

New Zealand SDI State of Play Report 2012

2012 NZSDI Benchmark Exercise
New Zealand Geospatial Office

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1 Purpose of this document

This document presents an assessment of the “State of Play” of New Zealand’s national-level Spatial Data Infrastructure (NZSDI). This assessment allows the NZSDI to be characterised in a way that will enable comparisons to its future state and other SDIs. The approach is based on that undertaken in Europe to compare SDI maturity between those nations working towards compliance with the [EU INSPIRE Directive](#)¹.

The baseline date for the assessment is September 2012.

2 Introduction

“Spatial Data Infrastructure” is a term used to describe a group of components that operate together to enable the use of geospatial information. These components range from readily identifiable assets (such as datasets and software tools), to governing rules (such as policies and protocols) and less tangible assets such as skills and knowledge.

The following definitions summarise in a little more detail what a spatial data infrastructure is:

Definition of SDI

“The term “Spatial Data Infrastructure” (SDI) is often used to denote the relevant base collection of technologies, policies and institutional arrangements that facilitate the availability of and access to spatial data. The SDI provides a basis for spatial data discovery, evaluation, and application for users and providers within all levels of government, the commercial sector, the non-profit sector, academia and by citizens in general.

The word infrastructure is used to promote the concept of a reliable, supporting environment, analogous to a road or telecommunications network, that, in this case, facilitates the access to geographically-related information using a minimum set of standard practices, protocols, and specifications.”

Spatial Data Infrastructure Cookbook (GSDI, 2009)

<http://www.gsdi.org/gsdicookbookindex>

“A national SDI represents a comprehensive system of inter-related elements involving governance structures, policy, standards, data, hardware, software, and people across all levels of their organisations.”

Spatial Data Infrastructure Cookbook (NZGO, 2011)

<http://www.geospatial.govt.nz/sdi-cookbook-v1-1-home>

Any approach to measuring the strength or maturity of an SDI therefore needs to accommodate a broad range of factors.

¹ Directive 2007/2/EC of the European Parliament, <http://inspire.jrc.ec.europa.eu/index.cfm> (Last visited 27/9/2012)

3 Approach

Since 2001 a number of “State of Play” reports have been published that audit the maturity and growth of national SDIs in the countries of the European Union (EU). These have been supported by country-level INSPIRE Monitoring and Reporting submissions that quantify the availability of datasets, related metadata and services and the degree of compliance of these with INSIPRE standards.

The latest European State of Play report was published in 2011, describing the situation as of quarter 1, 2011².

This report for New Zealand applies the same method of assessment, directly referencing many of the same criteria used in the EU’s reporting. Some criteria are adapted to fit within the context of New Zealand, while other New Zealand specific criteria have been added to the assessment.

The assessment uses 46 criteria to characterise the state of the NZSDI. These align to the 6 “Building Blocks” of an SDI plus indicators that look at the fit of the NZSDI with other related government initiatives. The number of criteria within each building block and what they relate to are as follows:

- **Organisational issues (8)** – the scale, operation, participation, and coordination of the SDI.
- **Legal issues and funding (9)** – the legal and funding frameworks within which the SDI operates.
- **Data (13)** – the availability, quality and interoperability of data within the SDI.
- **Metadata (7)** – the availability, implementation and use of metadata within the SDI.
- **Access and other services for data and their metadata (5)** – the availability of services that support the discovery and use of data and related services.
- **Standards (2)** – the approach taken to the use of standards within the SDI to support interoperability.
- **Cross-government coordination (2)** – how integrated the implementation of the SDI is with other related government initiatives.

Each criterion is given as a statement e.g. “The approach and territorial coverage of the SDI is truly national”. An assessor reviews the available evidence and then classifies the statement depending on whether it can be:

- agreed with,
- only partially agreed with,
- not agreed with, or
- it is unknown as to whether or not its can be agreed with.

By looking at each SDI building block and the degree of agreement with the statements that relate to them it is possible to characterise and benchmark the overall SDI.

The relevance of individual criteria, the approach to assessing the level of agreement for each, the evidence used to support the assessment and the results of the assessment are detailed Appendix A. A summary of findings from these results is provided in section 4.

² Spatial Data Infrastructures in Europe: State of play spring 2011, D4.2 – Summary report regarding the results of the European Assessment of 34 NSDI (second year), http://inspire.jrc.ec.europa.eu/reports/stateofplay2011/INSPIRE_NSDI_SoP_-_Summary_Report_2011_-_v6.2.pdf

(Last visited 17/7/2012)

The assessment has been undertaken by the New Zealand Geospatial Office (NZGO) with support from other staff at Land Information New Zealand (LINZ) and independently reviewed by the national Geospatial Steering Committee which represents the interests of a cross-sectoral range of users of and contributors to the SDI.

3.1 An example of the assessment

One of the eight statements within the “Organisational issues” criteria reads:

“The approach and territorial coverage of the SDI is truly national”.

As New Zealand’s National Government has a published Geospatial Strategy that aims to establish governance and data availability, accessibility and interoperability at a national level, and have specifically tasked LINZ (through the New Zealand Geospatial Office) to establish a more formal SDI, there is clear evidence that this statement can be agreed with, so it falls in to the “agreed with” category.

The other seven statements (and their categorisations) within the organisational issues category are:

“One or more components of the National Spatial Data Infrastructure (NSDI) have reached a significant level of successful operation” (partially agreed with)

“The officially recognised or de facto coordinating body of the NSDI is a National Data Provider” (agreed with)

“The officially recognised or de facto coordinating body for the NSDI is an organisation controlled by data users” (not agreed with)

“An organisation of the type ‘national GI -association’ is involved in the coordination of the NSDI” (agreed with)

“The coordinating body is controlled by both users and producers” (partially agreed with)

“Producers and users of spatial data are participating in the NSDI” (agreed with)

“Not only public service actors are participating in the NSDI” (agreed with)

So, the organisational state of play of the SDI can be characterised by having 5 agreed with criteria and 3 partially agreed with criteria.

Figures 1 – 3 in the following section show the level of agreement with the assessment criteria across each of the SDI building blocks.

Generally, the higher the proportion of criteria falling in to the “agreed with” category indicates a higher level of development or maturity of the SDI. However, in some instances the criteria are not value statements but describe the nature of the SDI rather than its maturity. In these categories getting 100% agreement is not necessarily desired outcome.

For example the statements “The officially recognised or de facto coordinating body of the NSDI is a National Data Provider” and “The officially recognised or de facto coordinating body for the NSDI is an organisation controlled by data users” are likely to be exclusive of each other and they are not value statements i.e. one approach is not necessarily better than another, but understanding which is true helps to characterise the nature of the SDI.

4 Summary of results and findings

The results of the assessment are summarised in the following figures which compare the proportion of criteria in agreement, or otherwise, with the indicator statements. Figure 1 shows the combined results for both the common and New Zealand specific assessment criteria. Figures 2 and 3 show these separated out from each other.

