Data Type: point	To digitize the left downside of a name.	-	-
code(1): 9508	-	-	-

Feature	Waterfall Name		
Definition	A name of Waterfall		
Parent class	Annotation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the left downside of a name.	-	-
code(1): 9509	-	-	-

Feature	Well, Spring, Borehole Name		
Definition	A name of Well, Spring, Borehole		
Parent class	Annotation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the left downside of a name.	-	-
code(1): 9510	-	-	-

Feature	Airport Name		
Definition	A name of Airport		
Parent class	Annotation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the left downside of a name.	-	-
code(1): 9601	-	-	-

Feature	Graveyard, Cemetery Name		
Definition	A name of Graveyard, Cemetry		
Parent class	Annotation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the left downside of a name.	-	-
code(1): 9602	-	-	-

Feature	Vegetation Name		
Definition	A name of Vegetation		
Parent class	Annotation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the left downside of a name.	-	-
code(1): 9603	-	-	-

Feature	Mountain Name		
Definition	A name of Mountain		
Parent class	Annotation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain

Data Type: point	To digitize the left downside of a name.	-	-
code(1): 9701	-	-	-

Feature	Valley, Plateau Name		
Definition	A name of Valley, Plateau		
Parent class	Annotation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the left downside of a name.	-	-
code(1): 9702	-	-	-
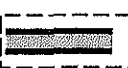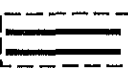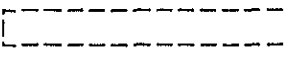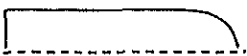
Feature	Hill Name		
Definition	A name of Hill		
Parent class	Annotation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the left downside of a name.	-	-
code(1): 9703	-	-	-

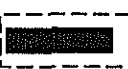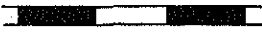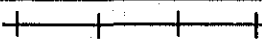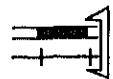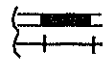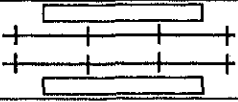| Feature	Control Point Name		
Definition	A name of Control Point		
Parent class	Annotation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the left downside of a name.	-	-
Code(1): 9801	-	-	-
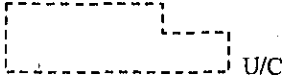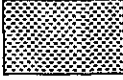
4.3 Definition of Graphics

