

2.5 Second Work in Japan (2009.7.3 - 2009.8.17)

2.5.1 (5-1.) Supplementary digital editing

(1) Points of clarification from numerical plotting/editing

Points needing clarification, marked on printed image, and numerical plotting/editing data maps, were all settled in the supplementary field identification, and were corrected accordingly.

(2) Editing add (A), delete (D), change (CG)

Correcting and editing was carried out of the content: symbols -- A: add; D: delete; CG: change -- and leading lines to the sides displaying the results of the supplementary field identification (content to be corrected) all within the sheet.

(3) Annotation input

Annotations were inputted in the position shown on the supplementary field identification sheets, based on the annotation list.

2.5.2 (5-2.) Symbolization on the topographic maps

The symbolization on the topographic maps were carried out based on the map symbols decided upon in the specification discussions and the results of (4-2.) Confirming data for map making., using the post-supplementary digital edited data. Also, make the final map output data by adding the marginal information for each map decided on in the specification discussions.

The accuracy of the symbols to be used will correspond to the resolution of the plotter.

2.5.3 (5-3.) Making data files

A data file was made using the data from the supplementary digital editing and after the symbolization. As a rule the data file will be made within automatic processing limits.

1) Making a vector data file

The data that had supplementary digital editing was converted into a format such as klm, DXF, Dgn, or Sharpe file; then stored in the appropriate media. This data is to be seamless, keeping in mind ease of use.

2) Making Raster data files

Each map sheet data with symbolized data and marginal information should be converted to PDF

format, and store in an appropriate media format.

2.5.4 (5-4.) The final report

The final step in the study period is the final report, describing the study chronology, progress, and results.

2.6 Quality Control

The following quality control measures were taken for the final output, the scale 1/10,000 topographic map digital data.

- Accuracy control (according to process specification thinking)
- Quality evaluation (according to product specification thinking)

(1) Accuracy control

The final output, the scale 1/10,000 topographic map digital data, is made through several processes.

Accuracy control was carried out during the following processes in making the output. The accuracy control of each process counts the number of omissions/errors for each feature on each sheet.

- during numerical editing
- during supplementary field identification
- during supplementary numerical editing

The results of the above accuracy controls are grouped by each sheet and each type of accuracy control.

(2) Quality evaluation

Quality evaluation of the final output, the scale 1/10,000 topographic map digital data, was implemented on two of the five evaluation criteria, completeness and consistency.

The quality evaluation criteria and sub-criteria were as follows.

Criteria: completeness, consistency

Sub-criteria:

Completeness: redundancy (errors of feature data non-existent in field); omission (error of existent feature for which there is no data)

Consistency: format consistency (format of feature data is consistent with the specifications), general consistency (codes and data types of feature data are consistent with all specifications)

Chapter 3 Issues and recommendations

3.1 Issues

3.1.1 Environment for effective use of output

The purpose of this project was to make digital topographic map data. To promote its effective utilization, five highly versatile formats of digital data were provided.

When considering the environment the output will be used in, with an Internet connection established and many computers in use, the conditions are comparatively good. However, since highly specialized equipment, such as GIS software and plotters for printing, are used, there are many issues which come up, such as equipment malfunction or the inability to use an old version.

Meeting the needs from both a hard and soft perspective are issues that must be addressed in order to effectively utilize the latest digital data provided this time.

3.1.2 Freshness of spatial information

Spatial data relies on being current. Updating work is vital when considering the use of accurate and up-to-date information. LCA however, is a user, and it would be difficult for it to manage the spatial information data. An effective spatial information utilization strategy on a national level needs to be established. Solutions to this issue will involve devising how LCA will be involved in this, and how it will work to promote this to relevant agencies.

3.2 Recommendations

Recommendations will be given going a step further than the provision of topographic maps, the aim of this project, considering the operation and management of spatial data, through to its effective use.

3.2.1 Establishing a spatial data infrastructure

(1) Development of laws and setting up a national committee

It is necessary to establish a national level spatial information utilization strategy in order to effectively use and not waste the spatial information. As mentioned above, LCA is a user, and it would be difficult for it to

manage the spatial information data. Therefore, it is necessary to formulate laws and provide a place for discussions on establishing a national spatial data infrastructure. In order to promote this to the relevant agencies it is suggested that (i) laws are developed for its prompt establishment, and (ii) a national committee is established.

(2) Making rules for updating data

This committee should focus its efforts on devising rules for the maintenance of reliable data. Examples of recommended ways to promote this data to relevant agencies are as follows:

- Clarification of a spatial information administrator
- Making and updating specifications based on product specifications
- Making and updating a manual of software needed to maintain the data

3.2.2 Effective use of spatial data

(1) Capacity development of LCA

The acquisition of skills and capacity development needed to effectively use the spatial data, and the equipment necessary for this are recommended.

(2) Capacity development of administrator

It is recommended to promote to relevant agencies the acquisition of skills and capacity development needed to effectively use the spatial data, and the equipment necessary for this.

Appendix 1: Minutes of Meeting (M/M)

Appendix 2: Memorandum

Appendix 3: Product Specifications

Appendix 4: Descriptions for Ground Control Point

Appendix 1: Minutes of Meeting (M/M)

**MINUTES OF MEETING
FOR
THE INCEPTION REPORT
OF
THE STUDY ON URBAN DEVELOPMENT MASTER PLAN
FOR
LILONGWE
IN
THE REPUBLIC OF MALAWI
(TOPOGRAPHIC MAPPING)**

AGREED UPON BETWEEN

LILONGWE CITY ASSEMBLY (LCA)

AND

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

**Lilongwe
3rd April, 2009**



Mr. Kelvin M'mangisa
Chief Executive
Lilongwe City Assembly
(LCA)



Mr. Satoru Nishio
Leader
JICA Study Team
Japan International Cooperation Agency
(JICA)

JICA Study Team for "The Study on Urban Development Master Plan for Lilongwe in the Republic of Malawi (Topographic Mapping)" (hereinafter referred to as the "JICA Study Team"), and Lilongwe City Assembly (hereinafter referred to as "LCA") held a meeting concerning the Inception Report of "The Study on Urban Development Master Plan for Lilongwe in the Republic of Malawi (Topographic Mapping)" on the 30th day of March 2009, from 9:55 to 10:55 at the Chamber of the Lilongwe Civic Offices.

1. Opening prayer: Ms. M. Mpakule
2. Self Introduction: Everybody
3. Welcome remarks: Eng. J. Tsogolani

Welcome remarks were by Mr. J. Tsogolani, Director of Engineering Services. He was sitting in on behalf of the Chief Executive. He told the members present that the Lilongwe City Assembly with assistance from the Government of Japan through the Japan International Cooperation Agency (JICA) has embarked on the process of reviewing the Lilongwe Outline Zoning Scheme.

The JICA study team from Japan had organised this meeting with the stakeholders. The objective of the meeting was to source technical input into the topographic mapping inception report from the stakeholders. The topographic mapping inception report was part of the preliminary works towards the comprehensive review of the Lilongwe Outline Zoning Scheme. He thanked the Japanese Government for their assistance.

4. Presentation: Mr. Nishio

The Leader of JICA Study Team explained about the followings based on the Inception Report.

- a) Objectives of the project.
- b) Basic policies of the project.
- c) Project implementation procedures.
- d) Final product.
- e) Work planning.
- f) Personnel planning

5. Q&A

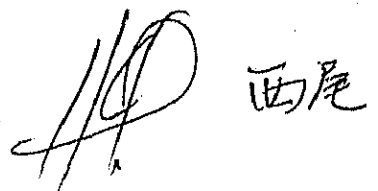
The JICA Study Team answered the following questions raised in the meeting.

Q) Is cadastral information going to be indicated on the topographic map scale 1/10,000 ?

A) The cadastral information will not be captured and indicated on the topographic map based on the JICA study team's experience.

Q) How has the study area been determined?

A) The JICA Study Team discussed with LCA the study area from the day the study team arrived here and the study team agreed with LCA. The tentative study area is being considered by JICA head quarters. The study team will get the results of consideration for the study area within a few days.



Q) What kind of a data will be used when the topographic map will be produced?

A) The JICA Study Team will use the satellite images to produce the maps.

Q) Are you going to carry out capacity building?

A) The capacity building related to the mapping component of the project will not be carried out basically. Because, the purpose of this project is to produce the topographic maps and there is not enough time and resources to carry out the capacity building.

Q) In the basic policy in the inception report, the world geodetic system is recommended to be introduced as a survey standard, but Malawi side would like to apply the local system, how do you think about our idea?

A) The JICA Study Team recommended the world geodetic system based on the tendency of survey field in the inception report. In case of applying the local system for the mapping of the project, there will be no any technical problems.

Q) How do you think about counterpart(C/P) duties and the implementation schedule?


A) It is very important to cooperate with C/P, LCA and Survey Department. The JICA Study Team informs and explains their duties and the schedule in advance.

6. Closing prayer: Ms. M. B. Dube

The conclusions of the explanation and discussions of the Inception Report were as follows:

1. In principle LCA agreed on the Inception Report prepared by the JICA Study Team.

The members who attended the meeting are listed in Appendix-1.

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LIST OF ATTENDANTS

Malawi Side:

- | | |
|----------------------------|--|
| 1. Mr. Julius TSOGOLANI | Director of Engineering Service, Lilongwe City Assembly |
| 2. Mr. Yohane NYANJA | Acting Director of Planning and Development, Lilongwe City Assembly |
| 3. Mr. K. J. BANDA | Lilongwe City Assembly |
| 4. Ms. M. B. DUBE | Regional Commissioner for Physical Planning, Ministry of Lands and Natural Resources |
| 5. Mr. F. C. J. TUKULA | Commissioner for Physical Planning, Ministry of Lands and Natural Resources |
| 6. Mr. K. G. MLINDE | Lilongwe City Assembly |
| 7. Ms. Mercy MPAKULE | Lilongwe City Assembly |
| 8. Mr. Jones K. GONDWE | Lilongwe City Assembly |
| 9. Mr. Brown MPHALO | Survey Department |
| 10. Mr. Dalitso MPOOLA | Representative, Ministry of Local Government and Rural Development |
| 11. Mr. Neeton MHURA | Commissioner for Lands, Ministry of Lands and Natural Resources |
| 12. Mr. Y. K. CHEWELE | ESCOM, Lilongwe |
| 13. Ms. Catherine KULEMEKA | Town Planning Manager, Lilongwe City Assembly |
| 14. Mr. H.S.K. MUMBA | Housing Manager, Lilongwe City Assembly |
| 15. Mr. H.T. KAMELA | Development Control Manager, Lilongwe City Assembly |

Japanese Side:

- | | |
|------------------------|--------------------------------|
| 1. Mr. Satoru NISHIO | Team Leader of JICA Study Team |
| 2. Mr. Akira NISHIMURA | Surveyor |

JICA Malawi Office

- | | |
|---------------------------|-----------------------------------|
| 1. Mr. Shunsuke TAKATOI | Assistant Resident Representative |
| 2. Mr. Godfrey KAPALAMULA | Senior Programme Officer |

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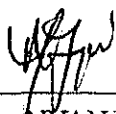
Appendix 2: Memorandum

MEMORANDUM

April 3rd, 2009

The following items have been agreed upon among Lilongwe City Assembly, Department of Surveys and JICA Study Team for the Study on Urban Development Master Plan for Lilongwe in the Republic of Malawi (Topographic Mapping):

