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**GENERAL NOTICES • ALGEMENE KENNISGEWINGS**

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**NOTICE 881 OF 2019****GAUTENG OFFICE OF THE PREMIER****CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA, 1996****SPATIAL DATA INFRASTRUCTURE ACT, 2003  
(ACT NO. 54 OF 2003)****GEOGRAPHIC INFORMATION SYSTEM POLICY, 2019****PUBLICATION FOR PUBLIC COMMENT**

The Executive Council of the Province of Gauteng has, on 27 March 2019, and in line with Section 125(2) of the Constitution of the Republic of South Africa, 1996 ("Constitution"), approved the attached Geographic Information System ("GIS") Policy for the Province of Gauteng, 2019, subject to publication in the *Provincial Gazette* for public comment.

The purpose of the GIS Policy is to (a) provide guidelines for the management of GIS resources in the Province (b) provide GIS governance standards and procedures for spatial data management, custodianship and exchange of data (c) manage the acquisition of data and licensing of software across the Province and (d) address issues of data sharing and information supply to ensure optimum use of available GIS resources and Geo-portal which the Gauteng Provincial Government has invested in.

In line with the Spatial Data Infrastructure Act, 2003 (Act No. 54 of 2003) (“Act”), the objectives of the GIS Policy are to (a) establish the GIS Committee for the Province of Gauteng as a formal coordinating structure for GIS related matters in line with Sections 5 and 6 of the Act (b) facilitate the capture of spatial information through cooperation among the organs of state and promote effective management and maintenance of spatial information (c) promote the effective use and sharing of spatial information in support of government policy priorities and integrated planning (d) ensure cost-effective sourcing, acquisition and development of Province-wide GIS data and eliminate duplication (e) create an environment which facilitates coordination and cooperation among all GIS stakeholders in the Province regarding access to spatial information (f) improve quality of spatial datasets through standardisation (g) promote universal access to spatial information through a central GIS system and (h) establish the GIS Catalogue for the Province in accordance with the Act.

Members of the public are accordingly hereby, in line with Section 195(1)(e) of the Constitution, within 30 days of publication of this notice, invited to submit written comment in relation to the attached GIS Policy for consideration by the Gauteng Office of the Premier.

Written comment may be delivered or sent to the person whose details are mentioned below:

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**GAUTENG**  
PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

**GAUTENG CITY REGION  
GEOGRAPHIC INFORMATION SYSTEM  
POLICY**

**2019  
(FINAL VERSION)**

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## 1. DEFINITIONS AND ABBREVIATIONS

In this Policy, unless the context indicates otherwise -

**“Committee for Spatial Information”** means the Committee as established in terms of Section 5 of the Spatial Data Infrastructure Act, Act No. 54 of 2003;

**“Data Custodian”** means an organ of state or an independent contractor or person engaged in the exercise of a public power or performance of a public function, which captures, maintains, manages, integrates, distributes or uses spatial information in line with the Spatial Data Infrastructure Act, Act No. 54 of 2003;

**“GCR GIS Coordinating Office”** means the office with a mandate to coordinate and manage GIS activities for the Gauteng City Region. Currently, the Coordinating Office is the Gauteng Planning Division in the Office of the Premier;

**“GIS Resources”** means software, hardware, data, systems and people employed to work in the GIS profession in accordance to the Geomatics Profession Act, Act No. 19 of 2013;

**“Interoperability”** means the capability of components or systems to exchange data with other components or systems, or to perform in multiple environments. In GIS, interoperability is required for a GIS user using software from one vendor to study data compiled with GIS software from a different provider; and

**“Stakeholders”** means Gauteng sector departments, municipalities and provincial entities, as listed in Annexure A.

**Abbreviations**

GIS	Geographic Information System
GISc	Geographic Information Science
GPG	Gauteng Provincial Government
GIO	Geospatial Information Systems Officer
GPD	Gauteng Planning Division
SDIA	Spatial Data Infrastructure Act, Act No. 54 of 2003
GCR	Gauteng City Region
ISO	International Standards Organisation
PAIA	Promotion of Access to Information Act, Act No. 2 of 2000
SLA	Service Level Agreement



## 2. INTRODUCTION

### 2.1 Background

GIS is one of the most important technologies used globally to ensure smart governance and innovation. In the 4<sup>th</sup> Industrial Revolution era, location intelligence provided by GIS technologies has become one of the most powerful information systems used by government for planning, early warning, disaster management and efficient delivery of service to the public.

In the Gauteng Government context, GIS supports the Decisive Spatial Transformation and Modernisation Pillars of the Ten Pillar Programme. Also, in line with Section 14 of the Public Administration Act, Act No.11 of 2014, Gauteng Government has to ensure that GIS resources are managed in a manner that leverages economies of scale, ensures interoperability, eliminates unnecessary duplication and promotes access to public services through use of GIS as one of information technology systems.

Gauteng, as a smart province has started a journey to deploy GIS as a solution for smart governance and service delivery. Since 2015, the establishment of centralised GIS for GCR has been successful, however there are challenges that still need to be addressed to ensure sustainability and successful implementation of GIS. These are challenges related to: -

- Lack of uniform standards in the application of GIS in sector departments and municipalities;
- Difficulty in spatial data sharing between sector departments and municipalities; and
- Variances overall in legal compliance to the Spatial Data Infrastructure Act, Act No. 54 of 2003 (SDIA).

At the heart of the problem is the “silo” planning, which leads to most of the data within the province being managed and stored within separate departments and sometimes not accessible even within the same organisation. While data may be effectively managed by individual organisations and stakeholders, a standard approach to managing data will lead to a greater level of interoperability and thus more effective government-wide data sharing.

In order to address the challenges above and ensure effective support of the Ten Pillar Programme, Gauteng Planning Division (in consultation with sector departments, municipalities and provincial entities) developed the GCR GIS Policy, to guide and govern the management of spatial information, GIS resources and information sharing across the GCR. Specifically, the following areas are addressed:

- (i) Legislative Framework which forms the foundation for this Policy.
- (ii) Principles on which this Policy is based.
- (iii) Policy provisions detailing the guidelines and standards to be followed.
- (iv) Governance and accountability structures to assure effective implementation.

## **2.2 Purpose**

The purpose of this Policy is to provide guidelines for the management of GIS resources for the GCR. It is to provide GIS governance standards and procedures for spatial data management, custodianship and exchange of data. It is also to manage the acquisition of data and licencing of software across the GCR. Lastly, it addresses issues of data sharing and information supply to ensure optimum use of available GIS resources and GCR Geo-portal which the Gauteng Provincial Government has invested in.

## **2.3 Objectives**

In line with SDIA, the objectives are to: -

- (i) Establish the GCR GIS Committee as a formal coordinating structure for GIS related matters, in line with Sections 5 and 6 of SDIA;
- (ii) Facilitate the capture of spatial information through cooperation among the organs of state and promote effective management and maintenance of spatial information;
- (iii) Promote the effective use and sharing of spatial information in support of government policy priorities and integrated planning;
- (iv) Ensure the cost-effective sourcing, acquisition and development of GCR-wide GIS data and to eliminate duplication;
- (v) Create an environment which facilitates coordination and cooperation among all GCR GIS stakeholders regarding access to spatial information;
- (vi) Improve quality of spatial datasets through standardisation;
- (vii) Promote universal access to spatial information through a central GIS system; and
- (viii) Establish the GCR GIS Catalogue in accordance with SDIA.

## **2.4 Scope and Application**

This Policy governs access to, the use of, and coordination of GIS resources. These include personnel, hardware, software, data, procedures, policies and methods and products related to GIS. This Policy applies to all GCR departments, municipalities and agencies holding and responsible for spatial data/information as listed in Annexure A. It also applies to all private sector entities, non-government organisations (NGOs) and tertiary institutions who wish to partner with the GCR GIS and GCR Geo-portal.