Regulations of graphics of topographic features for displaying data on computer monitor and printing maps are follows;
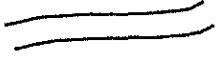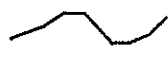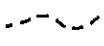
Name of package	Name of feature item	Data type	Code of item	Graphics	Remarks
Boundary	International Boundary	Polygon	1101		color: red width: 0.2mm
	Province or Region Boundary	Polygon	1102		color: red width: 0.2mm
	District Boundary	Polygon	1103		color: red width: 0.2mm
	City or Township Boundary	Polygon	1104		color: green width: 0.2mm
	Consistency Boundary	polygon	1105		color: purple width: 0.1mm
	Ward Boundary	polygon	1106		color: purple width: 0.1mm
	Location Boundary	polygon	1107		color: black width: 0.2mm
	National Park Boundary	polygon	1108		color: black width: 0.2mm
	Game Reserve, Forest Reserve, Intensive Conservation Area Boundary	polygon	1109		color: green width: 0.2mm
Transportation	Real Width Road(Main)	polygon	2101		color: grey red width: 0.15mm
	Edge of Real Width	line	2102		color: grey width: 0.2mm
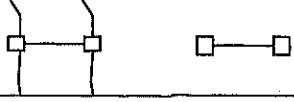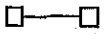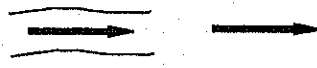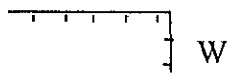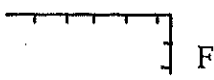
Road(Main)				
Real Width Road(Secondary)	polygon	2103		color: grey orange width: 0.15mm
Edge of Real Width Road(Secondary)	line	2104		color: grey width: 0.2mm
Real Width Road(Tertiary)	polygon	2105		color: grey black width: 0.15mm
Edge of Real Width Road(Tertiary)	line	2106		color: grey width: 0.2mm
Real Width Road(District)	polygon	2107		color: grey gold width: 0.15mm
Edge of Real Width Road(District)	line	2108		color: grey width: 0.2mm
Real Width Road(Others)	line	2109		color: grey width: 0.15mm
Edge of Real Width Road(others)	line	2110		color: grey width: 0.2mm
Main Truck	line	2111		color: grey width: 0.3mm
Other Truck and Foot path	line	2112		color: grey width: 0.2mm
Road Under Construction	polygon	2113	Under Construction	color: grey width: 0.1mm
Cycle Track	Line	2114		color: grey width: 0.1mm
Roundabout	line	2115		color: black width: 0.1mm
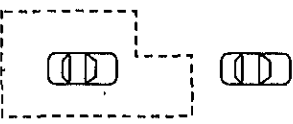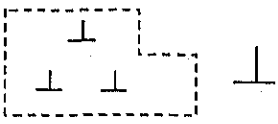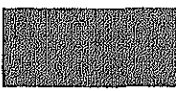
	Roads Island	line	2116		color: black width: 0.1mm
	Bridge	line	2201		color: grey width: 0.3mm
	Bridge for Main Truck, Other Truck and Footpath	line	2202		color: grey width: 0.3mm
	Flyover	line	2203		color: grey width: 0.15mm
	Culvert	point	2204		color: grey width: 0.3mm
	Tunnel 1	line	2205		color: grey width: 0.15mm
	Tunnel 2	point	2206		color: grey width: 0.3mm
	Railway	line	2301		color: black width: 0.2mm
	Railway light	line	2302		color: black width: 0.2mm
	Railway Under Construction	line	2303	Under construction	color: black width: 0.2mm 1.2mm
	Railway Bridge	line	2401		color: black width: 0.3mm
	Railway Tunnel 1	line	2402		color: black width: 0.15mm
	Railway Tunnel 2	point	2403		color: black width: 0.3mm
	Railway Station	Line	2404		color: black width: 0.1mm
	Level Crossing	point	2405	LC	color: black width:
Buildings	Permanent Buildings	polygon	3001		color: grey width: 0.2mm
	Semi-Permanent Buildings	polygon	3002		color: grey width: 0.2mm 0.1mm
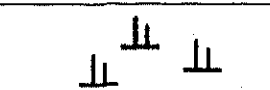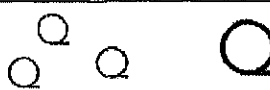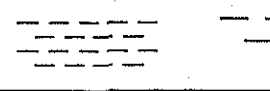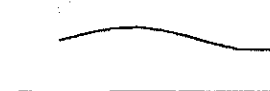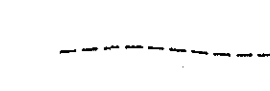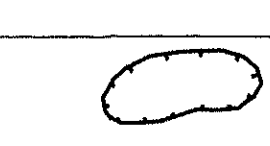
Temporary Buildings	polygon	3003		color: grey width: 0.2mm
Under Construction Buildings	polygon	3004	U/C	color: grey width: 0.1mm 1.2mm
Pool	polygon	3401		color: blue width: 0.1mm
District Commissione r	point	3501	DC	color: black width:
Division Head Quarters	point	3502	DHQ	color: black width:
Law Court	point	3503	LC	color: black width:
Post Office	point	3504	PO	color: black width:
Police Station	point	3505	PS	color: black width:
Police Post	point	3506	PP	color: black width:
Fire Station	point	3507	FSt	color: black width:
Labor Office	point	3508	LO	color: black width:
Ministry of Public Works	point	3509	Mow	color: black width:
Market	point	3510	Mkt	color: black width:
Mosque	point	3511		color: black width:
Hindu	point	3512		color: black width:
Church	point	3513		color: black width:
School	point	3514	Sch	color: black width:
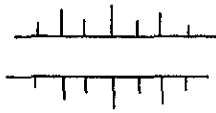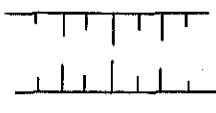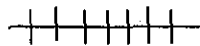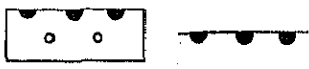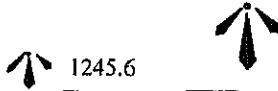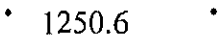
	Kindergarten	Point	3515	Kg	color: black width:
	Public Hall	point	3516	PH	color: black width:
	Guest House	point	3517	GH	color: black width:
	Health Center	point	3518	✛	color: green width:
	Hospital	point	3519	⊞	color: black green width:
	Dispensary	point	3520	Disp	color: black width:
	Bank	point	3521	B	color: black width:
	Factory	point	3522	F	color: black width:
	Power Station	point	3523	P/S	color: black width:
	Petrol Station	point	3524		color: black width:
	Police booth	point	3525	Pb	color: black width:
Small Object	Monument	point	4201		color: black width: 0.15mm
	Statue	point	4202		color: black width: 0.15mm
	Prominent Tree	point	4203		color: green brown width: 0.15mm
	Oil Tank	line	4204		color: black width:
	Water Reservoir	line	4205		color: blue width: 0.15mm
	Water Tank	line	4206		color: black, blue width: 0.15mm
	Wind Pump	point	4207		color: black width: 0.15mm

	Chimney	point	4208		color: black width: 0.15mm
	Pylon(Big)	line	4209		color: black width: 0.15mm
	Pylon(Small)	point	4210		color: black width: 0.15mm
	TV/Radio Wave Tower	point	4211		color: black width: 0.15mm
	Cellular phone Tower	point	4212		color: black width:
	Lighthouse	point	4213		color: black width: 0.15mm
	Water Level Observatory	point	4214		color: black width: 0.15mm
	Pipeline(on the ground)	line	4215		color: blue width: 0.1mm
	Power Line	line	4216		color: black width: 0.1mm
Water Area	Shore Line	line	5101		color: blue width: 0.15mm
	Lake	polygon	5102		color: black, cyanogens width: 0.15mm
	Pond	polygon	5103		color: blue width: 0.15mm
	River	line	5104		color: blue width: 0.15mm
	River(single line)	line	5105		color: blue width: 0.15mm
	Seasonal River(double line)	line	5106		color: blue width: 0.1mm
	Seasonal River(single line)	line	5107		color: blue width: 0.1mm
	Jetty(concrete)	line	5201		color: black width: 0.2mm