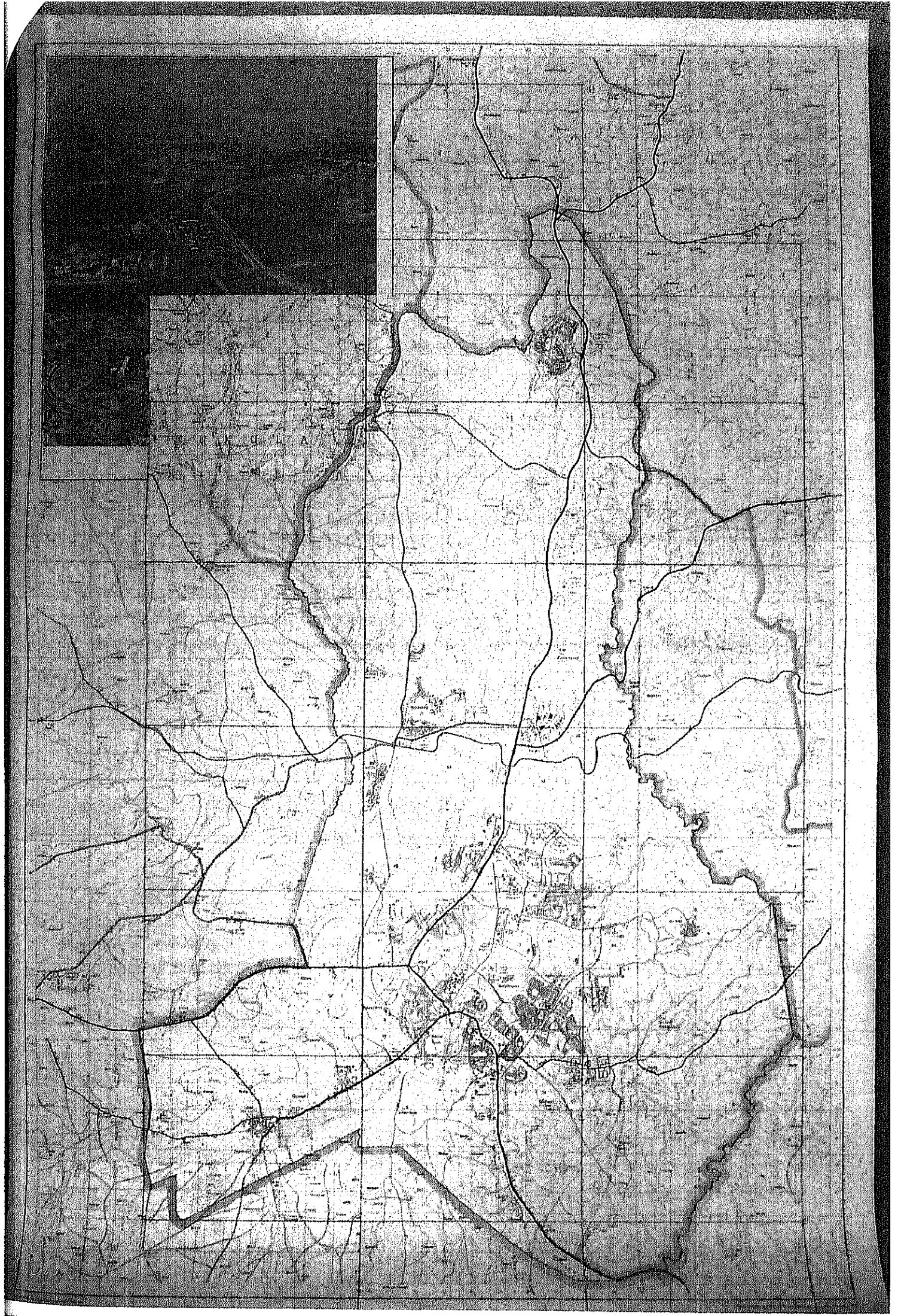
1. Reference Ellipsoid is Clarke 1880 (Modified).
 $a = 6,378,249.145326$ $1/f = 293.4663076$
2. Projection System is Transverse Mercator.
3. Grid System is U.T.M. (Zone 36).
4. Meridian of Origin is 33°00' East of Greenwich.
5. Latitude of Origin is Equator.
6. Scale Factor at Origin is 0.9996.
7. False Coordinate of Origin is 500,000m in Y (False Easting).
8. False Coordinate of Origin is 10,000,000m in X (False Northing).
9. Unit of Measurement is Meter.
10. Height is based on the Mean Sea Level of the Indian Ocean.
11. Sheet Size is 80cm(8km) by 60cm(6km) for scale 1:10,000.
12. Study Area for topographic mapping and Sheet Division is indicated in the Annex.



Yohane NYANJA
Director of Dept. of Planning and Development
Lilongwe City Assembly
The Republic of Malawi



Satoru NISHIO
Leader
JICA Study Team



Appendix 3: Product Specifications

Specification for Digital Topographic Maps (1/10,000)

Ver.1.0

July 2009

Lilongwe City, the Republic of Malawi

Contents

1	Outline	4
1.1	Creation of information for the digital topographic maps product specification	4
1.2	Purpose.....	4
1.3	Spatial extent.....	4
1.4	Temporal extent	4
1.5	Reference standards	4
1.6	Abbreviations.....	4
2	Domain of Validity.....	5
2.1	Identification of domain of validity	5
2.2	Applicable level	5
3	Data Product Identification	6
3.1	Name of spatial data product	6
3.2	Date.....	6
3.3	Contact information	6
3.4	Geographical description	6
4	Data contents and structure.....	7
4.1	UML static class diagram for application schema	7
4.1.1	Boundary package	7
4.1.2	Transportation package.....	7
4.1.3	Buildings package.....	8
4.1.4	Small Objects package.....	9
4.1.5	Water Areas package.....	10
4.1.6	Surround package	10
4.1.7	Open Spaces package	11
4.1.8	Vegetation package	12
4.1.9	Topographic Features package	13
4.1.10	Control Points package.....	14
4.1.11	Others package	14
4.1.12	Annotation package	15
4.2	Documents for application schema	16
4.2.1	Boundaries package.....	16
4.2.2	Transportation package.....	18
4.2.3	Buildings package.....	25
4.2.4	Small Objects package.....	31
4.2.5	Water Area Package.....	35
4.2.6	Surround Package.....	39

4.2.7	Open Space Package.....	40
4.2.8	Vegetation Package.....	42
4.2.9	Topographic Feature Package.....	48
4.2.10	Control Point Package.....	52
4.2.11	Others Package.....	53
4.2.12	Annotation Package.....	54
4.3	Definition of Graphics.....	61
5	Reference System.....	75
5.1	Spatial reference system.....	75
5.2	Temporal reference system.....	75
6	Data quality.....	76
6.1	Quality requirements and evaluation procedure.....	76
6.1.1	Completeness.....	76
6.1.2	Logical consistency.....	78
6.1.3	Positional accuracy.....	79
6.1.4	Temporal accuracy.....	79
6.1.5	Thematic accuracy.....	79
7	Data product distribution.....	80
7.1	Format name.....	80
7.2	Encoding rules.....	80
7.3	Language encoding method.....	80
7.4	Language.....	80
7.5	Unit of product.....	80
7.6	Media name (Option).....	81
8	Metadata (Option).....	82
9	Others.....	83
9.1	Portrayal schema (Option).....	83
9.2	Maintenance of spatial data products (Option).....	83

1 Outline

1.1 Creation of information for the digital topographic maps product specification

The title of product specification: [Specification of the 1/10,000 scale Digital Topographic Maps]

Date: July 2009

Author: JICA Study Team

Language: English

Application field: 1/10,000 scale Digital Topographic Map

Document format: PDF

1.2 Purpose

The digital topographic maps, based on the specification, aims to be used for the urban planning of Lilongwe city and as data source for printing works.

1.3 Spatial extent

The target area is the whole territory of Lilongwe city including Area 58 and the suburb of Lilongwe city.

1.4 Temporal extent

The digital topographic maps is constructed based on the satellite image data and the supplementary field identification.

Therefore, the date it was surveyed is the time of supplementary field identification.

1.5 Reference standards

The following references are applied for the preparation of the specification.

*The map symbol regulation

*ISO 19000 series

1.6 Abbreviations

Abbreviations that have been used in this document are as follows;

UML: Unified Modeling Language

2 Domain of Validity

Domain of validity of the specification is as follows:

2.1 Identification of domain of validity

The domain of validity identification is as follows.

*The specification of the 1:10,000 scale digital topographic maps.

2.2 Applicable level

The applicable level is the Dataset

3 Data Product Identification

The identification of the data products specification is as follows:

3.1 Name of spatial data product

The name of spatial data production is the 1:10,000 scale digital topographic maps.

3.2 Date

The data of production is July 2009.

3.3 Contact information

The contact office is as follow;

Contact:

Adress:

Telephone: +

Facsimile: +

E-mail:

3.4 Geographical description

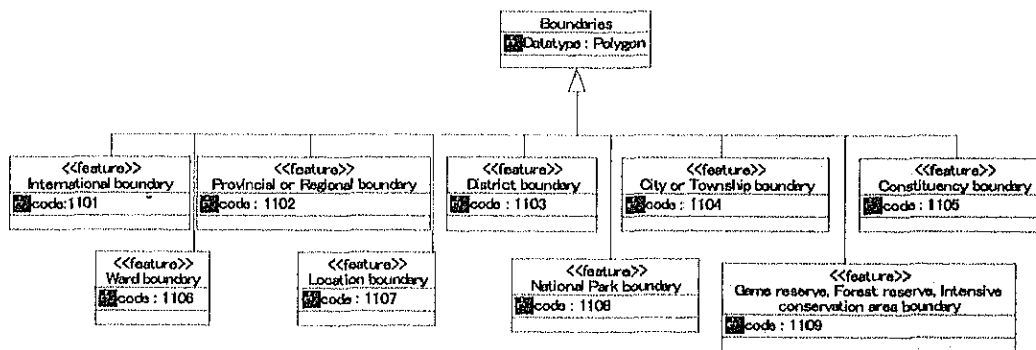
Lilongwe city including Area 58 and the suburb of Lilongwe city is the area where the 1:10,000 scale digital topographic maps is constructed.

4 Data contents and structure

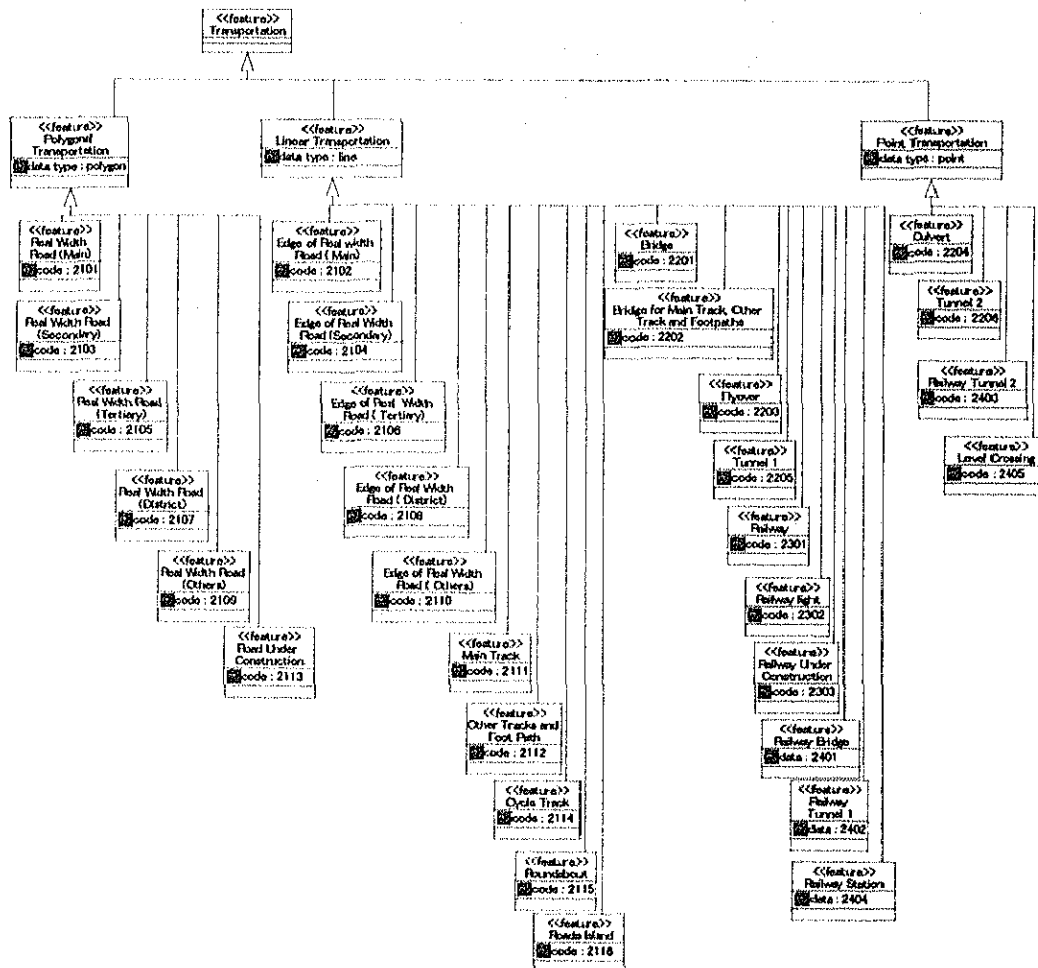
4.1 UML static class diagram for application schema

The each topographic feature package is expressed using UML static class diagram for application schema.