### 3. LEGISLATIVE FRAMEWORK

This Policy has been drafted within the South African regulatory framework and International Standards Organisation (ISO) regulations. The following Acts impact directly into the mandate of this Policy:

- (i) Constitution of the Republic of South Africa, Act No. 108 of 1996
- (ii) Public Administration Management Act, Act No.11 of 2014
- (iii) Spatial Data Infrastructure Act, Act No. 54 of 2003
- (iv) Geomatics Profession Act, Act No. 19 of 2013
- (v) Intergovernmental Relations Framework Act, Act No. 13 of 2005
- (vi) Promotion of Access to Information Act, Act No. 2 of 2000
- (vii) Protection of Personal Information Act, Act No. 4 of 2013
- (viii) Local Government: Municipal Finance Management Act, Act No. 56 of 2003
- (ix) Public Finance Management Act, Act No. 1 of 1999
- (x) Local Government: Municipal Systems Act, Act No. 32 of 2000

### 4. PRINCIPLES

The following principles underpin this Policy:

- (i) The principle of collaboration, whereby -  
seamless availability of spatial information from various sources across the GCR and sharing among multiple users and across applications is assured. This deals with the importance of how sector departments, municipalities and other stakeholders work together.
- (ii) The principle of symmetry, whereby -  
differences existing between municipalities and sector departments are recognised, and level-appropriate GIS objectives are developed and implemented in response.
- (iii) The principle of transparency, whereby -  
geographic information needed for good governance at all levels is transparently and readily available, and open sharing of information between all stakeholders as mandated by SDIA, Promotion of Access to Information Act, Act No. 2 of 2000 and Batho Pele principles is assured.
- (iv) The principle of economies of scale, whereby -

value for money with respect to GIS resource acquisition, data procurement and upkeep as mandated by the Public Finance Management Act, Act No. 1 of 1999 and the Treasury Regulations is assured.

- (v) The principle of shared service, whereby -
- creative sharing of a variety of services is promoted between municipalities, between municipalities and provincial departments and across government, research and tertiary institutions. This includes sharing of human resources capacity, information, systems and tools that will advance GIS in the Province, using modalities such as Memoranda of Agreement and Service Level Agreements.

## **5. POLICY PROVISIONS**

This Policy makes provision for GCR stakeholders (listed in Annexure A) to ensure that GIS resources and data are properly managed, protected and exchanged between them for delivery of efficient services to the public. The GCR GIS Policy requires stakeholders to adhere to the following:

### **5.1 GIS Coordination**

#### **5.1.1 GIS Coordinating Office**

The Gauteng Planning Division in the Office of the Premier is the primary GIS Coordinating Office for GCR. The role of the GIS Coordinating Office is to: -

- (i) Develop GIS Strategy for the GCR;
- (ii) Develop GIS Policy and manage the implementation of the Policy;
- (iii) Establish a provincial Spatial Data Infrastructure, in accordance to SDIA, and ensure compliance of the province to the Act;
- (iv) Promote and guide spatial data development;
- (v) Develop and manage the Central Geo-portal for spatial data integration and sharing;
- (vi) Coordinate GIS activities throughout the GCR;
- (vii) Manage spatial information and databases for the GCR; and
- (viii) Support GIS users throughout the GCR.

#### **5.1.2 Establishment of the GCR GIS Committee**

GIS Coordination requires the establishment of the GIS Committee for GCR as the official coordinating structure for all GIS matters of the province. The committee will be formed by representatives from each sector department, municipality and provincial entities.

Each GCR stakeholder (sector departments, municipalities and provincial entities) shall appoint or assign a Geospatial Information Systems Officer who

will represent each organisation at the GIS Committee as official committee members.

The function of the GIS Committee is to: -

- (i) Ensure compliance with SDIA;
- (ii) Take decisions on issues of spatial information and planning in the province;
- (iii) Plan collectively for GIS, in order to provide relevant support to all GCR GIS stakeholders and reduce the cost of acquiring data;
- (iv) Promote the integration of GIS technologies to enhance business processes;
- (v) Identify and prioritise major GIS needs to inform stakeholder budgets. These priorities will include but are not limited to data, training, software and equipment and system development and maintenance needs; and
- (vi) Facilitate and serve as a central point for communications regarding GIS issues, programs, policies, budgets and initiatives within the GCR.

### **5.1.3 Geospatial Information Systems Officer**

Each GCR stakeholder (sector departments, municipalities and provincial entities) shall appoint or assign a Geospatial Information Systems Officer who will represent each organisation in the GIS Committee.

The role of a Geospatial Information Systems Officer is to: -

- (i) Coordinate and oversee the management of organisation's spatial data, GIS resources and activities;
- (ii) Represent the organisation at the GIS Committee and in all spatial data management and data sharing matters and issues;
- (iii) Ensure that proper information management processes and procedures are in place and implemented to create, store, manage and process data that is accurate, up to date, timeous and complete;
- (iv) Take decisions on behalf of the organisation on GIS related matters;
- (v) Ensure that the organisations spatial data is accessible to all stakeholders and is shared through the GCR Geo-portal;
- (vi) Quality assurance of spatial data and approval of GIS information products to be shared and published on the GCR Web sites and GCR Geo-portal; and
- (vii) Ensure that the organisation complies to SDIA provisions.

The role of the Geospatial Information Systems Officer should be assumed by an official of sufficient seniority and experience, as the officer will have to

oversee and represent the organisation in all spatial data management and data sharing matters. The appointed or nominated official shall be registered with the South African Geomatics Council, as it is a requirement that everyone performing work within geomatics profession be professionally registered, in accordance with Section 13 of the South African Geomatics Professions Act, Act No. 19 of 2013.

The role of the Geospatial Information Systems Officer shall be performed in line with the organisation's management, standards, principles and structures.

## **5.2 Data Administration**

### **5.2.1 Data Custodianship**

A data custodian is an organ of state or an independent contractor or person engaged in the exercise of a public power or performance of a public function, which captures, maintains, manages, integrates or distributes spatial information.

In the context of this Policy, all sector departments, municipalities and provincial entities are the data custodians as described in Section 1 of SDIA. The responsibilities of a data custodian can be executed by the Geospatial Information Systems Officer on behalf of the organisation. Data custodians shall: -

- (i) Maintain, validate, describe and ensure accessibility of spatial data/information in their custody;
- (ii) Manage spatial data in a way that facilitates data sharing and use by other data custodians;
- (iii) Be accountable for the integrity of the data as generated by the custodian or data which is supplied by the vendor on their behalf; and
- (iv) Data custodians shall work together to facilitate data and information sharing in order to avoid duplication of data capture and cost to all spheres of government.

### **5.2.2 Data Ownership**

Data collated, generated or acquired by any GCR GIS stakeholder/custodian becomes an asset of the Gauteng Government and shall be available for sharing among stakeholders in the GCR. This does not apply to data licensed through a vendor. Data licensed through a vendor should be used in line with the license requirements.

### 5.2.3 Data Collection

- (i) All stakeholders/custodians shall ensure that data collated through surveys, field work or any other method, is captured electronically and have location attributes which will enable spatial referencing of data.
- (ii) The spatial referencing method should be the X and Y coordinates, or a properly captured street address according to the South African Address Standards (SANS 1883).
- (iii) All data shall be captured in accordance with open data standards that enable interoperability.

### 5.2.4 Spatial Data Procurement

- (i) Data custodians shall register and present their data collection or acquisition projects on the data collection project register for approval, by the Gauteng Planning Division and the GIS Committee, prior undertaking a project, and update the register when changing the status of the project.
- (ii) In cases where projects are outsourced to consultants, stakeholders shall ensure that the spatial data and associated metadata are identified as part of the deliverables in the contract. This will break the dependency on consultants, avoid duplication and multiple procurements of datasets, all of which result in fruitless and wasteful expenditure.
- (iii) For uniformity in projection and datum for GIS data in the province, the spatial reference system shall be in decimal degrees or Degrees, Minutes and Seconds (DMS) on the Hartebeeshoek '94 datum.

### 5.2.5 Metadata Standard

Data standards are the foundation for interoperability. The adoption of a set of data standards for use across the GCR will remove ambiguities and inconsistencies in the use of data and enable more effective use and exchange of data.

Information is valuable when it becomes accessible to the user. However, having access to volumes of information is only valuable if the limitations and constraints of the data are understood. It is imperative for data custodianships to capture metadata in terms of SDIA. Therefore, it is the responsibility of each GCR stakeholder, or the data custodian, to capture excellent quality data, maintain its metadata and make it available in the manner as prescribed by SDIA.

Furthermore: -

- (i) Custodians/stakeholders shall adhere to National and International Standards for spatial information in promoting interoperability;
- (ii) Custodians shall capture metadata of all the data they generate and hold and shall ensure that their metadata is available and is published in the

- GCR Geo-portal replicated on the National Electronic Metadata Catalogue;
- (iii) All custodians/stakeholders shall have a data catalogue that will be incorporated to the GCR Data Catalogue; and
  - (iv) Metadata shall at least conform to the International ISO 19115 metadata standard. The objective of this International Standard is to provide a clear procedure for the description of digital geographic datasets so that users will be able to determine whether the data in holding will be of use to them and how to access the data.

### 5.2.6 Data Access

The principle of access to information is rooted in Section 32(1)(a) and (b) of the Constitution, i.e. *“Everyone has the right of access to any information held by the state and any information that is held by another person and that is required for the exercise or protection of any right”*. Access to information is necessary for the development of and promotion of an informed public, an accountable government, evidence-based decision making, integrated planning and excellent quality service delivery.

Furthermore: -

- (i) Every stakeholder and data custodian shall have an archive which will replicate to the GCR Geo-portal to ensure data integration, availability and safety of data;
- (ii) Stakeholders/custodians shall disclose or make information available to the public on request, unless it is exempted under the Promotion of Access to Information Act, Act No. 2 of 2000;
- (iii) Any spatial data and information that is disclosed or made available shall include the metadata component;
- (iv) Stakeholders and custodians shall register their GIS projects on the GCR Project Register prior to undertaking the project and update the Register when changing status. The Project Register will be maintained by the Gauteng Planning Division in the Office of the Premier;
- (v) In providing access to spatial information, custodians shall ensure that the privacy of individuals is protected in accordance with the Protection of Personal Information Act, Act No. 4 of 2013;
- (vi) Custodians shall ensure that reasonable security measures are in place to avoid loss, unauthorised access, modification and disclosure of personal data; and
- (vii) Custodians shall ensure that their metadata is available and that it is published in the GCR Geo-Portal Catalogue. They shall also maintain a data catalogue that will be incorporated to the GCR Data Catalogue. This will be replicated to the National Electronic Metadata Catalogue.



### **5.2.7 Data Quality**

- (i) All stakeholders/data custodians shall ensure that data is accurate and current in terms of determined user needs for the purpose for which the data was captured. Where probable errors exist, the degree of probability of its correctness shall be reported.
- (ii) Data custodians shall ensure that the quality and the resolution of their data sets meet the needs of users.
- (iii) Custodians shall ensure that the data provided for sharing and use, does not have gaps and has been captured and is ready for use. All field values of the attribute data shall be complete, and its accuracy validated.

### **5.2.8 Data Sharing and Usage**

Spatial data collected, generated or owned by any stakeholder shall be shared through the GCR Geo-portal and within the bounds permissible by applicable laws and the principles of data privacy. Data will be shared to achieve the objectives of: -

- (i) Delivering good quality services to the citizens;
- (ii) Quality policy formulation and evidence-based planning;
- (iii) Supporting strategic goals of Gauteng Government; and
- (iv) Facilitating analysis and research.

Data custodians shall: -

- (i) Maintain, validate, describe and ensure accessibility of spatial data/information in their custody, unless restricted by law; and
- (ii) Manage spatial data in a way that facilitates data sharing and use by other data custodians and stakeholders.

## **5.3 GCR Geo-portal to support information access and data exchange**

In line with the Department of e-Government ICT Strategy, the GCR Geo-portal has been established as a central data and spatial information repository for all sector departments, municipalities and provincial entities.

- (i) All stakeholders shall make their data and information products available for sharing and publishing through the GCR Geo-portal, unless restricted by law.
- (ii) All stakeholders with existing Geo-portals shall provide access for automated portal to portal collaboration and linkages.
- (iii) All stakeholders without Geo-portals and hardware shall be hosted on the main portal to avoid unnecessary expenditure on hardware, licensing and storage.

- (iv) Data custodians shall work closely with the Chief Information Officer to determine other systems that can be integrated to the GIS systems, for live data harvesting and updates. This is to ensure availability of real-time data for analysis and production of rich information products.

#### **5.4 Central GIS Software Licensing**

In an effort to consolidate software inventories and to reduce cost on software purchases and maintenance: -

- (i) All GIS software is to be licensed under a single customer number, which will be managed by the Department of e-Government, in partnership with GCR GIS Coordinating Office;
- (ii) The procurement and maintenance of the GIS Software Licence will be managed by Department of e-Government as a transversal licence;
- (iii) Stakeholders shall not request software upgrades and/or procure licences individually and directly from the software vendor, but shall form part of the consolidated single licence for GCR;
- (iv) The software maintenance plan shall include core software licence, maintenance and upgrade and professional hours for GCR Geo-portal support. (Third party software licences are not included); and
- (v) Only when stakeholders need to customise their systems, shall approval be granted for purchase of professional service hours and products not covered under the SLA from the vendor where the software has been acquired.

#### **6. ISO STANDARDS**

Stakeholders shall adhere to the following spatial data standards (listed in Annexure B), as adopted by the Committee for Spatial Information established through SDIA:

- (i) Address Standards (ISO 19160)
- (ii) Metadata Standards (ISO 19115/TC 211)
- (iii) SABS SC71

#### **7. ACCOUNTABILITY AND GOVERNANCE STRUCTURE**

Because GIS forms part of ICT and is a transversal programme for the province, the reporting and approval process will be aligned to the GCR e-Governance structures.

Provisions of this Policy will be implemented through the GCR GIS Committee and in line with the GCR e-Governance structures as follows:

- (i) All sector departments, municipalities and provincial entities shall have officially appointed GIO who will be members of the GCR GIS Committee.
- (ii) The Chairperson of the GIS Committee shall be a member of the GCR CIO Council representing the GIS Committee and GIS Programme for the Province.
- (iii) The GCR CIO Council reports on all major key issues relating to ICT (including software licensing) to the HOD Forum where approvals are granted.

## **8. INDEMNITY**

Data custodians and contributors shall be liable for the quality and accuracy of data provided for sharing in the portal. Data download, cutting, copying, cropping and pasting from the portal shall not be allowed. Requests for original data sets shall be addressed to the Portal administrator or directly to the data custodian.

## **9. POLICY REVIEW**

No amendment(s) shall be made to any section(s) and/or sub-section(s) of this Policy without such amendment(s) first being tabled for review, duly approved, and signed by the GCR GIS Committee and the GCR GIS Coordinating Office.

This Policy shall be reviewed every three years from the date of approval or as and when there are major technological, legislative and strategic changes that have an impact on the Policy.

## **10. COPYRIGHT**

The GCR GIS Geo-portal system shall be the sole intellectual property of the Gauteng City Region Government.

All datasets created during any commissioned work by the Gauteng Government shall become the sole and intellectual property of Gauteng Government after completion of the work.

This Policy Document shall be the sole intellectual property of Gauteng Government.

**ANNEXURE A****GCR GIS Stakeholders**

<b>Provincial Sector Departments</b>	<b>Provincial Entities</b>	<b>Municipalities</b>
Gauteng Office of the Premier	The Innovation Hub	City of Tshwane
Department of Agriculture	Constitutional Hill	City of Johannesburg
Department of Community Safety	Gauteng Growth and Development Agency	City of Ekurhuleni
Department of Economic Development	Gauteng Enterprise Propeller	West Rand District Municipality
Department of Health	Automotive Industry Development Centre	Sedibeng District Municipality
Department of Education	Gauteng Liquor Board	Mogale City Local Municipality
Department of Social Development	Gauteng Tourism Authority	Merafong Local Municipality
Department of Sports, Arts, Culture & Recreation	Gauteng Infrastructure Finance Agency	Randwest City Local Municipality
Department of e-Government	Gauteng Gambling Board	Emfuleni Local Municipality
Department of Cooperative Government & Traditional Affairs		Lesedi Local Municipality
Department of Infrastructure Development		Midvaal Local Municipality
Provincial Treasury		
Department of Human Settlement		
Department of Roads and Transport		

## **ANNEXURE B**

### **ISO Standards**

#### **Foreword**

The International Organisation for Standardisation (ISO) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organisations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardisation. International Standards are drafted in accordance with the rules given in the ISO/IEC Directives.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting.

Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote. In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report.

A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides is considered to be no longer valid or useful.

ISO/RS 19150 was prepared by Technical Committee ISO/TC 211, Geographic Information/Geomatics.

#### **Overview of South African Geographic Information Standards**

- SANS 19101:2003, Geographic Information - Reference Model
- SANS 19105:2003, Geographic Information - Conformance and Testing
- SANS 19106:2004, Geographic Information - Positioning Services
- SANS 19107:2003, Geographic Information - Spatial Schema
- SANS 19108:2003, Geographic Information - Temporal Schema

- SANS 19110:2005, Geographic Information - Methodology for Feature Cataloguing
- SANS 19111:2003, Geographic Information - Spatial Referencing by Coordinates
- SANS 19112:2004, Geographic Information - Spatial Referencing by Geographic Identifiers
- SANS 19113:2003, Geographic Information - Quality Principles
- SANS 19114:2004, Geographic Information - Quality Evaluation Procedures
- SANS 19116:2004, Geographic information - Positioning Services
- SANS 19119:2005, Geographic Information - Services
- SANS/TR 19120:2003, Geographic Information - Functional Standards
- SANS/TR 19121:2000, Geographic Information - Imagery and Gridded Data

These standards are comprehensive.

**Currently three ISO Standards are compulsory for South Africa:**

**a) Address Standards (ISO 19160)**

ISO 19160 -1:2015 Geographic Information defines a conceptual model for address information (address model), together with the terms and definitions that describe the concepts in the model. Lifecycle, metadata and address aliases are included in the conceptual model. The model is presented in the Unified Modeling Language (UML).

The model provides a common representation of address information, independent of actual addressing implementations. It is not intended to replace conceptual models proposed in other specifications, but provides a means to cross-map between different conceptual models for address information and enables the conversion of address information between specifications.

The model provides a basis for developing address specifications by individual countries or communities.

A Standard is reviewed every five years.

**b) Metadata Standards (ISO 19115/TC 211)**

ISO 19115 - 2:2009 extends the existing geographic metadata standard by defining the scheme required for describing imagery and gridded data. It provides information about the properties of the measuring equipment used to acquire the data, the geometry of the measuring process employed by the equipment and the production process used to digitise

the raw data. This extension deals with metadata needed to describe the derivation of geographic information from raw data, including the properties of the measuring system, and the numerical methods and computational procedures used in the derivation. The metadata required to address coverage data in general is addressed sufficiently in the general part of ISO 19115.

**c) SABS SC71**

SC 71 E has also been developing national standards during the past few years. The programme of work has consisted of the following:

- SANS 1876: Feature instance identification standard
- SANS 1877:2004: A standard land-cover classification scheme for remote-sensing applications in South Africa
- SANS 1878-1:2005: South African spatial metadata standard - Part 1: Core metadata profile
- SANS 1880: South African geospatial data dictionary (SAGDaD) and its application
- SANS 1883: A standard framework for South African addresses

SANS 1876: Promotes the use of a 14- character alphanumeric key (the South African unique Identifier or SAUID) to uniquely identify feature instances (i.e. actual features in the real world). SANS 1876 has progressed to the editing stage within the SABS and is ready for final vote. SANS 1876 will apply to data custodians who have datasets of national interest. SANS 1877 was adopted in 2004 - the first standard to be completed by SC 71E. It is based on the Africover land cover classification scheme, which subsequently evolved into the Land Cover Classification System (LCCS), currently being developed as ISO 19144 by ISO/TC 211 SANS 1878-1 is the South African profile (i.e. subset) of ISO 19115, and was published in 2005. SANS 1880 is the South African implementation of ISO 19110:2005, Geographic information - Methodology for feature cataloguing, which defines the feature types (classes) and their attributes, for commonly exchanged spatial data.