	Ferry	point	5202		color: black width: 0.1mm
	Dam	point	5203		color: black, blue width: 0.1mm
	Waterfall(line)	line	5204		color: blue width: 0.2mm
	Waterfall(point)	point	5205		color: black width: 0.2mm
	Watergate(line)	line	5206		color: black width: 0.2mm
	Watergate(point)	point	5207		color: black width: 0.2mm
	Borehole	point	5208	BH	color: blue black width: 0.2mm
	Well	point	5209	W	color: blue black width: 0.2mm
	Spring	point	5210	S	color: blue black width: 0.2mm
	Direction of Flowing Water	point	5211		color: blue width: 0.3mm
Surround	Hedge	line	6101		color: black width: 0.2mm
	Walls	line	6102	W	color: Black width: 0.2mm Annotation: Font: gothic Size: 2mm
	Fences	line	6103	F	color: black width: 0.2mm Annotation: Font: gothic Size: 2mm
Open Space	Car Park(Small)	point	6201	Car park	color: black width: 0.2mm Annotation: Font: gothic, italic

					Size: 2.0mm
	Car Park(big)	polygon	6202		color: black
	Garden	point	6203	Garden	color: black annotation width: 0.2mm
	Graveyard	polygon	6204		color: black width: 0.15mm
	Cemetery	point	6205		color: black width: 0.2mm
	Crater	line	6206		color: black width:
Vegetation	Rice Field	polygon	6301	Rice	color: black green width: 0.1mm
	Cultivated land	polygon	6302		color: green width: 0.1mm
	Coffee Plantation	polygon	6303	C	color: black green width: 0.1mm
	Sisal Plantation	polygon	6304	S	color: black green width: 0.1mm
	Sugar Plantation	polygon	6305	Su	color: black green width: 0.1mm
	Palm Plantation	polygon	6306		color: black green width: 0.1mm
	Wattle Plantation	polygon	6307	W	color: black green width: 0.1mm
	Cashew Nut Plantation	polygon	6308	CN	color: black green width: 0.1mm
	Turf	polygon	6309		color: green green 60 dot 75/25 diagonal
	Grass	polygon	6310		color: brown
	Forest	polygon	6311		color: green

	Thicket	polygon	6312		color: black green width: 0.1mm
	Bamboo	polygon	6313		color: black green width: 0.1mm
	Woodland	polygon	6314		color: green width: 0.1mm
	Shrub	polygon	6315		color: green width: 0.1mm
	Scattered Trees	polygon	6316		color: green width: 0.1mm
	Palm	polygon	6317		color: green width: 0.1mm
	Marsh	polygon	6318		color: blue width: 0.1mm
	Dambo	polygon	6319		color: blue width: 0.1mm
	Sand or Mud(Inland)	polygon	6320		color: brown
	Sand or Mud(Coastal)	polygon	6321		color: grown
Topographic Features	Contour Index (10m)	line	7101		color: brown width: 0.2mm
	Contour Normal (2m)	line	7102		color: brown width: 0.1mm
	Supplementary Contour (1m)	line	7103		color: brown width: 0.1mm
	Depression	Line	7104		color: brown width: 0.2mm
	Steep Slope	line	7201		color: brown width: 0.1mm
	Cliff	line	7202		color: brown width: 0.1mm
	Outcrop Rock	polygon	7203		color: black width: 0.1mm

	Quarry	line	7204		color: brown width: 0.1mm
	Congealed Lava	point	7205		color: black width: 0.1mm
	Artificial Slope(Embankment)	line	7206		color: black width: 0.1mm
	Artificial Slope(Cutting)	line	7207		color: black width: 0.1mm
	Riverbank	line	7208		color: black width: 0.1mm
	Covering(Coating)	line	7209		color: black width: 0.2 0.1mm
Control Points	Geodetic Point-Primary	point	7301		color: black brown width: 0.2 0.3mm
	Geodetic Point-Secondary	point	7302		color: black width: 0.3 0.2mm
	Geodetic Point-Tertiary	point	7303		color: black width: 0.3 0.2mm
	Unclassified Geodetic Point	point	7304		color: black width: 0.3mm
	Bench Mark	point	7305	1245.6	color: black
	Boundary Pillar	point	7306	BP	color: black
	Spot Height	point	7307	1250.6	color: black annotation width: 0.2mm
Others	Point arrow	point	8101		color: black
	Principal point	point	8102		color: black width: 0.2mm

	Contour height value	point	8103	1250	color: black annotation width: 0.2mm
Annotation	Nation	point	9101		color: black annotation: Font: Gill Sans Regular Size: 5.0mm
	Province or Region	point	9102	e.g.	color: black annotation: Font: Gill Sans Regular Size: 4.5mm
	District	point	9103	e.g.	color: black annotation: Font: Gill Sans Regular Size: 4.0mm
	City or Township	point	9104	e.g.	color: black annotation: Font: Gill Sans Regular Size: 4.5mm
	Consistency	point	9105	e.g.	color: purple annotation: Font: Gill Sans Regular Size: 3.5mm
	Ward	point	9106	e.g.	color: black annotation: Font: Gill Sans Regular Size: 3.0mm
	Location	point	9107	e.g.	color: dark blue annotation: Font: Gill Sans Regular Size: 3.5mm
	National Park	point	9108	e.g.	color: green annotation: Font: Gill Sans Regular Size: 4.0mm
	Common name	point	9109	e.g.	color: black annotation: Font: Gill Sans Regular Size: 3.0mm
	Real Width Road(Main)	point	9201	e.g.	color: black annotation: Font: Gill Sans Regular Size: 2.0mm
	Real Width Road(Secondary)	point	9202	e.g.	color: black annotation: Font: Gill Sans Regular Size: 1.8mm