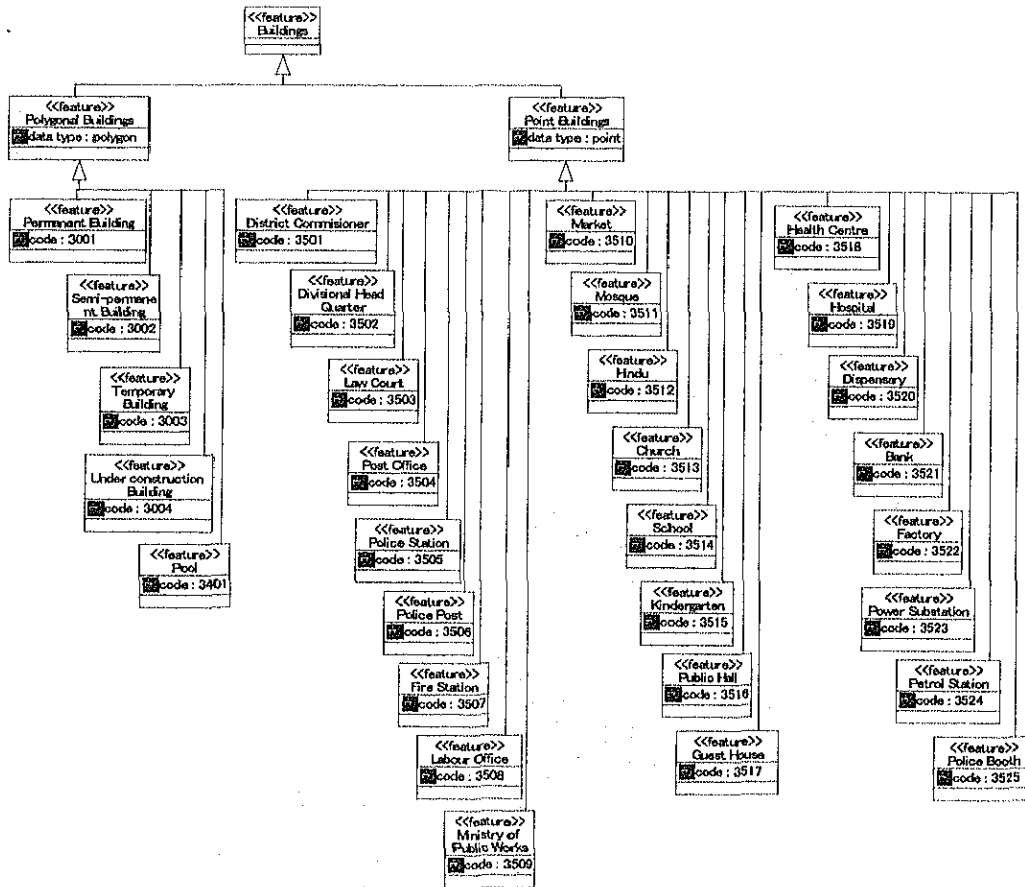
4.1.1 Boundary package



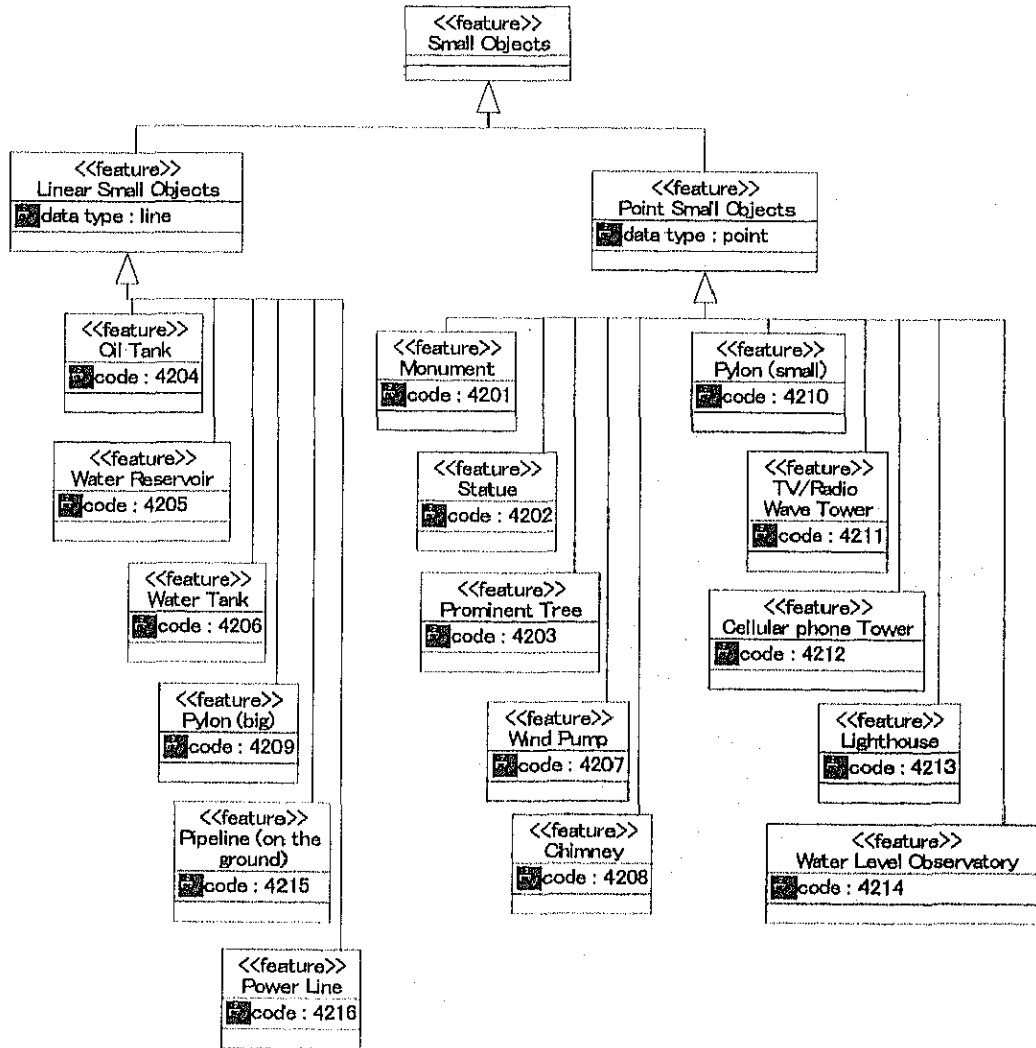
4.1.2 Transportation package



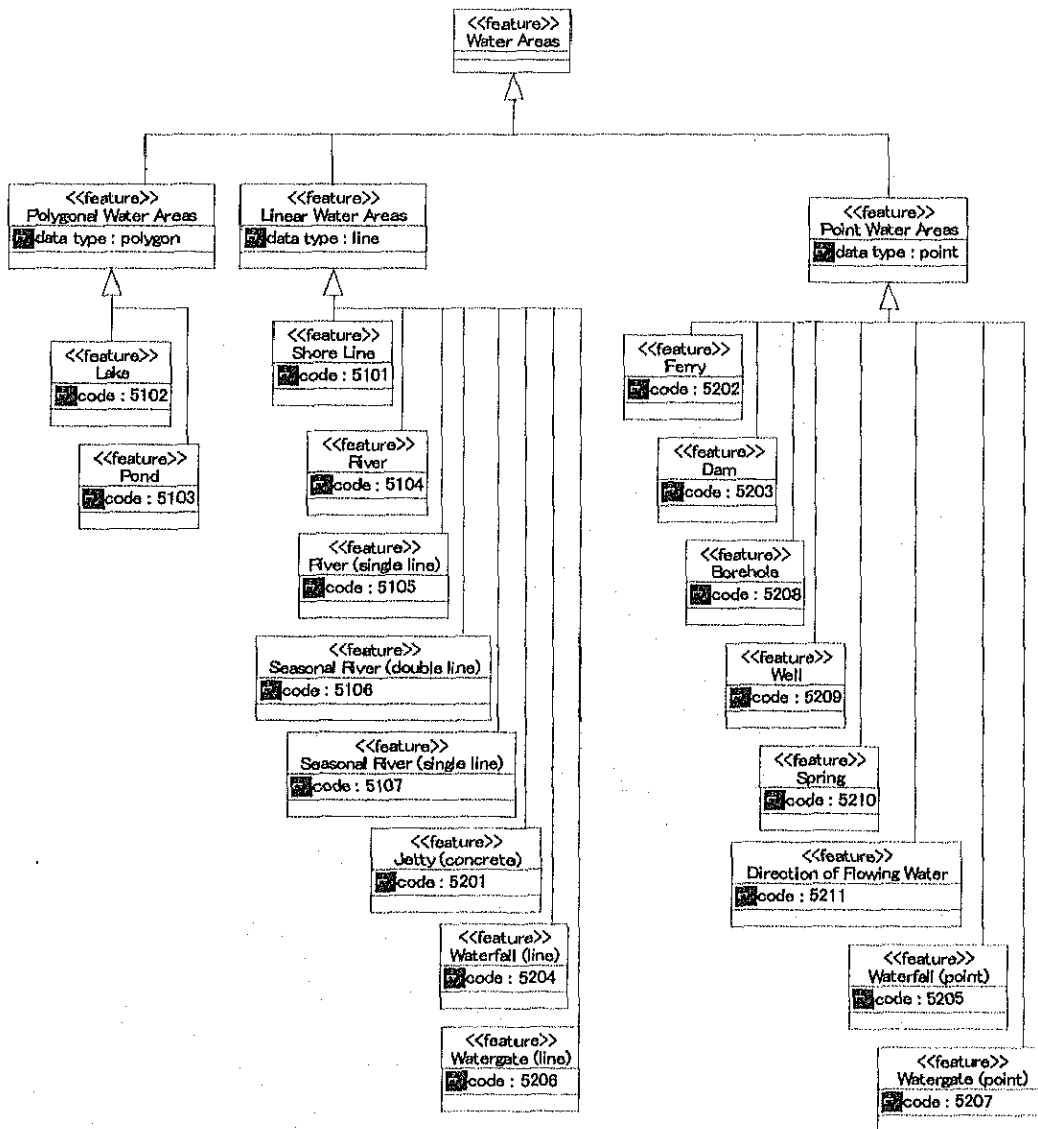
4.1.3 Buildings package



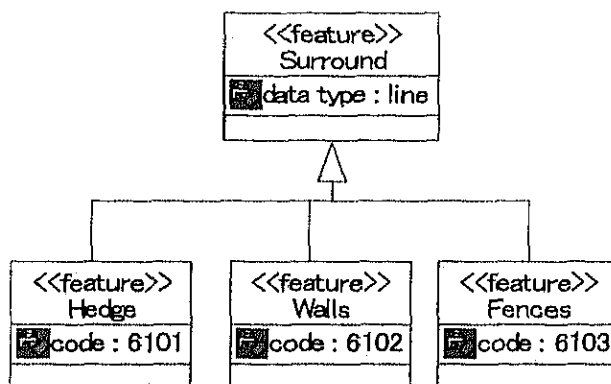
4.1.4 Small Objects package



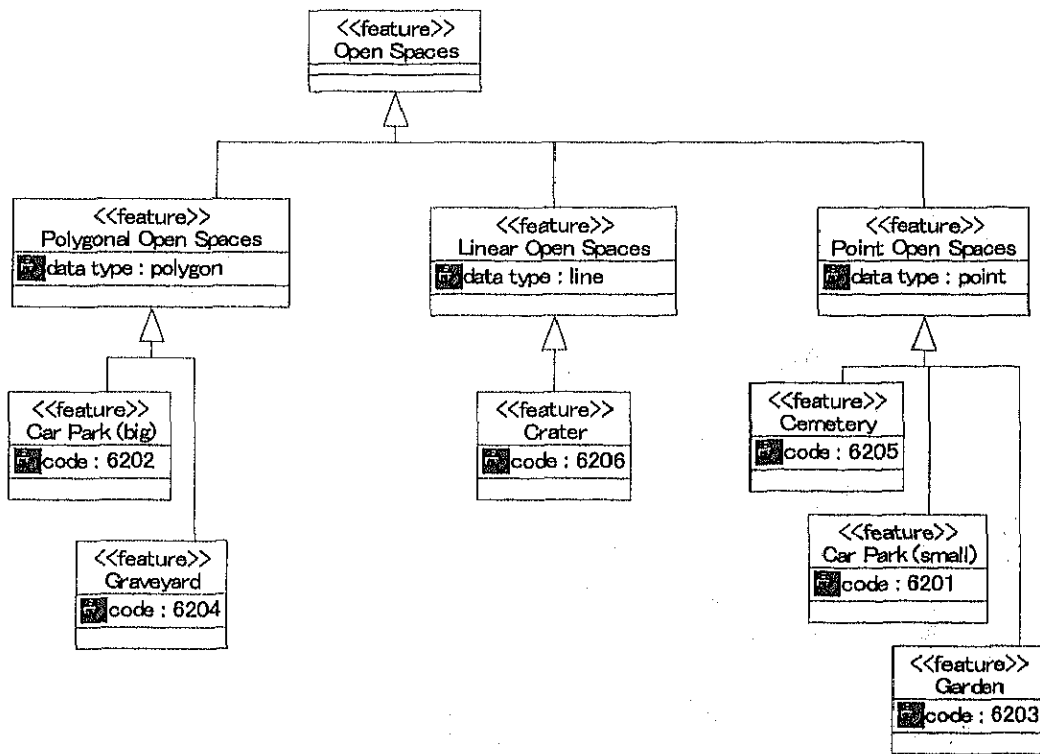
4.1.5 Water Areas package



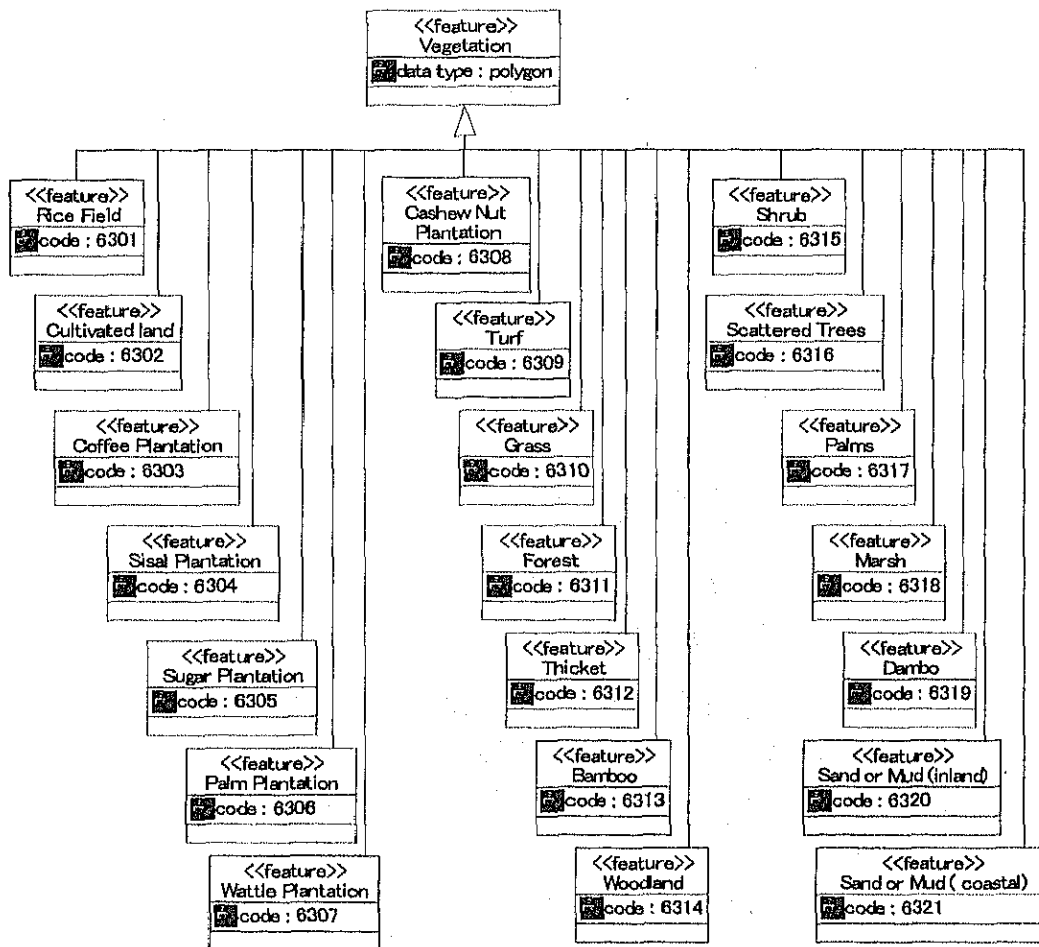
4.1.6 Surround package



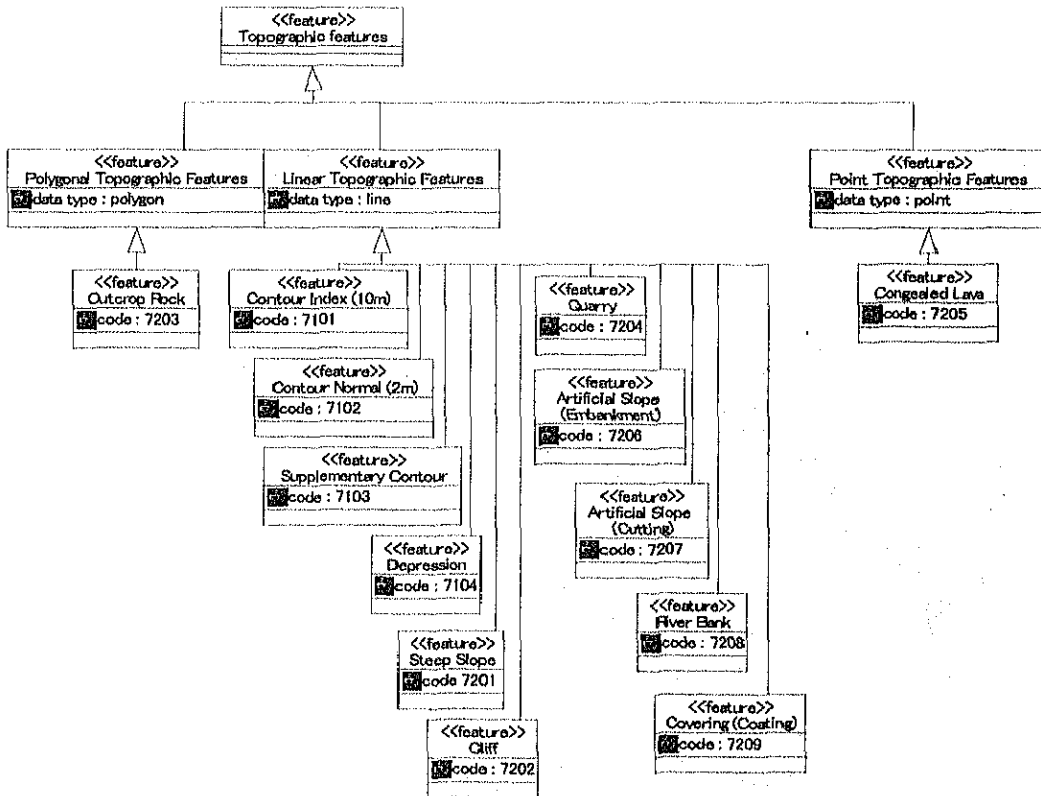
4.1.7 Open Spaces package



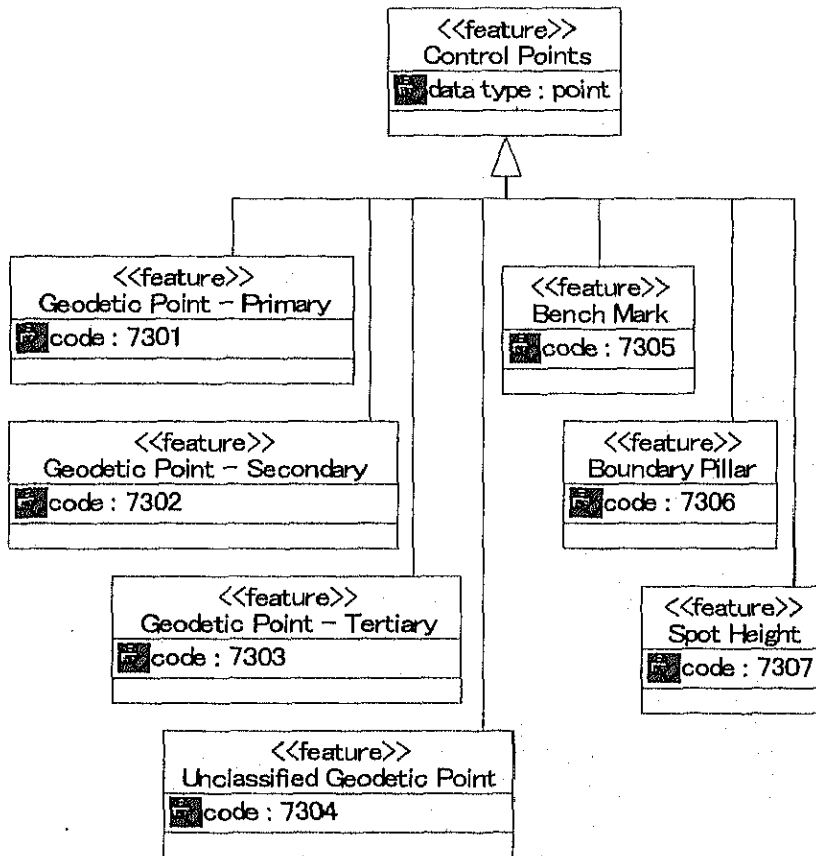
4.1.8 Vegetation package



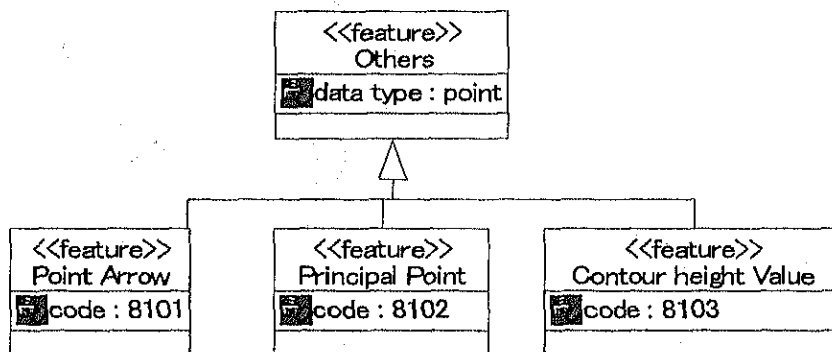
4.1.9 Topographic Features package