Figure 1 - Combined (common + New Zealand specific) SDI Indicator Assessment

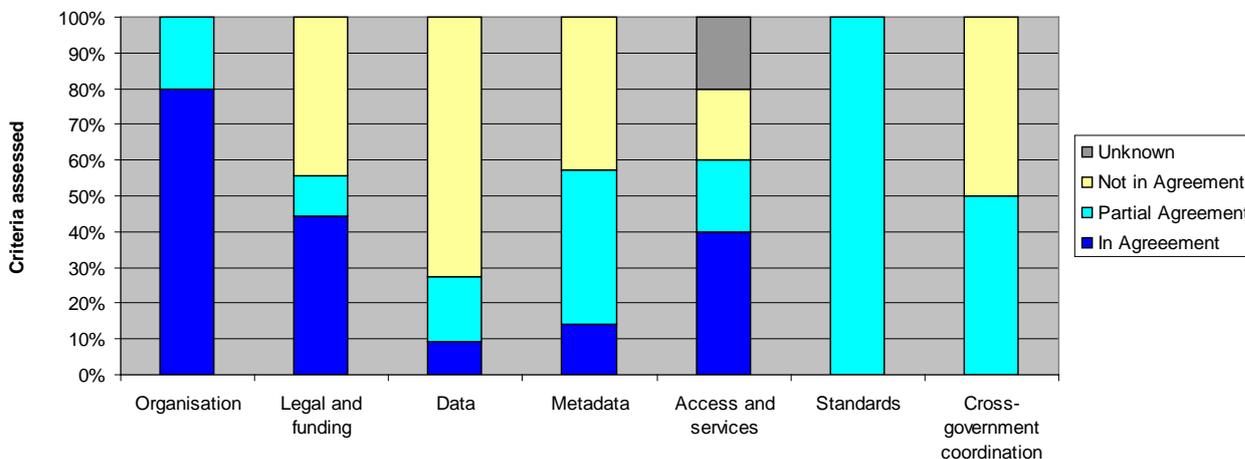


Figure 2 - Common SDI Indicator Assessment

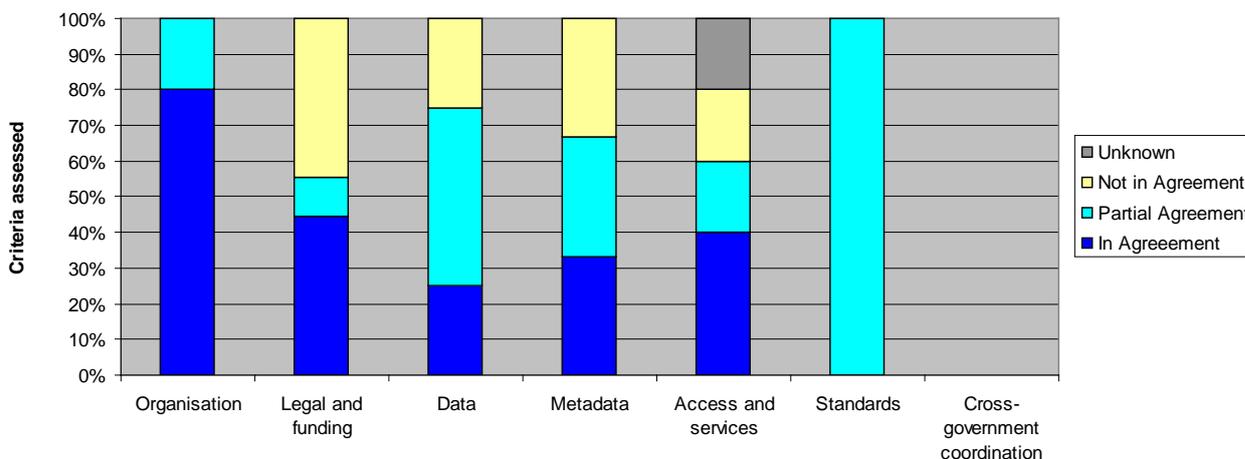


Figure 3 - New Zealand Specific SDI Indicator Assessment

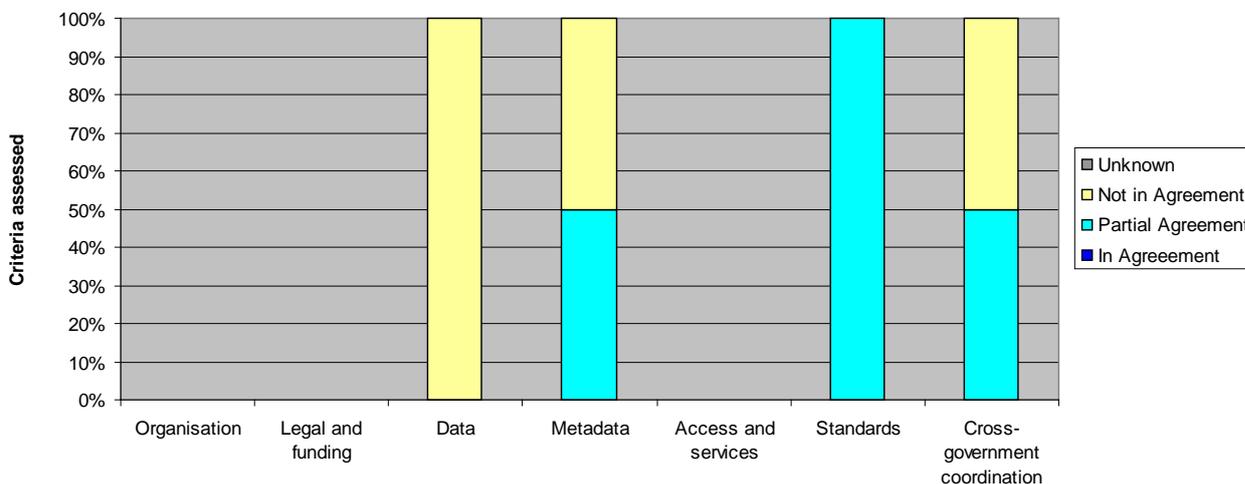
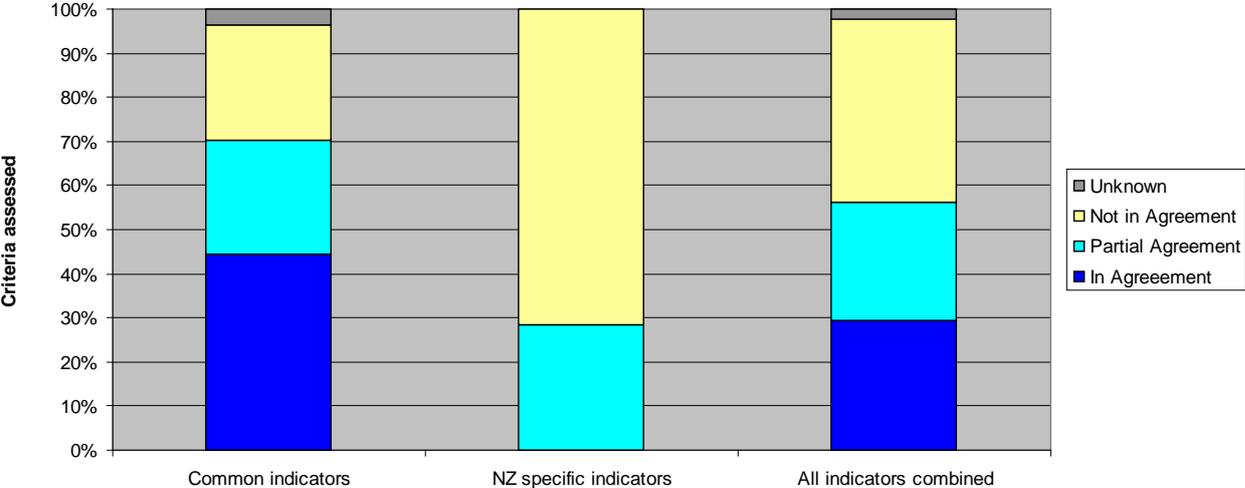