Real Width Road(Tertiary)	point	9203	e.g.		color: black annotation: Font: Gill Sans Regular Size: 1.5mm
Real Width Road(District)	point	9204	e.g.		color: black annotation: Font: Gill Sans Regular Size: 1.5mm
Bridge	point	9205	e.g.		color: black annotation: Font: Gill Sans Regular Size: 2.5mm
Tunnel	point	9206	e.g.		color: black annotation: Font: Gill Sans Regular Size: 2.5mm
Railway	point	9207	e.g.		color: black annotation: Font: Gill Sans Regular Size: 3.0mm
Railway Station	point	9208	e.g.		color: black annotation: Font: Gill Sans Regular Size: 2.5mm
Building	point	9301	e.g.		color: black annotation: Font: Gill Sans Regular Size: 2.5mm
Small Object	point	9401	e.g.		color: black annotation: Font: Gill Sans Regular Size: 2.5mm
River	point	9501	e.g.		Color: blue Font: Gill Sans Regular Size: 4.0mm
River(Single)	point	9502	e.g.		color: blue annotation: Font: Gill Sans Regular Size: 3.2mm
Lake/Pond/S wamp	point	9503	e.g.		color: blue annotation: Font: Gill Sans Regular Size: 4.7mm
Cape/Cape Point	point	9504	e.g.		color: blue annotation: Font: Gill Sans Regular Size: 2.6mm
Harbor/Bay	point	9505	e.g.		color: blue annotation:

					Font: Gill Sans Regular Size: 2.9mm
Island	point	9506	e.g.		color: black annotation: Font: Gill Sans Regular Size: 4.7mm
Ferry	point	9507	e.g.		color: black annotation: Font: Gill Sans Regular Size: 2.5mm
Dam	point	9508	e.g.		color: black annotation: Font: Gill Sans Regular Size: 2.5mm
Waterfall	point	9509	e.g.		color: black annotation: Font: Gill Sans Regular Size: 1.5mm
Well/Spring/B orehole	Point	9510	e.g.		color: blue annotation: Font: Gill Sans Regular Size: 1.5mm
Airport	Point	9601	e.g.		color: black annotation: Font: Gill Sans Regular Size: 3.5mm
Graveyard/Ce metery	point	9602	e.g.		color: black annotation: Font: Gill Sans Regular Size: 2.0mm
Vegetation	point	9603	e.g.		color: black annotation: Font: Gill Sans Regular Size: 2.5mm
Mountain	point	9701	e.g.		color: black annotation: Font: Gill Sans Regular Size: 3.0mm
Valley/Plateau	point	9702	e.g.		color: black annotation: Font: Gill Sans Regular Size: 2.5mm
Hill	point	9703	e.g.		color: black annotation: Font: Gill Sans Regular Size: 2.5mm
Control Point	point	9801	e.g.		color: black annotation: Font: Gill Sans Regular

					Size: 2.0mm

5 Reference System

5.1 Spatial reference system

The spatial reference system of 1:10,000 scale digital topographic maps is as

Compound coordinates reference system				
	Identical name			
	Coordinates reference system 1 (Horizontal component)			
		Identical name		
		Domain of validity		The Republic of Malawi
		Datum		
			Identical name	n/a
			Type	n/a
			Fixed (False) origin	500,000m Easting, 10,000,000m Northing
			Ellipsoid	
				Identical name	Clarke 1880 (Modified)
				Semi major axis	6,378,249.145326
				Inverse flattening	1 / 293.4663076
			Prime meridian	
				Identical name	Greenwich meridian
				Greenwich longitude	33deg 00min East of Greenwich
		Coordinate system		
			Identical name	Universal Transversal Mercator (UTM)
			Type	UTM Projection in Zone 36
			Number of dim	2
			Coordinate axis	
				Name	Northing
				Direction	Positive to true north at origin
				Unit identifier	Meter
			Coordinate axis	
				Name	Easting
				Direction	Positive to true east at origin
				Unit identifier	Meter
	Coordinates reference system 2 (Vertical component)			
		Identical name		the mean sea level of the Indian Ocean
		Domain of validity		The Republic of Malawi
		Datum		
			Identical name	the mean sea level of the Indian Ocean
			Type	Altitude
			Fixed origin	0.00.
		Coordinate system		
			Identical name	Altitude
			Type	
			Number of dim	1
			Coordinate axis	
				Name	Altitude
				Direction	Vertical from each geoidal surface
				Unit identifier	Meter

5.2 Temporal reference system

The temporal reference system of 1:10,000 scale digital topographic maps is as follows;

The calendar : Gregorian calendar

The standard time : East African Standard Time (ESAT)

6 Data quality

6.1 Quality requirements and evaluation procedure

6.1.1 Completeness

(1) Excess

Domain of validity	Data quality evaluation index	
Boundary, Control Point.	Name	Excess percentage
	Definition	The feature items that are targeted for quality evaluation in the 0.5km grid cell of the map sheet are compared with original data. The error rate is found by computing the ratio of 0.5km grid cells where there is no reference data in correspondence to the topographic map data. The following cases are designated as grid cell errors. • No reference data that corresponds with the topographic map data • The duplicate topographic map data is present. Error Rate (%) = (the number of grid cells with errors/the total number of cells in the map sheet)×100.
	Quality conformity level	Error rate = 0%

Quality evaluation procedure

Full Inspection
① Display or output 0.5km grid cells and data included in the domain of validity so that it can be identified.
② Determine the error grid cell based on the definition for the data quality evaluation index.
③ Count the number of error grid cells and total number of grid cells, and calculate the error rate based on the error rate formula.
④ The error rate shall be acceptable when it equals 0%, and unacceptable when greater than 0%.