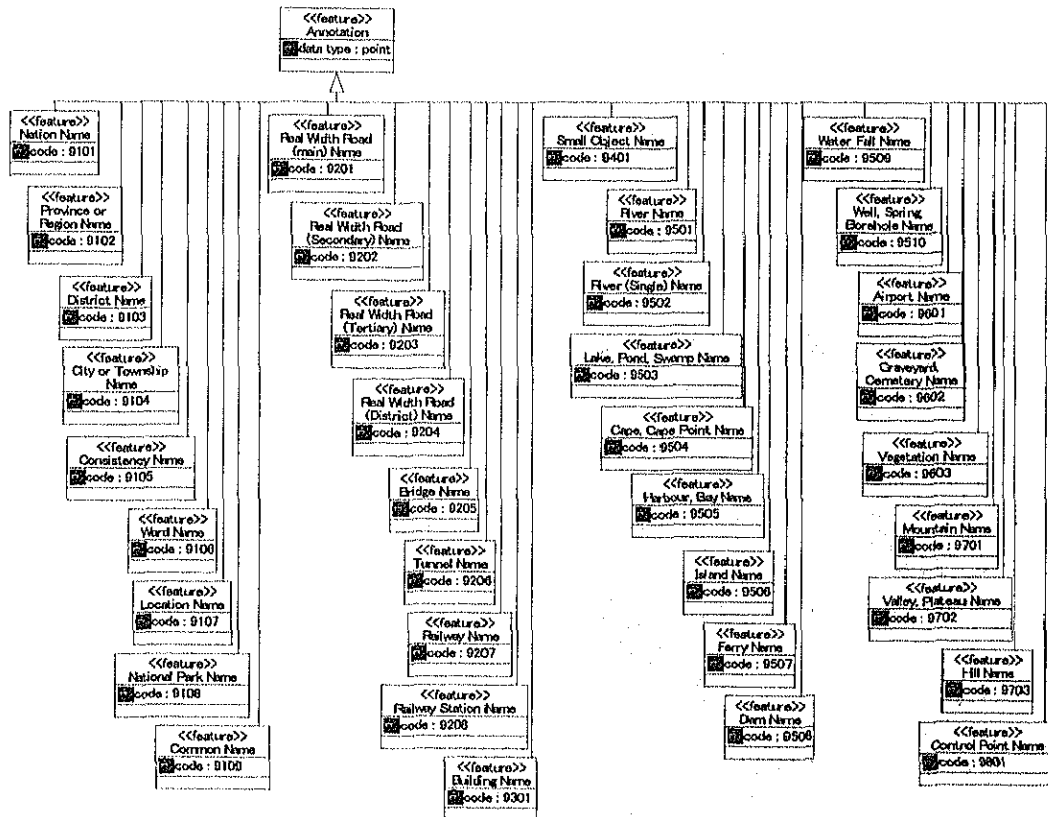
4.1.10 Control Points package



4.1.11 Others package



4.1.12 Annotation package



4.2 Documents for application schema

4.2.1 Boundaries package

Package	Boundary		
Definition	A real or imaginary line that marks where 2 areas are separated from each other.		
Physical features	topographic International, Provincial or Regional, District, City or Township, Consistency, Ward, Location, National park, Game Reserve/Forest reserve/Intensive Conservation Area		
Parent class			
Abstract / Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon			
code(1):	-	-	-