Figure 4 gives an overall picture, combining the results for all the assessment criteria for all of the components of the SDI.

Figure 4 - Summary of all assessed SDI indicators



The graphs in figures 1 to 4 are drawn from the summary results presented in tables 1 to 3 which in turn are based on the detailed assessment in Appendix A.

SDI Component	Common criteria	New Zealand specific criteria	Total score
Organisation *	4/5	N/A	4/5
Legal and funding	4/9	N/A	4/9
Data **	1/4	0/7	1/11
Metadata	1/3	0/4	1/7
Access and services ***	2/5	N/A	2/5
Standards	0/1	0/1	0/2
Cross-government coordination	N/A	0/2	0/2
Totals	12/27	0/14	12/41

Table 1 – Summary scores for criteria found to be “in agreement” with assessment statements relating to the operation of the NZSDI

SDI Component	Common criteria	New Zealand specific criteria	Total score
Organisation *	1/5	N/A	1/5
Legal and funding	1/9	N/A	1/9
Data **	2/4	0/7	2/11
Metadata	1/3	2/4	3/7
Access and services ***	1/5	N/A	1/5
Standards	1/1	1/1	2/2
Cross-government coordination	N/A	1/2	1/2
Totals	7/27	4/14	11/41

Table 2 – Summary scores for criteria found to be “in partial agreement” with assessment statements relating to the operation of the NZSDI

SDI Component	Common criteria	New Zealand specific criteria	Total score
Organisation *	0/5	N/A	0/5
Legal and funding	4/9	N/A	4/9
Data **	1/4	7/7	8/11
Metadata	1/3	2/4	3/7
Access and services ***	1/5	N/A	1/5
Standards	0/1	0/1	0/2
Cross-government coordination	N/A	1/2	1/2
Totals	7/27	10/14	17/41

Table 3 – Summary scores for criteria found to be “not in agreement” with assessment statements relating to the operation of the NZSDI

Individual assessment criteria can be found in Appendix A.

* Criteria 3, 4 and NZ1 are excluded from the figures in the tables. They help to characterise how the SDI is organised but do not judge whether any one model is best or more mature.

** Criteria 21 and 22 are not included in the assessment or figures in the tables. They relate to multi-lingual aspects of the SDI more relevant to the European context than to that of New Zealand.

*** Criteria 30 (the presence of middleware services) is unknown.

Overall, for the 41 criteria accounted for in tables 1 – 3:

- 12 are in agreement
- 11 in partial agreement
- 17 are not in agreement, and
- 1 is currently an “unknown”.

The following sections summarise the findings within each of the seven indicator groups for the NZSDI.

4.1 Organisation

The existing governance framework for the NZSDI provides a strong base to support its development. Its creation is being led by the public sector and its governance reflects this, but there is clear direction from Government that all sectors should be involved. There is an increasing level of cross-sector participation e.g. the representation of the Spatial Industry Business Association (SIBA) on the Geospatial Executive Group (GEG) and Geospatial Steering Committee (GSC). Its governance is not fully inclusive of all potential participants e.g. there is no representation of 3rd sector organisations (such as charities and other non-government organisations) in its governance, and input from end-users of the NZSDI in to its development is currently limited.

4.2 Legal issues and funding

There is no direct legal mandate for the creation of the NZSDI but there is clear direction from Cabinet for its development.

There is no specific legislation or licensing governing the use and ownership of geospatial information, but there is a mature and comprehensive legal framework within which these issues can be managed.

There is no dedicated long-term funding to support the NZSDI development. Current activities are supported mainly out of Land Information New Zealand (LINZ) baseline funding or specific, time-bound projects. This may be a limiting factor to NZSDI development in future years as policy and funding priorities shift focus.

There are no Public-Private-Partnership (PPP) arrangements or long-term supply contracts in place to engage private sector resources in the development of the NZSDI (e.g. in terms of national fundamental data provision).

4.3 Data

Some elements of national topographic, bathymetric and thematic data supply are in place (e.g. via the LINZ Data Service (LDS) and Crown Research Institute web-portals). Work is ongoing to formalise national stewardship and custodian roles with organisations that have the potential to supply the “Fundamental Data” sets that will act as key reference information for NZSDI users and service providers.

Only once these agreements are in place can programmes for the publication of the fundamental data be planned. No plan or programme has been considered for the publication of non-fundamental data. This is taking place in an *ad hoc* manner. The same steward and custodianship framework could be applied to some non-fundamental data sets if required.

The 10 themes of fundamental data are listed Figure 5.

It is anticipated that action following the Declaration on Open and Transparent Government³ will lead to the release of significant volumes of geospatial data (along with other types of data) that will form an important part of the NZSDI. Work is ongoing to consider how the release of open data will be supported and how this will contribute to the NZSDI e.g. in terms of data, metadata, access and services.

Currently the management of the Open Data Secretariat and the New Zealand Geospatial Office (NZGO) are combined within the same unit at LINZ.