Domain of validity	Data quality evaluation index	
Transportation, Buildings, Small Objects, Water areas, Surround, Open Spaces, Vegetation, Topographic features, Others.	Name	Excess percentage
	Definition	The feature items that are targeted for quality evaluation in the 0.5km grid cell of the map sheet are compared with reference data. The error rate is found by computing the ratio of 0.5km grid cells where there is no reference data in correspondence to the topographic map data. The following cases are designated as grid cell errors. • The duplicate topographic map data is present. • When excess data extends across multiple cells, all of the related cells are counted as errors. Error Rate (%) = (the number of grid cells with errors/the total number of cells inspected)×100.
	Quality conformity level	Error Rate ≤ 5%

Quality evaluation procedure

Sample Inspection
① Display or output 0.5km grid cells and data included in the domain of validity so that it can be identified.
② Extract 20% of the total grid cells at random from the map sheet. Use a random number table to extract grid cells with consecutive numbers.
③ The conditions to be followed when conducting a random extraction of grid cells are as follows:
• No gaps in features, such as bodies of water.
• A large number of features in the domain of validity are contained.
If the extracted grid cells are not appropriate, an adjacent cell will be extracted.
④ Target the extracted grid cell and determine the error grid cell based on the definition for the data quality evaluation index.
⑤ Find the error rate by calculating the number of error grid cells and the number of extracted grid cells based on the error rate formula.
⑥ The error rate is acceptable when it is less than or equal to 5% and unacceptable if greater than 5%.

Domain of validity	Data quality evaluation index	
Annotation.	Name	Excess percentage
	Definition	The feature items (annotations) that are targeted for quality evaluation in the map sheet are compared with reference data. The error rate is found by computing the ratio of errors where there is no reference data in

		corresponding to the topographic map data. The following cases are designated as errors. • The annotation in the topographic map data that does not correspond to reference data is present. • The annotation duplicates. Error Rate (%) = (the number of errors/the total number of annotations in the original material)× 100.
	Quality conformity level	Error Rate ≤ 5%

Quality evaluation procedure

Full Inspection
① Display or output data included in the domain of validity so that it can be identified.
② Identify errors based on the definition of data quality evaluation index.
③ Find the error rate by calculating the number of errors and the total number in the inspection based on the error rate formula.
④ The error rate is acceptable when it is less than or equal to 5% and unacceptable if greater than 5%.

(2) Omission

Domain of validity	Data quality evaluation index	
Boundary, Control Point.	Name	Omission percentage
	Definition	The feature items that are targeted for quality evaluation in the 0.5km grid cell of the map sheet are compared with reference data. The error rate is found by computing the ratio of 0.5km grid cells where there is no topographic map data corresponding to the reference data. The following cases are designated as grid cell errors. • The topographic map data that corresponds to reference material is not present. Error Rate (%) = (the number of grid cells with errors/the total number of cells in the map sheet)× 100.
	Quality conformity level	Error Rate = 0%

Quality evaluation procedure

Full Inspection
① Display or output 0.5km grid cells and data included in the domain of validity so that it can be identified.
② Specify the error cells based on the definition of the data quality evaluation measurement.
③ Find the error rate by calculating the number of error grid cells and total number of cells, based on the error rate formula.
④ The error rate is acceptable when it equals 0% and unacceptable if greater than 0%.

Domain of validity	Data quality evaluation index	
Transportation, Buildings, Small Objects, Water areas, Surround, Open Spaces, Vegetation, Topographic features, Others.	Name	Omission percentage
	Definition	The feature items that are targeted for quality evaluation in the 0.5km grid cell of the map sheet are compared with reference data. The error rate is found by computing the ratio of 0.5km grid cells where there is no topographic map data corresponding to reference data. The following cases are designated as grid cell errors. • The topographic map data that corresponds to reference data is not present. • When omission data extends across multiple grid cells, all of the related grid cells are counted as errors. Error Rate (%) = (the number of grid cells with errors/the total number of cells inspected)× 100.
	Quality conformity level	Error Rate ≤ 5%

Quality evaluation procedure

Sample Inspection
① Display or output 0.5km grid cells and data included in the domain of validity so that it can be identified.
② Extract 20% of the total grid cells at random from the map sheet. Use a random number table to extract grid cells with consecutive numbers.
③ The conditions to be followed when conducting a random extraction of grid cells are as follows:
 • No gaps in features, such as bodies of water
 • A large number of features in the domain of validity are contained
 If the extracted grid cells are not appropriate, an adjacent grid cell will be extracted.

④ Target the extracted grid cells and specify the error grid cells based on the definition for the data quality evaluation measurement.
⑤ Find the error rate by calculating the number of error grid cells and the number of extracted grid cells based on the error rate formula.
⑥ The error rate is acceptable when it is less than or equal to 5% and unacceptable if greater than 5%.