Feature	International Boundary		
Definition	A real or imaginary line that marks where 2 nation's territories are separated from each other.		
Parent class	Boundary		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the centre of a symbol for international boundary or to apply the digital data for the international boundary that is provided by C/P.	the direction of digitization is the clockwise	
code(1): 1101	-	-	-

Feature	Provincial or Regional Boundary		
Definition	A real or imaginary line that marks where 2 regions or provinces within a territory are separated from each other.		
Parent class	Boundary		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the centre of a symbol for provincial or regional boundary or to apply the digital data for the provincial or regional boundary that is provided by C/P.	the direction of digitization is the clockwise	
code(1): 1102	-	-	-

Feature	District Boundary		
Definition	A real or imaginary line that marks where 2 districts within a territory are separated from each other.		
Parent class	Boundary		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the centre of a symbol for district boundary or to apply the digital data for the district boundary that is provided by C/P.	the direction of digitization is the clockwise	
Code(1): 1103	-	-	-

Feature	City or Township Boundary		
Definition	A real or imaginary line that marks where 2 cities or townships within a territory are		

	separated from each other.		
Parent class	Boundary		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the centre of a symbol for city or township boundary or to apply the digital data for the city or township boundary that is provided by C/P.	the direction of digitization is the clockwise	
code(1): 1104	-	-	-

Feature	Consistency Boundary		
Definition	A real or imaginary line that marks where 2 consistencys within a territory is separated from each other.		
Parent class	Boundary		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the centre of a symbol for consistency boundary or to apply the digital data for the consistency boundary that is provided by C/P.	the direction of digitization is the clockwise	
code(1): 1105	-	-	-

Feature	Ward Boundary		
Definition	A real or imaginary line that marks where 2 wards within a territory is separated from each other.		
Parent class	Boundary		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the centre of a symbol for ward boundary or to apply the digital data for the ward boundary that is provided by C/P.	the direction of digitization is the clockwise	
code(1): 1106	-	-	-

Feature	Location Boundary		
Definition	A real or imaginary line that marks where 2 locations within a territory is separated from each other.		
Parent class	Boundary		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the centre of a symbol for location boundary or to apply the digital data for the location boundary that is provided by C/P.	the direction of digitization is the clockwise	
code(1): 1107	-	-	-

Feature	National Park Boundary		
Definition	A real or imaginary line that marks where National park within a territory are separated from other.		
Parent class	Boundary		
Abstract / Concrete	Concrete		

Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the centre of a symbol for national park boundary or to apply the digital data for the national park boundary that is provided by C/P.	the direction of digitization is the clockwise	
code(1): 1108	-	-	-

Feature	Game Reserve, Forest Reserve, Intensive Conservation Area Boundary		
Definition	A real or imaginary line that marks where Game Reserve, Forest Reserve and Intensive Conservation Area within a territory are separated from other.		
Parent class	Boundary		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the centre of a symbol for game reserve, forest reserve and intensive conservation area boundary or to apply the digital data for the game reserve, forest reserve and intensive conservation area boundary that is provided by C/P.	the direction of digitization is the clockwise	
code(1): 1109	-	-	-

4.2.2 Transportation package

Package	Transportation		
Definition	A specially prepared hard surface for car's buses, bicycles etc.		
Physical topographic features	Polygonal transportation, Linear transportation, Point transportation. Real Width Road(Main), Edge of Real Width Road(Main), Real Width Road(Secondary), Edge of Real Width Road(Secondary), Real Width Road(Tertiary), Edge of Real Width Road(Tertiary), Real Width Road(District), Edge of Real Width Road(District), Real Width Road(Others), Edge of Real Width Road(Others), Main Track, Other Tracks and Foot Path, Road Under Construction, Cycle Track, Roundabout, Roads Island, Bridge, Bridge for Main Track Other Track and Foot Path, Flyover, Culvert, Tunnel1, Tunnel2, Railway, Railway light, Railway under Construction, Railway Bridge, Railway Tunnel1, Railway Tunnel2, Railway Station, Level Crossing.		
Abstract / Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type:		-	-
code(1):	-	-	-

Feature	Polygonal Transportation		
Definition	Topographic feature in Transportation package that has polygon data format.		
Parent class	Transportation		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon		-	-
code(1):	-	-	-

Feature	Linear Transportation		
Definition	Topographic feature in Transportation package that has linear data format.		
Parent class	Transportation		
Abstract / Concrete	Abstract		

Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	.	-	-
code(1):	-	-	-

Feature	Point Transportation		
Definition	Topographic feature in Transportation package that has point data format.		
Parent class	Transportation		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	.	-	-
code(1):	-	-	-

Feature	Real Width Road(Main)		
Definition	Real width road refers roadways that have a width of 4.0 m or more and a main grade in accordance with a grade classification. Such a road shall be indicated.		
Parent class	Polygonal Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the side of a road in both sides for real width road(main).	The direction of digitization should such that center of road side is always on the right hand side. This road data shall be a closed line data with a real width road(main) data.	-
code(1): 2101	-	-	-

Feature	Edge of Real Width Road(Main)		
Definition	Edge and end of real width road(main) shall be indicated the border of the real width road(main).		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a real width road(main).	The direction of digitization should such that center of road side is always on the right hand side.	-
code(1): 2102	-	-	-

Feature	Real Width Road(secondary)		
Definition	Real width road refers roadways that have a width of 4.0 m or more and a main grade in accordance with a grade classification. Such a road shall be indicated.		
Parent class	Polygonal Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the side of a road in both sides for real width road(secondary).	The direction of digitization should such that center of road side is always on the right hand side. This road data shall be a closed line data with a real width road(secondary) data.	-
code(1): 2103	-	-	-

Feature	Edge of Real Width Road(Secondary)		
Definition	Edge of real width road(secondary) shall be indicated the border of the real width road(secondary).		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a real width road(secondary).	The direction of digitization should such that center of road side is always on the right hand side.	-
code(1): 2104	-	-	-

Feature	Real Width Road(Tertiary)		
Definition	Real width road refers roadways that have a width of 4.0 m or more and a main grade in accordance with a grade classification. Such a road shall be indicated.		
Parent class	Polygonal Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the side of a road in both sides for real width road(tertiary).	The direction of digitization should such that center of road side is always on the right hand side. This road data shall be a closed line data with a real width road(tertiary) data.	-
code(1): 2105	-	-	-

Feature	Edge of Real Width Road(Tertiary)		
Definition	Edge of real width road(tertiary) shall be indicated the border of the real width road(tertiary).		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a real width road(tertiary).	The direction of digitization should such that center of road side is always on the right hand side.	-
code(1): 2106	-	-	-

Feature	Real Width Road(District)		
Definition	Real width road refers roadways that have a width of 4.0 m or more and a main grade in accordance with a grade classification. Such a road shall be indicated.		
Parent class	Polygonal Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the side of a road in both sides for real width road(district).	The direction of digitization should such that center of road side is always on the right hand side. This road data shall be a closed line data with a real width road(district) data.	-
code(1): 2107	-	-	-

Feature	Edge of Real Width Road(District)		
Definition	Edge of real width road(district) shall be indicated the border of the real width road(district).		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a real width road(district).	The direction of digitization should such that center of road side is always on the right hand side.	-
code(1): 2108	-	-	-

Feature	Real Width Road(Others)		
Definition	Real width road refers roadways that have a width of 4.0 m or more and a main grade in accordance with a grade classification. Such a road shall be indicated.		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the side of a road in both sides for real width road(others).	The direction of digitization should such that center of road side is always on the right hand side.	-
code(1): 2109	-	-	-

Feature	Edge of Real Width Road(Others)		
Definition	Edge of real width road(others) shall be indicated the border of the real width road(others).		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a real width road(others).	The direction of digitization should such that center of road side is always on the right hand side.	-
code(1): 2110	-	-	-

Feature	Main Track		
Definition	Main tracks refer roads with a width from 1.5 m to less than 4.0 m Such a road shall be indicated.		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the centre of a main track.	The main track with a length of less than 1 cm on the map can be omitted.	-
code(1): 2111	-	-	-

Feature	Other Track and Footpath		
Definition	Other tracks and footpath refer roads with a width less than 1.5 m Such a road shall be indicated.		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the centre of a other track and footpath.	The other tracks and footpaths with a length of	-

		less than 1 cm on the map can be omitted.	
code(1): 2112	-	-	-

Feature	Road Under Construction		
Definition	Road under construction refer to a road under construction and be formed it's shape.		
Parent class	Polygonal Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Polygon	To digitize the edge of shape.	The direction of digitization is the clockwise.	-
code(1): 2113	-	-	-

Feature	Cycle Track		
Definition	A raised hard surface along the side of a road for people for walk on.		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the boundary between a cycle track and a carriage way.	A cycle track with a width more than 3.0m and a length more than 100m shall be digitized.	-
code(1): 2114	-	-	-

Feature	Roundabout		
Definition	A raised area in the center of a road crossing.		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of roundabout.	A roundabout with a diameter more than 3.0 m shall be digitized.	-
code(1): 2115	-	-	-

Feature	Roads island		
Definition	A raised area in the middle of a wide road that separates cars going in opposite direction.		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the boundary between a roads island and a carriage way.	A roads island with a width more than 3.0m and a length more than 100m shall be digitized.	-
code(1): 2116	-	-	-

Feature	Bridge		
Definition	A structure that allows people or vehicles to cross the river from one side to the other (a width is more than 4.0 m).		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize a parapets of the bridge for both sides.	A bridge with a length more than 10.0 m shall be digitized. the direction of	-

		digitization should such that center side is always on the right hand side.	
code(1): 2201	-	-	-

Feature	Bridge for Main Track, Other Track and Footpaths		
Definition	A structure that allows people or vehicles to cross the river from one side to the other(a width is less than 4.0 m).		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize a center of the bridge.	A bridge with a length more than 10.0 m shall be digitized.	-
code(1): 2202	-	-	-

Feature	Flyover		
Definition	A structure like a bridge that allows people to cross the road from one side to the other over the road.		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize a edge of a flyiover.	A digitized data shall be a closed line data.	-
code(1): 2203	-	-	-

Feature	Culvert		
Definition	A pipe or a box that takes a stream under a road.		
Parent class	Point Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the centre point of a entranc and exit of culvert.	-	-
code(1): 2204	-	-	-

Feature	Tunnel 1		
Definition	A passage that has been dug under the ground, through a mountain etc. for people or cars to go through(a width is more than 4.0m).		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a structure for a entrance and a exit of the tunnel.	A digitized data shall be a closed line data.	-
code(1): 2205	-	-	-

Feature	Tunnel 2		
Definition	A passage that has been dug under the ground, through a mountain etc. for people or cars to go through(a width is less than 4.0m).		
Parent class	Point Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a entrance and a exit of the tunnel.	-	-
code(1): 2206	-	-	-

Feature	Railway		
Definition	A facility that a train with engine runs on a rail.		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the centre of a railway.	-	-
code(1): 2301	-	-	-

Feature	Railway light		
Definition	A facility that a train with engine runs on a rail(light).		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the centre of a railway light.	-	-
code(1): 2302	-	-	-

Feature	Railway under Construction		
Definition	A facility under construction that a train with engine runs on a rail.		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the centre of a railway under construction.	-	-
code(1): 2303	-	-	-

Feature	Railway Bridge		
Definition	A structure that allows railway to cross the river from one side to the other.		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize a parapets of the railway bridge for both sides.	A railway bridge with a length more than 10.0 m shall be digitized. the direction of digitization should such that center side is always on the right hand side.	-
code(1): 2401	-	-	-

Feature	Railway Tunnel 1		
Definition	A passage that has been dug under the ground, through a mountain etc. for trains to go through(a width is more than 4.0m).		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a structure for a entrance and a exit of the railway tunnel 1.	A digitized data shall be a closed line data.	-
code(1): 2402	-	-	-

Feature	Railway Tunnel 2		
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Definition	A passage that has been dug under the ground, through a mountain etc. for trains to go through(a width is less than 4.0m).		
Parent class	Point Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a entrance and a exit of the railway tunnel 2.	-	-
code(1): 2403	-	-	-