³ Declaration on Open and Transparent Government, <http://ict.govt.nz/programme/opening-government-data-and-information/declaration-open-and-transparent-government>

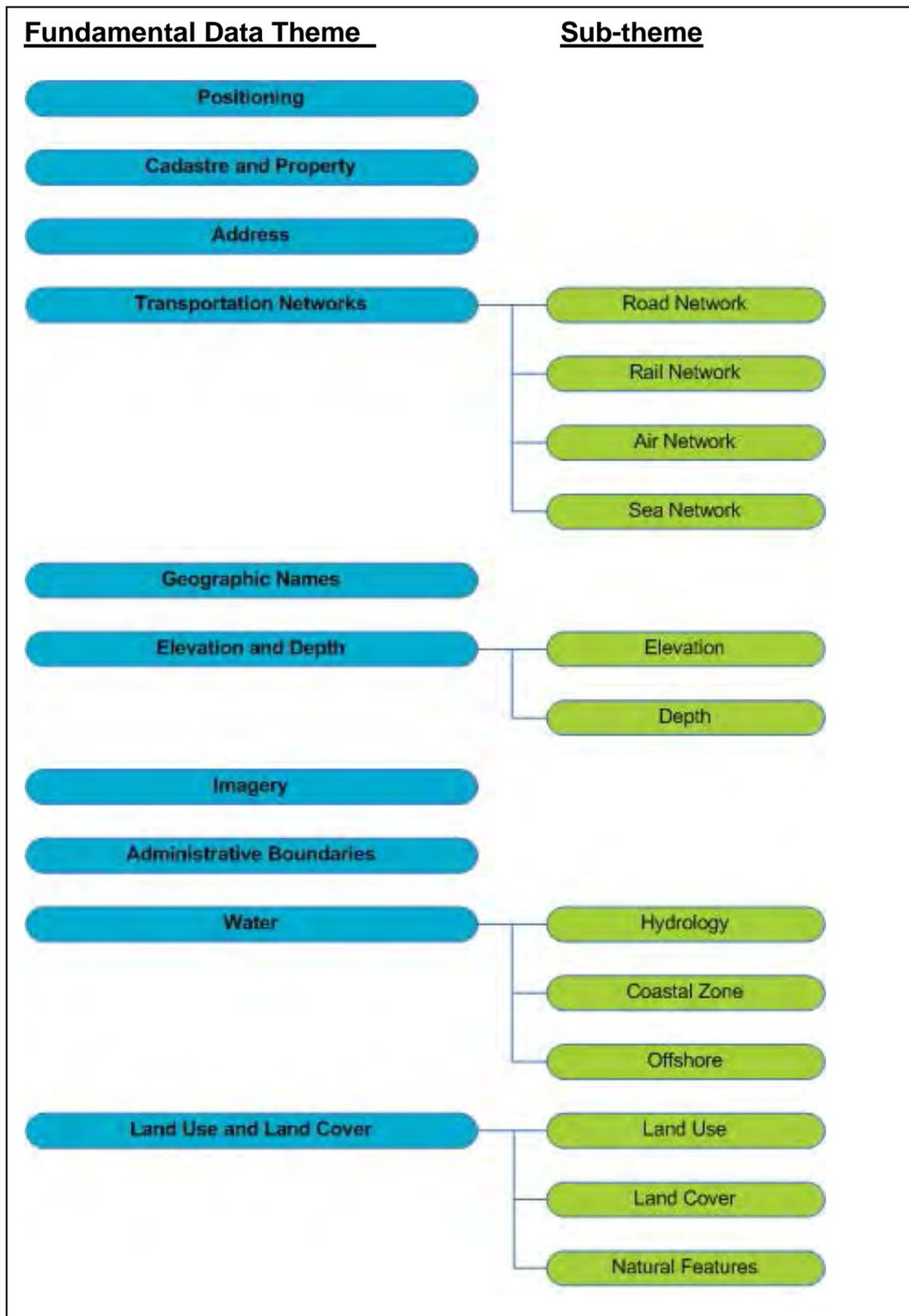


Figure 5 – New Zealand’s fundamental geospatial data themes

4.4 Metadata

The adoption of a standard format of metadata for geospatial data and services has been recognised as being critical to enabling the effective publication and sharing of these resources for a number of years.

New Zealand and Australia have worked jointly to create the Australia and New Zealand Land Information Council (ANZLIC) metadata profile, based on International Standards Organisation (ISO) standard 19115. This profile was first published in 2006. An associated XML schema (ISO 19139 compliant), used to store and exchange information in this profile format, has also been developed and is in use.

A number of metadata catalogues exist that provide access to discovery level and detailed metadata for a large number of national and local data sets. Some are federated i.e. records are shared across catalogues. For example www.geodata.govt.nz/ was established by the NZGO as a catalogue for metadata for publicly funded geospatial data and related web-services. Work was undertaken to federate its records with the New Zealand government data catalogue, www.data.govt.nz (which also references non-geospatial data).

Though catalogues exist, their content is created and maintained by a few specialists. Work is needed to support a range of other organisations; to help them create, maintain and publish metadata in a well managed way that presents them with no a significant overhead.

Future work in this area also needs to be aligned to the creation and publication of metadata for more general (non-geospatial) data as part of the open data initiative. This should aim to agree a core set of metadata elements common to data sets from different domains (e.g. geospatial, statistics, library services, education, etc.) which each have their own specialised metadata standards.

4.5 Access and other services

Data discovery, view and download services are available through a number of metadata catalogues (see above) and thematic geo-portals e.g. the National Land Resource Centre <http://www.nlrc.org.nz/home>.

Related web-services (e.g. WMS or WFS data feeds) are less easily discovered and there is no widely recognised or comprehensive service catalogue. There is no evidence of middleware services being run that invoke such services to create new outputs or add value to the available data feeds.

Automated transformation services are not a feature of the NZSDI though some data download utilities do provide a choice of coordinate systems to users e.g. data transformation can be undertaken prior to download within the LDS.

The introduction of transformation services may be of benefit to enable integration of data held in different projection and coordinate systems e.g. off-shore territories, New Zealand map grid etc.

4.6 Standards

The importance of the use of standards in achieving cross-organisation interoperability is well recognised by the bodies coordinating the development of the NZSDI. NZGO are active participants in regional and international geospatial standards organisations (e.g. ISO, the Open Geospatial Consortium (OGC) and ANZLIC).

Practical use of these standards is still relatively limited. Promoting the importance and adoption of common standards by participants in the NZSDI, particularly system and data providers, is an important area of work that will lead to the growth of data use and its associated benefits.

4.7 Cross-government coordination

Connections exist at a high-level between the development of the NZSDI and the Government ICT Capabilities Roadmap. The formal link between the two was made relatively recently so achieving practical outcomes from this is an area that will require further work, particularly in

terms of cross-agency engagement, influencing and support regarding the development or implementation of geospatial data sets and technologies.

There is clear direction from Cabinet that NZGO should be consulted by government agencies involved in procuring “location-based” information or services. Currently evidence that this is occurring effectively is limited. LINZ and NZGO are contributing to new government procurement rules that should help to improve this situation.

5 Conclusions

In reviewing the indicators used for this study it is encouraging that the NZSDI is developing across each of its components. In terms of the assessment criteria there are substantial areas of agreement, particularly around the organisational and legal components, and for many areas where there is currently no agreement work is already ongoing or planned to address these gaps.

The framework for the development of the NZSDI is in place. There is a national geospatial strategy in place that recognises the importance of growing the NZSDI, and strong governance arrangements in place regarding its implementation. Cabinet have given clear direction to LINZ to more formally develop the NZSDI, and this task is appointed to the New Zealand Geospatial Office.