Domain of validity	Data quality evaluation index	
Annotation	Name	Omission percentage
	Definition	The feature items (annotation) that are targeted for quality evaluation in the map sheet are compared with reference data. The error rate is found by computing the ratio of errors where there is no topographic map data corresponding to reference data. The following cases are designated as errors. • There are no annotations that correspond with reference data in the topographic map data. Error Rate (%) = (the number of errors/the total number of annotation in the original data)×100.
	Quality conformity level	Error Rate ≤ 5%

Quality evaluation procedure
Full Inspection
① Display or output data included in the domain of validity scope so that it can be identified.
② Identify errors based on the definition of data quality evaluation measurement.
③ Find the error rate by calculating the number of errors and the total number in the inspection based on the error rate formula.
④ The error rate is acceptable when it is less than or equal to 5% and unacceptable if greater than 5%.

6.1.2   Logical consistency

(1)   Formal consistency

Domain of validity	Data quality evaluation index	
The 1:10,000 scale digital topographic maps	Name	Package range error percentage
	Definition	Each package that is consisted of the 1:10,000 scale digital topographic maps are inspected to find the formal consistency error. The error rate is found by calculating the ratio of formal consistency error. The following cases are designated as errors. • There are cases that are not open the package data using designated software coresspond with each package data. Error Rate (%) = (the number of formal errors/the total number of data file in the all package)×100.
	Quality conformity level	Error Rate = 0%

Quality evaluation procedure
Full Inspection
① Choose the package data included in the domain of validity so that it can be identified.
② Identify open errors with   designated software based on the definition of data quality evaluation measurement.
③ Find the error rate by calculating the number of errors and the total number of package data in the inspection based on the error rate formula.
The error rate is acceptable when it equals 0% and unacceptable if greater than 0%.

(2)   Conceptual consistency

The domain consistency is not adopted.

(3)   Domain consistency

Domain of validity	Data quality evaluation index	
The 1:10,000 scale digital topographic maps	Name	Feature item range error percentage
	Definition	Each package that is consisted of the 1:10,000 scale digital topographic maps are inspected by the software to find the domain consistency error. The error rate is found by calculating the ratio of domain consistency error. The following cases are designated as errors. • There are item codes that are not disigncted in the

		product specification.
		• There are relationships between item code and data type that not designated in the product specification. Error Rate (%) = (the number of domain errors/the total number of data in the package)×100.
	Quality conformity level	Error Rate = 0%

Quality evaluation procedure

Full Inspection

④ Choose the data package included in the domain of validity so that it can be identified.

⑤ Identify errors with imspection software based on the definition of data quality evaluation measurement.

⑥ Find the error rate by calculating the number of errors and the total number of data in the inspection based on the error rate formula.

⑦ The error rate is acceptable when it equals 0% and unacceptable if greater than 0%.

(4)　Topological consistency

The topological consistency is not adopted.

6.1.3　Positional accuracy

(1)　Absolute exterior positional accuracy

The absolute exterior positional accuracy is not adopted.

(2)　Relative interior positional accuracy

The relative interior positional accuracy is not adopted.

(3)　Gridded data positional accuracy

The gridded data positional accuracy is not adopted.

6.1.4　Temporal accuracy

(1)　Accuracy of a time measurement

The accuracy of a time measurement is not adopted.

(2)　Temporal consistency

The temporal consistency is not adopted.

(3)　Temporal validity

The temporal validity is not adopted.

6.1.5　Thematic accuracy

(1)　Thematic Classification Correctness

The thematic classification correctness is not adopted.

(2)　Non Quantitative Attribute Accuracy

The non quantitative attribute accuracy is not adopted.

(3)　Quantitative Attribute Accuracy

The quantitative attribute accuracy is not adopted.

7 Data product distribution

7.1 Format name

ArcGIS shape format (ESRI), DXF, DGN, PDF and kml is applied for Label/Point, Arc and Polygon.

7.2 Encoding rules

n/a

7.3 Language encoding method

The Language encoding is the UTF-8

7.4 Language

The language to be used is English

7.5 Unit of product

(1) Unit of dataset

The unit of dataset is 1: 10,000

(2) Display Scale

The display scale is 1: 10,000.

(3) Components of

The 1:10,000 scale digital topographic maps consists of 12 topographic packages depending on the character of the feature and each topographic class consists of data depending on the type of data.

Name of data	Name of Package	Name of data	Description of data
The 1:10,000 scale digital topographic maps	Boundaries	International B (interbpl)	Polygon data of the international
		Administrative B (adminibpl)	Polygon data of administrative boundary
	Transportation	Transportation (transpl)	Polygon data of transportation
		Transportation(transli)	Line data of transportation
		Transportation(transpo)	Point data of transportation
	Buildings	Buildings (buildpl)	Polygon data of buildings
		Buildings(buildpo)	Point data of buildings
	Small objects	Small objects (smallli)	Line data of small objects
		Small objects (smallpo)	Point data of small objects
	Water Areas	Water Areas (waterapo)	Point data of water areas
		Water Areas (waterali)	Line data of water areas
		Water Areas (waterapl)	Polygon data of water areas
	Surround	Surround (surroundli)	Line data of surround
	Open Spaces	Open Spaces (ospacepo)	Point data of open spaces
		Open Spaces (ospaceli)	Line data of open spaces
		Open Spaces (ospacepl)	Polygon data of open spaces
	Vegetation	Vegetation (vegetapl)	Polygon data of vegetation
	Topographic	Topographic Features	Point data of topographic features

	Features	(topografeapo)	
		Topographic Features (topografeali)	Line data of topographic features
		Topographic Features (topograpfeapl)	polygon data of topographic features
	Control Points	Control points (contpopo)	Point data of control point
	Others	Others (otherspo)	Point data of others
	Annotation	Annotation (annotapo)	Point data of annotation

7.6 Media name (Option)

The media to be used is a DVD.