Feature	Railway station		
Definition	A place where a trains regulary stop so that passengers can get on and off.		
Parent class	Linear Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a railway station.	A digitized data shall be a closed line data.	-
code(1): 2404	-	-	-

Feature	Level Crossing		
Definition	A place where a railway cross a road.		
Parent class	Point Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a level crossing.	-	-
code(1): 2405	-	-	-

4.2.3 Buildings package

Package	Buildings		
Definition	An area that has buildings and a structure such as home, church or factory, that has a roof and wall,		
Physical features	topographic Polygonal Buildings, Point Buildings, Permanent Buildings, Semi-Permanent Buildings, Temporary Buildings, Under Construction Buildings, Pool, District Commissioner, Division Head Quarter, Law Court, Post Office, Police Station, Police Post, Fire Station, Labor Office, Ministry of Public Works, Market, Mosque, Hindu, Church, School, Kindergarten, Public Hall, Guest House, Health Centre, Hospital, Dispensary, Bank, Factory, Power Station, Petro Station, Police booth.		
Abstract / Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type:			-
code(1):	-	-	-

Feature	Polygonal buildings		
Definition	Topographic feature in Buildings package that has polygon data format.		
Parent class	Buildings		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon		-	-
code(1):	-	-	-

Feature	Point Building		
Definition	Topographic feature in Buildings package that has point data format.		
Parent class	Buildings		
Abstract / Concrete	Abstract		
Attributes			

Name	Collection Method	Collection condition	Domain
Data Type: point	-	-	-
code(1):	-	-	-

Feature	Permanent Building		
Definition	A building that is made from concretes, stone, block etc.		
Parent class	Polygonal building		
Abstract / Concrete	Concrete		

Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the edge of a permanent building.	A narrow side of building with more than 0.4 mm on the map shall be digitized. the direction of digitization is the clockwise	-
code(1): 3001	-	-	-

Feature	Semi-Permanent Buildings		
Definition	A building that is made from iron sheet and unburn brick.		
Parent class	Polygonal building		
Abstract / Concrete	Concrete		

Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the edge of a semi-permanent buildings.	A narrow side of building with more than 0.4 mm on the map shall be digitized. the direction of digitization is the clockwise	-
code(1): 3002	-	-	-

Feature	Temporary Buildings		
Definition	Temporary buildings refer to buildings constructed of material other than concrete (i.e. wood, etc.).		
Parent class	Polygonal building		
Abstract / Concrete	Concrete		

Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the edge of a temporary buildings.	A narrow side of building with more than 0.4 mm on the map shall be digitized. the direction of digitization is the clockwise	-
code(1): 3003	-	-	-

Feature	Under Construction Buildings		
Definition	An under construction buildings refer to all buildings that are in the process of being constructed.		
Parent class	Polygonal building		
Abstract / Concrete	Concrete		

Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the edge of an under construction buildings.	A narrow side of building with more than 0.4 mm on the map shall be digitized. the direction of digitization is the clockwise	-
code(1): 3004	-	-	-

Feature	Pool		
Definition	A hole that has been specially built and filled with water so that people can swim in it.		
Parent class	Polygonal building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the edge of a pool.	A narrow side of pool with more than 0,4 mm on the map shall be digitized. the direction of digitization is the clockwise	-
code(1): 3401	-	-	-

Feature	District Commissioner		
Definition	A building for one who is officially in charge of the District.		
Parent class	Point buildings		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of district commissioner.	-	-
code(1): 3501	-	-	-

Feature	Division Head Quarters		
Definition	A building for one who is officially in charge of the Division and is head .		
Parent class	Point buildings		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of division head quarters.	-	-
code(1): 3502	-	-	-

Feature	Law Court		
Definition	A building that has courts of law.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of law court.	-	-
code(1): 3503	-	-	-

Feature	Post Office		
Definition	A place where you can buy stamps and send letters, packages etc.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of post office.	-	-
code(1): 3504	-	-	-

Feature	Police Station		
Definition	The local office of the police in a town, part of city etc.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain

Data Type: Point	To digitize the center of police station.	-	-
code(1): 3505	-	-	-

Feature	Police Post		
Definition	The local office of the police in a town.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of police post.	-	-
code(1): 3506	-	-	-

Feature	Fire Station		
Definition	A building where the equipment used to stop fires from burning is kept, and where Firefighters stay until they are needed.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of fire station.	-	-
code(1): 3507	-	-	-

Feature	Labor Office		
Definition	A building where a labour matters shall be dealt with.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of labor office.	-	-
code(1): 3508	-	-	-

Feature	Ministry of Public Works		
Definition	A government department related to works.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of ministry of public works.	-	-
code(1): 3509	-	-	-

Feature	Market		
Definition	Open area where people buy and sell goods, food etc.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of market.	-	-
code(1): 3510	-	-	-

Feature	Mosque		
Definition	A building in which Muslims WORSHIP.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			

Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of mosque.	-	-
code(1): 3511	-	-	-

Feature	Hindu		
Definition	A building in which Hinduims WORSHIP.		
Parent class	Point buildings		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of hindu.	-	-
code(1): 3512	-	-	-

Feature	Church		
Definition	A building where Christians go to WORSHIP for religious services.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of church.	-	-
code(1): 3513	-	-	-

Feature	School		
Definition	A place where children are taught.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of school.	-	-
code(1): 3514	-	-	-

Feature	Kindergarten		
Definition	A school or class for young children, usually aged five to six, that prepares them for later school years.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of kindergarden.	-	-
code(1): 3515	-	-	-

Feature	Public Hall		
Definition	A place where a public event will be organized.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of feature.	-	-
code(1): 3516	-	-	-

Feature	Guest House		
Definition	A small building next to a main house that visitors can stay in.		
Parent class	Point building		
Abstract / Concrete	Concrete		

Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of guest house.	-	-
code(1): 3517	-	-	-

Feature	Health Center		
Definition	A place where several doctors have thire offices, and people can go for medical treatment or advice.		
Parent class	Point building s		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a health center.	-	-
code(1): 3518	-	-	-

Feature	Hospital		
Definition	A large building where sick or injured people are taken care of and receive medical treatment.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a hospital.	-	-
code(1): 3519	-	-	-

Feature	Dispensary		
Definition	A place where sick people are treated.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a dispensary.	-	-
code(1): 3520	-	-	-

Feature	Bank		
Definition	A place where keeps and lends money and provides other financial services.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a bank.	-	-
code(1): 3521	-	-	-

Feature	Factory		
Definition	A building or group buildings in which goods are produced in large quantities, using machines.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a factory.	-	-
code(1): 3522	-	-	-

Feature	Power Substation		
Definition	A building where electricity is produced to supply a area.		

Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a power substation.	-	-
code(1): 3523	-	-	-

Feature	Petrol Station		
Definition	A place where a car is filled with fuel.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a petrol station.	-	-
code(1): 3524	-	-	-

Feature	Police booth		
Definition	A place where a policeman stand ready.		
Parent class	Point building		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a police booth.	-	-
code(1): 3525	-	-	-

4.2.4 Small Objects package

Package	Small Objects		
Definition	A topographic feature that is small thing or small area.		
Physical topographic feature	Linear Small Objects, Point Small Objects, Monument, Statue, Prominent Tree, Oil Tank, Water Reservoir, Water Tank, Wind Pump, Chimney, Pylon(big), Pylon(small), TV/Radio Wave Tower, Cellular phone Tower, Lighthouse, Water Level Observatory, Pipeline(on the ground), Power Line.		
Abstract / Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type:	-	-	-
code(1):	-	-	-

Feature	Linear Small Objects		
Definition	Topographic feature in Small Objects that has a line data format.		
Parent class	Small Objects		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	-	-	-
code(1):	-	-	-

Feature	Point Small Objects		
Definition	Topographic feature in Small Objects that has a point data format.		
Parent class	Small Objects		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	-	-	-
code(1):	-	-	-

Feature	Monument		
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Definition	A building or other large structure that is built to remind people of an important event or famous person.		
Parent class	Point Small Objects		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a monument.	A monument that has a pedestal with a short side of 2.0mm or more on the map shall be represented. If several monuments are grouped together, the prominent ones shall be represented or a symbol shall be indicated in the centre.	-
code(1): 4201	-	-	-

Feature	Statue		
Definition	An image of a person or animal that is made in solid material such as stone or metal and is usually large.		
Parent class	Point Small Objects		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a statue.	A statue that has a pedestal with a short side of 2.0mm or more on the map shall be represented. If several statues are grouped together, the prominent ones shall be represented or a symbol shall be indicated in the centre.	-
code(1): 4202	-	-	-

Feature	Prominent Tree		
Definition	A Prominent trees are large individual trees or clusters of large trees.		
Parent class	Point Small Objects		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a prominent tree.	A notable one shall be represented.	-
code(1): 4203	-	-	-

Feature	Oil Tank		
Definition	An oil tank is tank that store oil.		
Parent class	Linear Small Objects		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edger of a oil tank.	An oil tank with a diameter or short side of 0.5mm or more on the map shall be represented. A digitized data shall be a closed line data.	-
code(1): 4204	-	-	-

Feature	Water Reservoir		
Definition	A water reservoir is facilities for storing drinking water.		

Parent class	Linear Small Objects		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a water reserver.	A water reservoir with a diameter or short side of 0.5mm or more on the map shall be represented. A digitized data shall be a closed line data.	-
code(1): 4205	-	-	-

Feature	Water Tank		
Definition	A water tank is tank for storing drinking water.		
Parent class	Linear Small Objects		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a water tank.	A water tank with a diameter or short side of 0.5mm or more on the map shall be represented. A digitized data shall be a closed line data.	-
code(1): 4206	-	-	-

Feature	Wind Pump		
Definition	A pump that uses a force of wind to rotate to produce energy.		
Parent class	Point Small Objects		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a feature.	-	-
code(1): 4207	-	-	-

Feature	Chimney		
Definition	A pipe inside a building for smoke from a fire to go out through the roof.		
Parent class	Point Small Objects		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a chimney.	A base of chimney with more than 2.0mm on the map shall be digitized.	-
code(1): 4208	-	-	-

Feature	Pylon(big)		
Definition	One of the tall metal structures that supports wires carrying electricity.		
Parent class	Linear Small Objects		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edger of a pylon (big).	A base of pylon with more than 2.0mm on the map shall be digitized.	-
code(1): 4209	-	-	-

Feature	Pylon(small)		
Definition	One of the tall metal structures that supports wires carrying electricity.		
Parent class	Point Small Objects		
Abstract / Concrete	Concrete		

Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a pylon (small).	A base of pylon with less than 2.0mm on the map shall be digitized.	-
code(1): 4210	-	-	-
Feature			
TV/Radio Wave Tower			
Definition			
One of the tall metal structures that transmits TV/radio electric wave.			
Parent class			
Point Small Objects			
Abstract / Concrete			
Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a TV/radio wave tower.	A base of pylon with more than 1.2mm on the map shall be digitized.	-
code(1): 4211	-	-	-
Feature			
Cellular phone Tower			
Definition			
One of the tall metal structures that transmits cellulaphone electric wave.			
Parent class			
Point Small Objects			
Abstract / Concrete			
Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a cellulaphone tower.	A base of pylon with more than 1.2mm on the map shall be digitized.	-
code(1): 4212	-	-	-
Feature			
Lighthouse			
Definition			
A tower with a powerful flashing light that guides ship away from danger near the shore.			
Parent class			
Point Small Objects			
Abstract / Concrete			
Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a lighthouse.	-	-
code(1): 4213	-	-	-
Feature			
Water Level Observatory			
Definition			
A place where observe a water level continously in the river.			
Parent class			
Point Small Objects			
Abstract / Concrete			
Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Point	To digitize the center of a water level observatory.	-	-
code(1): 4214	-	-	-
Feature			
Pipeline(on the ground)			
Definition			
A line connecting pipes, often under the ground, used for moving water, oil etc. over long distances.			
Parent class			
Linear Small Objects			
Abstract / Concrete			
Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Line	To digitize the center of a pipe line.	A pipeline on the ground with a diameter of 50cm or more, and a length of 2.0mm or more on the map shall be digitized.	-

code(1): 4215	-	-	-
Feature	Power Line		
Definition	Large wire carrying electricity above the ground.		
Parent class	Linear Small Object		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the centre of a power line.	A power lines that transmit 20kV or more of high voltage current shall be digitized.	-
Code(1): 4216	-	-	-

