCPN members from the States of Western Australia (WA), South Australia (SA), Queensland, and Victoria.

The Aim of the project was:

> "To develop a common feature terminology catalogue between the State gazetteers and the National Gazetteer hosted by Geoscience Australia."

The proposed 'terms' are described as Group, Category and Feature. Definitions will be applied to each term. Approved 'included generic terms' will be listed where it assists clarification or where jurisdictions have an equivalent local term. The table below provides a snap shot:

GROUP	CATEGORY	FEATURE
ADMINISTRATIVE	ADMIN BOUNDARY	LOCAL GOVERNMENT AREA
ADMINISTRATIVE	ADMIN BOUNDARY	LOCALITY
ADMINISTRATIVE	ADMIN BOUNDARY	PARISH
CULTURE	COMMUNITY FACILITY	BOTANICAL GARDENS
CULTURE	COMMUNITY FACILITY	COMMUNITY CENTRE
CULTURE	LANDMARK	SHIP WRECK
CULTURE	PLACE OF WORSHIP	CHAPEL
HYDROLOGY	WATERBODY	ENTRANCE
HYDROLOGY	WATER POINT	WATER TANK
HYDROLOGY	WATERWAY	WATERCOURSE

Initial focus of the working group was to include as many feature terms as possible from primary authoritative sources, taking into consideration their dates of publication. Subsequent second and third level authoritative sources were also referenced.

The authoritative sources used in this project are listed below.

Primary sources

This Feature Catalogue will expand primarily on the most recent work undertaken, taking into account the dates of the publications below:

- Intergovernmental Committee on Survey and Mapping (ICSM) Standardised National Codes 2004[7],

- Public Sector Mapping Authority (PSMA) 2014 feature list, and

- CGNA Glossary of Generic Terms 1996[8].

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[7] ICSM Standardised national feature codes: http://www.icsm.gov.au/topo/standardised_national_feature_codes.pdf

[8] CGNA Glossary of Generic Terms 1996: http://www.icsm.gov.au/cgna/glossary_pnames.pdf

Note: Many of ICSM's Standardised National Codes 2004 'Possible included terms' are stand-alone features in today's spatial industry.

Secondary sources

VICMAP[9], VICNAMES[10], Australian National Place Names Survey[11] Feature chart (ANPS) and Geoscience Australia term and grouping lists.

State and International sources

Australian jurisdictional feature term lists, international jurisdictions (Ordnance Survey, INSPIRE, International Hydrographic Organisation's (SCUFN gazetteer[12]), Federal Geographic Data Committee (US), EPOI (Canadian)).

1.1 Rules

The terms are to be relevant in today's spatial world. eg 'fire station' is a currently a working fire station, not a non-operating fire station. A historic fire station may in today's world be a 'neighbourhood house' a café, or a bar. It may also be a 'historic site'.

• Numerical characters are not to be used for the terms in Feature, Category and Group.

CAV3	CAVE

• All Features will have a Category and Group.

GROUP	CATEGORY	FEATURE
HYDROLOGY	WATER POINT	WATER TANK

• Each Group's description must be unambiguous. For example, Morphology and Relief would not be allowed.

MORPHOLOGY	RELIEF

• Each Feature's description must be unambiguous. For example, Court House and Law Court would not be allowed.

COURT HOUSE	LAW COURT

• Each Feature term is unique - not replicated either as another feature within a feature or as a category or a group.

WATERCOURSE	WATERCOURSE

• The tier classification of the terms should allow for expansion or further detail as required.

GROUP	CATEGORY	FEATURE

[9] Vicmap data: http://services.land.vic.gov.au/landchannel/content/productCatalogue
[10] VICNAMES – The Register of Geographic Names http://maps.land.vic.gov.au/lassi/VicnamesUI.jsp
[11] ANPS: http://www.anps.org.au/index.html
[12] SCUFN Gazetteer: http://www.gebco.net/data_and_products/undersea_feature_names/

GROUP	CATEGORY	FEATURE	
HYDRO	WATERBODY	LAKE	
HYDRO	WATERBODY	RESERVOIR	
HYDRO	WATERBODY	WETLAND	

GROUP	CATEGORY	FEATURE	SUB FEATURE
HYDRO	WATERBODY	LAKE	POND
HYDRO	WATERBODY	LAKE	LAGOON
HYDRO	WATERBODY	LAKE	OXBOW

- A term's name will not be constrained to 50 characters.

- Spaces may be used to separate words.

POLICE STATION

- A backslash / and brackets ( ) are the only special characters utilised. The use of these characters should be limited.

LAND/MARINE USE ACTIVITY AREA
GENERAL HOSPITAL (EMERGENCY)
BASIN (MARINE)

- The Feature Catalogue of terms is designed to enable expansion and growth.

1.3   Exclusions

The following points will be considered exclusions.

- The Feature Catalogue will not advise on the type of spatial entity. eg whether a feature such as a quarry is a point, line or polygon; or a combination of all three.

- Terms that refer to imaginary lines or points eg spot heights, contours.

- Terms that refer to organisations.

- Technical terms that existed for specific mapping network connectivity (they may be added in subsequent versions eg 'connector', 'road end').

2.0   Process

The bulk of the project was completed over three years from 2014 through to 2016. The working group held:

- three teleconferences,
- two face to face meetings (in SA), and
- three annual conferences, (Townsville, Darwin and Perth) which included workshops devoted to the project.

A matching exercise was undertaken between the primary sources, favouring the features which were most prominent across jurisdictions. Obviously, some features are unique to jurisdictions and rightly so, for example:

- *Antarctic Specially Managed Areas are unique to Australian Antarctic Division,*
- *A 'Hundred' is unique to WA and SA (A subdivision of counties into land units, which is a Parish in other jurisdictions), and a*
- *Basin (Marine), which has been adopted from SCUFN (Sub-Committee on Undersea Feature Names).*

The initial matching exercise took many hours and several months to complete, focusing on using the sources indicated within 1.0 Context. Teleconferences were held to fine tune decisions and ultimately led to face to face meetings hosted by South Australia.

The face to face meetings consisted of working group members completing the following tasks:

1. Review and further develop the Feature Catalogue,

    a. Finalise the Group, Category and Feature classifications and their definitions into a documented national standardised Feature Catalogue.

    b. Identification of any future technical training and a model framework to assist PCPN jurisdictions in the redevelopment of jurisdictional Feature Catalogues to ensure they remain extensible and appropriate to future national requirements of the FSDF themes.

2. To develop a plan for the ongoing supply chain of FSDF Place Names information from all jurisdictions to the National Gazetteer in an efficient and timely manner.

3. Identify future collaborative opportunities with other FSDF themes.

Following on from the face to face meetings and workshops at yearly conferences, the finalised Feature Catalogue was presented to PCPN members at the October conference in Perth 2016, with adoption of the new Feature Catalogue in December 2016. Regular updates throughout the project were provided to both PCPN and ICSM members.

The final adopted catalogue saw some further amendments being made as jurisdictions began the task of matching jurisdictional Feature Catalogues to the nationally adopted Features Catalogue. It is expected that jurisdictions will provide their place name data or link to the national portal by the end of July 2017, creating the Composite Place Names Gazetteer of Australia.

The final adopted catalogue has:

- Nine Groups,
- Forty-One Categories, and
- Four hundred and fourteen Features.

An example of the Feature Catalogue is shown below:

GROUP	GROUP DEFINITION	CATEGORY	CATEGORY DEFINITION	FEATURE	FEATURE definition	Source	included terms	Examples
HYDROLOGY	Natural or man-made places which relate to the surface and underground water or marine environments	WATERBODY	Natural or constructed places where a body of water may be available	RESERVOIR	An artificial LAKE for the storage, regulation and control of water for domestic or other use	GNR		
HYDROLOGY	Natural or man-made places which relate to the surface and underground water or marine environments	WATERBODY	Natural or constructed places where a body of water may be available	WETLAND	Areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support vegetation typical of SWAMPS, MARSHES, bogs, etc.	GNR	Swamp, Marsh, Salt marsh, Morass	
HYDROLOGY	Natural or man-made places which relate to the surface and underground water or marine environments	WATER POINT	Natural or constructed places where water may be available	WATER TANK		VIC_INACTIVE	Water Tower, elevated water tank	
HYDROLOGY	Natural or man-made places which relate to the surface and underground water or marine environments	WATERWAY	Natural or contructed places that are assoctaed with the movement of water	BEND	A curve in the course of a STREAM		meander, Loop	

Nine Groups, 41 Categories and 414 Features.

3.0 Future tasks

As described by the FSDF Place Names theme, PCPN will provide all officially named features into the one foundation theme database, the Composite Place Names Gazetteer of Australia. This will allow for an openly available real-time service with the production of specific and general gazetteer products to be created from authoritative data.

Jurisdictions are in the process of determining a specific implementation plan based on their system requirements and resourcing capacity. The eventual aim is for all databases to use the same feature classifications but it is recognised that this will require some system design changes in some jurisdictions. When an immediate incorporation is not suitable, then the data will be matched to existing jurisdictional Feature Catalogues enabling delivery of jurisdictional place name data to the Composite Place Names Gazetteer of Australia.

There is currently a 'freeze' on any additions and alterations, though as these are identified, they will be discussed at teleconferences and conferences and incorporated into the Feature Catalogue, as required. This will ensure, wherever possible, the consistent adoption of the Feature Catalogue nationally.

Decisions around the supply of point, line and polygon data will be discussed at future meetings as well as defining the descriptions in the definition column and providing real world examples.

4.0   Conclusion

The implementation of a standardised Feature Catalogue for all jurisdictions will ensure that Australia is consistent with current international data models, standards and best practice processes. It will improve the interoperability and useability of the Composite Place Names Gazetteer of Australia for a wider range of applications including other FSDF Themes as required. The project will allow stakeholders and customers to integrate Place Names information and provide a platform for the development of future applications which will be able to integrate the Composite Gazetteer with other heterogeneous sources of data, thus contributing into seamless national and international products.