8   Metadata (Option)

Not adopted.

9 Others

9.1 Portrayal schema (Option)

Not adopted

9.2 Maintenance of spatial data products (Option)

n/a

Appendix 4: Descriptions for Ground Control Point

Descriptions for Ground Control Point

Point No.	142/ MWT	Point Name	SAKDULA	Operated by	S .Nishio
Photo Signal Type	Pricking	Date of Observation	6-Apr-2009	Inspected by	A. Nishimura

Coordinate Zone: UTM 36		Horizontal Coordinates (m)		Ortho Height (m)	
		Easting (E)	Northing (N)	Pillar Point	Ground Height
WGS-84		587,213 Handy GPS	8,471,570 Handy GPS	-------	-1.40
Clarke 1880 (Modified)		587,187.711	8,471,885.706	1,250.900	1,249.500

Surrounding Site Photo A	Surrounding Site Photo B
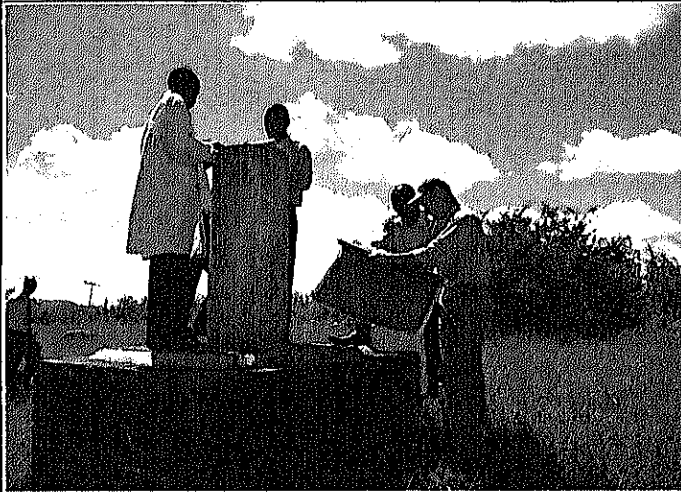
Position on QB images

Notes:

Descriptions for Ground Control Point

Point No.	240/ MWT	Point Name	ALIMAUNDE EAST	Operated by	S .Nishio
Photo Signal Type	Pricking	Date of Observation	6-Apr-2009	Inspected by	A. Nishimura

Coordinate Zone: UTM 36		Horizontal Coordinates (m)		Ortho Height (m)	
		Easting (E)	Northing (N)	Pillar Point	Ground Height
WGS-84		586,182 Handy GPS	8,463,040 Handy GPS	--------	-2.40
Clarke 1880 (Modified)		586,159.152	8,463,360.625	1,134.400	1,132.000
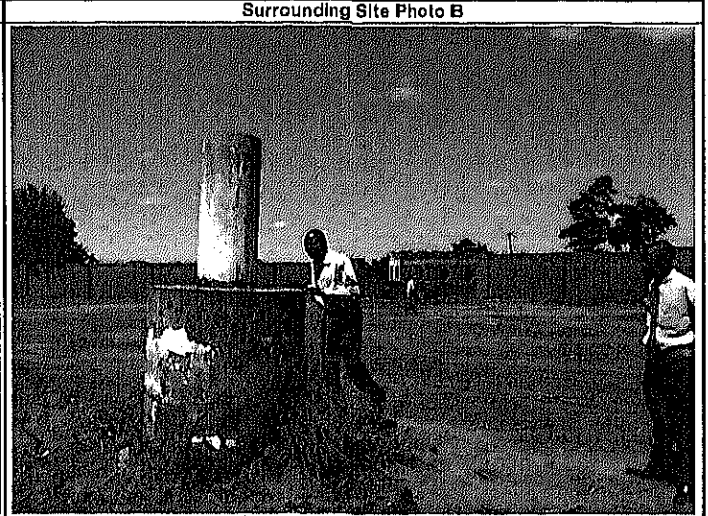
Surrounding Site Photo A	Surrounding Site Photo B

Position on QB Images

Notes:

Descriptions for Ground Control Point

Point No.	143/ MWT	Point Name	CAPITAL	Operated by	S .Nishlo
Photo Signal Type	Pricking	Date of Observation	6-Apr-2009	Inspected by	A. Nishimura

Coordinate Zone: UTM 36	Horizontal Coordinates (m)		Ortho Height (m)	
	Easting (E)	Northing (N)	Pillar Point	Ground Height
WGS-84	585,275 Handy GPS	8,457,962 Handy GPS	-------	-1.20
Clarke 1880 (Modified)	585,254.171	8,458,288.006	1,110.800	1,109.600