4.2.5 Water Area Package

Package	Water Area		
Definition	Topographic feature that is related to water.		
Physical feature	topographic	Polygonal Water Area, Linear Water area, Point Water Area, Shore Line, Lake, Pond, River, River(single line), Seasonal River(double line), Seasonal River(single line), Jetty(concrete), Ferry, Dam, Waterfall(line), Waterfall(point), Watergate(line), Watergate(point), Borehole, Well, Spring, Direction of Flowing Water.	
Abstract / Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type:		-	-
code(1):	-	-	-

Feature	Point Water Area		
Definition	Topographic feature in Water area that has a point data format.		
Parent class	Water Area		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point		-	-
code(1):	-	-	-

Feature	Linear Water Area		
Definition	Topographic feature in Water area that a line data format.		
Parent class	Water Area		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line		-	-
code(1):	-	-	-

Feature	Polygonal Water Area		
Definition	Topographic feature in Water area that has a polygon data format.		
Parent class	Water Area		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon		-	-
code(1):	-	-	-

Feature	Shore Line		
Definition	The land at the edge of an ocean.		
Parent class	Linear Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain

Data Type: line	To digitize the centre of a shore line.	-	-
code(1): 5101	-	-	-

Feature	Lake		
Definition	A large area of water surrounded by land.		
Parent class	Polygonal Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the water line for lake.	A lake with 2mm×2mm on the map shall be digitized. The direction of digitization is the clockwise	-
code(1): 5102	-	-	-

Feature	Pond		
Definition	A small area of fresh water that is smaller than a lake.		
Parent class	Polygonal Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the water line for pond.	A pond with 2mm×2mm on the map shall be digitized. the direction of digitization is the clockwise	-
code(1): 5103	-	-	-

Feature	River		
Definition	A natural and continuous flow of water in a long line across a country that flows in an ocean.The width is more than 0.4mm on the map.		
Parent class	Linear Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the water line for river.	A river with more than 0.4mm width on the map shall be digitized. the direction of digitization should such that center side is always on the right hand side. The sections that are underground and are under the bridge shall not be shown. The sections that are under the bridge shall be obtained digital data.	-
code(1): 5104	-	-	-

Feature	River(single line)		
Definition	A natural and continuous flow of water in a long line across a country that flows in an ocean.The width is more than 0.2mm to 0.4mm on the map.		
Parent class	Linear Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the center of river(single line).	A river (single line) with more than 0.2mm to	-

		0.4mm width on the map shall be digitized. The sections that are underground and are under the bridge shall not be shown. The sections that are under the bridge shall be obtained digital data.	
code(1): 5105	-	-	-

Feature	Seasonal River(double line)		
Definition	A natural and continuous flow of water in a long line across a country that flows in an ocean seasonally.The width is more than 0.4mm on the map.		
Parent class	Linear Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the water line for seasonal river(double line).	A seasonal river (double line) with more than 0.4mm width on the map shall be digitized. the direction of digitization should such that center side is always on the right hand side. The sections that are underground and are under the bridge shall not be shown. The sections that are under the bridge shall be obtained digital data.	-
code(1): 5106	-	-	-

Feature	Seasonal River(single line)		
Definition	A natural and continuous flow of water in a long line across a country that flows in an ocean seasonally.The width is more than 0.2mm to 0.4mm on the map.		
Parent class	Linear Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the center of river(single line).	A seasonal river (single line) with more than 0.2mm to 0.4mm width on the map shall be digitized. The sections that are underground and are under the bridge shall not be shown. The sections that are under the bridge shall be obtained digital data.	-
code(1): 5107	-	-	-

Feature	Jetty(Concrete)		
Definition	A wide wall built out into the water as protection against large waves.		
Parent class	Linear Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a jetty(concrete).	Jetties (concrete) that are 0.4mm or more in width on the map and 4.0mm or more in length on the map shall be digitized.	-
code(1): 5201	-	-	-

Feature	Ferry		
Definition	A boat that carries people or goods across a river or a narrow area of water.		
Parent class	Point Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the arrival and departure point of ships.	In case of a narrow river, to digitize the center point between the arrival and the departure point.	-
code(1): 5202	-	-	-

Feature	Dam		
Definition	A special wall built across a river, stream etc. to stop the water from flowing, especially to make a lake or produce electricity.		
Parent class	Point Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a dam.	In case of a dam in the river(double line), the dam shall be digitized as a artificial slope(7206), covering(coating)(7209).	-
code(1): 5203	-	-	-

Feature	Waterfall(line)		
Definition	A stream that falls from a height.		
Parent class	Line Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a waterfall in higher side.	A waterfall with a height of 3.0m or more in a river (double line) shall be digitized.	-
code(1): 5204	-	-	-

Feature	Waterfall(point)		
Definition	A stream that falls from a height.		
Parent class	Point Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a waterfall.	A waterfall with a height of 3.0m or more in a river (single line) shall be digitized.	-
code(1): 5205	-	-	-

Feature	Watergate(line)		
Definition	A watergate refers to a structure that has been built to control the intake and discharge of water, the water volume, etc.		
Parent class	Line Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a watergate.	-	-
code(1): 5206	-	-	-

Feature	Watergate (point)		
Definition	A watergate refers to a structure that has been built to control the intake and discharge of water, the water volume, etc.		
Parent class	Point Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a watergate.	-	-
code(1): 5207	-	-	-

Feature	Borehole		
Definition	A deep hole made using special equipment, especially in order to get water of the ground.		
Parent class	Point Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the centre of a borehole based on the topo map scale 1/50,000.	-	-
code(1): 5208	-	-	-

Feature	Well		
Definition	A deep hole in the ground from which people take water.		
Parent class	Point Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the centre of a well.	-	-
code(1): 5209	-	-	-

Feature	Spring		
Definition	A place where water comes up naturally from the ground.		
Parent class	Point Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the centre of a spring.	-	-
code(1): 5210	-	-	-

Feature	Direction of Flowing Water		
Definition	An arrow that shows the direction of flow in the river.		
Parent class	Point Water Area		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the centre of wide river or on the side of narrow river.	This symbol shall be placed in the centre of wide rivers and on the side of narrow rivers in which the symbol cannot fit.	-
code(1): 5211	-	-	-

4.2.6 Surround Package

Package	Surround
Definition	Topographic feature that surround a topographic feature.

Physical topographic feature	Hedge, Wall, Fences		
Abstract / Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line		-	-
code(1):	-	-	-

Feature	Hedge		
Definition	A row of small bushes or trees growing close together, used as a border around a yard or between two yards.		
Parent class	Surround		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the centre of a hedge.	A hedge with a height of 1.5m or more and a length of 1.0cm or more on the map shall be digitized.	-
code(1): 6101	-	-	-

Feature	Wall		
Definition	An upright structure with flat sides that is made of stone or brick, that divides one area from another.		
Parent class	Surround		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the centre of a wall.	Wall with a height of 2.0 m or more and a length of 4.0 cm or more on the map shall be represented.	-
code(1): 6102	-	-	-

Feature	Fences		
Definition	A structure made of wood, metal etc. that surround a piece of land.		
Parent class	Surround		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the centre of a fence.	Fence with a height of 2.0 m or more and a length of 4.0 cm or more on the map shall be represented.	-
code(1): 6103	-	-	-

4.2.7 Open Space Package

Package	Open Space		
Definition	An area that is used for a special purpose		
Physical topographic feature	Polygonal Open Space, Linear Open Space, Point Open Space, Car Park(small), Car Park(big), Garden, Graveyard, Cemetery, Crater.		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type:		-	-
code(1):	-	-	-

Feature	Polygonal Open Space		
Definition	Topographic feature in Open space that has a polygon data format.		
Parent class	Open Space		
Abstract / Concrete	Concrete		

Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	-	-	-
code(1):	-	-	-

Feature	Linear Open Space		
Definition	Topographic feature in Open space that has a line data format.		
Parent class	Open Space		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	-	-	-
code(1):	-	-	-

Feature	Point Open Space		
Definition	Topographic feature in Open space that has a point data format.		
Parent class	Open Space		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	-	-	-
code(1):	-	-	-

Feature	Car Park(small)		
Definition	A open space where cars park.		
Parent class	Point open space		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a car park.	A car park with 4.0 x 4.0mm or less on the map shall be digitized.	-
code(1): 6201	-	-	-

Feature	Car Park(big)		
Definition	A open space where cars park in the center of town.		
Parent class	Polygon open space		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the edger of a car park.	A car park with 4.0 x 4.0mm or more on the map shall be digitized. the direction of digitization should such that a car park (big) side is always on the right hand side	-
code(1): 6202	-	-	-

Feature	Garden		
Definition	The part of a piece of land around or next to your house that has flowers and plants in it.		
Parent class	Point open space		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a garden.	A garden with 4.0 x 4.0mm or more on the map shall be digitized.	-
code(1): 6203	-	-	-

Feature	Graveyard		
Definition	An area of land where dead people are buried.		
Parent class	Polygon open space		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the edge of a graveyard.	A graveyard with 4.0 x 4.0mm or more on the map shall be digitized. the direction of digitization should such that a grave yard side is always on the right hand side	-
code(1): 6204	-	-	-

Feature	Cemetery		
Definition	A stone monument where dead people are buried.		
Parent class	Point open space		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of a stone monument.	-	-
code(1): 6205	-	-	-

Feature	Crater		
Definition	A round hole in the ground made by something that has fallen on it or exploded on it.		
Parent class	Linear open space		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of a crater.	-	-
code(1): 6206	-	-	-

4.2.8 Vegetation Package

Package	Vegetation		
Definition	Plants in general, especially in one particular area		
Physical topographic feature	Rice Field, Cultivated land, Coffee Plantation, Sisal Plantation, Sugar Plantation, Palm Plantation, Wattle Plantation, Cashew Nut Plantation, Turf, Grass, Forest, Thicket, Bamboo, Woodland, Shrub, Scattered Trees, Palms, Marsh, Dambo, Sand or Mud(Inland), Sand or Mud(Coastal).		
Abstract / Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Polygon			-
code(1):	-	-	-

Feature	Rice Field		
Definition	A very large area of land that is cultivated by rices.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of rice field.	A rice field with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of	-

		digitization should such that a rice field side is always on the right hand side	
code(1): 6301	-	-	-

Feature	Cultivated land		
Definition	A very large area of land that is cultivated by wheat, barley, upland rice and vegetables, grasslands, lawns, etc.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of cultivated land.	A cultivated land with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a cultivated land side is always on the right hand side	-
code(1): 6302	-	-	-

Feature	Coffee Plantation		
Definition	A very large area of land wher a coffee is grown in plantation form.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of coffee plantation.	A coffee plantation with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a coffee plantation side is always on the right hand side	-
code(1): 6303	-	-	-

Feature	Sisal Plantation		
Definition	A very large area of land wher a sisal is grown in plantation form.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of sisal plantation.	A sisal plantation with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a sisal plantation side is always on the right hand side	-
code(1): 6304	-	-	-

Feature	Sugar Plantation		
Definition	A very large area of land wher a sugar cone is grown in plantation form.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		

Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of sugar plantation.	A sugar plantation with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a sugar plantation side is always on the right hand side	-
code(1): 6305	-	-	-

Feature	Palm Plantation		
Definition	A very large area of land wher a palm is grown in plantation form.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of palm plantation.	A palm plantation with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a palm plantation side is always on the right hand side	-
code(1): 6306	-	-	-

Feature	Wattle Plantation		
Definition	A very large area of land wher a wattle is grown in plantation form.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of wattle plantation.	A wattle plantation with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a wattle plantation side is always on the right hand side	-
code(1): 6307	-	-	-

Feature	Cashew Nut Plantation		
Definition	A very large area of land wher a cashew nut is grown in plantation form.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of cashew nut plantation.	A cashew nut plantation with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a cashew nut plantation side is always on the right hand side	-
code(1): 6308	-	-	-

Feature	Turf		
Definition	A very large area of land that is made up of soil and a thick covering of grass, or an artificial substance made to look like this.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of turf.	A turf with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a turf side is always on the right hand side	-
code(1): 6309	-	-	-

Feature	Grass		
Definition	A very large area of land that is covered by grass.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of grass.	A grass with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a grass side is always on the right hand side	-
code(1): 6310	-	-	-

Feature	Forest		
Definition	A very large area of land that is covered by trees.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of forest.	A forest with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a forest side is always on the right hand side	-
code(1): 6311	-	-	-

Feature	Thicket		
Definition	A large area that is covered by a group of bushes and small trees.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of thicket.	A thicket with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a thicket side is always on the right hand side	-
code(1): 6312	-	-	-

Feature	Bamboo		
Definition	A large area that is covered by tall tropical plants with hollow stems.		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of bamboo	A bamboo with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a bamboo side is always on the right hand side	-
code(1): 6313	-	-	-

Feature	Woodland		
Definition	Land that is covered with trees		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of woodland	An woodland with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a woodland side is always on the right hand side	-
code(1): 6314	-	-	-

Feature	Shrub		
Definition	An area where low bush and tree grow in very dry soil .		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of shrub	A shrub with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a shrub side is always on the right hand side	-
code(1): 6315	-	-	-

Feature	Scattered Trees		
Definition	An area that is covered with scattered trees		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of scattered trees	Scattered trees over 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a scattered trees side is always on the right hand side	-

code(1): 6316	-	-	-
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Feature	Palm		
Definition	An area where palm is planted		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of palm	Palm over 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a palm side is always on the right hand side	-
code(1): 6317	-	-	-

Feature	Marsh		
Definition	Low wet large area near a river. An area of low wet ground, often between the ocean and land , in which grasses or bushes may grow		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of marsh.	A Marsh with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a marsh side is always on the right hand side	-
code(1): 6318	-	-	-

Feature	Dambo		
Definition	Low-wet large area near a seasonal river		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of dambo	A dambo with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a dambo side is always on the right hand side	-
code(1): 6319	-	-	-

Feature	Sand or Mud(Inland)		
Definition	An area that is covered in sand or mud(inland)		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of sand or mud(inland)	A sand or mud (inland) with 3.0 x 3.0mm or more	-

		on the map in general shall be digitized. the direction of digitization should such that a sound or mud(inland) side is always on the right hand side	
code(1): 6320	-	-	-

Feature	Sand or Mud(Coastal)		
Definition	An area that is covered in sand or mud(coastal)		
Parent class	Vegetation		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the boundary of sand or mud(coastal)	A sand or mud (coastal) with 3.0 x 3.0mm or more on the map in general shall be digitized. the direction of digitization should such that a sound or mud(coastal) side is always on the right hand side	-
code(1): 6321	-	-	-

4.2.9 Topographic Feature Package

Package	Topographic Feature		
Definition	Feature that describes the shape of an land, including its hills, valleys etc.		
Physical topographic feature	Point topographic feature, Linear topographic feature, Polygonal topographic feature, Contour(Index), Contour(Normal), Supplementary Contour, Depression, Steep Sloop, Cliff, Outcrop Rock, Quarry, Congealed Lava, Artificial Sloop (Embankment), Artificial Sloop (Cutting), Riverbank, Covering (Coating).		
Abstract / Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type:			-
code(1):	-	-	-

Feature	Point Topographic Feature		
Definition	Topographic feature in topographic feature that has point data format.		
Parent class	Topographic Feature		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point			-
code(1):	-	-	-

Feature	Linear Topographic Feature		
Definition	Topographic feature in topographic feature that has line data format.		
Parent class	Topographic Feature		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line			-
code(1):	-	-	-

Feature	Polygonal Topographic Feature		
Definition	Topographic feature in topographic feature that has polygon data format.		
Parent class	Topographic Feature		
Abstract / Concrete	Abstract		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon			-
code(1):	-	-	-

Feature	Contour(Index)10m		
Definition	A line that connects points of equal heights (every 10m) above sea level		
Parent class	Linear Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the equal hight or the symbol of contour line(Index, every 10m).	the direction of digitization should such that lower side is always on the right hand side	-
code(1): 7101	-	-	-

Feature	Contour(Normal)2m		
Definition	A line that connects points of equal heights (every 2m) above sea level		
Parent class	Linear Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the equal height or the symbol of contour line (normal, every 2m)	the direction of digitization should such that lower side is always on the right hand side	-
code(1): 7102	-	-	-

Feature	Supplementary Contour (1m)		
Definition	A line that connects points of equal heights (every 1m) above sea level		
Parent class	Linear Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the equal hight or the symbol of supplementary contour line (every 1m)	For the flat area, a supplementary contour shall be digitized. the direction of digitization should such that lower side is always on the right hand side	-
code(1): 7103	-	-	-

Feature	Depress		
Definition	Part of a surface that is deeper or lower than the other parts.		
Parent class	Linear Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the edge of depress	the direction of digitization should such that lower side is always on the right hand side	-
code(1): 7104	-	-	-

Feature	Steep Slope		
Definition	An area where the sloop is very steep		
Parent class	Linear Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: Line	To digitize the top of steep sloop	the direction of digitization should such that lower side is always on the right hand side.	-
code(1): 7201	-	-	-

Feature	Cliff		
Definition	A high, steep side of a large area of rock or mountain		
Parent class	Linear Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the top of cliff	the direction of digitization should such that lower side is always on the right hand side	-
code(1): 7202	-	-	-

Feature	Outcrop Rock		
Definition	An area where groups of rocks appear above the surface of the ground		
Parent class	Polygonal Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: polygon	To digitize the edge of outcrop rock	the direction of digitization should such that an outcrop rock side is always on the right hand side	-
code(1): 7203	-	-	-

Feature	Quarry		
Definition	A place where many stones, and large amount of sand etc, are dug out of the ground		
Parent class	Linear Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the top of quarry	the direction of digitization should such that lower side is always on the right hand side	-
code(1): 7204	-	-	-

Feature	Congealed Lava		
Definition	Hot liquid rock that flows from a volcano, this rock when it comes out it becomes cold and solid		
Parent class	Point Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the center of congealed lava.		-
code(1): 7205	-	-	-

Feature	Artificial Sloop (Embankment)		
Definition	An artificial slopes (embankment) refer to man-made slopes that have been		

	constructed as embankment.		
Parent class	Linear Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the top of an artificial sloop (embankment).	A height of 1.5 m or more, and a length of 1.0 cm or more on the map shall be digitized. The direction of digitization should such that lower side is always on the right hand side.	-
code(1): 7206	-	-	-

Feature	Artificial Sloop (Cutting)		
Definition	An artificial slopes (cutting) refer to man-made slopes that have been constructed as cutting.		
Parent class	Linear Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the top of an artificial sloop (cutting).	A height of 1.5 m or more, and a length of 1.0 cm or more on the map shall be digitized. The direction of digitization should such that lower side is always on the right hand side.	-
code(1): 7207	-	-	-

Feature	Riverbank		
Definition	A riverbanks refer to elevated land around banks.		
Parent class	Linear Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the center of riverbank.	A height of 1.5 m or more, and a length of 1.0 cm or more on the map shall be digitized. A riverbank that cannot be represented by 7206 and 7207 shall be digitized.	-
code(1): 7208	-	-	-

Feature	Covering (Coating)		
Definition	A coverings (coatings) refer to concrete and stone structures built to protect the slopes of roads, riverbanks, sea banks, and others.		
Parent class	Linear Topographic Feature		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: line	To digitize the top of covering (coating).	A height of 1.5 m or more, and a length of 1.0 cm or more on the map shall be digitized. The direction of digitization should such that lower side is always on the right hand side.	-
code(1): 7209	-	-	-

4.2.10 Control Point Package

Package	Control Point		
Definition	A point that has a coordinate (horizontal and/or vertical)		
Physical topographic feature	Geodetic point-primary, Geodetic point-secondary, Geodetic point-tertiary, Unclassified geodetic point, Bench mark, Boundary pillar, Spot Height.		
Abstract / Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point		-	-
code(1):	-	-	-

Feature	Geodetic point-primary		
Definition	A first order point that has a coordinates in horizontal		
Parent class	Control Point		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the centre of symbol for geodetic point -primary or to digitized with the coordinates of the geodetic point-primary.	-	-
code(1): 7301	-	-	-

Feature	Geodetic point-secondary		
Definition	A second order point that has coordinates in horizontal		
Parent class	Control Point		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the centre of geodetic point-secondary or to digitized with the coordinates of the geodetic point-secondary.	-	-
code(1): 7302	-	-	-

Feature	Geodetic point-tertiary		
Definition	Tertiary point that has a coordinates in horizontal		
Parent class	Control Point		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the centre of geodetic point-tertiary or to digitized with the coordinates of the geodetic point-tertiary.	-	-
code(1): 7303	-	-	-

Feature	Unclassified geodetic point		
Definition	Unclassified point that has a coordinates in horizontal		
Parent class	Control Point		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the centre of unclassified geodetic point or to digitized with the coordinates of the	-	-

code(1): 7304	unclassified geodetic point.	-	-
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Feature	Benchmark		
Definition	A point that has a height value		
Parent class	Control Point		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the centre of bench mark	-	-
code(1): 7305	-	-	-

Feature	Boundary Pillar		
Definition	A point that shows an international boundary		
Parent class	Control Point		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the centre of boundary pillar or to digitized with the coordinates of the boundary pillar.	-	-
code(1): 7306	-	-	-

Feature	Spot Height		
Definition	Spot height are points whose heights have been determined through photogrammetry or direct leveling.		
Parent class	Control Point		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the point of spot height.	-	-
code(1): 7307	-	-	-

4.2.11 Others Package

Package	Others		
Definition	A data of topographic map		
Physical topographic feature	Point arrow, Principal point, Contour height value.		
Abstract / Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	-	-	-
code(1):	-	-	-

Feature	Point arrow		
Definition	A point that point out a topographic feature.		
Parent class	Others		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the point arrow.	-	-
code(1): 8101	-	-	-

Feature	Principal point		
Definition	A point on topographic map that is a principal point of aerial photography for producing a topographic map.		

Parent class	Others		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the principal point with its coordinates.	-	-
code(1): 8102	-	-	-

Feature	Contour height value		
Definition	A value of contour height		
Parent class	Others		
Abstract / Concrete	Concrete		
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point	To digitize the left downside of a height value.	-	-
code(1): 8103	-	-	-

4.2.12 Annotation Package

Package	Annotation		
Definition	A name of topographic feature		
Physical topographic feature	Nation, Province or Region, District, City or Township, Consistency, Ward, Location, National park, Common, Real Width Road(Main), Real Width Road(secondary), Real Width Road(tertiary), Real Width Road(district), Bridge, Tunnel, Railway, Railway Station, Building, Small Object, River, River(Single), Lake/Pond/Swamp, Cape/Cape Point, Harbor/Bay, Island, Ferry, Dam, Waterfall, Well/Spring/Borehole, Airport, Graveyard/Cemetery, Vegetation, Mountain, Valley/Plateau, Hill, Control Point.		
Abstract / Concrete			
Attributes			
Name	Collection Method	Collection condition	Domain
Data Type: point		-	-
code(1):	-	-	-

Feature	Nation Name		
Definition	A name of Nation		
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): 9101	-	-	-

Feature	Province or Regain Name		
Definition	A name of Province or Region		
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): 9102	-	-	-

Feature	District Name		
Definition	A name of District		
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): 9103	-	-	-

Feature	City or Township Name		
Definition	A name of City or Township		
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): 9104	-	-	-

Feature	Consistency Name		
Definition	A name of Consistency		
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): 9105	-	-	-

Feature	Ward Name		
Definition	A name of Ward		
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): 9106	-	-	-

Feature	Location Name		
Definition	A name of Location		
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): 9107	-	-	-

Feature	National Park Name		
Definition	A name of National Park		
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): 9108	-	-	-

Feature	Common Name		
Definition	A name of Common		
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): 9109	-	-	-

Feature	Real Width Road(Main) Name		
Definition	A name of Real Width Road(Main)		
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): 9201	-	-	-

Feature	Real Width Road(secondary) Name		
Definition	A name of Real Width Road(secondary)		
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): 9202	-	-	-

Feature	Real Width Road(tertiary) Name		
Definition	A name of Real Width Road(tertiary)		
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): 9203	-	-	-

Feature	Real Width Road(district) Name		
Definition	A name of Real Width Road(district)		
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): 9204	-	-	-

Feature	Bridge Name		
Definition	A name of bridge		
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): 9205	-	-	-

Feature	Tunnel Name		
Definition	A name of tunnel		
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): 9206	-	-	-

Feature	Railway Name		
Definition	A name of railway		
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): 9207	-	-	-

Feature	Railway Station Name		
Definition	A name of railway station		
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): 9208	-	-	-

Feature	Building Name		
Definition	A name of building		
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): 9301	-	-	-

Feature	Small Object Name		
Definition	A name of small object		
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): 9401	-	-	-

Feature	River Name		
Definition	A name of River		
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): 9501	-	-	-

Feature	River(Single) Name		
Definition	A name of River(single)		
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): 9502	-	-	-

Feature	Lake, Pond, Swamp Name		
Definition	A name of Lake, Pound, Swamp		
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): 9503	-	-	-

Feature	Cape, Cape Point Name		
Definition	A name of Cape, Cake 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): 9504	-	-	-

Feature	Harbor, Bay Name		
Definition	A name of Harbor, Bay		
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): 9505	-	-	-

Feature	Island Name		
Definition	A name of Island		
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): 9506	-	-	-

Feature	Ferry Name		
Definition	A name of Ferry		
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): 9507	-	-	-

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