The degree to which the NZSDI is formalised differs across its components; the organisational and legal frameworks are well defined; fundamental data stewardship and custodian roles and responsibilities have been formalised, though are yet to be put in to practice; the governance of other (non-fundamental) data sets is not directly influenced by GEG; ISO and OGC standards are in use but not enforced; the publishing of services is not centrally managed or directed; data catalogues and discovery portals exists but none are recognised as being definitive or totally comprehensive.

Ultimately ownership of different parts of the infrastructure will be vested in different organisations. A key challenge is how to coordinate this and foster participation to create an NZSDI that is effective and sustainable. This activity needs to be aligned with, and provide support to, other information-related government policies and initiatives.

4.1 Future use of this report

The indicators detailed in Appendix A and the resulting assessments made against each can be used:

1. to draw attention to areas of the NZSDI where work is needed to further develop and improve it, and to help plan out how this is done.
2. to benchmark the current state of play for the NZSDI so that we can re-assess the situation at a future date and gauge whether improvements have been made and help us understand our successes and failures.
3. to compare New Zealand's national SDI with others and support a collaborative dialogue with those working towards similar goals.

This report purposely does not make specific recommendations about activities or initiatives that need to be undertaken to further develop and strengthen the NZSDI. It is intended to provide a benchmark that will be used to support planning activities to be carried out by NZGO in 2013. These activities will roadmap the further development of the NZSDI and identify the initiatives required to move it forward.

Appendix A - NZSDI Assessment

The assessment presented in the following tables is based on those in the “INSPIRE & NSDI State of Play – D4.2 – Summary Report (Spring 2011)” (K.U. Leuven, 2011).

It assesses the status of the NZSDI according to the response to individual statements about a range of indicators. For each indicator one or more criteria are assessed, and the statement about each criterion can be judged to be:

- “A” – in agreement,
- “N” – not in agreement,
- “P” – in partial agreement, or
- “U” - Unknown

The indicators relates to one of the six building blocks of a national SDI:

1. Organisational framework
2. Legal and funding framework
3. Data
4. Metadata
5. Access and services
6. Standards

A seventh theme has been introduced that relates to cross-government coordination i.e. how well the NZSDI initiative fits with other related government activities.

Compared to the original work by K.U. Leuven some assessment criteria have been modified to better reflect the New Zealand context. However, the numbering of the original indicators has been kept to enable comparison back to that report (should it be required).

Additional criteria have also been introduced specific to New Zealand to provide a more detailed and relevant assessment. These are identified through the criteria ID number in Table A.1 by the prefix “NZ”.

Table A.1 shows the result of the assessment. For each criterion it presents a rating and supporting evidence and/or comment as to why that rating has been given. The table also explains the relevance of each indicator. The overall results of the assessment are summarised in section 4 of this report.

Table A.1 NSDI Assessment for New Zealand, September 2012

A - Organisational issues

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
Level of SDI	1	The approach and territorial coverage of the SDI is truly national	A	<p>The strategy for the development of an national SDI is outlined here: http://www.geospatial.govt.nz/geospatial-strategy</p> <p>“The Strategy is a national strategy and it aims to benefit all New Zealanders. However, because government is such a significant player in the geospatial sector, the initial focus of the Strategy and the work programme developed to implement the Strategy will be on government.” (A New Zealand Geospatial Strategy, January 2007)</p> <p>The strategy is Government led but inclusive of other sectors.</p>
		<p>Relevance: the indicator reflects the existence (or not) of a national initiative to create a NSDI. Assessment: A - If there is a clear initiative with a name, structure or organisation responsible and or legislation/strategy at the national level N - If no such initiative can be detected - e.g. if only national GI organisations exist but no clear coordination amongst them, or if regions develop their initiatives independently. P - If there are efforts to bring together stakeholders, but it has not (yet) been formalised.</p>		
Degree of operational maturity	2	One or more components of the NSDI have reached a significant level of successful operation	P	No one component in sections B to F has a majority of indicators “in agreement” with the qualifying criteria.
		<p>Relevance: the indicator gives an overall idea of the degree of development and ability of the NDSI to function effectively. Assessment: Following indicators are taken into account: I8-I16; I17-I22; I23-I25; I26-I30; I31; I32 (1 point for each) A - when for at least one of the building blocks the majority of the indicators are agreed with; for I31 the indicator should have a score "in agreement". P - when for several building blocks several (but less than half) indicators' score is "in agreement"; for I31 and I32 the indicators should be with a score "partially in agreement" N - in all other cases</p>		
Coordination	3	The officially recognised or de facto coordinating body of the NSDI is a National Data Provider, i.e. a National Mapping Agency or a comparable organisation (Cadastral or Land Survey Agency, i.e. a major producer of GI)	A	<p>Cabinet have endorsed Land Information New Zealand (LINZ) “as the lead agency to develop a more formalised spatial data infrastructure, in collaboration with other significant holders of location-based information, including local government, Crown agents, academia and the private sector” (Cabinet Economic Growth and Infrastructure Committee minute of decision (10) 30/14 (8 Dec. 2010)).</p> <p>The New Zealand Geospatial Office (N ZGO) within LINZ has the responsibility for taking this forward.</p> <p>http://www.beehive.govt.nz/release/government-recognises-importance-location-based-information</p> <p>http://www.linz.govt.nz/geospatial-office/about/projects-and-news/spatial-data-infrastructure/index.aspx</p> <p>NZGO are supported by the Geospatial Executive Group (GEG) and Geospatial Steering Committee (GSC), which provide direction to, and stewardship of the Geospatial Strategy.</p>
	4	The officially recognised or de facto coordinating	N	See above.

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
		body for the NSDI is an organisation controlled by data users		
	5	An organisation of the type 'national GI-association' is involved in the coordination of the NSDI	A	The GEG and GSC include members from government agencies, Crown Research Institutes and the private sector Spatial Industry Business Association (SIBA). No national associations other than SIBA are represented e.g. The Surveying and Spatial Sciences Institute (SSSI) may have individual members on GEG and GEC but is not formally represented.
	NZ1	The coordinating body is controlled by both users and producers.	P	These types of organisations have an input to the steer of the geospatial strategy through GEG and GSC.
		<p>Relevance: who is currently taking the lead and how (if at all) will this change over time (e.g. a shift to a more participatory and user focused and led NSDI)? This information is used mainly for the typology of the NSDI, and does not aim to 'evaluate' the way the coordination is done. I5 explicitly asks for the involvement in the coordination of an association (which could include universities, private sector and 3rd sector).</p> <p>Assessment: A - It is a simple "Yes" N - It is a simple "No" P - is applied when it is not so clear</p> <p>I3 and I4 can't be Y at the same time, but one can be Y and the other P since the indicators are assessed separately.</p>		
Participants	6	Producers and users of spatial data are participating in the NSDI	A	<p>Yes, e.g. LINZ, GNS, DOC, Landcare Research and NIWA are data providers and some are also participant users.</p> <p>Data discovery, viewing, download, content delivery via web services and other related services can be found through a range of geoportals and other websites. Examples include:</p> <p>http://www.doc.govt.nz/about-doc/role/maps-and-statistics/docgis/ http://data.linz.govt.nz/ http://www.geodata.govt.nz/ http://iris.scinfo.org.nz/ http://www.nlrc.org.nz/home http://wrenz.niwa.co.nz/webmodel/ http://maps.gns.cri.nz/</p> <p>NZGO is preparing illustrative summaries specific user cases. More formal work on benefits realisation associated with the growth and use of the NSDI should be considered.</p>
	7	Not only public service actors are participating in the NSDI	A	<p>The private sector, state sector universities and Crown Research Institutes are engaged and cooperating in the NSDI development in a number of significant ways e.g. via cross-sector CRC-SI collaborative research programme; SIBA representation on the GEG and GSC, the development of Masters and Postgraduate Diploma in Geographic Information Science and the in Geographic Information Science at the University of Canterbury and Victoria University of Wellington.</p> <p>Private sector service providers are supporting public sector organisations' SDI creation and developing commercial services that that draw on public sector geodata.</p>
		<p>Relevance: I6 is meant to capture whether the SDI initiative actively involves (= participation, not necessarily coordination) the users (e.g. Ministries) or not; I7 tries to capture if also private sector, universities, or other stakeholders are involved. This information is not used in the assessment itself, nor in the typology but</p>		

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
		provides a perspective on the level of cross-sector involvement and engagement in NSDI development. A - If answer is Y N - if answer is N P - if unclear, if there are elements that hints to agreement, others to no agreement.		

B – Legal issues and funding

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
Legal framework	8	There is a legal instrument or framework determining the NSDI-strategy or -development	A	The Geospatial Strategy is owned and promoted by Government. There is no legal framework, but a mature governance framework around the ownership and direction of the Geospatial Strategy exists. The Cabinet Economic Growth and Infrastructure Committee recognises the potential benefit that a NSDI would bring to improving revenues, efficiency and meeting policy objectives and endorses “LINZ as the lead agency to [collaboratively] develop a more formalised spatial data infrastructure”: http://www.linz.govt.nz/sites/default/files/docs/geospatial-office/cabinet-minute-capturing-benefits-of-location-based-information.pdf http://www.linz.govt.nz/geospatial-office/about/projects-and-news/spatial-data-infrastructure/index.aspx
		Relevance: This indicator captures whether there is a clear document defining the status of the SDI strategy. Assessment: A: when the document could be verified P: when it is said that such strategy exists but there is no proof; or when the document does not really provide a strategy; or when legislation or such a document is under preparation N: in all other cases		
Public-private partnerships (PPP)	9	There are true PPP's or other co-financing mechanisms between public and private sector bodies with respect to the development and operation of the NSDI-related projects	N	There are no formalised PPP or co-financing arrangements in place. Private sector supply of data and services is typically on a project-by-project / contract-by-contract basis (e.g. NZGO funded projects in Canterbury and Auckland), with no strategic or long-term contribution to the NSDI being contracted-out to the private sector. There are examples of syndicated procurement (e.g. data for the emergency services) and club funding of procurement (e.g. for Kiwi Image) but no true PPP.
		Relevance: This is one of the mechanisms to solve the problem of funding for the SDI. A: if Yes N: if No P: if not so clear		

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
Policy and legislation on access to public sector information (PSI)	10	There is a freedom of information (FOI) act which contains specific FOI legislation for the GI-sector	N	<p>Legislation is in place covering access to public sector information e.g. Official Information Act; Public Records Act; Local Government Information and Meetings Act;</p> <p>Legislation is inclusive of GI but not specific to it.</p> <p>The New Zealand Data and Information Management Principles (NZDIMP), endorsed by Cabinet in 2011, provides guidance governing public sector information provision:</p> <p>“government data and information should be open, readily available, well managed, reasonably priced and re-usable unless there are necessary reasons for its protection. Personal and classified information will remain protected. Government data and information should also be trusted and authoritative” (http://ict.govt.nz/programme/opening-government-data-and-information/new-zealand-data-and-information-management-princi)</p> <p>These principles support the 2011 Declaration on open and transparent government which also provides clear direction the release of public information for re-use.</p> <p>Other References: REVIEW OF THE OFFICIAL INFORMATION LEGISLATION, Law Commission, 2012 http://www.parliament.nz/NR/rdonlyres/2C8C72CA-6F09-45C0-AC8A-6CB63B16A227/227447/DBHOH_PAP_23261_LawCommissionTeAkaMatuaoTeTureRepo.pdf</p>
		Relevance: not directly for NSDI; but useful information on related legislation. A: if Yes N: if No P: if in preparation		
Legal protection of GI by intellectual property rights	11	GI can <u>specifically</u> be protected by copyright	N	The Copyright Act is inclusive of GI but not specific to it.
		Relevance: not directly for NSDI; but useful information on related legislation. A: if Yes N: if No P: if in preparation		
Restricted access to GI further to the legal protection of privacy	12	Privacy laws are actively being taken into account by the holders of GI	A	Privacy laws exist and are taken into account by GI holders. E.g. Privacy Act; Open Public Data (private data is protected); Privacy (Information Sharing) Bill; NZ Government Open Access Licensing framework (NZGOAL) licenses are a key mechanism for the release of public “materials” for reuse. NZGOAL licenses can be varied to enable privacy restrictions e.g. to protect the identity of land title holders.
		Relevance: not directly for NSDI; but useful information on related legislation. A: if Yes N: if No P: if in preparation		
Data licensing	13	There is a framework or policy for sharing GI	A	Yes, this is not limited to public institutions; see Declaration on open and transparent government ; NZ

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
		between public institutions		Government Open Access Licensing framework
	14	There are simplified and standardised licenses for personal use	A	Yes; the Copyright Act allows personal use; NZGOAL licenses reuse by any individual or organisation. "Quick guides" are available for both publishers and users of NZGOAL.
		Relevance: these indicators say something on whether there is a data policy or not and whether there is a simple licensing mechanism for use other than in public or private sector (citizen). A: if Yes N: if No P: if in preparation		
Funding model for the NSDI and pricing policy	15	The long-term financial security of the NSDI-initiative is secured	N	There is no specific long-term funding to support the NSDI. Base funding from LINZ supports the activities of the NZGO for the medium term. Specific short term project funding has to be bid for to support other key initiatives e.g. the Open Data Service and Canterbury SDI Acceleration.
	16	There is a pricing framework for trading, using and/or commercialising GI	P	For public data the principles within NZDIMP are to be applied: "Use and re-use of government held data and information is expected to be free. Charging for access is discouraged. Pricing to cover the costs of dissemination is only appropriate where it can be clearly demonstrated that this pricing will not act as a barrier to the use or re-use of the data. If a charge is applied for access to data, it should be transparent, consistent, reasonable and the same cost to all requestors." (NZDIMP) No standard framework is in place relating to the trading or sale of GI with or from the private sector.
		Relevance: funding is seen as a key issue for a sustainable NSDI; I16 shows whether there is a pricing policy or not. A: if Yes; it means e.g. that there are specific budgets foreseen for the NSDI, and they are coming back annually N: if No P: if in preparation or partially in place e.g. if the NSDI can rely systematically on funding from large projects.		

C – Data

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
Fundamental data availability	17	Geodatasets exist which provide a basis for contributing to the national coverage of Fundamental Data sets	P	Yes; but these do not necessarily provide full national coverage, nor have they been assessed in detail as to their content and use.
		Relevance: geo-datasets are the core for any NSDI; they are necessary to realise the aspirational benefits outlined in the Geospatial Strategy A: For almost all themes, data sets are identified. P: There are many data sets, but important themes are missing (e.g. addresses, cadastral parcels) N: If only a few data themes are covered.		
Geodetic reference systems and projections	18	The geodetic reference system and projection systems are standardised, documented and publicly available so that data transformation	A	Yes; these exist so that transformations between systems can take place. However this reference information is not identified formally as part of the NSDI.

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
		between them is possible.		
		Relevance: standardisation is important at the national level, and territorial level (data should be transformable, i.e. all necessary parameters should be known). A: If the answer on all sub-questions is yes: i.e. all the necessary parameters are known, documented (and publicly available). P: if there exist such systems, but the parameters are not publicly known. N: In all other cases.		
Quality of reference data & core thematic data	19	There is a documented data quality control procedure applied at the level of the NSDI	N	This has not been formally addressed but should form part of the stewards' responsibilities. NZDIMP defines the concept of "well managed" that is incorporated in the stewardship responsibilities. This requires good practice is applied to data and information management. It does not address issues such as accuracy, precision, logical consistency etc. that will need to be defined for fundamental data.
		Relevance: data quality is a key issue in any NSDI. It is not enough to have data and data access; data should match to certain quality standards. Quality is referring to positional accuracy/precision, logical consistency, completeness, etc.; the inclusion of user perspective/feedback; testing procedures for quality (QC); update cycles, and other such quality assurance measures. A: If there is a clearly described procedure (e.g. application of standard); and there is attention for almost all aspects in the QC process. P: If there is attention for some aspects; or if QC procedures are only happening at the level of individual data providers. N: If there is no such QC procedure; or if there is no attention given to this aspect.		
Interoperability	20	Concern for interoperability goes beyond conversion between different data formats	P	Interoperability is recognised as a fundamental enabler of the NSDI. Interoperability can be thought of in terms of the provision and use of services across heterogeneous IT systems. It can also be considered at the data level and how one data set is able to interoperate with others e.g. through the use of persistent and unique IDs; the development of linked data. Though there is "concern" for these issues, operable solutions to them are not yet widely practiced within the NSDI, though there are a growing number of examples of open data being published as web services: http://www.wellington.govt.nz/maps/gis/gis-data.html http://maps.aucklandcouncil.govt.nz/aucklandcouncilviewer/ http://data.linz.govt.nz/ http://koordinates.com/
Language and culture	21	The national language is the operational language of the SDI		These European-based indicators relating to language are less relevant to New Zealand where cross-national data sharing is less of an imperative for the success of the SDI. The need for cultural inclusivity is recognised. LINZ is currently formulating its approach to supporting "Business with Maori". Once these requirements are better understood relevant indicators for the NZSDI will be considered.
	22	English is used as secondary language		
		Relevance: the national language is important for making access for local users easier; Mostly, we look to the language of the geo- and related portals. A: If the answer is clearly yes P: if unclear N: if the answer is clearly no		
Fundamental data	NZ2	Fundamental data stewards have been appointed	N	Acceptance of the definition of the roles of stewards and custodians and the process governing their

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
				<p>appointment is currently on going.</p> <p>Discussions with some potential stewards and custodians ahead of them potentially taking up these roles is ongoing.</p> <p>LINZ has committed to taking on Stewardship of the imagery theme but this agreement is still to be formalised.</p>
	NZ3	Fundamental data custodians have been appointed	N	
	NZ4	A monitoring programme for stewards and custodians is in place	N	
	NZ5	Fundamental data sets that sit within each fundamental data theme are identified	N	
	NZ6	Standardised schemas are agreed for each of the fundamental data sets	N	
	NZ7	A programme for the publication of fundamental data is in place	N	
	NZ8	Programme for the publication of non-fundamental data in place	N	
		<p>Relevance: Having stewards and custodians in place for each of the fundamental data sets is a prerequisite to being able to provide well managed and sustainable data for the national data themes of underpinning importance to the NSDI. Providing these data sets in standard and consistent forms will enable the development of new uses and ancillary data sets.</p> <p>A: If the answer to the questions is yes for each of the fundamental data sets.</p> <p>P: If the answer to the questions is yes for at least one of the fundamental data sets</p> <p>N: If the answer to the questions is no for each of the fundamental data sets.</p>		

D - Metadata

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
Availability of metadata	23	Metadata are produced for all fundamental datasets and a significant fraction of the other data sets in the NSDI.	N	
	NZ9	Metadata is compliant with ANZLIC standards for all fundamental datasets and a significant fraction of the other data sets in the NSDI.	N	
		<p>Relevance: metadata for data is essential in any NSDI in order to discover, evaluate and use the data.</p> <p>A: If the answer is yes .</p> <p>P: If the answer is yes for a significant fraction of the fundamental and non-fundamental data sets.</p> <p>N: If there are no metadata (or only occasionally), or if the metadata are not following any standard (e.g. some descriptions in readme file).</p>		
Metadata catalogue	24	One or more standardised metadata catalogues	A	A number of web sites contain metadata catalogues published to ANZLIC and other metadata standards

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
availability + standard		are available covering more than one data producing agency		e.g. Geodata.govt.nz; data.govt.nz; Koordinates.com; sites published by NIWA and Landcare.
	NZ10	A catalogue exists which references metadata for all fundamental data and these are managed within a consistent framework.	N	Catalogues exist but fundamental data does not.
	NZ11	Web services are catalogued and provided through one or more standardised registry service.	P	Web services can be found via searches on some catalogue nodes e.g. Geodata.govt.nz but are not easily or obviously discoverable.
		<p>Relevance: a metadata catalogue / clearinghouse is key for making data and services discoverable; the fact that it does not cover only the data and services from one data provider but from several is even more important (bringing resources from different stakeholders together).</p> <p>A: If at least one such catalogue could be identified / named and/or described that enables effective searching.</p> <p>P: If there are one or more catalogues, but only from one data provider.</p> <p>N: In all other cases</p>		
Metadata implementation	25	There is a coordinating authority for metadata implementation at the level of the NSDI	P	There is no dedicated resource for metadata coordination within authorities such as ANZLIC and NZGO, though they do provide a level of coordination e.g. regarding standards development and use.
		<p>Relevance: I25) initial thinking on NSDI (INSPIRE) was that coordination / centralisation could help to trigger metadata creation and publication, a key issue (but often a weak point) for NSDI. There is now a question if this still relevant; and especially if this is the only / best organisational model to guarantee high quality metadata (e.g. why not a distributed model?). (Hence the criteria NZ 12.)</p> <p>A: If there is clearly an authority indicated.</p> <p>P: If it is not so clear or if several organisations are involved.</p> <p>N: In all other cases (N.B. this could mean there is a well functioning (or otherwise) entirely distributed model)</p>		
	NZ12	Standard-compliant metadata is being sourced from multiple entities and harvested by one or more publicly searchable catalogues.	P	A few public organisations such as NIWA, LINZ, Landcare and GNS are independently publishing metadata that is harvested in to a number of searchable catalogues. These are examples of good practice, but wider participation by other organisations is needed to strengthen the NSDI.
		<p>Relevance: a more participatory approach to metadata creation and publication (compared to I25) is illustrative of a sustainable approach to NSDI creation and maintenance.</p> <p>A: If well managed metadata is routinely being published from multiple sources and harvested by one or more national level catalogues.</p> <p>P: If metadata is published from multiple sources and harvested by one or more national level catalogues but there is no evidence of widespread or routine well managed participation.</p> <p>N: Metadata is not being published for discovery.</p>		

E – Access and other services for data and their metadata

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
Discovery Services	26	There are one or more discovery services making it possible to search for data <u>and services</u> through metadata	P	There are a number of discovery services for data available e.g. Geodata.govt.nz; data.govt.nz, LDS; Landcare; but few effective resources relating to service discovery.
		Relevance: discovery is a key NSDI function enabling reuse of data. A: When at least one standard service is identified / described P: When it is not so clear; or when there is a similar mechanism (but e.g. not using standards) N: All other cases		
View Services	27	There are one or more view services available to visualise data from the NSDI.	A	View services do exist but are not managed as part of a formal national or cross-agency NSDI e.g. LDS
		Relevance: view services support the evaluation of available data by potential users and can provide a reusable resource. A: When at least one standard service is identified / described P: When it is not so clear; or when there is a similar mechanism (but e.g. not using standards) N: All other cases		
Download Services	28	There are one ore more on-line download services enabling copies of datasets (or parts of) to be obtained.	A	Download services do exist but are not managed as part of a formal national or cross-agency NSDI e.g. LDS
		Relevance: download services are a key means of data delivery that enable reuse (driving benefits of associated with NSDI creation). A: When at least one standard service is identified / described P: When it is not so clear; or when there is a similar mechanism (but e.g. not using standards) N: All other cases Note 2: this does not say anything about which part of the data can be downloaded.		
Transformation Services	29	There are one or more transformation services for geospatial datasets.	N	Transformation services are not identified as a priority in the NSDI at the moment, but there are issues that this would address e.g. transformation of data from off-shore territories and Antarctica; bathymetry; historic / legacy data mapped using the NZ map grid. Some portals (e.g. LDS and Koordinates) do allow download of data in a range of user selectable geographic or transformed projections. No live services have been identified that enable data from different themes to be re-projected and combined on the fly.
		Relevance: enables data from different coordinate systems to be combined for use, supporting interoperability. A: When at least one standard service is identified / described P: When it is not so clear; or when there is a similar mechanism (but e.g. not using standards) N: All other cases		
Middleware (invoking) Service	30	There are one or more middleware services allowing data services to be invoked	U	There is no known evidence to support this statement e.g. an example of connection into LDS to provide value added services / applications.
		Relevance: promise data reuse. A: When at least one standard service is identified / described P: When it is not so clear; or when there is a similar mechanism (but e.g. not using standards) N: All other cases		

F - Standards

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
Standards	31	The SDI-initiative is devoting significant attention to standardisation issues	P	Standardisation is recognised as a key issue and there is proactive engagement and advocacy of around this by NZGO. E.g. the publication of the SDI Cookbook by NZGO promotes standardisation and offers advice on the issue; Standards NZ promote the use of OGC compliant web-services; the Government e-GIF initiative recognises the use of geospatial standards.
	NZ13	International and industry standards are being effectively adopted by participants in the SDI	P	There is only the beginning of signs of uptake and deployment of the standards (e.g. growing use of ANZLIC metadata standards, WMS and WFS services being published, and investigatory work on WFS-T deployment), and there are gaps in support and uptake of some standards e.g. data schema and gazetteer development.
		<p>Relevance: this is also key to a good functioning SDI; standards are making it possible that the technological components work together and are the basis to reach interoperability. Standards relate to the data (semantics), the metadata and the services.</p> <p>A: when there is a standardisation policy/strategy document; when standards in both the fields of data (semantics, data exchange), metadata and services are applied.</p> <p>P: when there is only attention for e.g. the metadata standard or a specific exchange format, or a suite of standards are promoted but not widely applied.</p> <p>N: when there is only attention for the software used.</p>		

G – Cross-government coordination

Indicator	ID	Criteria and relevance	Rating	Comment / Evidence
ICT Coordination	NZ14	The NSDI-initiative is contributing to and aligned with other major government-related information policies and strategies.	P	<p>The Government Common ICT Capabilities Roadmap includes the capability specification for the NSDI, recognising it as a cross-sector initiative coordinated by the NZGO. Though this recognition exists more work is required to embed the implementation of the NSDI within the Directions and Priorities for Government Information and Communication Technology (ICT)</p> <p>The Open Data Secretariat and NZGO have jointly managed work programmes in recognition of contribution that the development of the NSDI has to creating more open and transparent government.</p> <p>Though there is support from and engagement with the Government CIO work needs to be done to raise awareness with other parts of government as to how the NSDI can positively support their work and how they can assist its development.</p>
		<p>Relevance: NSDI is only part of a larger data and information sharing framework. Geospatial data cannot be considered alone in the workings of government or needs of the citizen, so for the NSDI to be able to fully contribute it needs to be recognised and considered as part of the bigger national ICT framework. This criterion indicates the degree to which NSDI is linked in to this bigger picture thinking.</p> <p>A: The NSDI is directly referenced in government ICT strategies and has effective linkages to other related data and information programmes.</p> <p>P: The NSDI initiative is informally collaborating with other ICT related initiatives or work programmes, or is formally connected but with limited practical interaction.</p> <p>N: There is no engagement between the NSDI programme and other potentially related ICT initiatives or work programmes.</p>		
	NZ15	NZGO are routinely consulted on the procurement of government agency SDI-related services.	N	There are some instances where this does happen (e.g. NZTA) but there is no track record to demonstrate that this is routine or normal. Current rules for NZ government procurement to be used by agencies are being drafted and are intended to include specific rules on geographic information and service provision.
		<p>Relevance: Indicates conformance with the direction given by Cabinet, ensuring early identification of opportunities to strengthen the NSDI and participation of government agencies in its development.</p> <p>A: Government procurement rules require consideration of engagement with NZGO and these rules are being followed.</p> <p>P: There is an ad hoc engagement with NZGO over the procurement of SDI-related services.</p> <p>N: It is rare that NZGO are approached for support or that engagement only comes later in the procurement process.</p>		