Surrounding Site Photo A	Surrounding Site Photo B
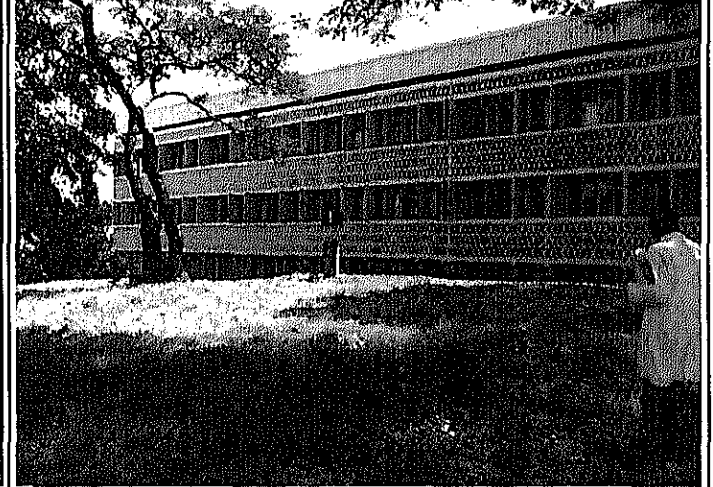
Position on QB Images

Notes:

Descriptions for Ground Control Point

Point No.	81/ MWT	Point Name	LIKUNI	Operated by	S .Nishio
Photo Signal Type	Pricking	Date of Observation	7-Apr-2009	Inspected by	A. Nishimura

Coordinate Zone: UTM 36		Horizontal Coordinates (m)		Ortho Height (m)	
		Easting (E)	Northing (N)	Pillar Point	Ground Height
WGS-84		576,214 Handy GPS	8,451,090 Handy GPS	-------	-1.50
Clarke 1880 (Modified)		576,188.961	8,451,408.624	1,108.200	1,106.700
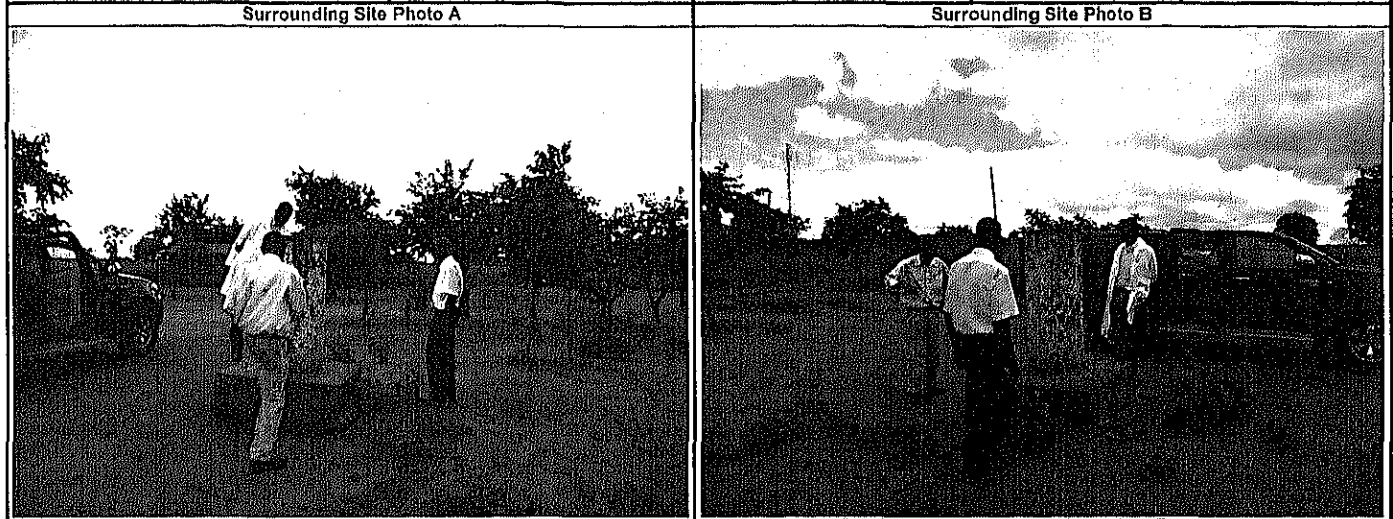
Surrounding Site Photo A	Surrounding Site Photo B

Position on QB Images

Notes:

Descriptions for Ground Control Point

Point No.	80/ MWT	Point Name	NCHENCHE	Operated by	S .Nishio
Photo Signal Type	Pricking	Date of Observation	7-Apr-2009	Inspected by	A. Nishimura

Coordinate Zone: UTM 36		Horizontal Coordinates (m)		Ortho Height (m)	
		Easting (E)	Northing (N)	Pillar Point	Ground Height
WGS-84		577,094 Handy GPS	8,446,886 Handy GPS	-------	-1.80
Clarke 1880 (Modified)		577,069.821	8,447,205.697	1,098.900	1,097.100

Surrounding Site Photo A	Surrounding Site Photo B

Position on QB Images

Notes:

Descriptions for Ground Control Point

Point No.	135/ MWT	Point Name	MKOMACHI	Operated by	S .Nishio
Photo Signal Type	Pricking	Date of Observation	7-Apr-2009	Inspected by	A. Nishimura

Coordinate Zone: UTM 36		Horizontal Coordinates (m)		Ortho Height (m)	
		Easting (E)	Northing (N)	Pillar Point	Ground Height
WGS-84		580,309 Handy GPS	8,460,608 Handy GPS	-------	-1.70
Clarke 1880 (Modified)		580,285.010	8,460,928.355	1,110.300	1,108.600

Surrounding Site Photo A	Surrounding Site Photo B

Position on QB Images

Notes: