ANNEXURE A

GEORGE MUNICIPALITY GIS DATA STANDARDS AND METADATA REQUIREMENTS

INTRODUCTION:

The George Municipality's (GM) GIS system plays a vital role in planning, documenting and decision-making processes within the GM. To maintain, develop and streamline the GIS of the GM data, standards need to be developed and implemented. This document addresses these issues by specifying the data requirements from a GIS perspective.

BACKGROUND:

The GM has made use of GIS technology since 2012. As GIS technology developed various directorates have become more reliant on GIS. This has resulted in the need to establish a set of standards that can be issued with tender specifications that have a GIS component or when spatial data is requested from service providers.

The GM utilises the ESRI software suite, namely ArcGIS version 10.3, which comprises ArcGIS Server, ArcSDE, Portal for ArcGIS and ArcGIS Desktop.

GIS DATA STANDARDS:

WHEN AN EMPTY GEODATABASE HAS BEEN PROVIDED BY THE MUNICIPALITY

- Capture all data and relevant fields as specified in the tender specifications
- If any other spatial data (Except for the feature classes provided) is included in the final deliverable this data has to be in a feature dataset
- Data must be captured with the cadastral data used as background reference
- All raster data and symbology layers must be excluded from the geodatabase and provided in a separate folder.

WHEN NO GEODATABASE HAS BEEN PROVIDED BY THE MUNICIPALITY

Vector data

- All vector data must be submitted as Feature Classes (Points, Lines or Polygons) and preferably be provided in either a File Geodatabase or a Personal Geodatabase format. Alternatively, Shapefiles will suffice.
- Should the data be saved as an ArcGIS project, the .mxd should accompany the various spatial layers.
- Where specific symbols have been created a symbol file and/or a layer file should be submitted with the various spatial layers.
- All spatial layers created as part of a project commissioned by the GM should be submitted with the final deliverable, as this will assist with determining the methodology used and the accuracy of the data. These files should be saved in a separate folder from the final deliverable.

Attribute data

- All field names must be in title case and understandable i.e. if provided as a Shapefile, the field names must be shorter than twelve characters.
- If the field name is more that one word, underscores must be used e.g. Facility_Name.
- The attribute data text must be in sentence case.
- Metadata explaining the field names and field parameters must be provided
- Metadata explaining the file information must be provided e.g. Created by Author, Credibility, Date Created, Description and Summary.

GPS data

- All GPS coordinates must be provided as degrees, minutes and seconds, or as X and Y coordinates.
- GPS accuracy depends on the application for which the coordinates are being captured. Sub 1 m accuracy should be the norm when capturing engineering related activities, e.g. the location of water meters or water pipelines. When dealing with land related activities sub 2.5 meter accuracy should be the norm, e.g. the location of a building or an erf.

Raster data

- All imagery provided to the GM that relates to a specific project and that is required electronically must be submitted in Tiff format and should include a title, drawing reference number, name of company, scale, etc.
- All imagery purchased on behalf of the GM or ordered directly from the various service providers must be georeferenced to the GM cadastral.
- When purchasing imagery from a service provider, detailed terms of reference must be agreed on. This should include any additional deliverables, such as ground control points (x, y and z values) and the data bundles, in the case of satellite imagery.
- All imagery purchased on behalf of the GM or as part of a project being undertaken for the GM must be provided to the institution at no additional cost.
- All imagery provided to the GM must come with a government multi-license, i.e. all government departments should have access to the imagery at no expense, only a license agreement should need to be signed.

DATA ACCURACY

- Data accuracy is the responsibility of the service provider or vendor. Should the accuracy of the data not be to the satisfaction of the GM, it is the responsibility of the service provider to correct the accuracy, at no additional cost to the institution.
- Data accuracy will be measured against the cadastral dataset
- Metadata on the accuracy of any spatial data must accompany the final deliverable.

DATA QUALITY

Data quality is the responsibility of the service provider or vendor. Should the quality of the data not be to the satisfaction of the GM, it is the responsibility of the service provider to correct the accuracy, at no additional cost to the institution.

PROJECTION

All spatial data provided to the GM must be projected. The following Projected Coordinate System must be used:

Projection:	Transverse_Mercator
False_Easting:	0.000000
False_Northing:	0.000000

Central_Meridian:	23.000000
Scale_Factor:	***1.000000***
Latitude_Of_Origin:	0.000000
Linear Unit:	Meter (1.000000)
Geographic Coordinate System:	GCS_Hartebeesthoek_1994
Angular Unit:	Degree (0.0174532925199433)
Prime Meridian:	Greenwich (0.000000000000000000)
Datum:	D_Hartebeesthoek_1994
Spheroid:	WGS_1984
Semimajor Axis:	6378137.000000000000000000
Semiminor Axis:	6356752.314245179000000000
Inverse Flattening:	298.257223563
Hartebeesthoek94_Lo23	
Authority:	Custom

GROUND CONTROL POINTS

Where ground control points have been collected as part of the tender/work done for George Municipality these points will belong to the Municipality.

These points must be provided to the Municipality before the end of the project in a text file, csv or XML file format.

Ground Control Points must contain x, y and z values and use either the WGS 84 Coordinates system or Hartebeeshoek 94 LO23 coordinates system as mentioned above. For the Height values mean sea level or height above ellipsoid can be used.

METADATA STANDARDS:

The following metadata should be provided with any spatial data being provided to the GM. The metadata should preferably be accessible through ArcCatolog, i.e. XML file; alternatively, a separate word document can be submitted with the spatial data. For more detail on Spatial Metadata refer to SANS:1878 in South Africa.

Core metadata for spatial datasets:

No	Metadata	Explanatory Notes
Identification		
1	Dataset description	A brief summary of the dataset.
2	Purpose of the dataset	The purpose for which the dataset was created
3	Access constraints	Restrictions and legal prerequisites for accessing the data set.
4	Use constraints	Restrictions and legal prerequisites for using the data set after access is granted.
5	Format of dataset	Shapefile, Feature Class, GeoTIFF, etc.
Contact information		
6	Contact name	Contact name of the person responsible for creating the dataset.
7	Organisation	Organisation for whom the responsible person works.
8	Contact no. (Tel)	Telephone number of the responsible person.
9	Contact no. (Fax)	Contact fax number of the responsible person.
10	Contact e-mail	Contact e-mail address of the responsible person.
Citation		
11	Project Title	Name of the dataset.
12	Originator	The name of the organisation or individual that originally developed the data set.
13	Publication date	The date on which the data set was published or otherwise made available for release.
Status		
14	Progress	Complete, In progress, Draft or planned etc.
Spatial reference		
15	Geographic Coordinate System	GCS_Hartebeesthoek_1994

16	Projection	Transverse Mercator
17	Horizontal datum	D_Hartebeesthoek_1994
18	Ellipsoid	WGS_1984
19	Planar distance units	Meters
Data quality		
20	Attribute accuracy	Brief description of the attribute accuracy, e.g. not accurate, as the data needs to be verified/Very accurate/Verified on site.
21	Source information	Where the data was originated, e.g. created for the project or not sure.
Metadata reference		
22	Contact details	Who was responsible for creating the metadata.
23	Organisation	For which organisation does the person who updated the metadata work.
24	Contact details	Contact number of the responsible person.
Ground Control Points		
25	Geographical Co-ordinates	Latitude (Ø): angular displacement north/south of the equator Longitude():angular displacement east/west of the Greenwich meridian Height:(H) orthometric (height above mean sea level) or (h) ellipsoidal (height above ellipsoid)

NOTE:

All spatial data requested by or created for the GM must be submitted in the format specified above and should include core metadata as per the above table. Should a service provider not be in a position to supply the spatial data to the GM in the above -mentioned formats, it is his responsibility to obtain the relevant services or software at his own cost. Should a tool or application be developed for the GM, all the source code is to be provided as part of the final deliverable.

Once the GM has received a copy of the adopted metadata standards, the above -mentioned metadata requirements are likely to change.

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ACCEPTANCE OF TERMS STATED BY THE GEORGE MUNICIPALITY REGARDING GIS DATA STANDARDS AND METADATA REQUIREMENTS

By signing this part of the form, the supplier identified below declares that he/she, including the sub-contractors/specialist advisors/suppliers that will be employed by him/her to execute this assignment, accepts the terms and conditions regarding GIS data standards and metadata requirements and agrees to adhere to these requirements.

Name of supplier: _____

Name of representative

(duly authorized to sign on behalf of the supplier): _____

Signature: _____

Capacity: _____

Date: _____

Witness: _____ **Witness:** _____

(name) **(name)**

Witness: _____ **Witness:** _____

(signature) **(signature)**