

Mymensingh Strategic Development Plan (MSDP)2011-2031:

Structure Plan Procedure

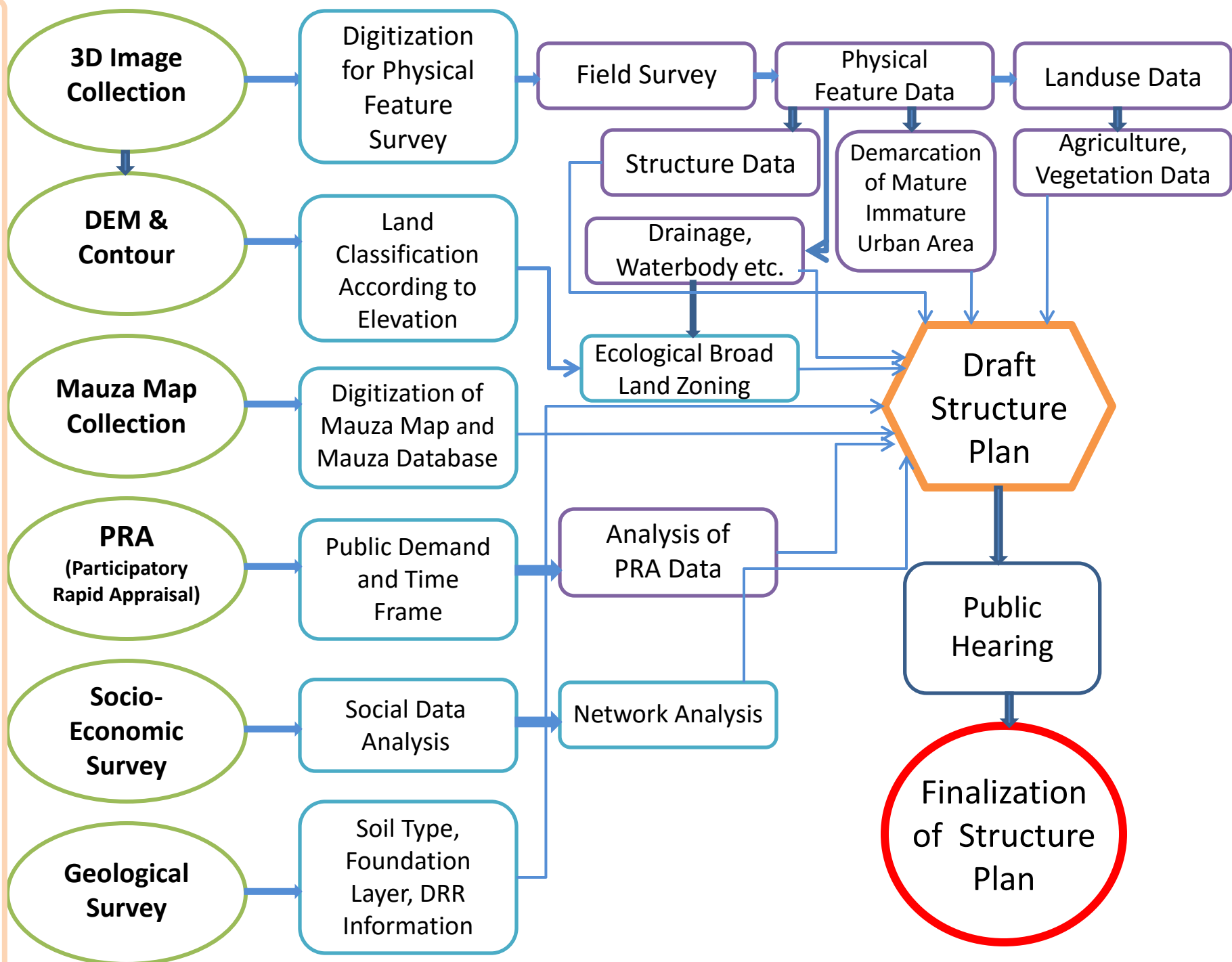
Presented by
Planner Zakia Sultana

(www.msdp.gov.bd)

IMPLEMENTED JOINTLY BY
UDD & CDMP-II



Total Structure Plan Procedure for MSDP



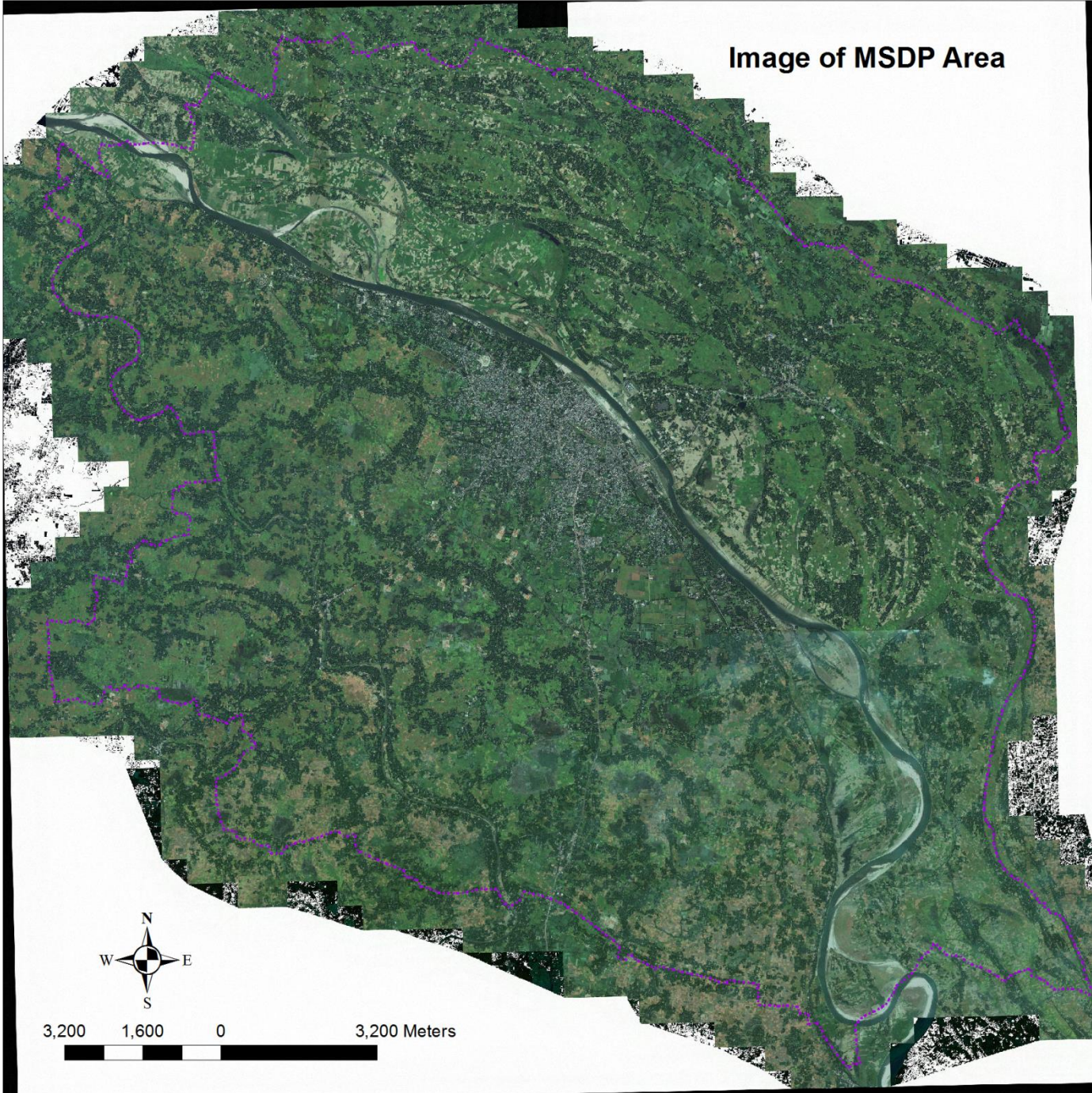
List of Issues while Preparing Draft Structure Plan of MSDP Area

1	Image
2	Digitization & Field Check
3	DEM
4	Different Survey
5	Mauza Map
6	PRA
7	Agricultural Map
8	Geological Map
9	Soil Map
10	Tree
11	Urban Road
12	Eco Sensitive Land
13	Mental Map
14	Network Analysis
15	Drainage Map
16	Fire Map
17	Crime Map
18	Ecological Sensitive Map
19	Regional Road Network
20	Regional Growth Center
21	Draft Structure Plan

Image Collection and Processing

1	Image Collection
2	Processing of Image
3	Rectification
4	Cleaning of Image
5	Geo Referencing of Image

Image of MSDP Area



Digitization and Field Check

1	Prepare .shp file for Digitization With Arc GIS	22	Ward wise Database prepare
2	Physical Feature Digitization from Image	23	Ward wise Database and Map Print
3	Prepared Map from Image Digitization for Field Check and Data Collection	24	Verification of Ward wise database and Map from Municipality
4	Physical Feature Survey and Data Collection with the help of Previously Digitized map	25	Wardwise map Prepare and Print
5	GIS Database Prepare and Update from Collected Field Data	26	Para/ Neighborhood Demarcation From BBS
6	Field Check By MSDP Team	27	Field Check of Para/ Neighbourhood Demarcation
7	Additional Building Data Collection By MSDP Team	28	Reform/Correction and Update of Para/ Neighbourhood Boundary
8	Floor wise Building Data Collected from Field By MSDP Team	29	Parawise Database Preparation
9	GIS Database Prepare and Update By MSDP Team	30	Parawise Map prepare and Print
10	Physical feature database	31	Verification of Para wise database and Map from Municipality
11	Building use Declaration	32	Unionwise Database prepare
12	Landuse database	33	Specify Growth centers from unions and
13	Important point Feature database	34	Map Prepare and Print from Union Database
14	Road Network Database	35	Field check of two Union and 10 Specific Growth center
15	Waterbody Database	36	Database of Unions and Growth Centers are Corrected and Updated
16	Drainage database	37	Print Growth Center and Union Database
17	Embankment,Bridge, Culvert Database	38	Print Unionwise Map
18	Admin boundary Demarcation	39	Sample Field check of Different database
19	KPI Demarcation	40	Analysis of Different Database
20	Educational Structure demarcation	41	Map Preparation From Different Database and
21	Religious Facilities Demarcation	42	Print Map

Survey Check

Name of Data Filed of Structure Data

Sl No	Collected Information Type	Sl No	Collected Information Type
1	Final__ID	23	NAME
2	UDD_Name	24	STRUCTYPE
3	UDD_Ward	25	FLOOR
4	U_Gr_F_Us	26	MobileTowe
5	U_1st_F_Us	27	HoldingNo
6	U_2nd_F_Us	28	OccupantDa
7	U_3rd_F_Us	29	OccupantNi
8	U_4th_F_Us	30	OccupancyC
9	U_5th_F_Us	31	StructureA
10	U_6th_F_Us	32	StructureT
11	U_7th_F_Us	33	HeavyOverh
12	U_8th_F_Us	34	NumberApar
13	U_9th_F_Us	35	SoftStory
14	U_10_F_Us	36	PoundingPo
15	U_11_F_Us	37	Stories
16	U_12_F_Us	38	StrucShape
17	U_Floor	39	Ground_Set
18	UDD_Para	40	ShortColum
19	U_Str_Typ	41	PhysicalCo
20	U_Hol_Num	42	Struc_Slop
21	U_House_H	43	Struse1T
22	U_Con_Year	44	Struse2T
		45	Struse3T
		46	STRUSE4T

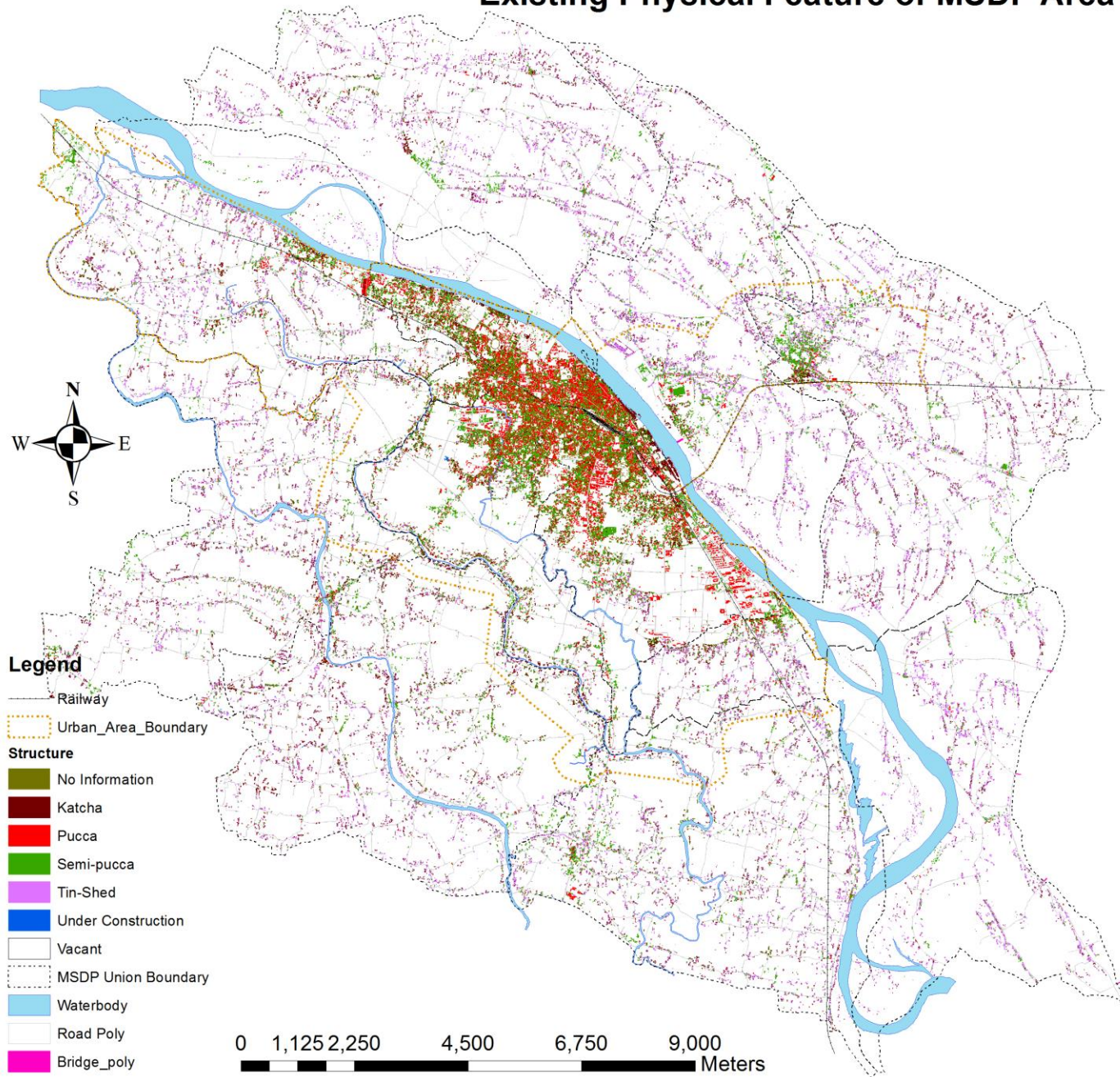
Total Structure
Attribute Data
is 93,05,938

Growth Center Check for Rural Area



Existing Physical Feature of MSDP Area

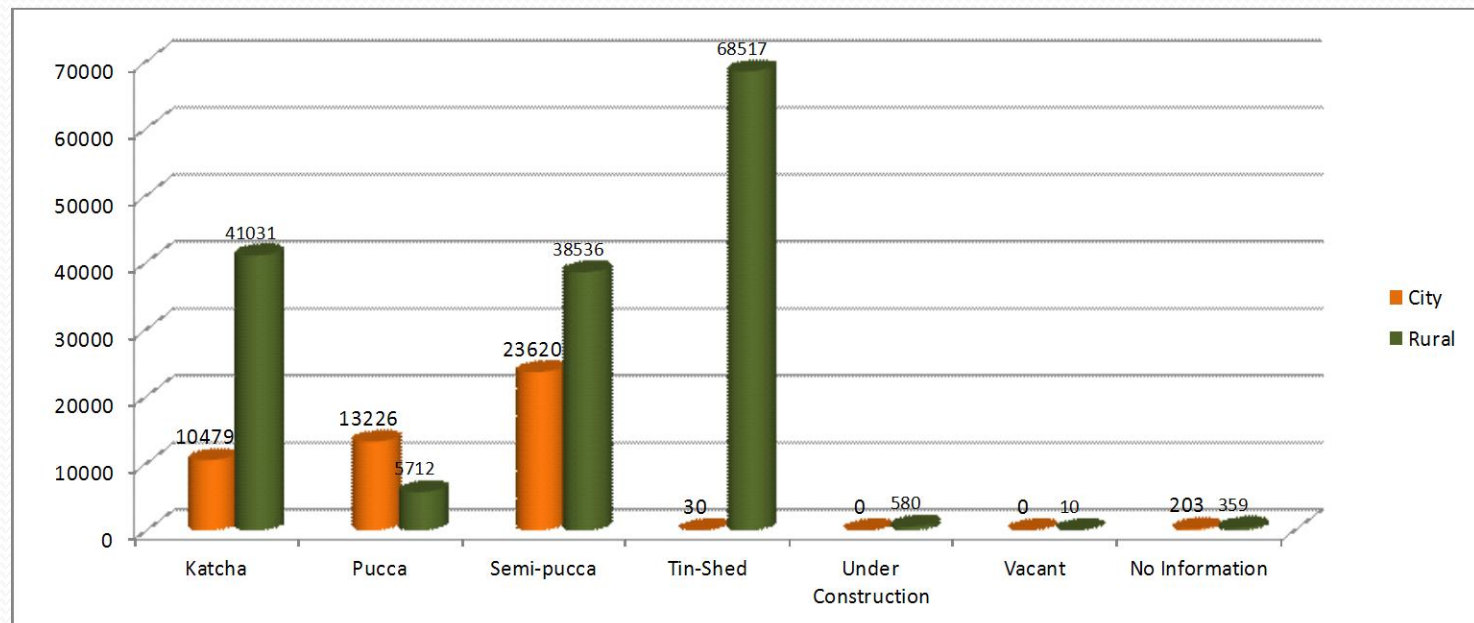
Physical Feature Survey



Structure Type

Structure Type of Municipality and Rural Unions

Structure Type	Municipality		Rural Unions		Grand Total	
	Total No.	%	Total No.	%	Total No.	%
Katcha	10479	22.03	41031	26.52	51510	25.46
Pucca	13226	27.81	5712	3.69	18938	9.36
Semi Pucca	23620	49.67	38536	24.90	62156	30.72
Tin-Shed	30	0.06	68517	44.28	68547	33.88
Under Construction		0.00	580	0.37	580	0.29
Vacant		0.00	10	0.01	10	0.00
No Information	203	0.43	359	0.23	562	0.28
Grand Total	47558	100.00	154742	100.00	202303	100



Existing Waterbody of MSDP Area

Waterbody of MSDP Area

Legend

----- Railway

Waterbody

WB_TYPE

- Borrow Pits
- Gheer (Fish Cultivation Only)
- Irrigation Canal
- Marsh Land
- Ditch
- Pond
- Khal
- Lake
- River
- Rural_Administrative_Poly
- Road Poly



1:23,000

1 inch = 584 meters

1 inch = 1,917 feet

0 850 1,700 3,400 5,100 6,800 Meters

Date: 21-Aug-11 Time: 8:42:00 PM
Path: D:\Data For Analysis\B1\2010\1011\MSDP\WB_2010.mxd

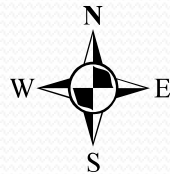
Existing Water body

Water body Type	Area in Acre	%
Borrow Pits	47.21	0.37
Ditch	544.27	4.27
Gheer (Fish Cultivation Only)	1496.04	11.74
Khal	327.15	2.57
Lake	62.31	0.49
Marsh Land	3065.74	24.05
Pond	4505.13	35.34
River	2699.19	21.18
Grand Total	12747.05	100.00
Waterbody Type	Total No	%
Ditch	2070	8.85
Gheer (Fish Cultivation Only)	3344	14.30
Pond	17976	76.85
Grand Total	23390	100.00

Categorization of Road

Width of These Road has been Categorized in 6 Different Types

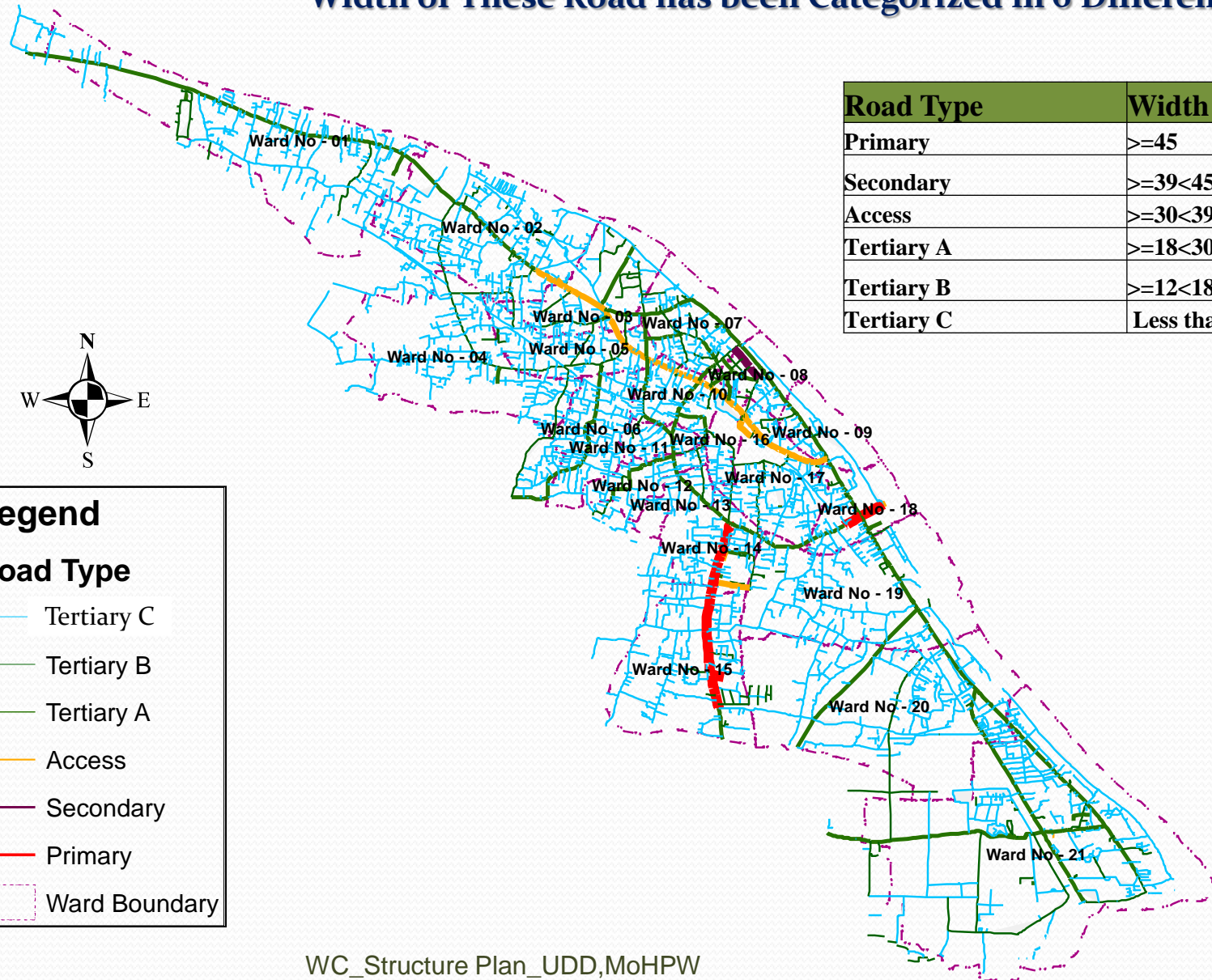
Road Type	Width in Ft
Primary	≥ 45
Secondary	$\geq 39 < 45$
Access	$\geq 30 < 39$
Tertiary A	$\geq 18 < 30$
Tertiary B	$\geq 12 < 18$
Tertiary C	Less than 12 ft



Legend

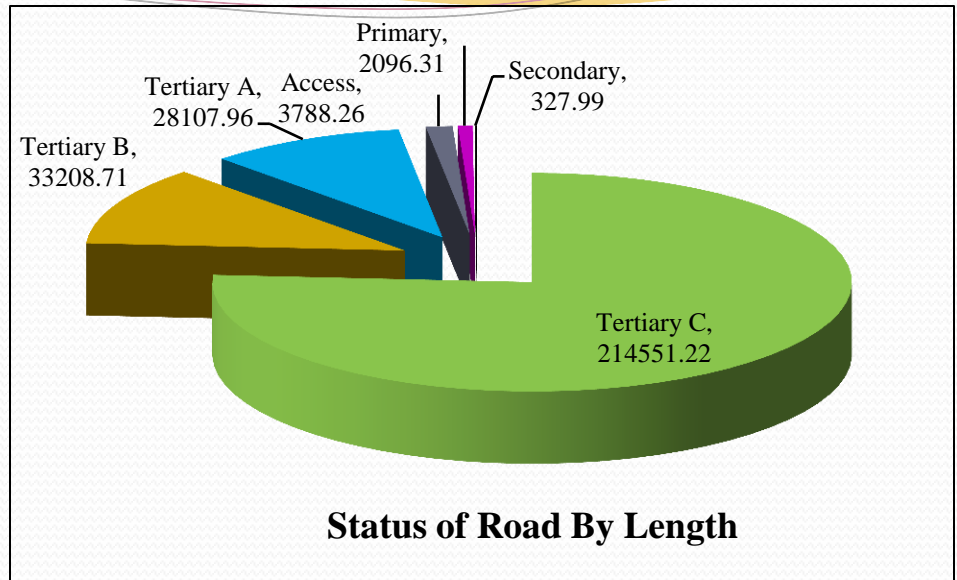
Road Type

- Tertiary C
- Tertiary B
- Tertiary A
- Access
- Secondary
- Primary
- Ward Boundary

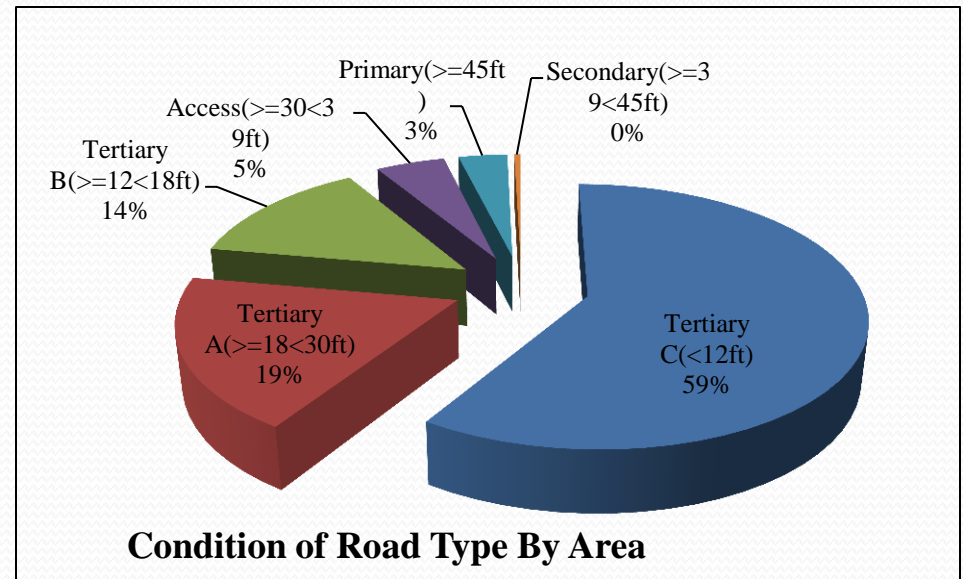


Status of Road Type by Length and Area

Road Type	Length(M)
Tertiary C	214551.22
Tertiary B	33208.71
Tertiary A	28107.96
Access	3788.26
Primary	2096.31
Secondary	327.99
Total	282080.44



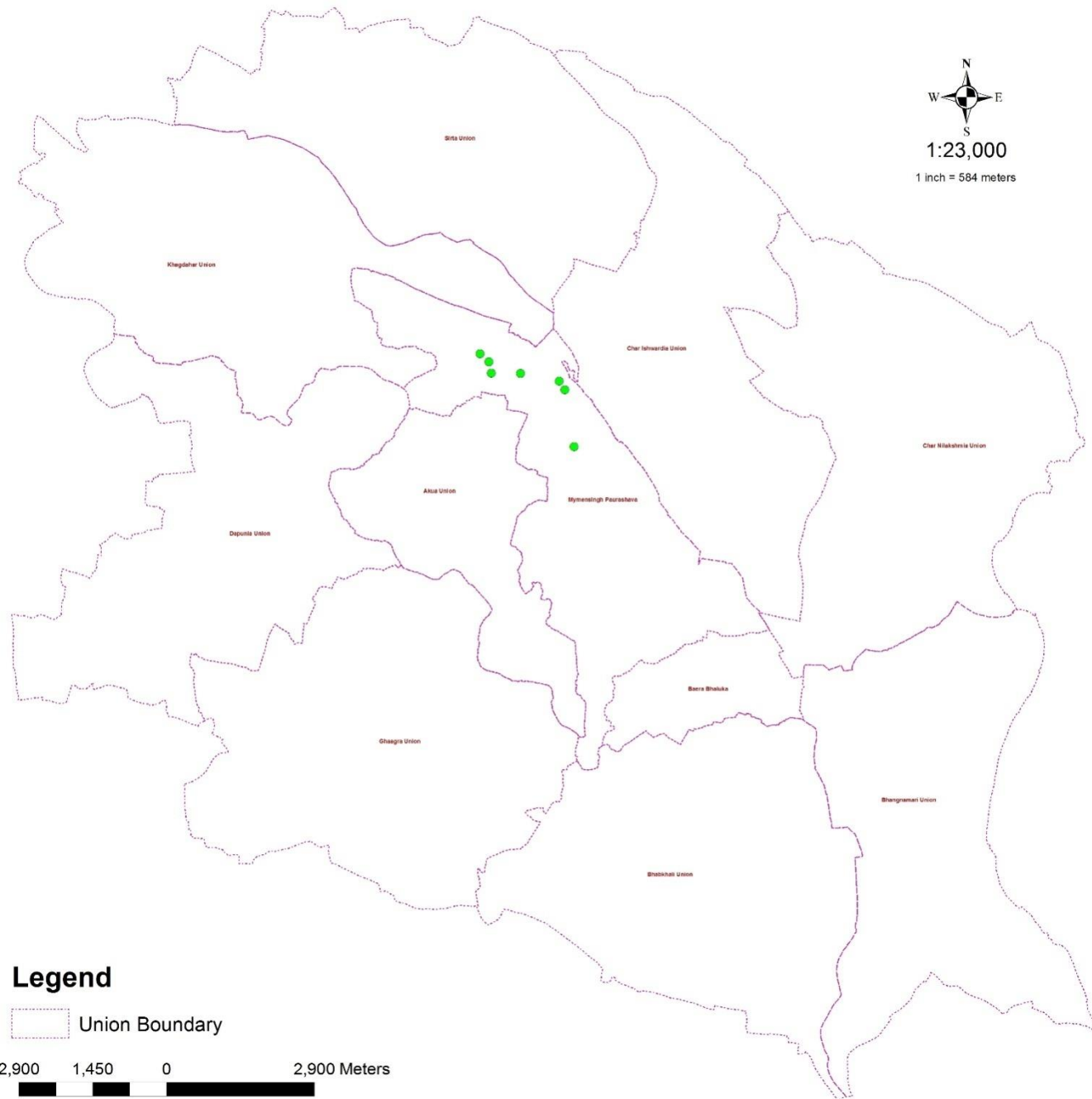
Road Type	Road Area(Acre)
Tertiary C(<12ft)	138.78
Tertiary A(>=18<30ft)	44.03
Tertiary B(>=12<18ft)	31.79
Access(>=30<39ft)	11.33
Primary(>=45ft)	8.02
Secondary(>=39<45ft)	1.02
Total	234.96



Mauza Map Digitization and Layout Preparation

- 1 Mauza Map Collection from DLRS
- 2 Mauza Map Collection from DC Office
- 3 Mauza Map Digitization
- 4 Mauza Map Print
- 5 Mauza Map Check on Light Table
- 6 Error demarcation & Listing of Error for Mauza Map
- 7 Edit and Reprint of Mauza Map
- 8 Recheck of Mauza Map
- 9 Re Demarcation & Listing of Error for Mauza Map
- 10 Edit and reprint of Mauza Map
- 11 Recheck of Mauza Map
- 12 Edit and Finalization of Mauza Map
- Ground Control Point Collection for Mouza Map Geo
- 13 Reference
- 14 Mauza Map Georeference
- 15 Mosaic of Mauza Map for MSDP Area
- Ground Control Point Collection From field by RTK
- 16 GPS for Checking of Mouza Map
- GCP Collection at the corner of halot for georeference
- 17 Check
- GCP Collection at the corner of Mauza Building for
- 18 geo-reference Check
- 19 Mauza reference check from GCP
- 20 Mosaic of Mauza Unionwise
- 21 Mosaic of Mauza for MSDP Area
- Mauza Map Database Prepared and Map
- 22 print
- 23 Mauza Map Database Check
- 24 Mauza Map Database Edit & Print
- 25 Prepare Mauza Boundary
- 26 Prepare Sheet boundary
- 27 Ward wise Mauza Map Prepare
- 28 Ward wise Mauza Map Print
- Ward wise Mauza with Physical feature Map
- 29 Prepare & Print for Verification
- 30 Final Mauza map Prepare
- 31 Layout Prepare for Final Mauza print
- Layout Validate From PD for Final Mauza
- 32 print
- 33 Test Layout of Mauza Map Print
- 34 Test Layout of Mauza Map Check
- 35 Test Layout of Mauza Map Edit
- 36 Finalize Mauza Layout and Map Print

GCP Collection for Mauza Reference

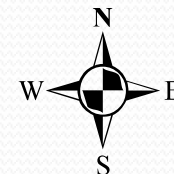
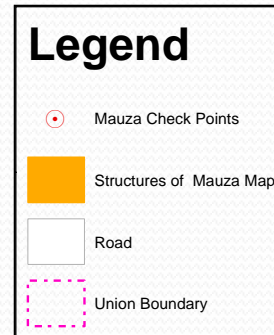
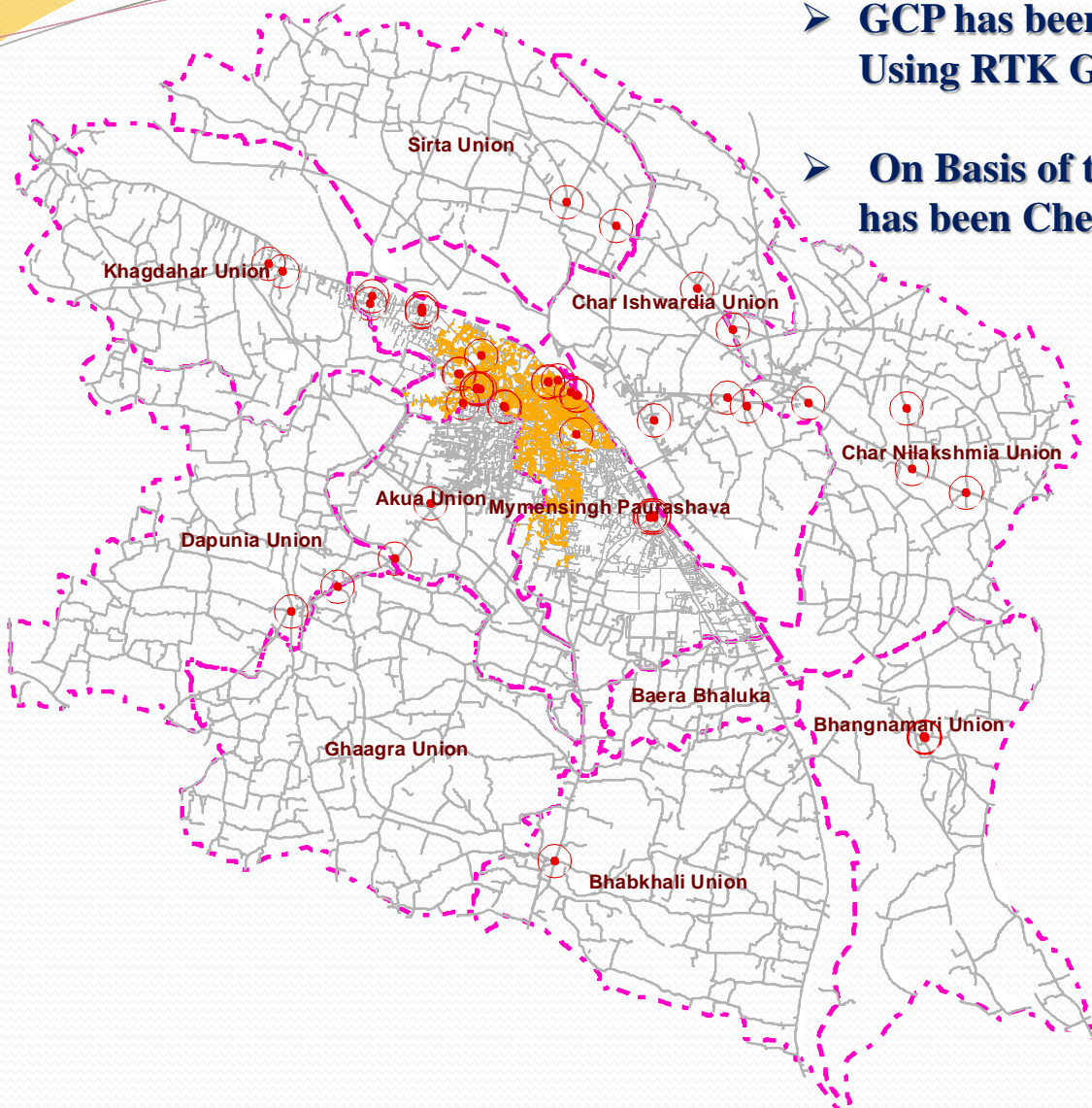


Union wise Mauza Map



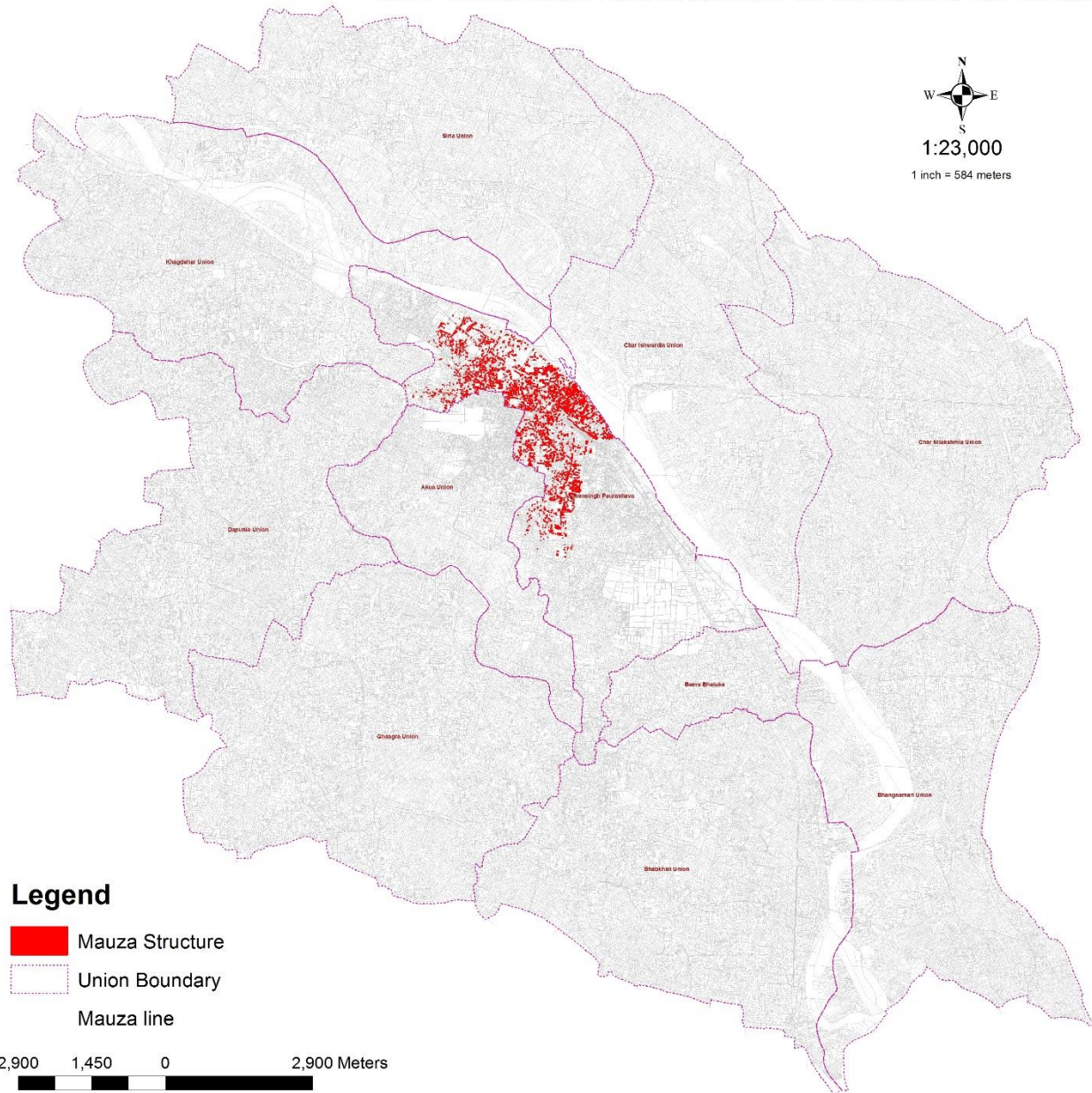
Geo-referenced Mauza Check

- GCP has been Collected in Total 58 Locations by Using RTK GPS
- On Basis of these GCP Geo-referenced Mauza has been Checked

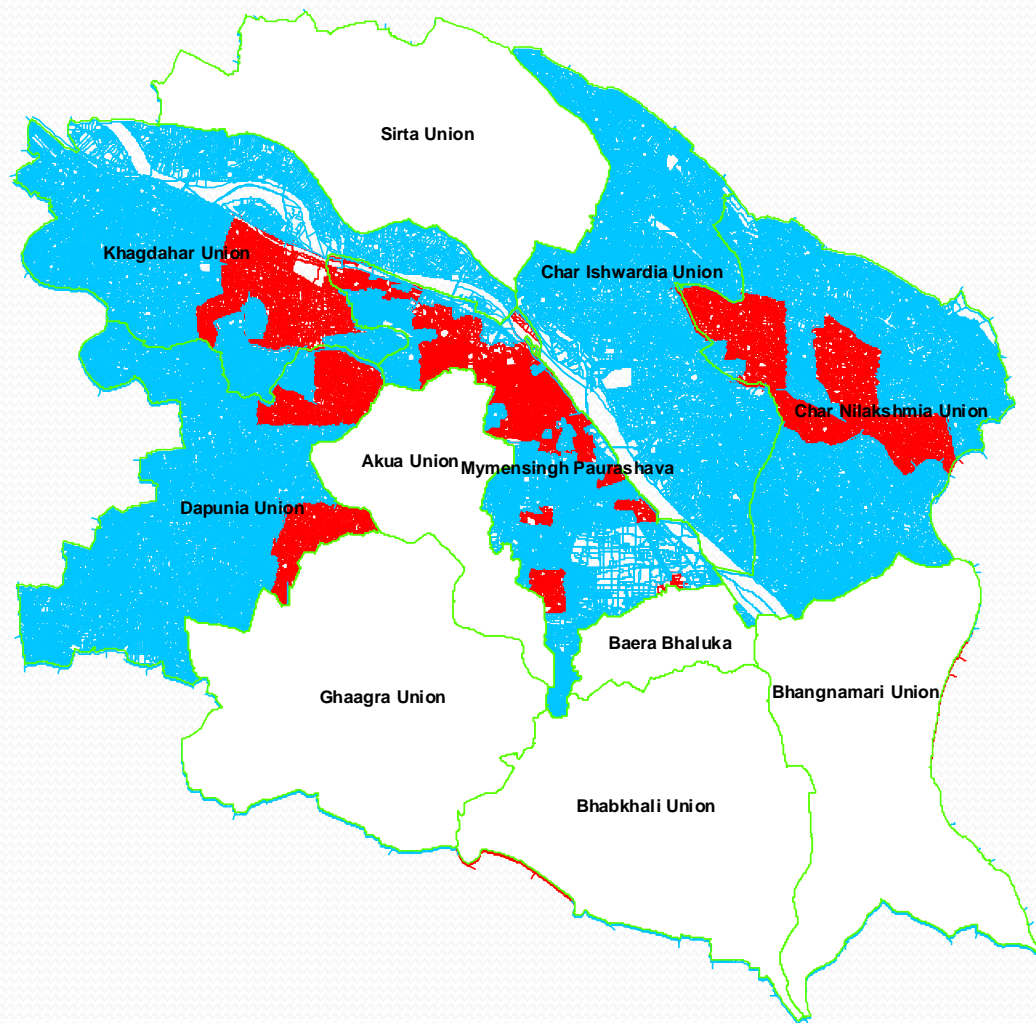


Mauza Check

GCP Collection At the Corner of Structure for Check



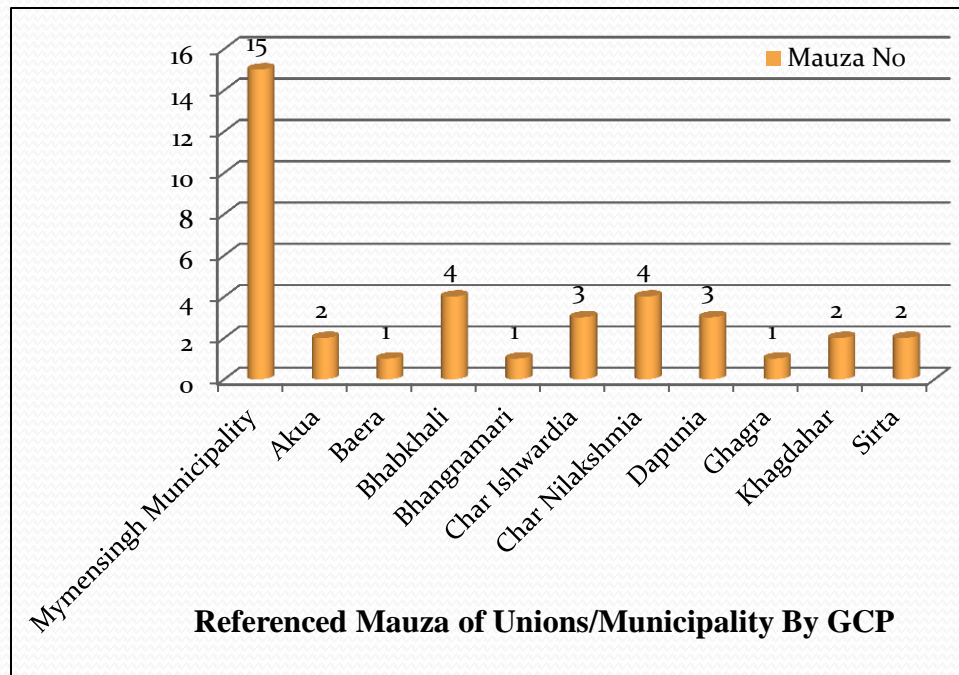
Red Colour is Marked as Referenced Mauza From GCP
Blue Colour is Marked as Referenced Mauza From Image



Source : GIS Database

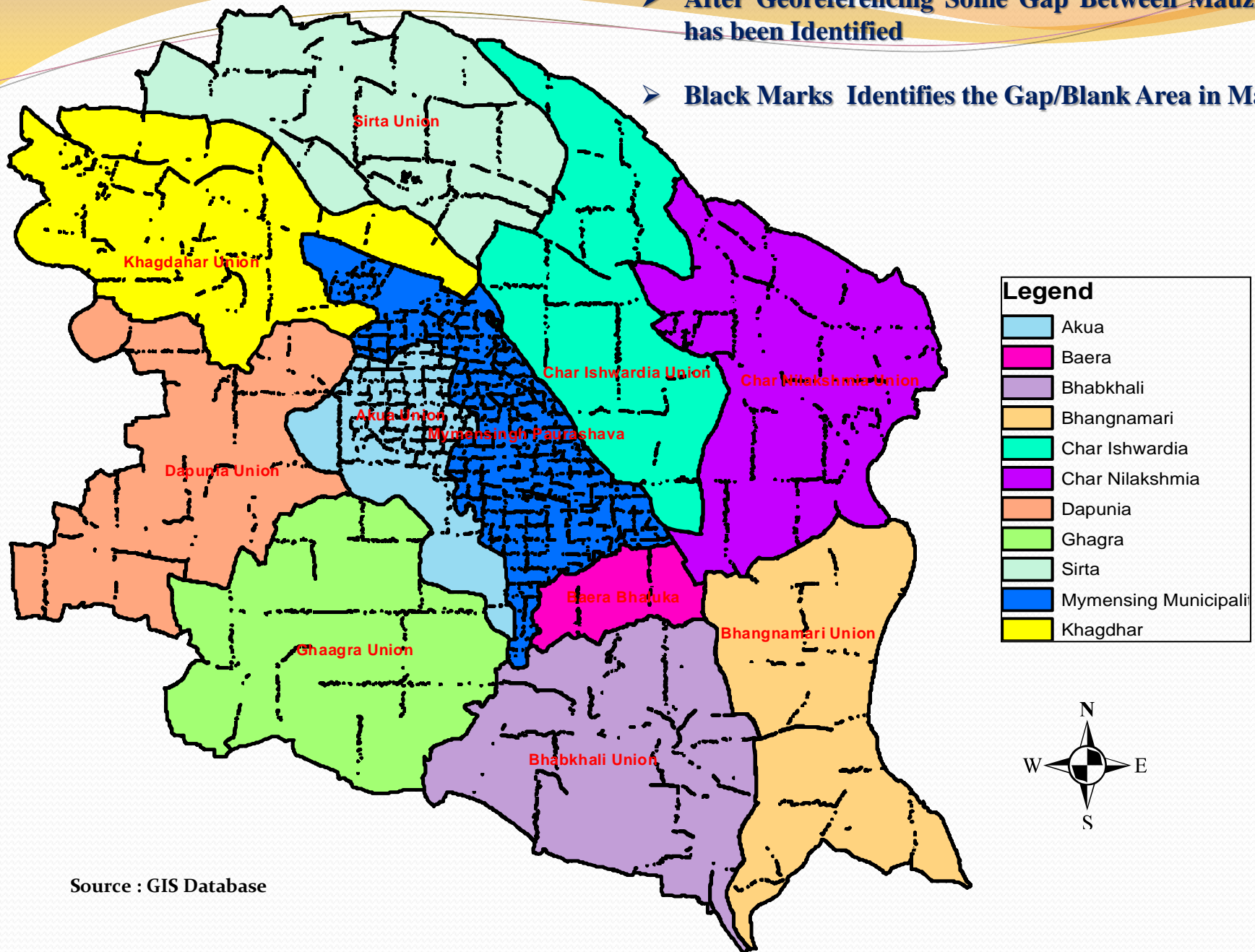
Summery List of Referenced Mauza and Sheet for MSDP Area

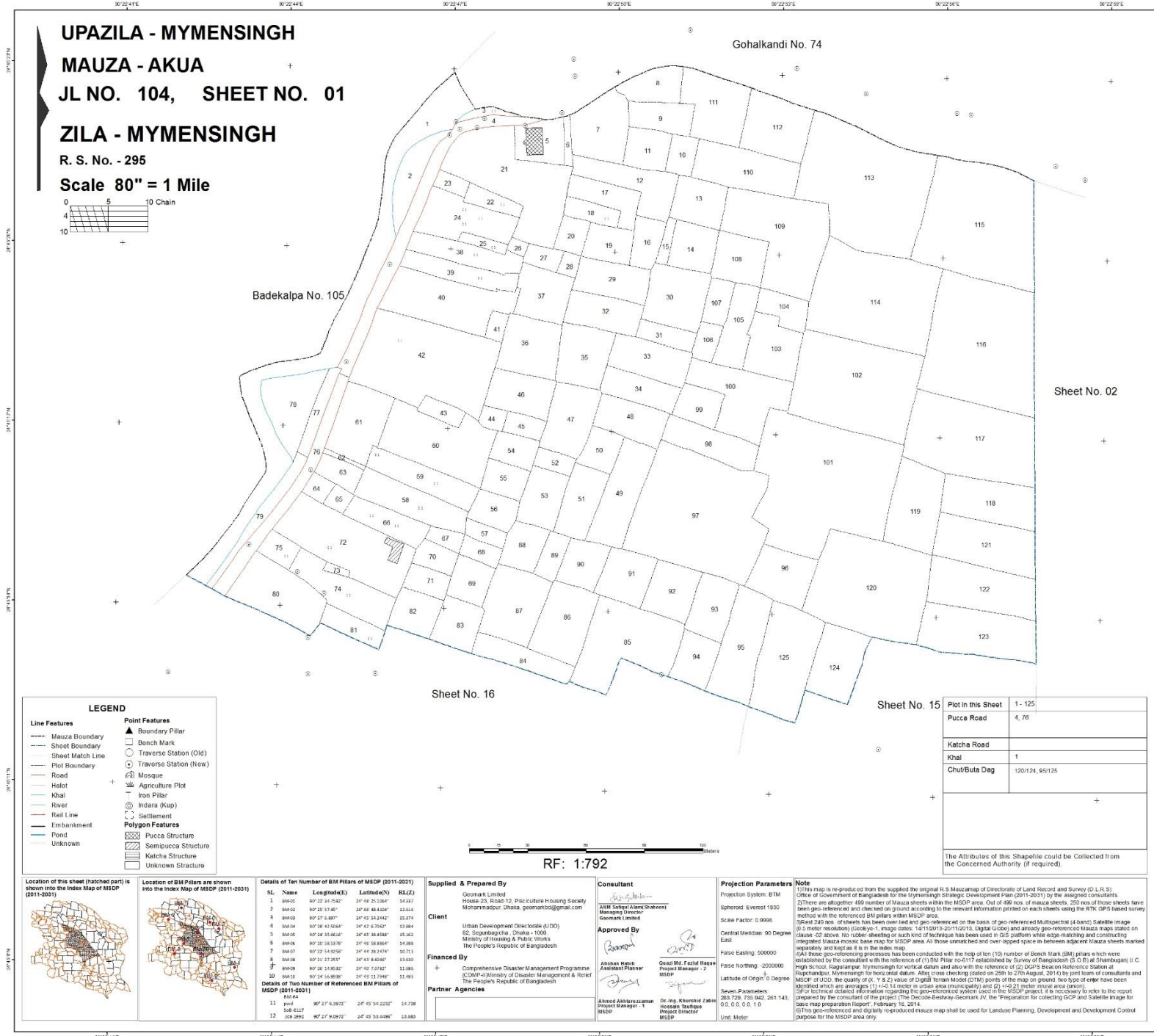
Union/Municipality	Mauza	JL	Sheet
Mymensingh Municipality	15	15	102
Akua	2	2	30
Baera	1	1	1
Bhabkhali	4	4	6
Bhangnamari	1	4	4
Char Ishwardia	3	3	5
Char Nilakshmia	4	4	7
Dapunia	3	3	4
Ghagra	1	1	1
Khagdahar	2	2	4
Sirta	2	2	3
Total	38	41	167



➤ After Georeferencing Some Gap Between Mauza Sheets has been Identified

➤ Black Marks Identifies the Gap/Blank Area in Mauzas

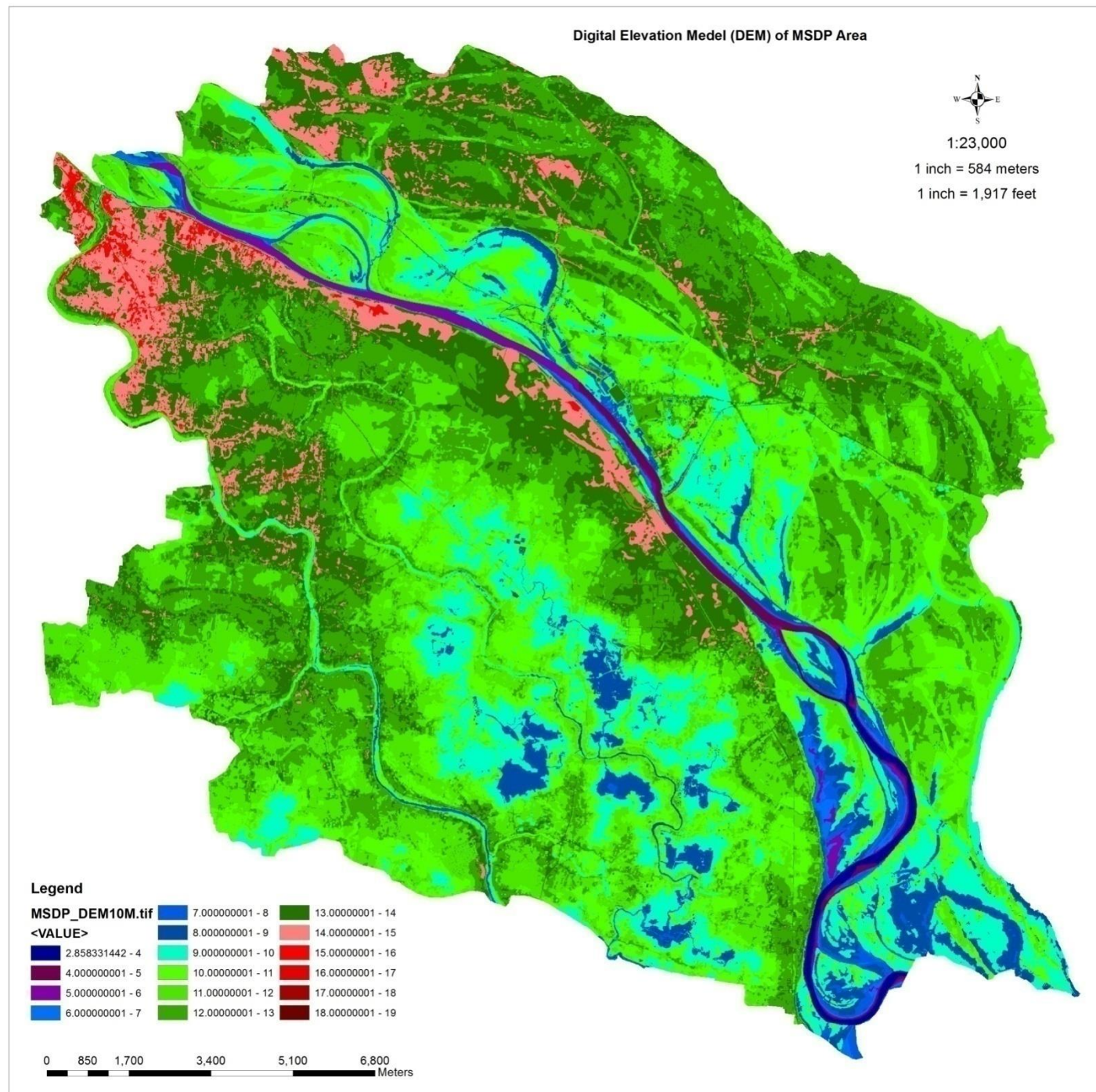




Preparation of Digital Elevation Model

- | | |
|----|--|
| 1 | DTM points generated(10m interval) from 3d Image |
| 2 | DEM Preparation |
| 3 | Prepare Contour from DEM |
| 4 | Collect RL from Field for DEM(RL) checking |
| 5 | Find out Difference By using GIS Software |
| 6 | Check Contour from Field(RL) |
| 7 | DEM Correction and Finalization |
| 8 | Contour Correction and Finalization |
| 9 | Inundation Data collection |
| 10 | Flood Map Preparation from DEM |

Total DTM Points
2900000



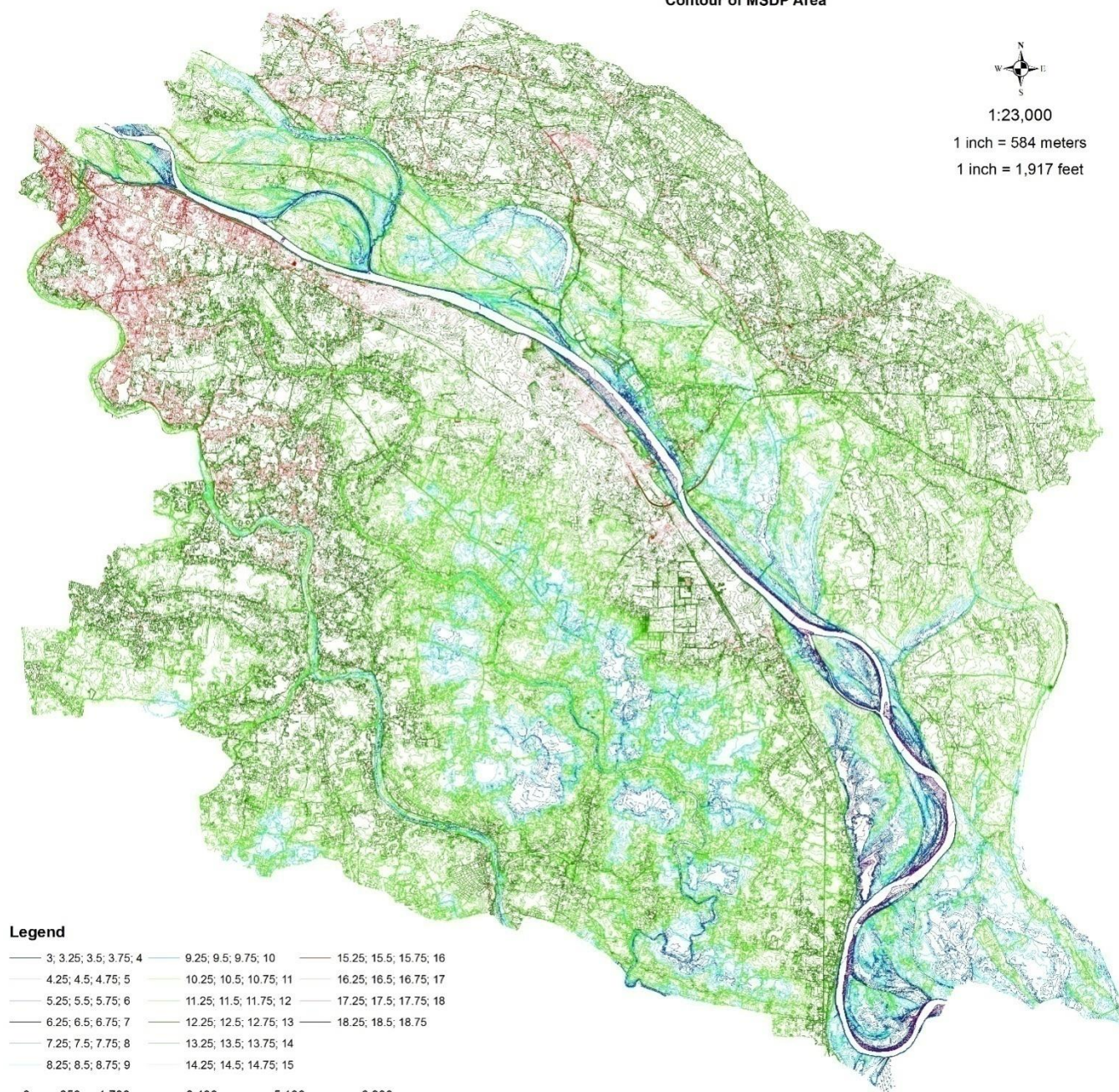
Contour of MSDP Area



1:23,000

1 inch = 584 meters

1 inch = 1,917 feet



Legend

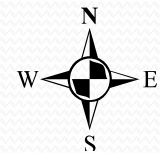
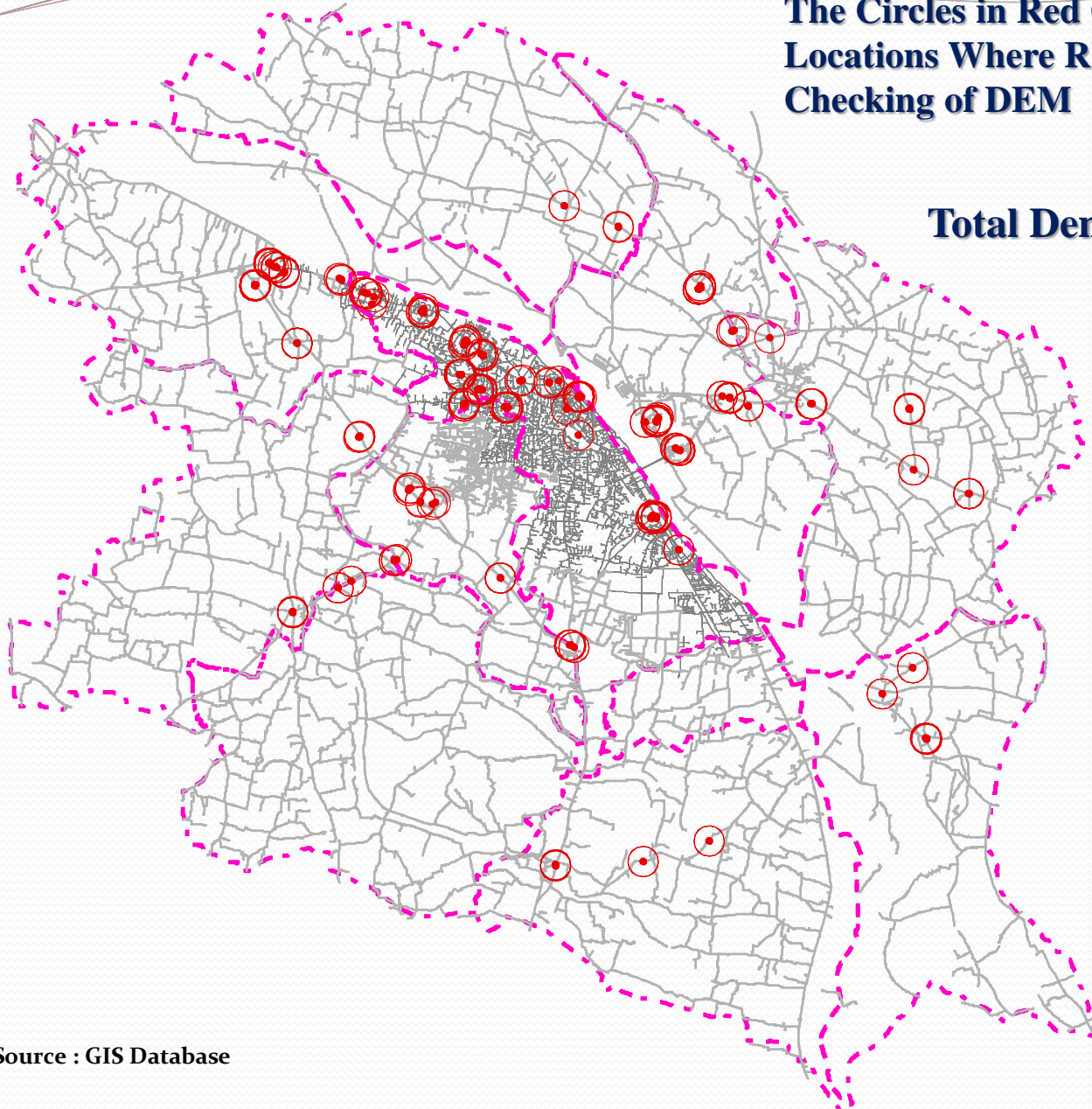
3; 3.25; 3.5; 3.75; 4	9.25; 9.5; 9.75; 10	15.25; 15.5; 15.75; 16
4.25; 4.5; 4.75; 5	10.25; 10.5; 10.75; 11	16.25; 16.5; 16.75; 17
5.25; 5.5; 5.75; 6	11.25; 11.5; 11.75; 12	17.25; 17.5; 17.75; 18
6.25; 6.5; 6.75; 7	12.25; 12.5; 12.75; 13	18.25; 18.5; 18.75
7.25; 7.5; 7.75; 8	13.25; 13.5; 13.75; 14	
8.25; 8.5; 8.75; 9	14.25; 14.5; 14.75; 15	

0 850 1,700 3,400 5,100 6,800 Meters

DEM Check & Correction

The Circles in Red Colour Marked Different Locations Where RL has been Collected for Checking of DEM

Total Dem Check Points 231



Legend

- DEM Check Point
- Union Boundary
- Road

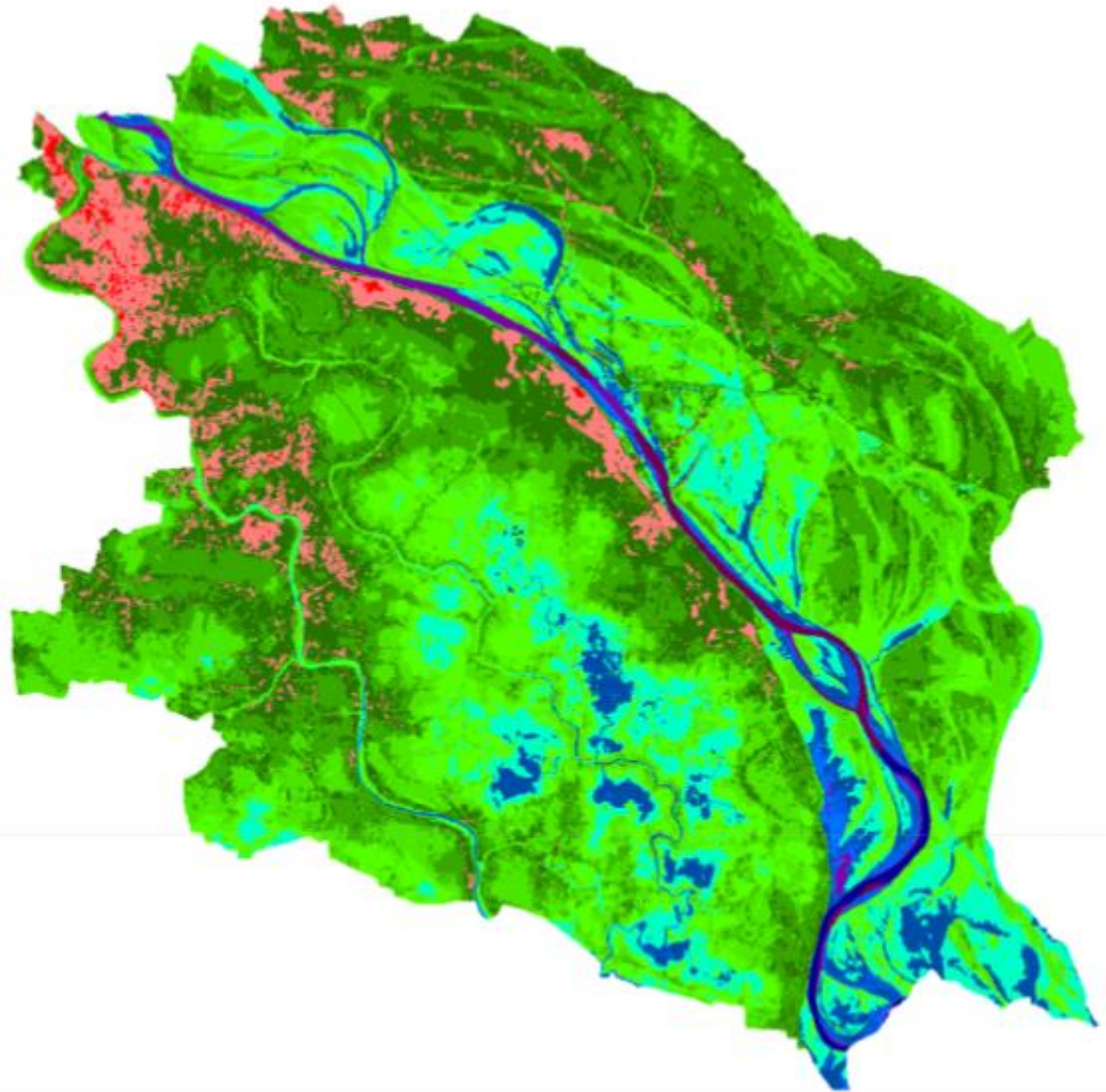
DEM Check & Correction

This is an Example of DEM Check


- **The Point in Blue Circle Shows that Error is .00025m**
- **The Point in Yellow Circle Shows that Error is .85974m**



Corrected DEM



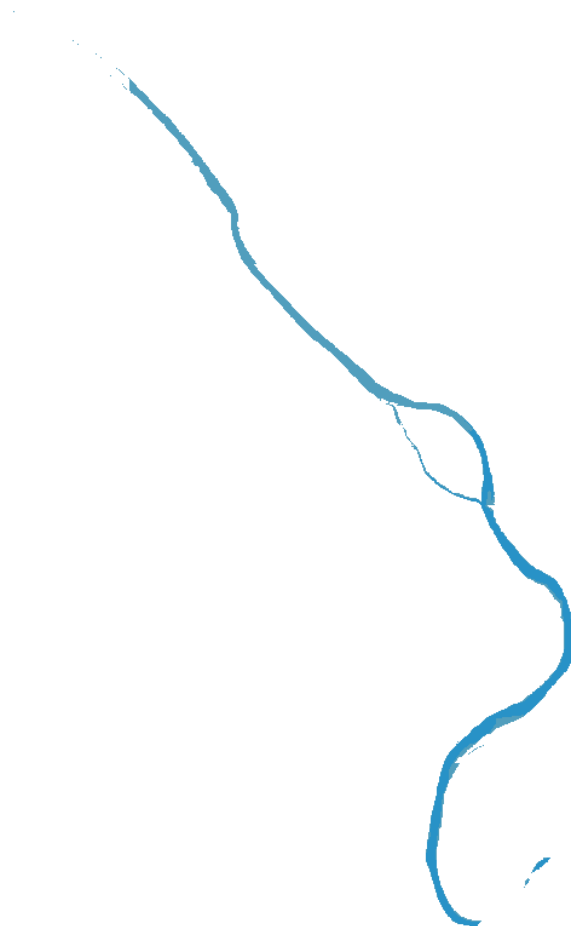
Legend

 Elivation below 04m

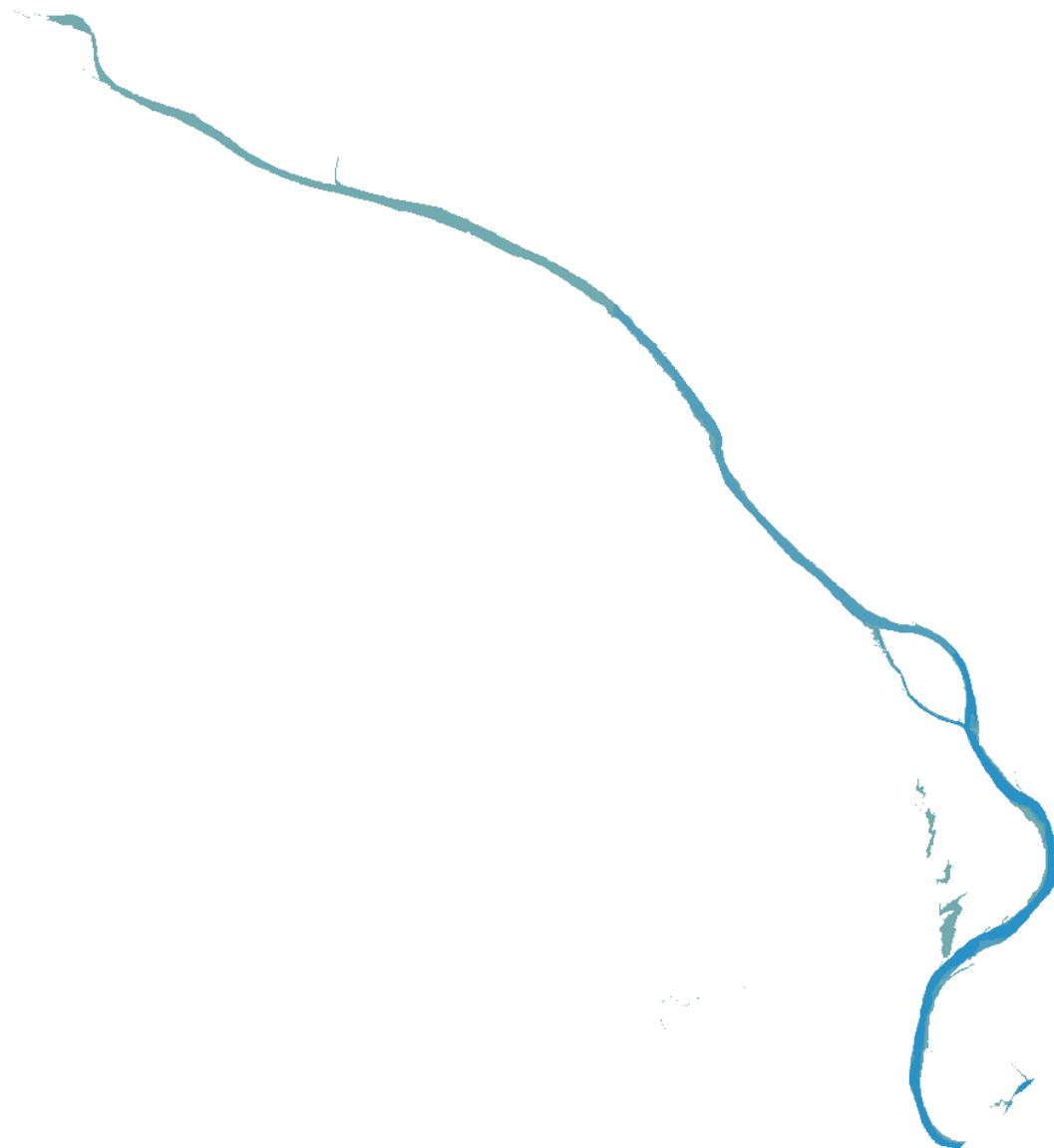
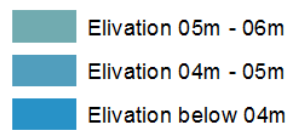


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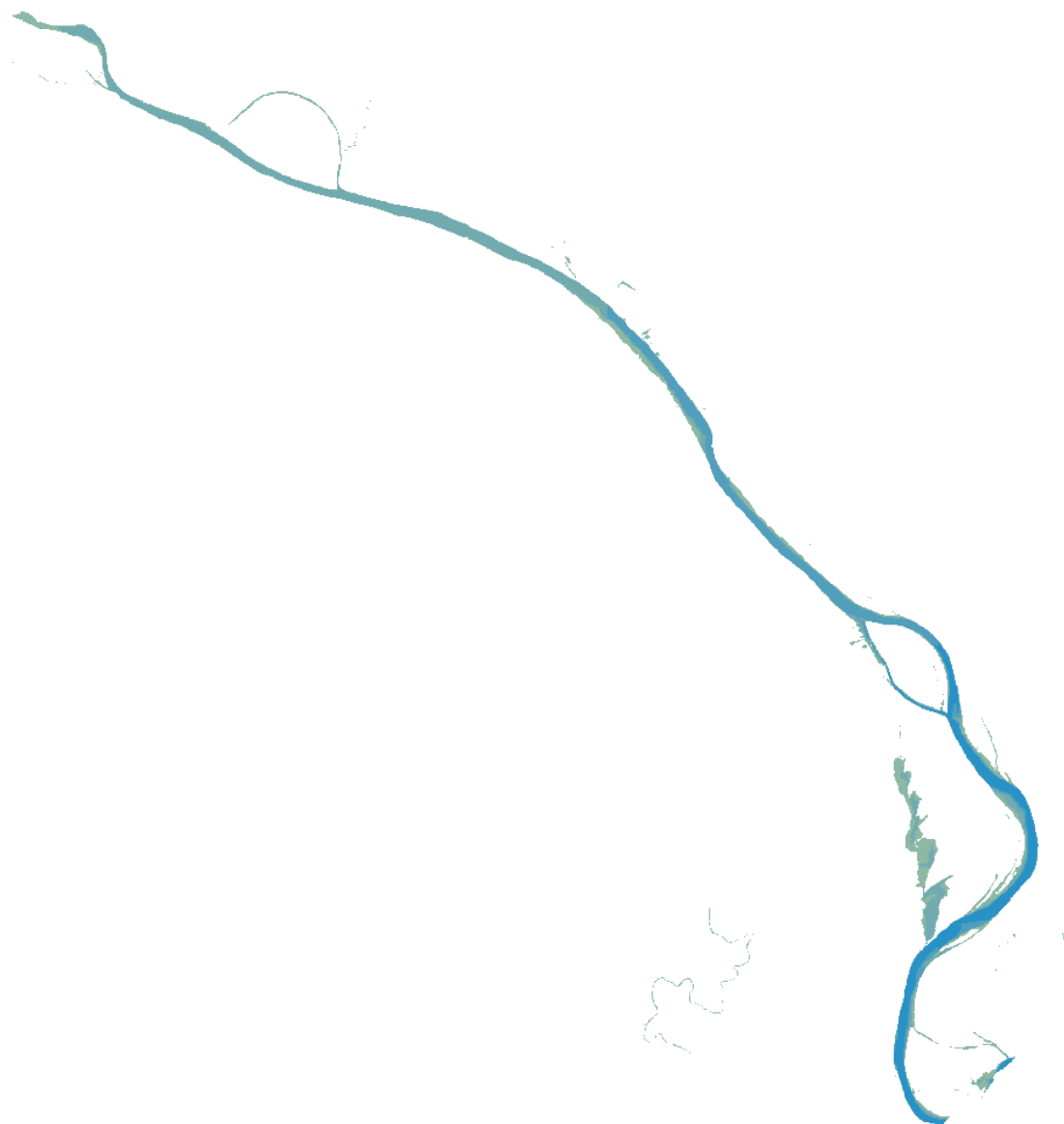
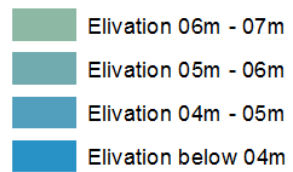
- Elivation 04m - 05m
- Elivation below 04m



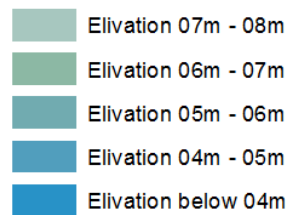
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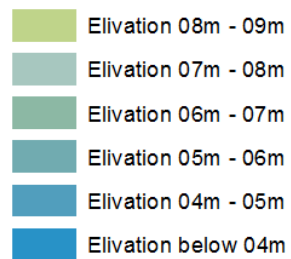
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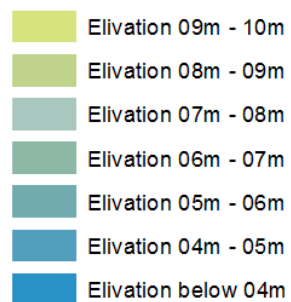
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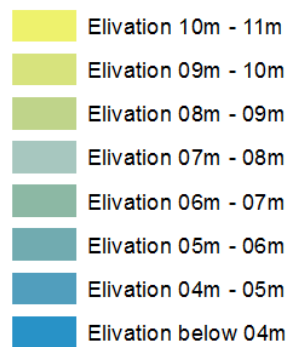
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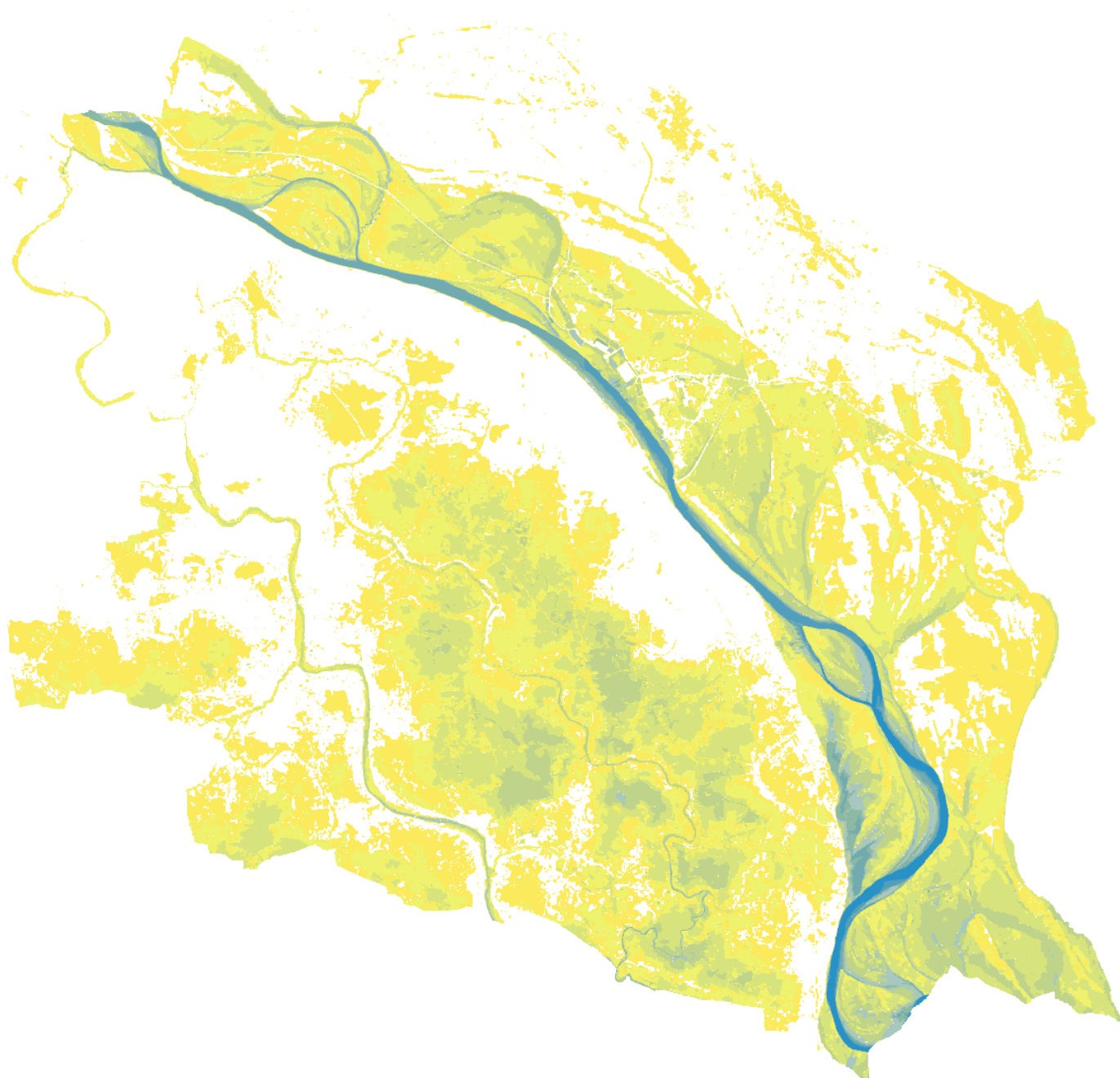
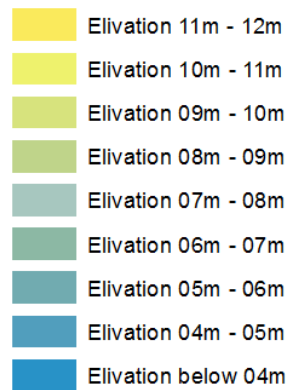
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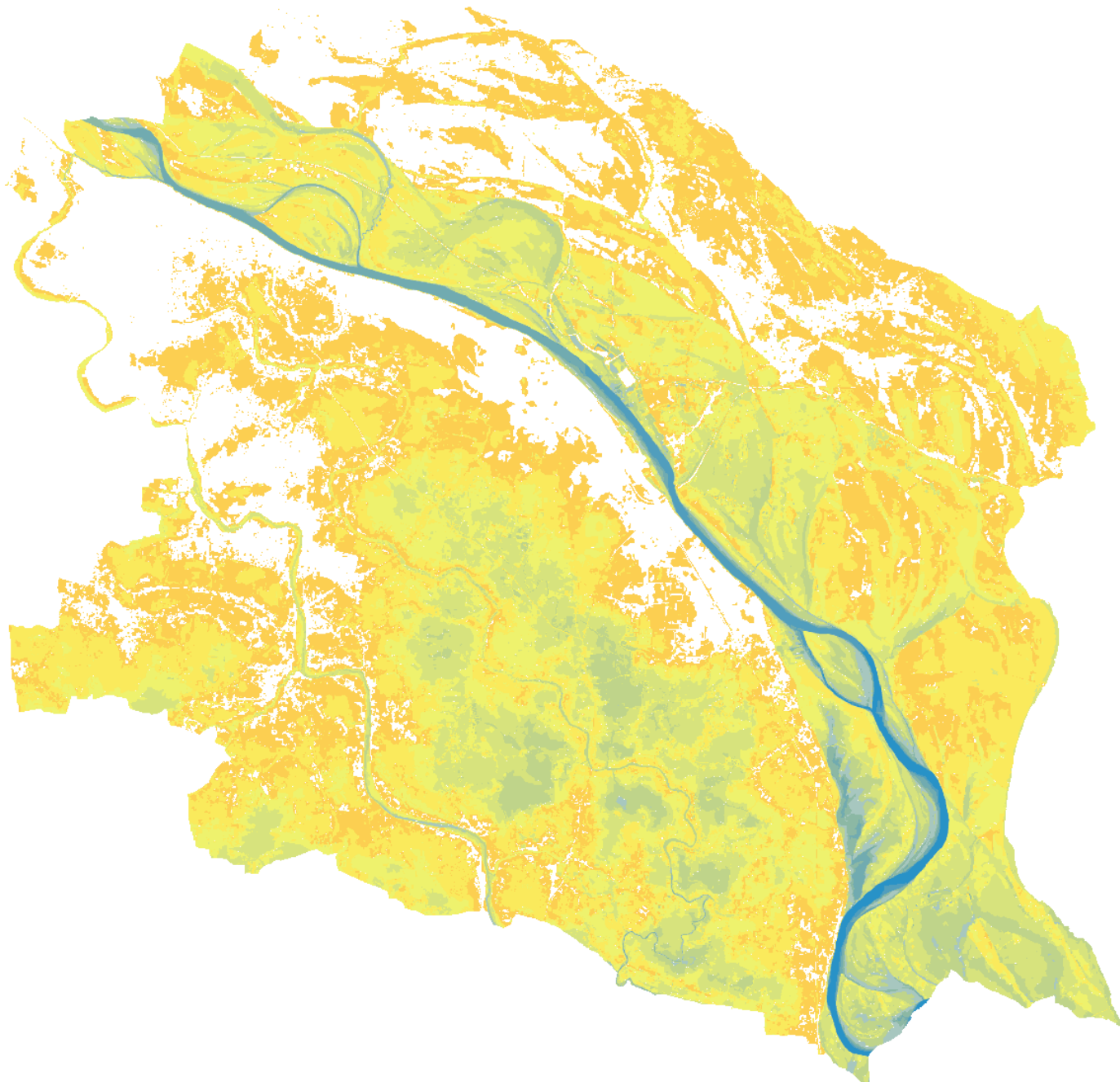
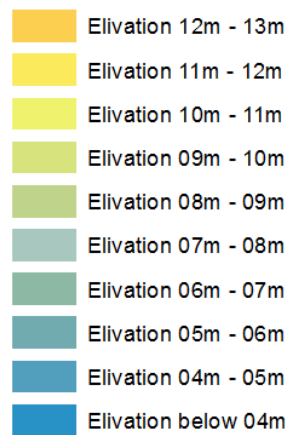
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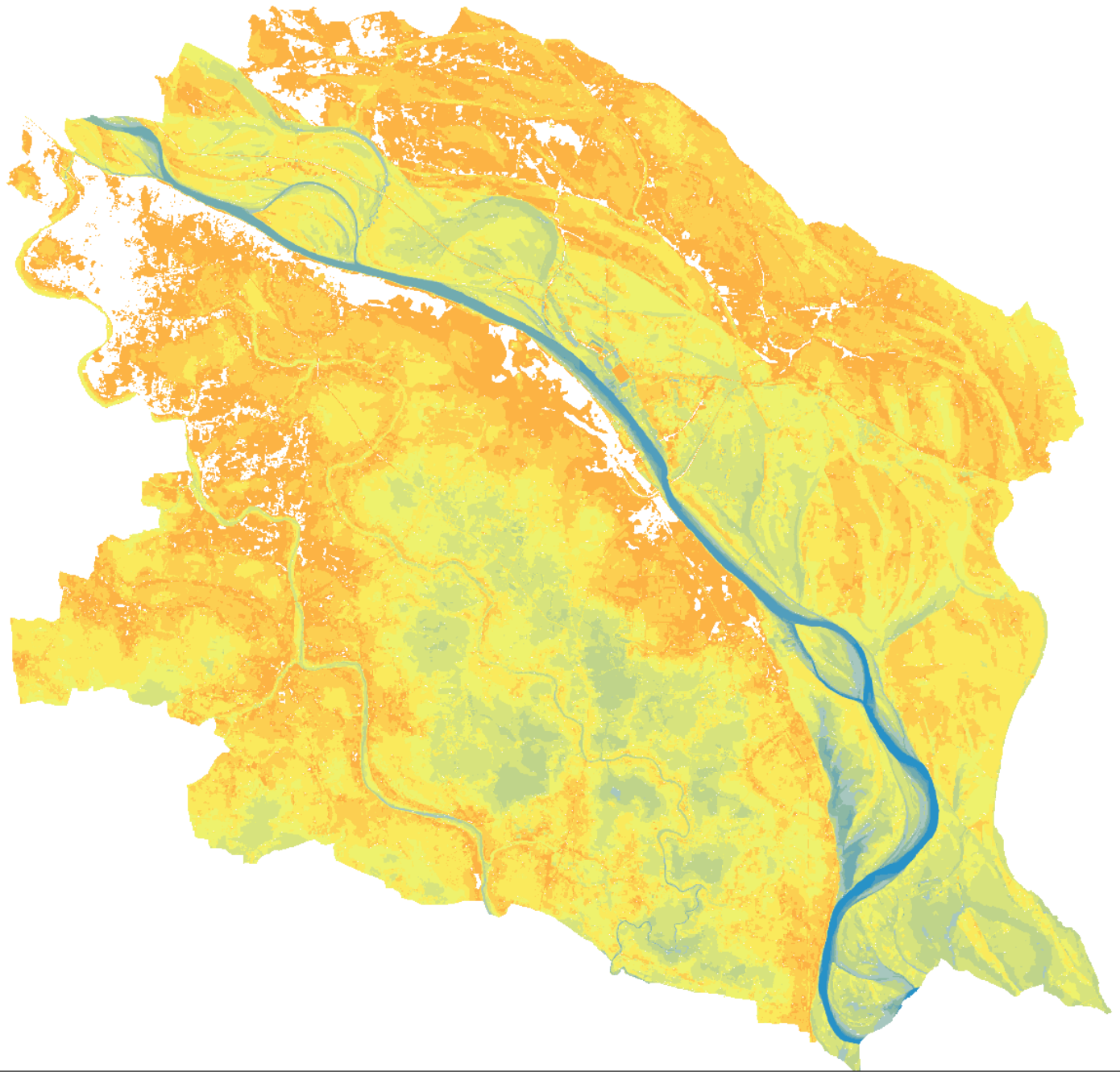
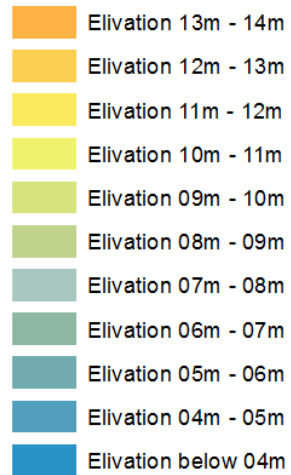
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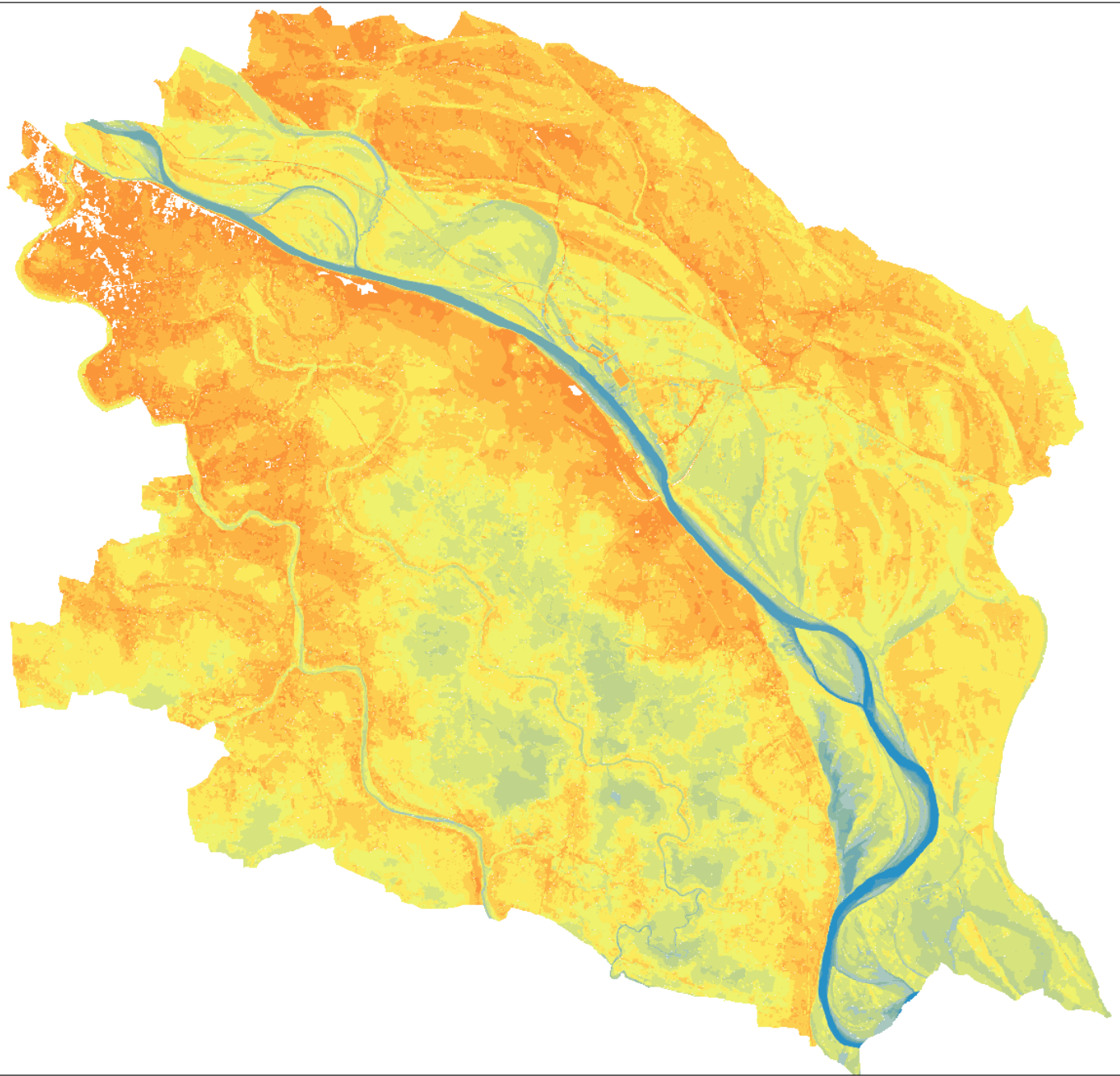
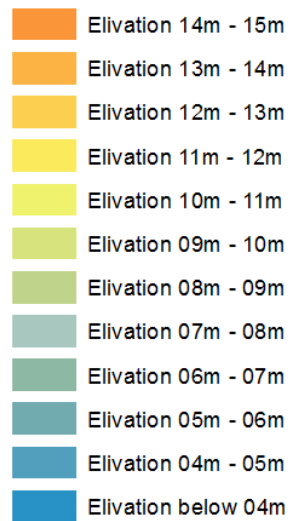
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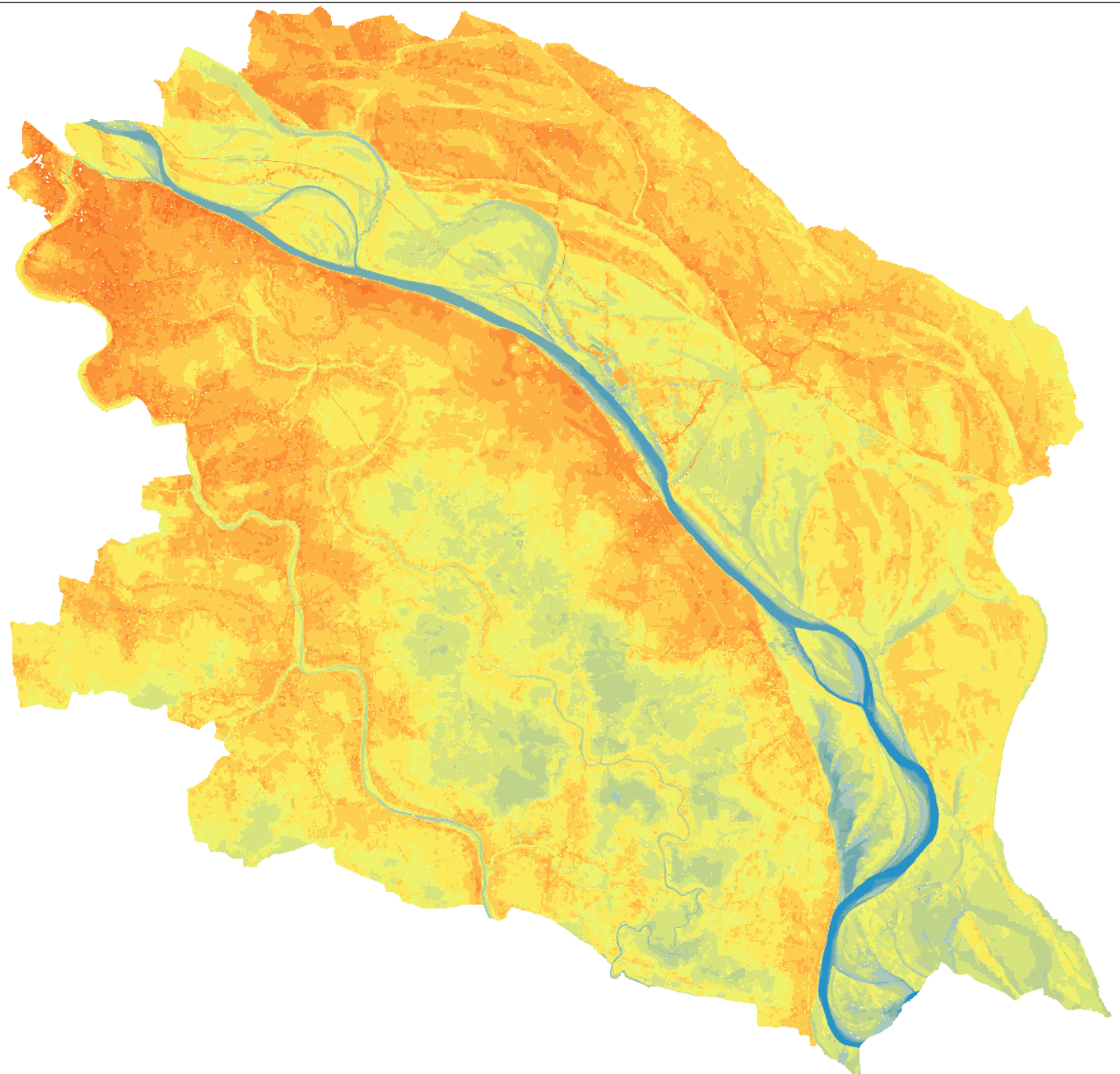
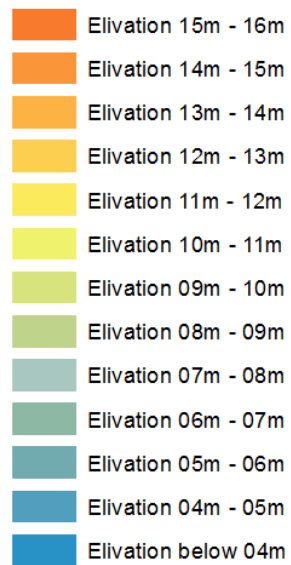
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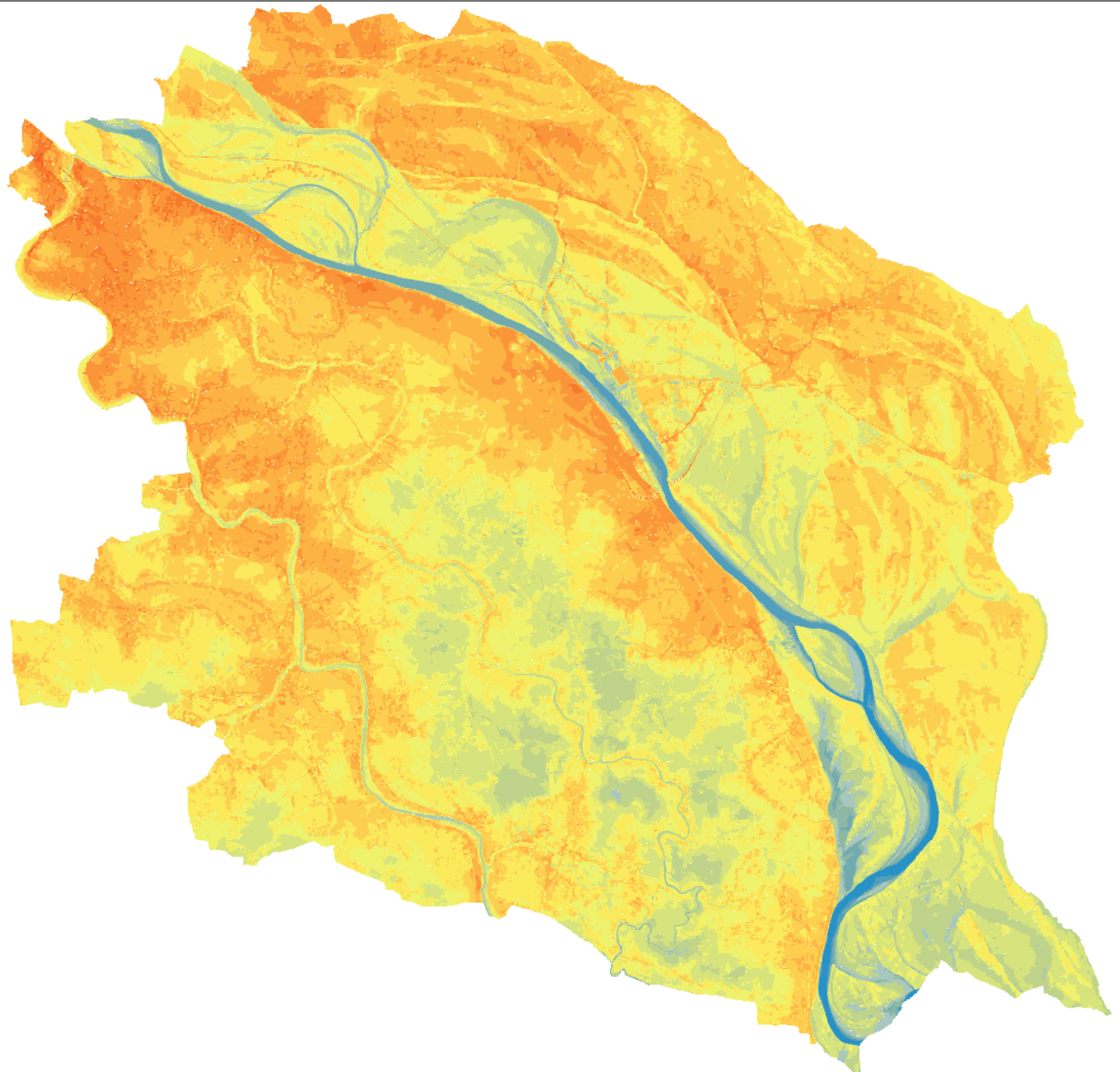
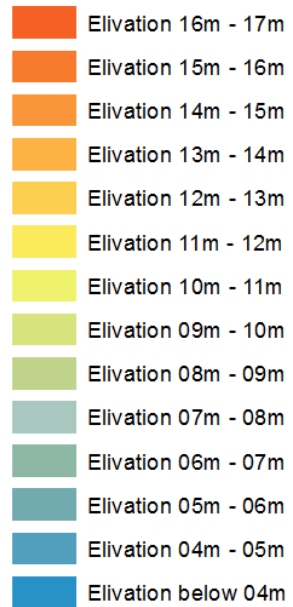
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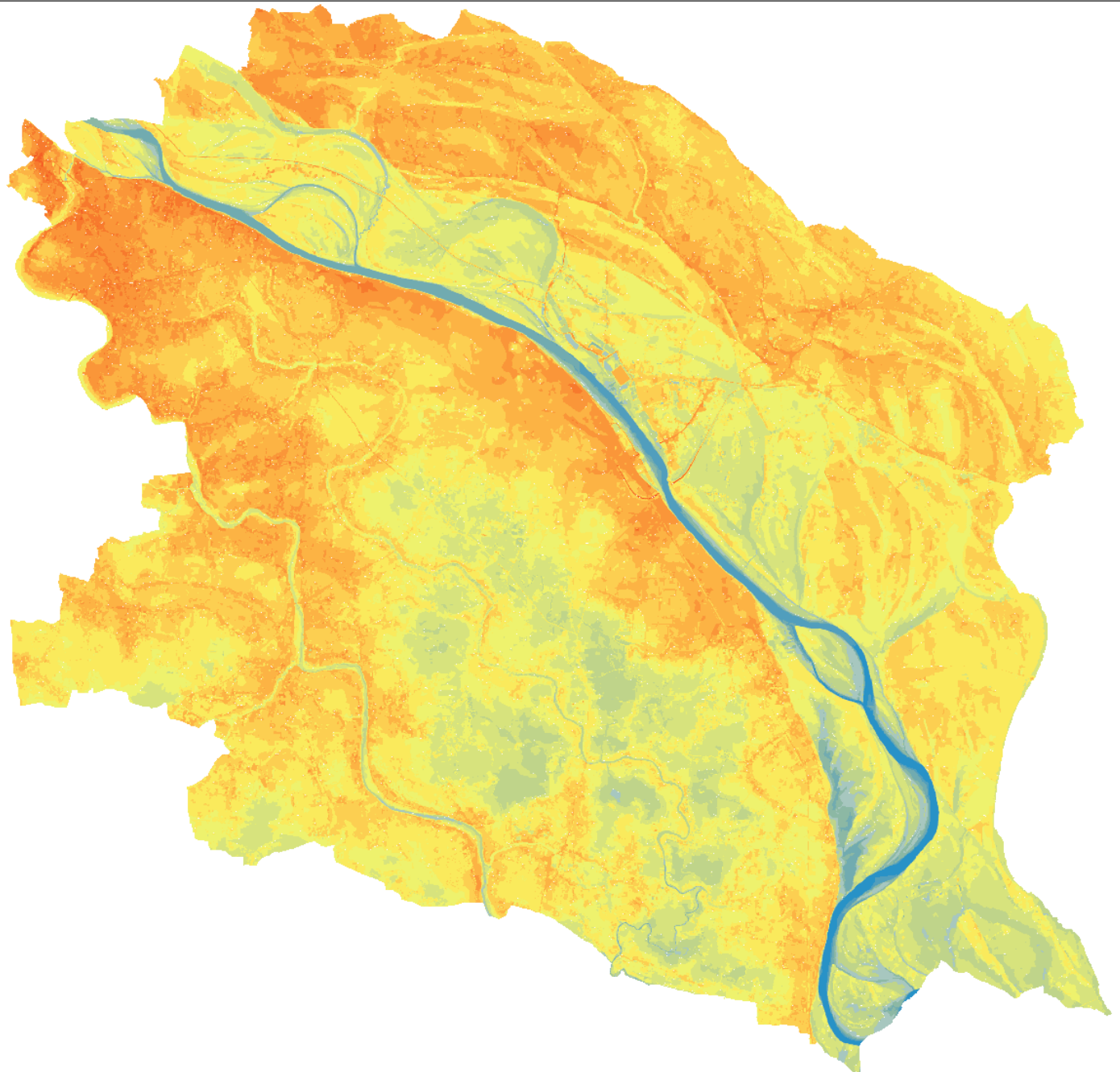
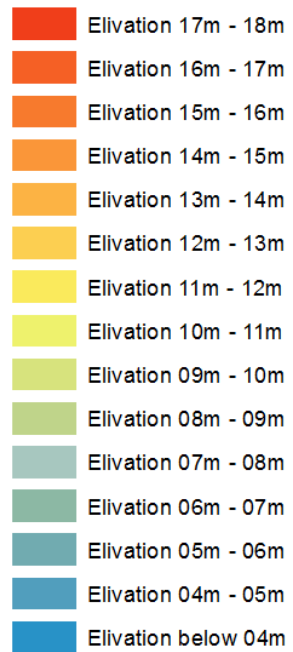
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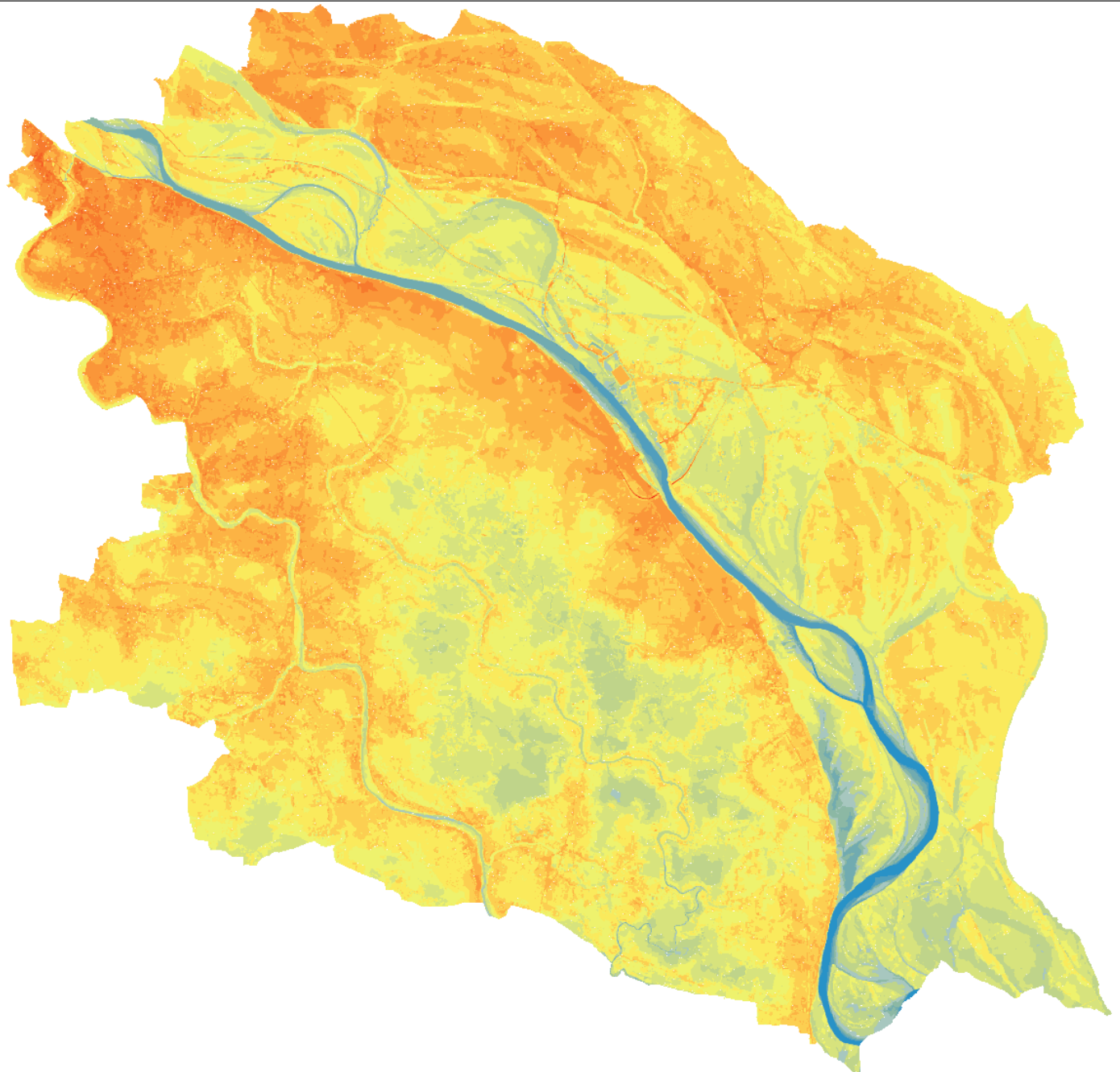
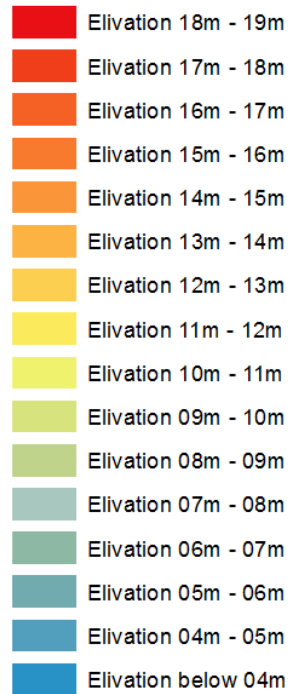
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Legend

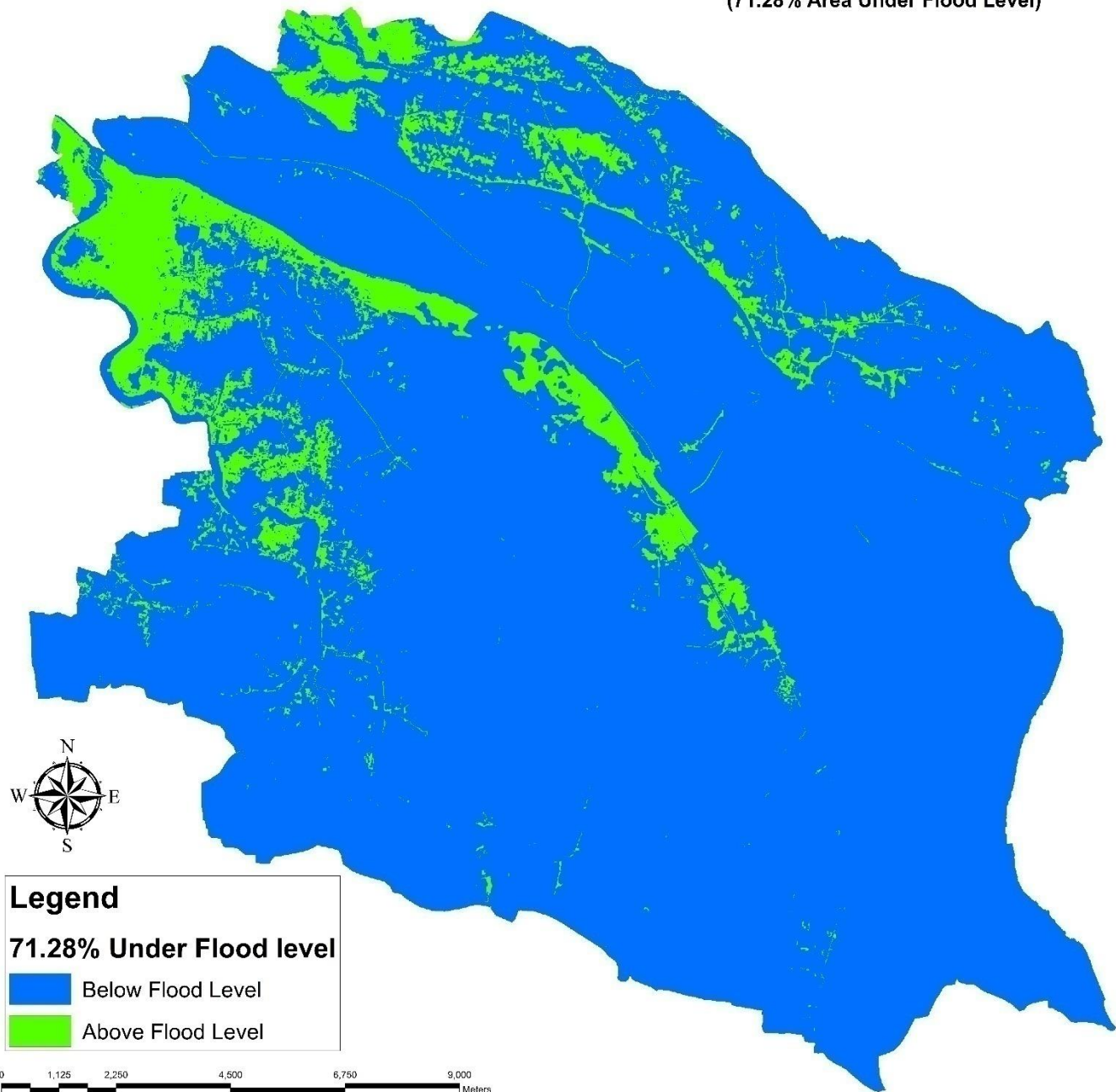


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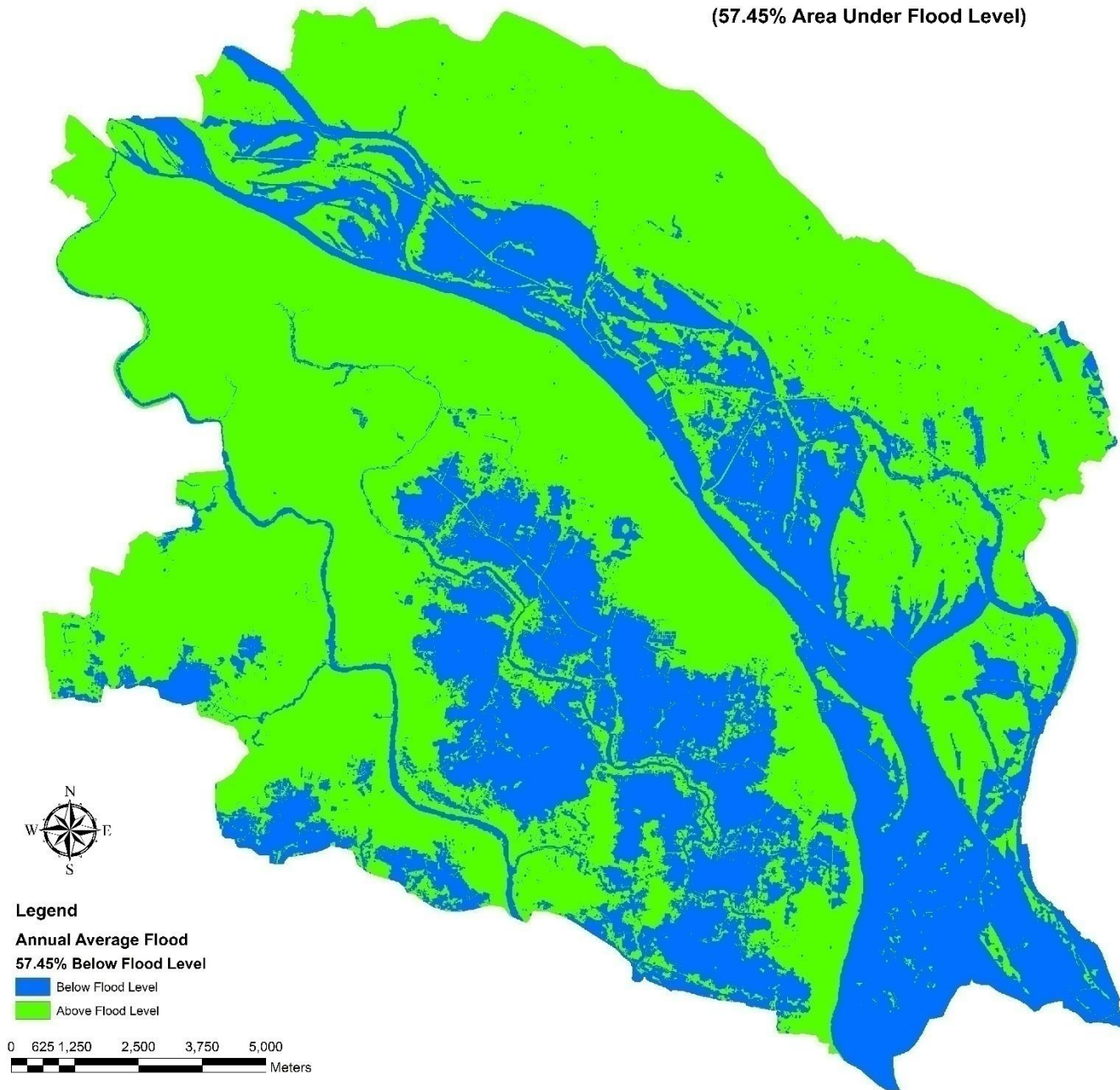
Flood Water Level Map:1988

(71.28% Area Under Flood Level)



Annual Average Flood Map (Inundation Map)

(57.45% Area Under Flood Level)

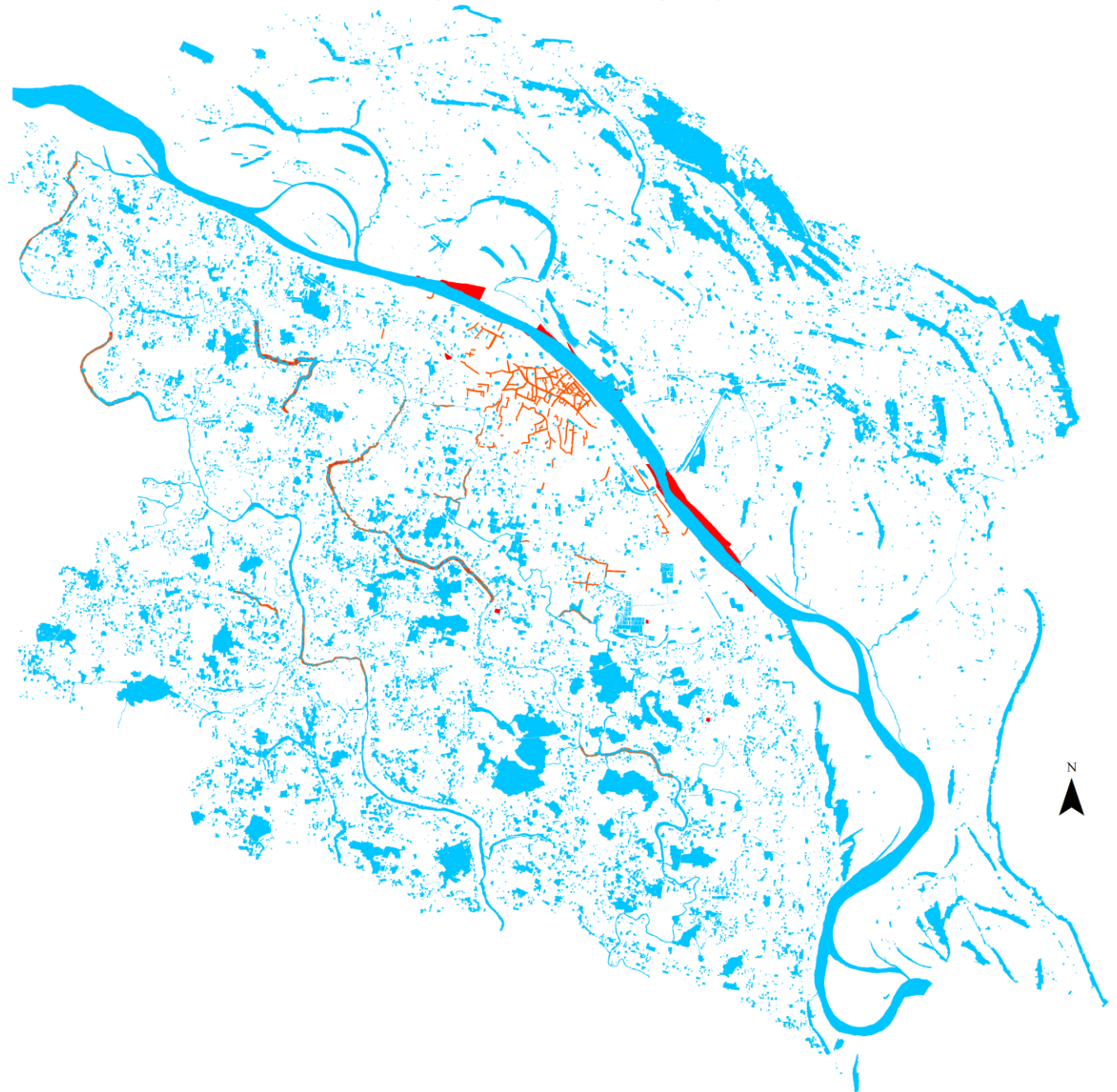


Preparation of Drainage Database

- 1 Prepare Drainage Map from Field Survey By Using RTK GPS and Total Station and GIS Software
- 2 Identify Missing link of Khal from Mauza Map
- 3 Identify missing link from DEM
- 4 Prepare Drainage Map for Print
- 5 Detailed Field survey for Drainage and flow Direction
- 6 Identify flow Direction
- 7 Define Catchment Area for Drainage
- 8 Edit Drain database
- 9 Prepare Flow Direction Map
- 10 Prepare Catchment Area Map and Print
- 11 Re Edit by Expert
- 12 Re prepare Catchment Map and Print
- 13 Finalize Catchment Area and prepare Database
- 14 Calculate rainfall data
- 15 Link Rainfall data and Analyze
- 16 Prepare Drain junction
- 17 Analyze Drainage data and prepare Flooding node By Using Pcswmm Software
- 18 Find Flooding Area
- 19 Finalize Drainage Map

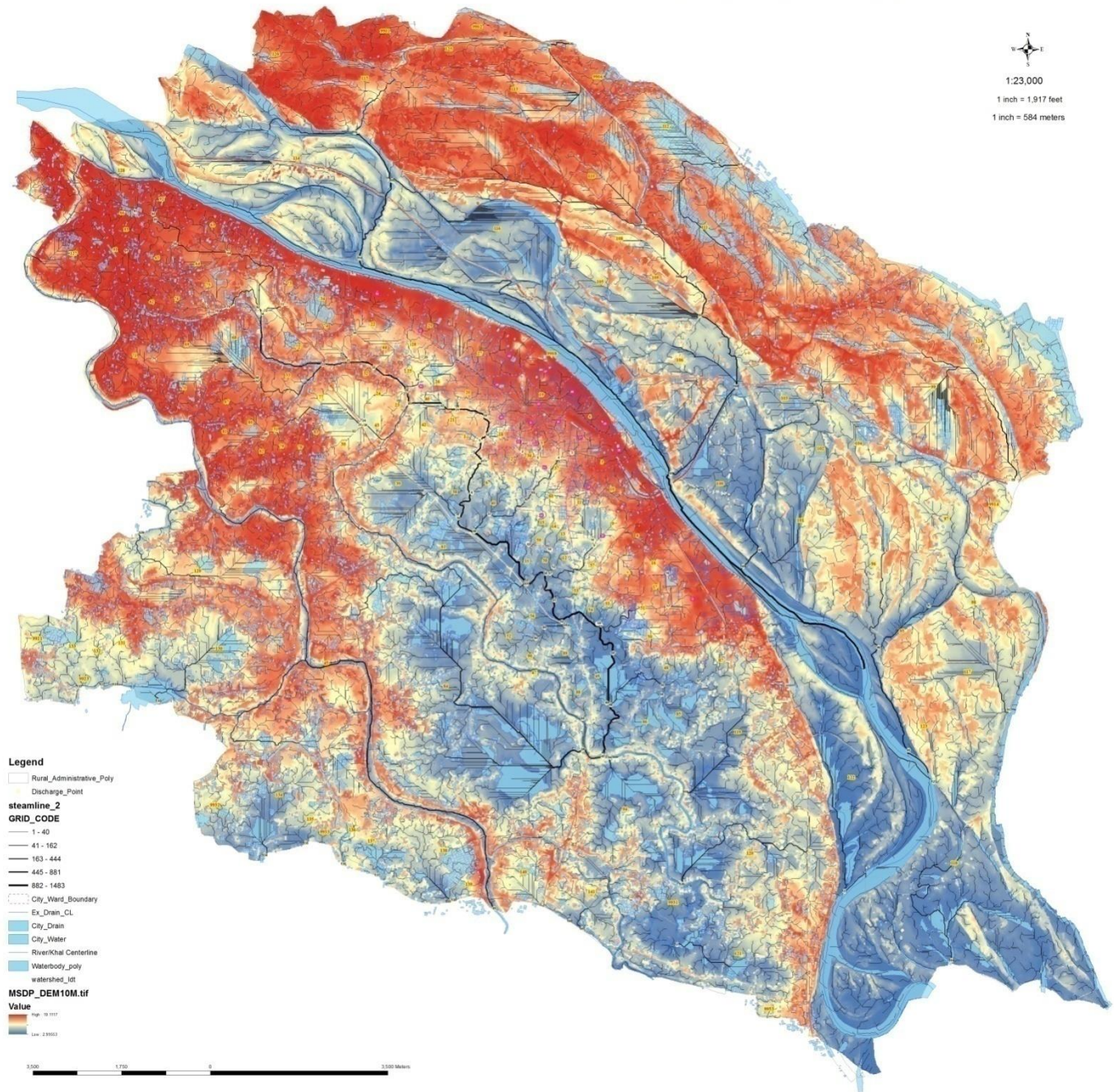
Missing Link of Drainage System Identified from Mauza

**Red Colour
are Marked
as Missing
link**



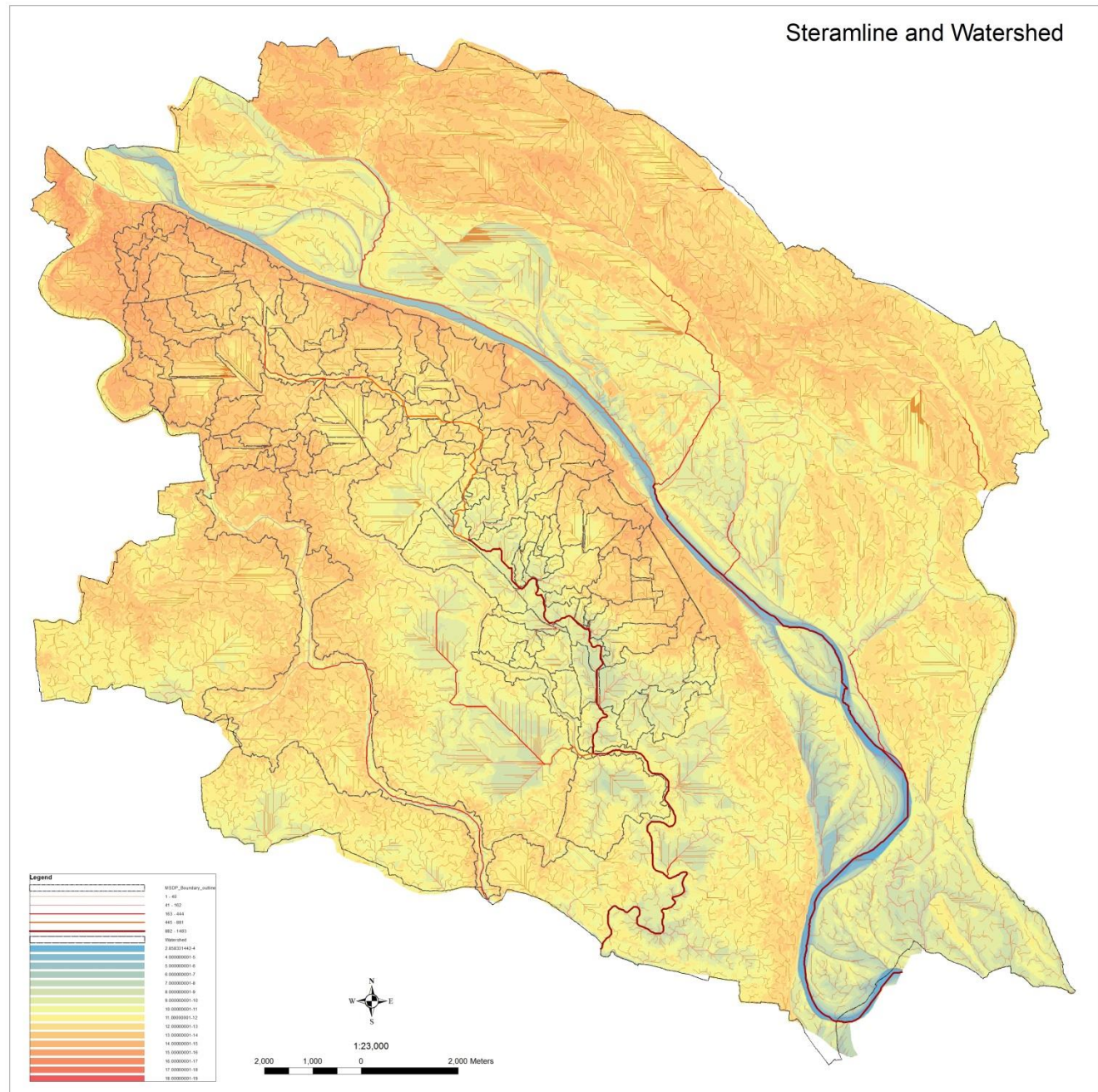
Water Flow Network

Flow Network Map (Draft) of MSDP Area



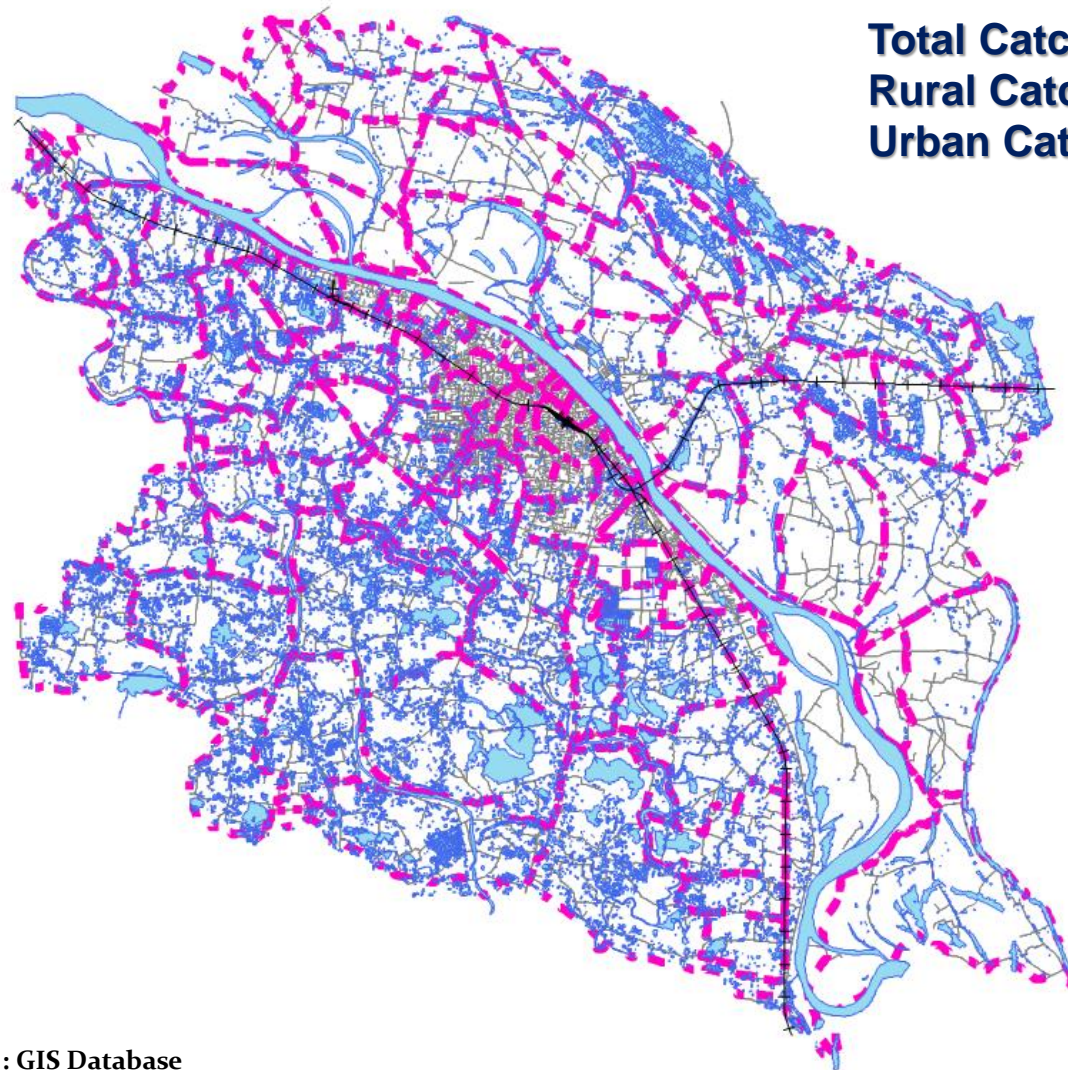
Streamline and Watershed

Steramline and Watershed

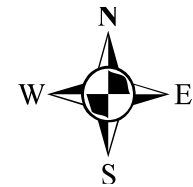


Delineation of Drainage Catchments for Both Urban & Rural Area

MSDP Area has been Divided into Different Catchments



Total Catchment No : 123
Rural Catchment No : 86
Urban Catchment No : 37

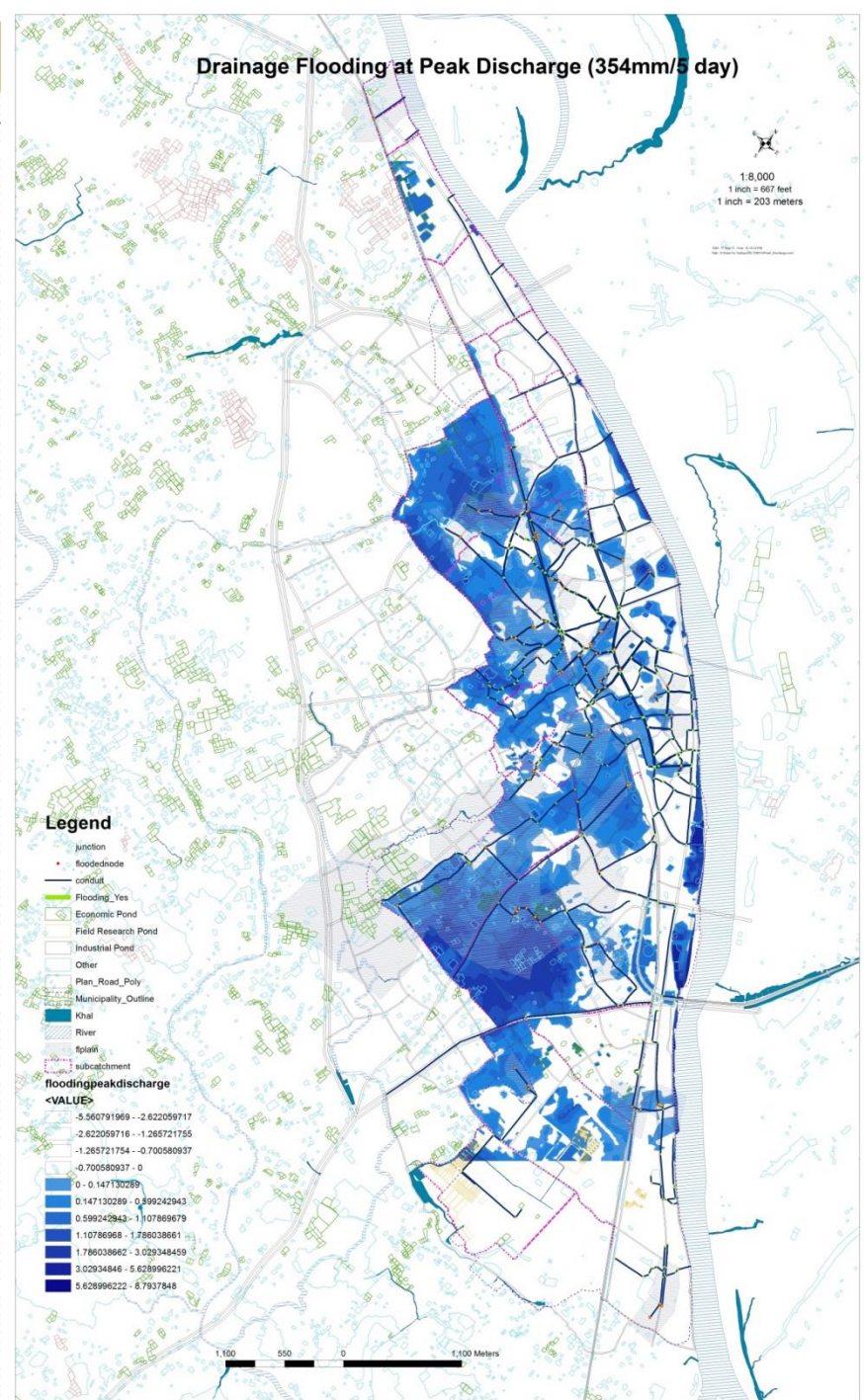


Legend

- Railway Tracks
- Waterbody
- Catchment_Area

Flooding Peak Discharge Area

- 354mm rainfall/5 days
- By using PCSWMM Software



Preparation of Eco Sensitive Land Zoning Map

1	Prepare Polygone from DEM According to elevation
2	Re-class Elevation of DEM
3	Prepare Database
4	Classify Elevation
5	Prepare Map and Print
6	Check on Map
7	Edit Map and Re-class
8	Finalize Map and Print
9	Add Missing link of Drainage From stream line generated from DEM
10	Classify Waterbody According to Use
11	Add Classified Waterbody
12	Demark Eco Sensitive broad Land Zoning and prepare Map
13	Print Map
14	Finalize Eco Sensitive broad Land Zoning

Ecological Network of Proposed Planning Area



1:23,000

1 inch = 584 meters

1 inch = 1,917 feet



Legend

Drainage Id

- Boundary
- Drain
- Direction
- Drainage Buffer_100m

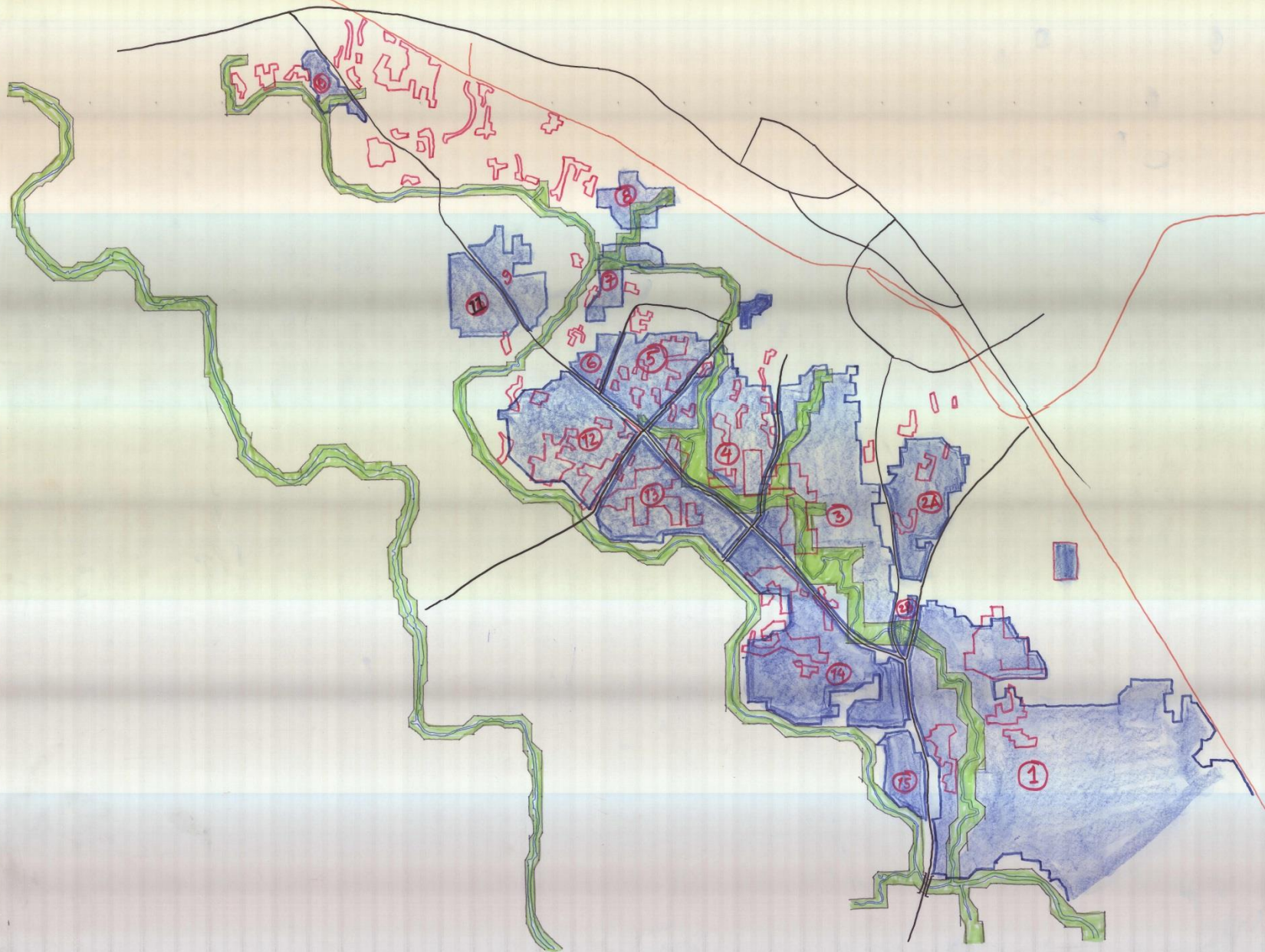
ECOLOGICAL
NETWORK

Scale: 1:23,000

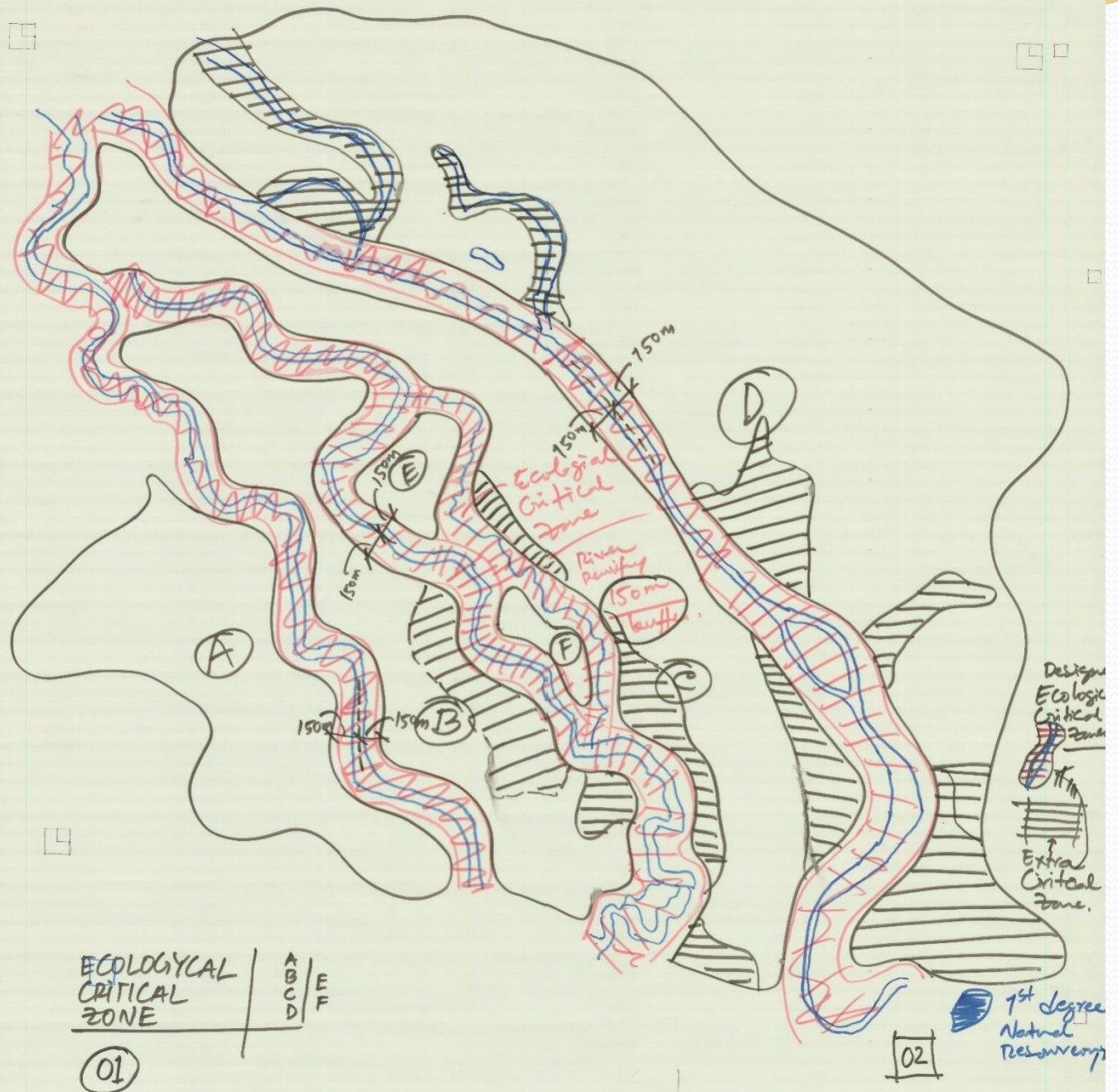
- Drain / Khoh / River
- Drainage Influence Zone 100m
- Drainage Boundary

0 1,250 2,500 5,000 7,500 10,000 Meters

Demarcation of low Land



Ecological Critical Area Identified from a Workshop



Eco Sensitive Buildable Land Identified from a Workshop



Land Classification According to Elevation

1:23,000
1 inch = 1,917 feet
1 inch = 584 meters

0 480 960 1,920 2,880 3,840 Meters

Legend

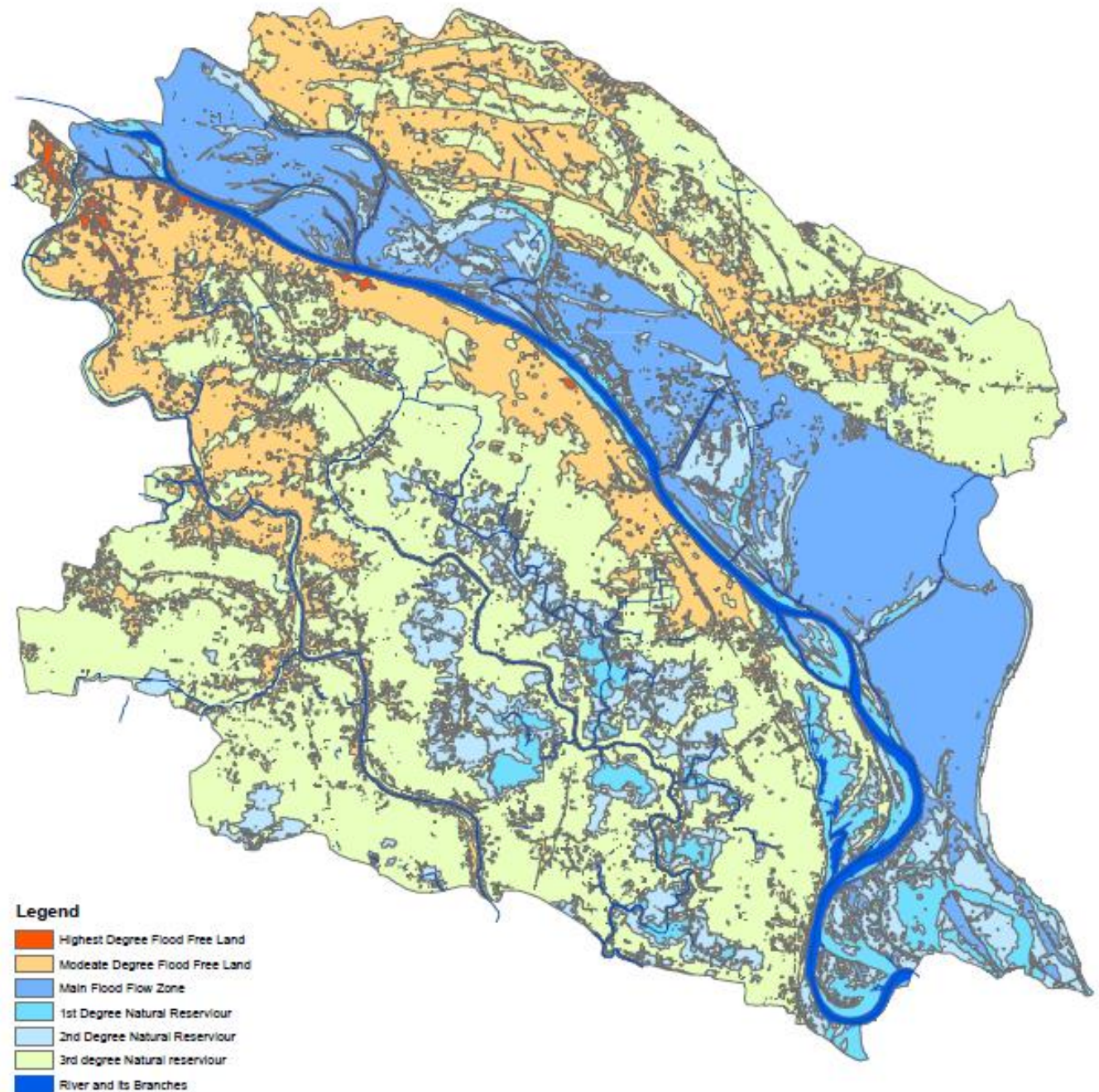
Land Classification

Dark Blue	Brahmaputra River & its Branches (2-8m)	Green	Natural Drainage Zone (11-12m)
Blue	1st Degree Natural Reserviour (8-9m)	Yellow	Natural Drainage Sensitive Zone (12-13m)
Light Blue	2nd Degree Natural Reserviour (9-10m)	Orange	3rd Degree Flood Free Land (13-14m)
Light Green	3rd Degree Natural Reserviour (10-11m)	Red	2nd Degree Flood Free Land (14-15m)
		Dark Red	1st Degree Flood Free Land (15-19m)

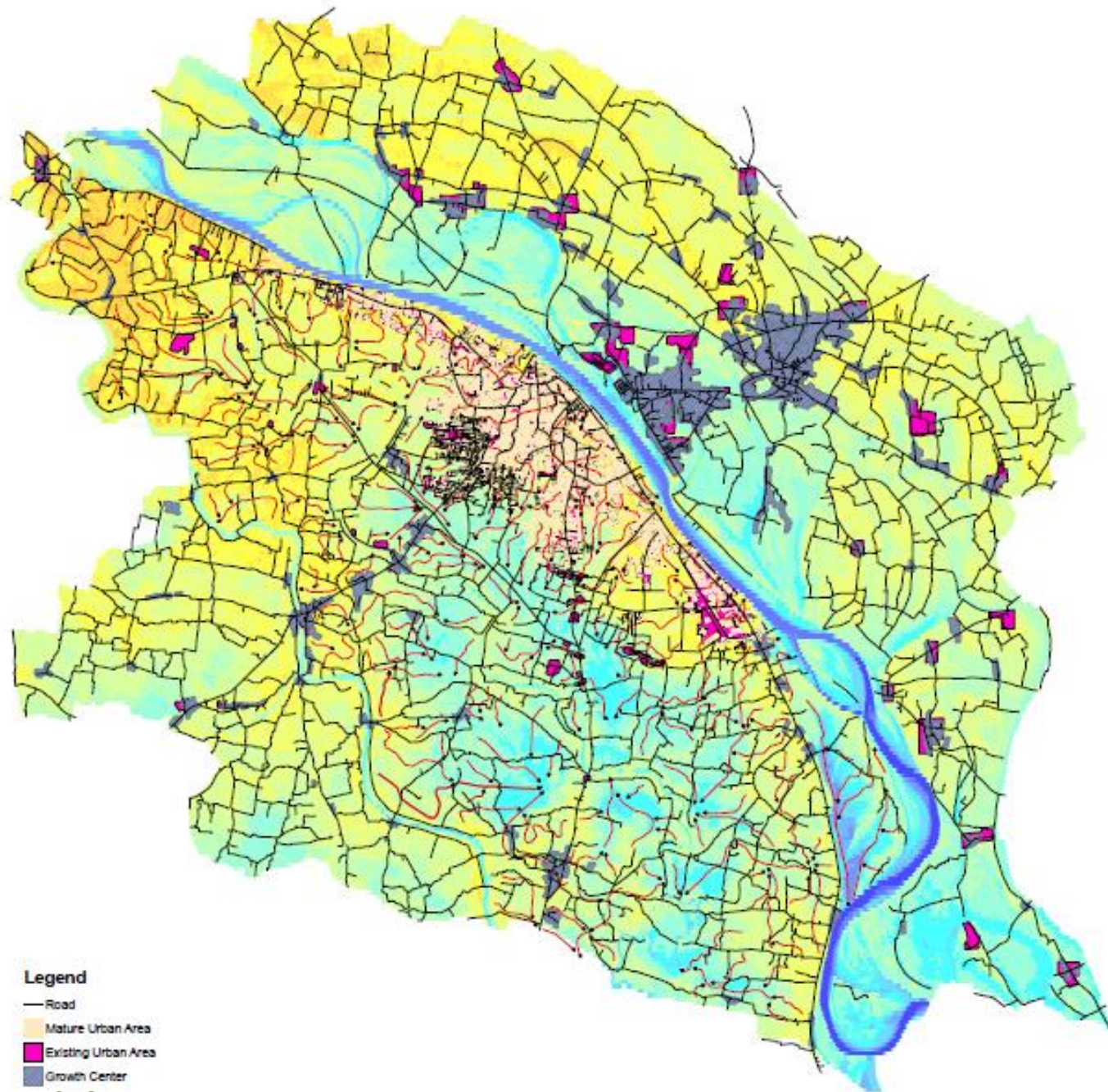
Map is Data for Taskforce for Brahmaputra River Commission (2007) map
Date: 07 Sep 11 Time: 10:41:20 AM

Path: G:\Data For Teachers\By 200512\Structure\Phonemic_Script.mxd
Date: 07.10.15 / Time: 12:41:26 PM

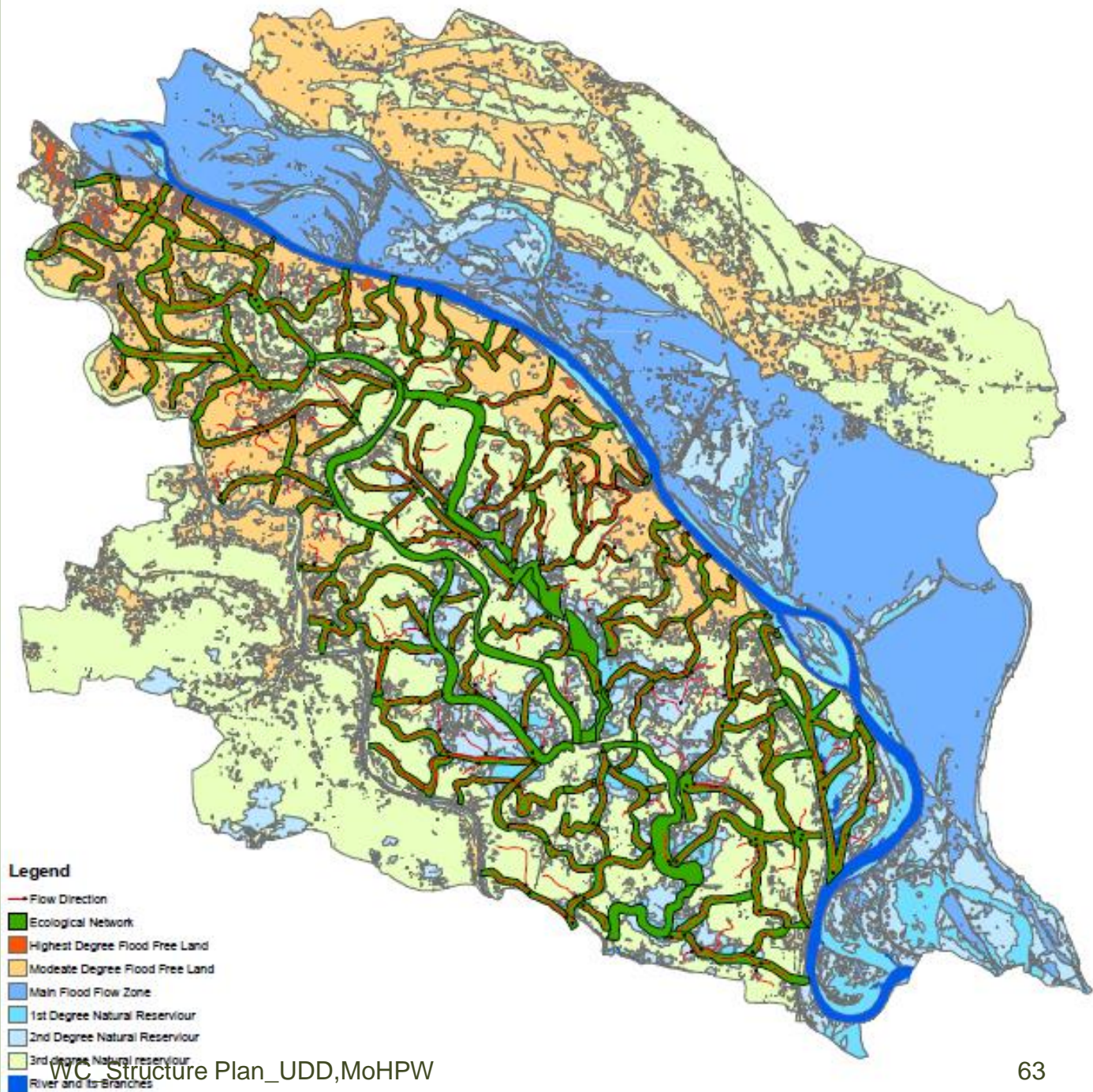
Flood Plain & Location of High Land



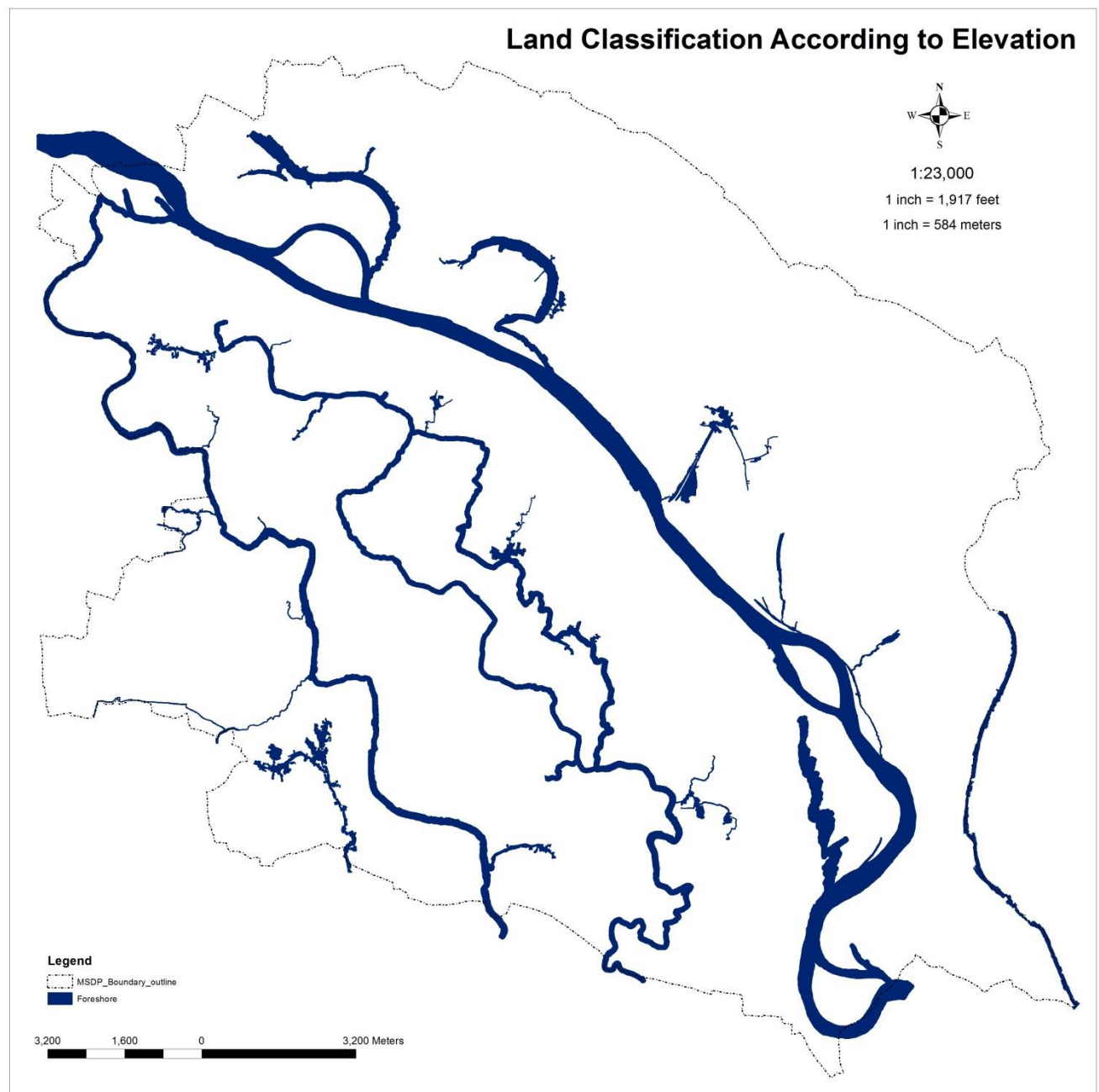
Existing
Urban
area



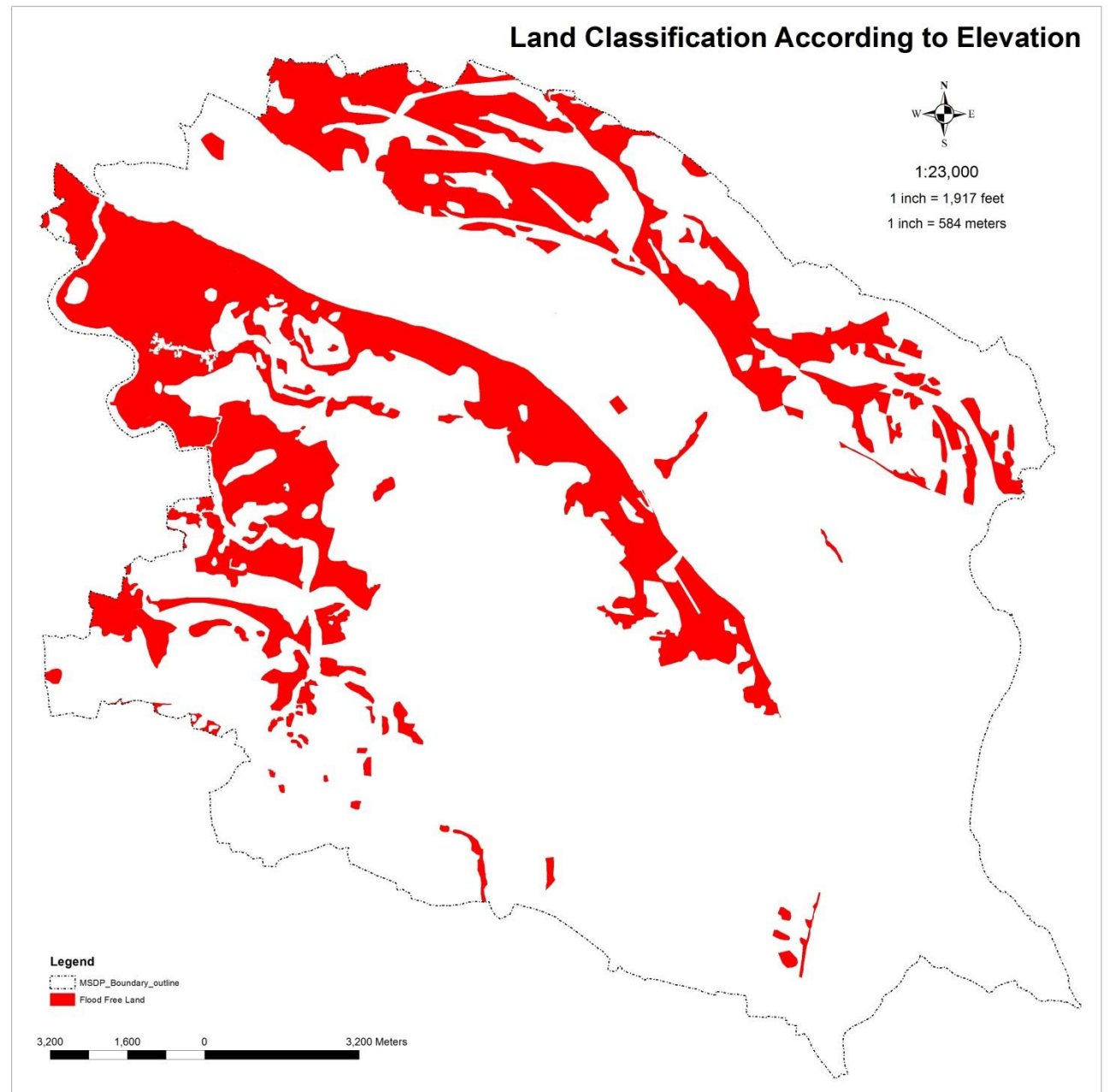
Conserving
the
Ecological
Critical area
within
existing
urban system



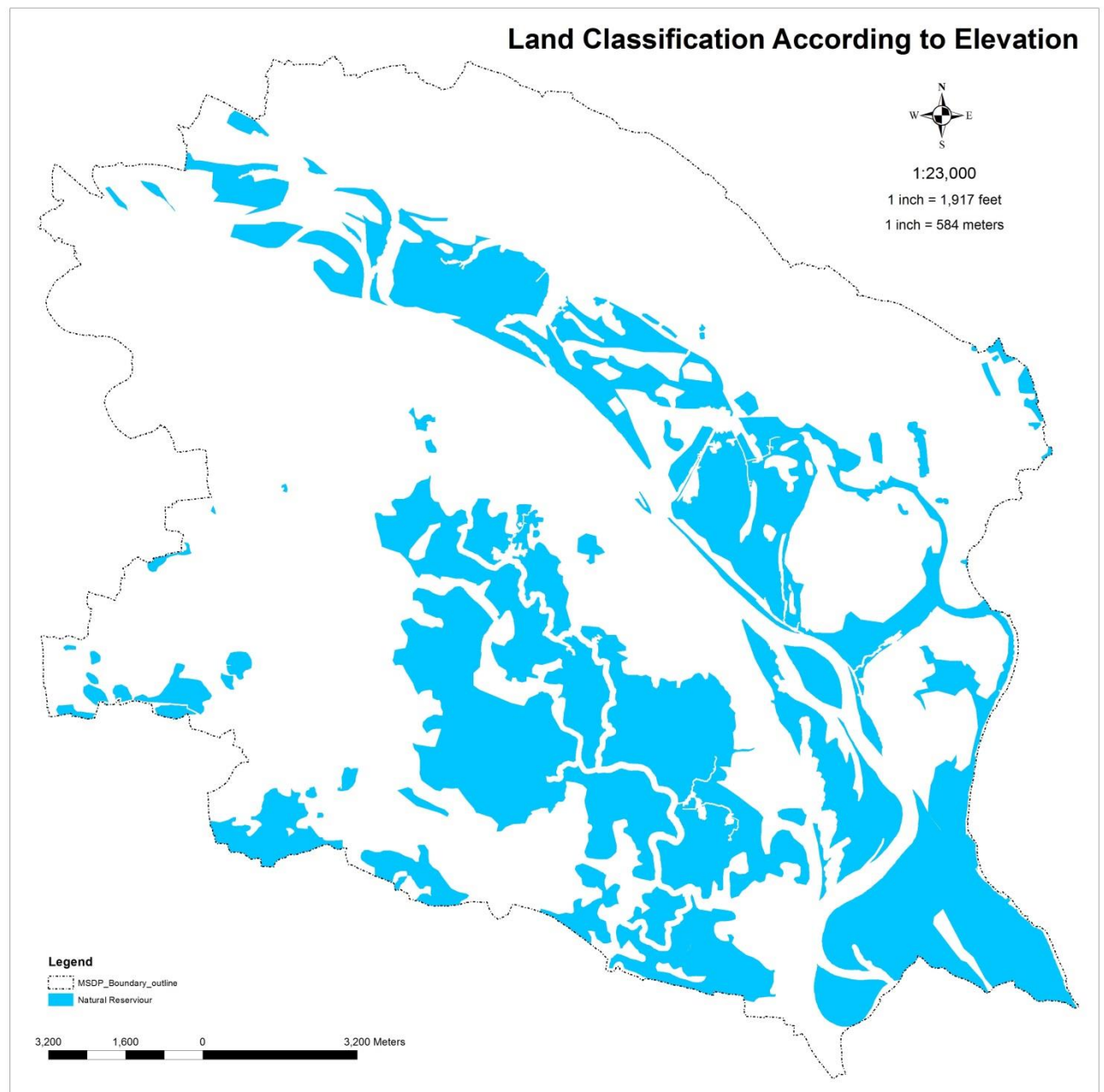
Existing Water Network



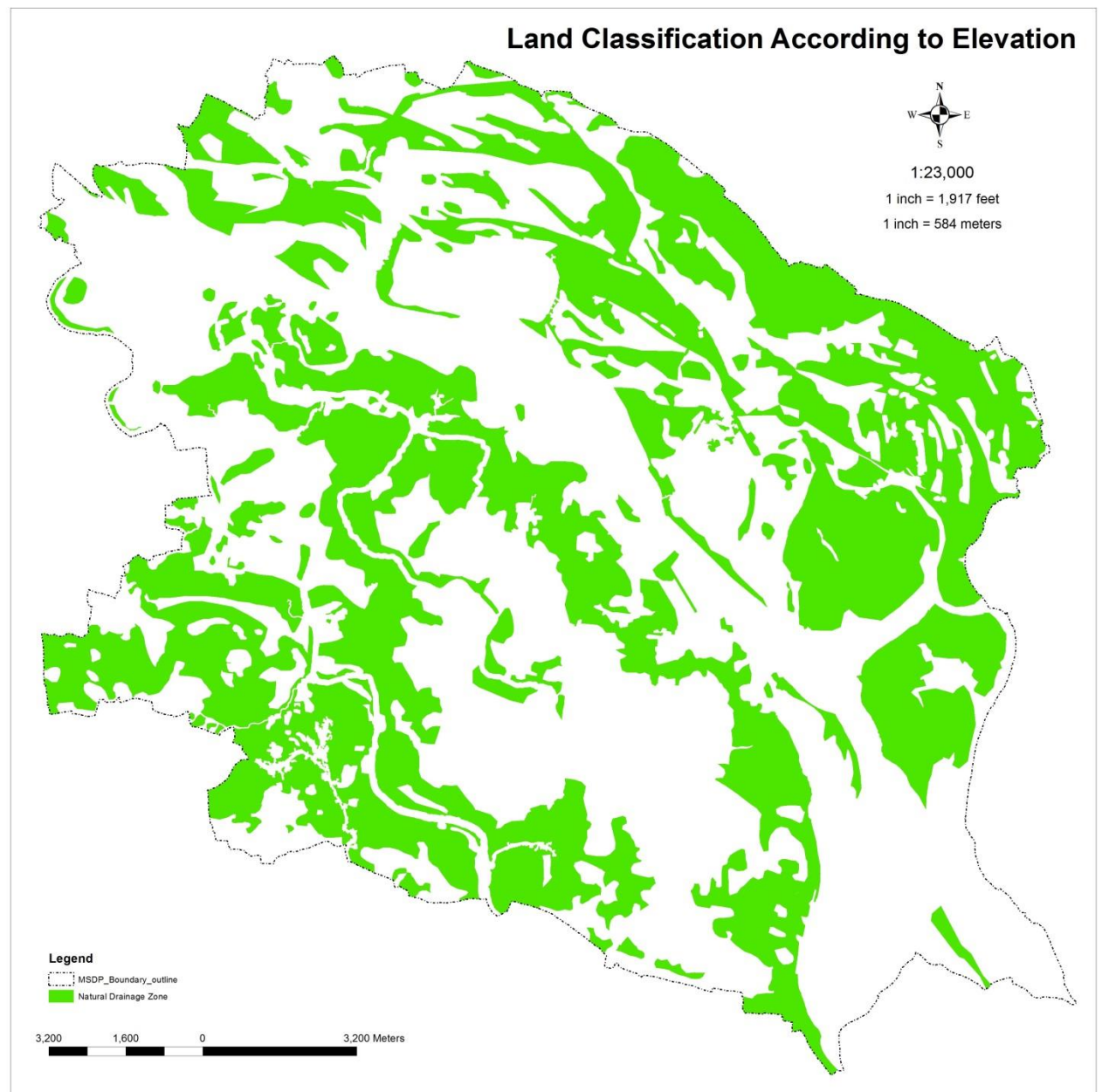
Flood
Free
Land



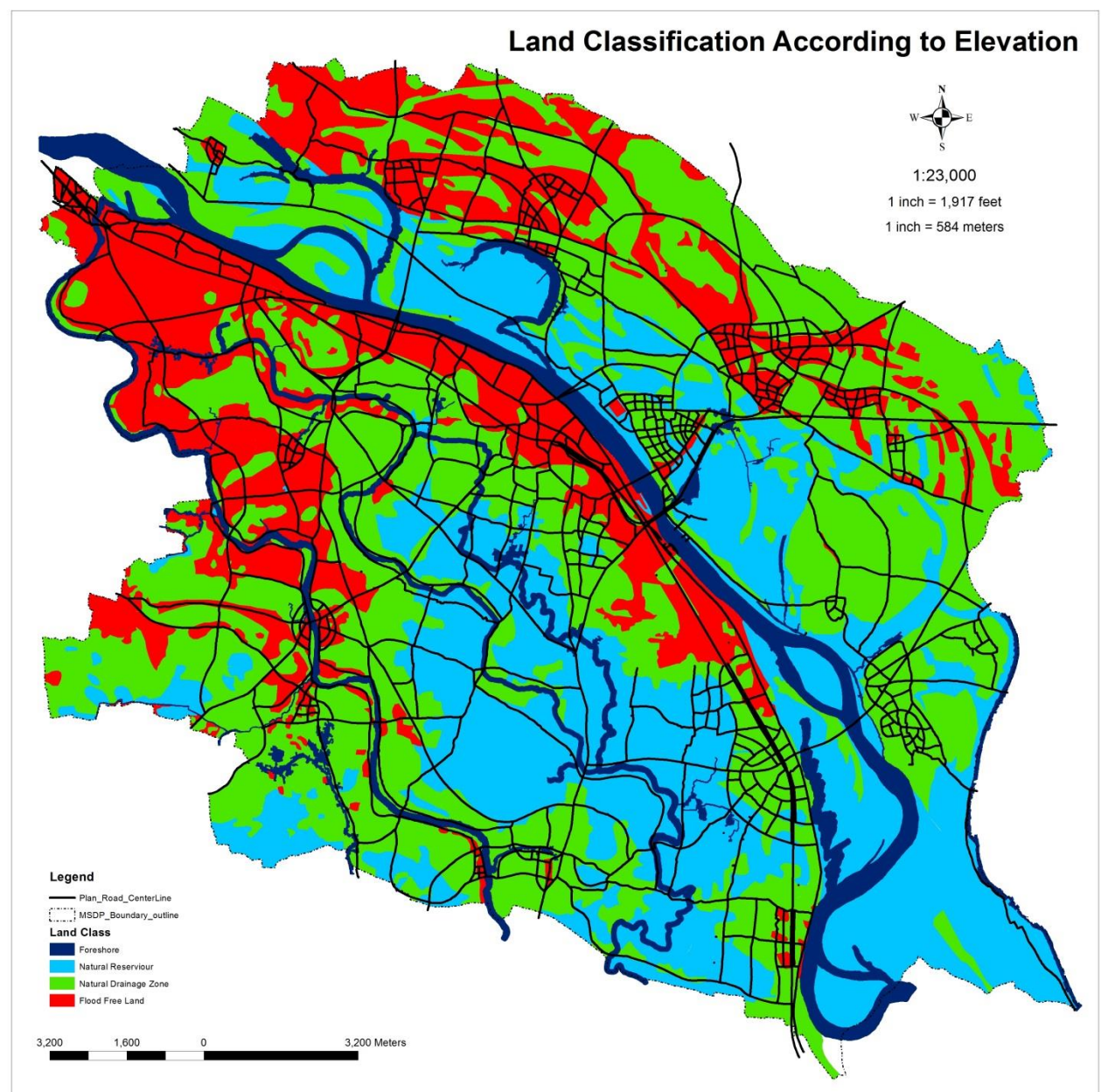
Flood Sensitive land



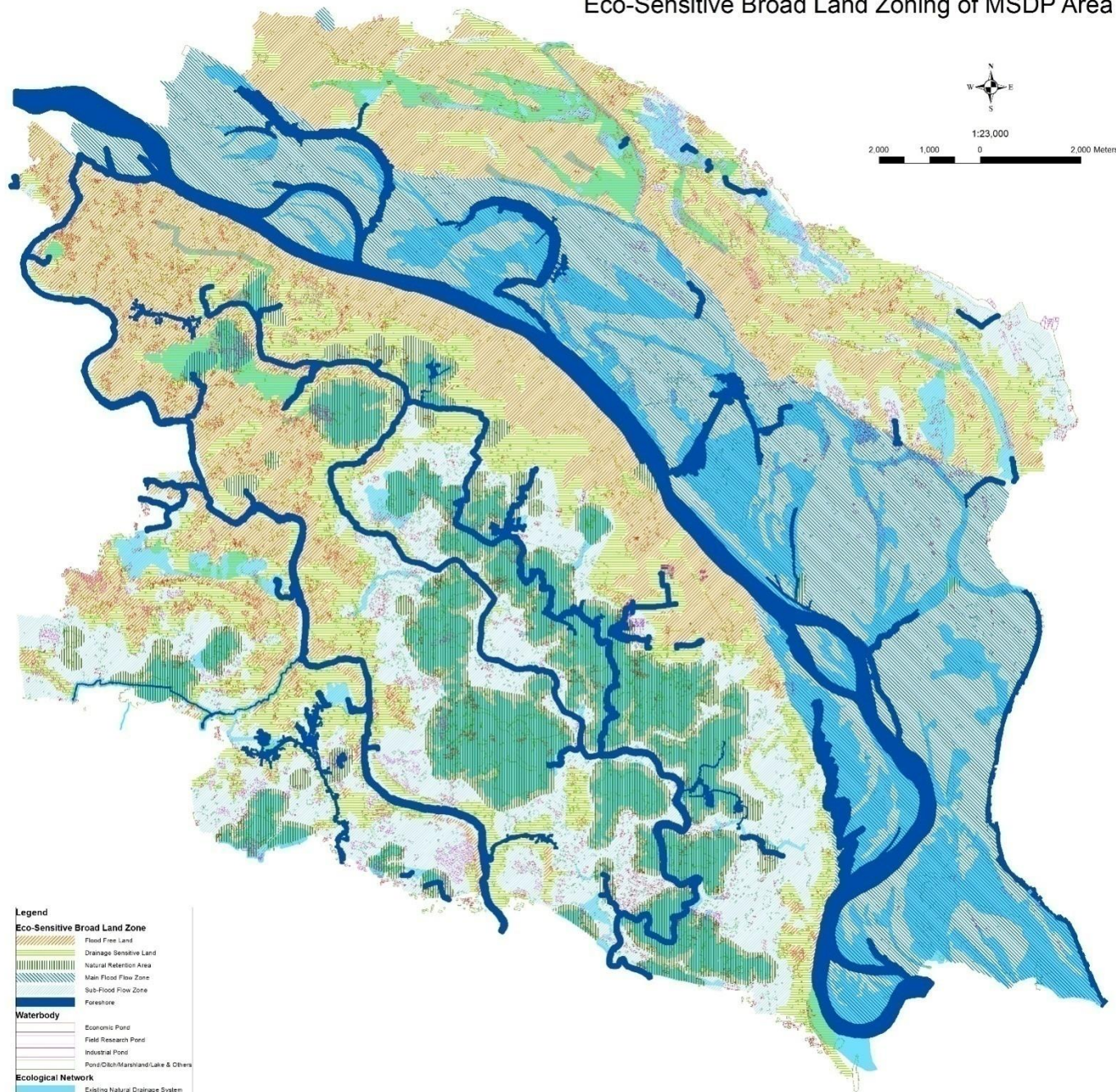
Sensitive Drainage
land



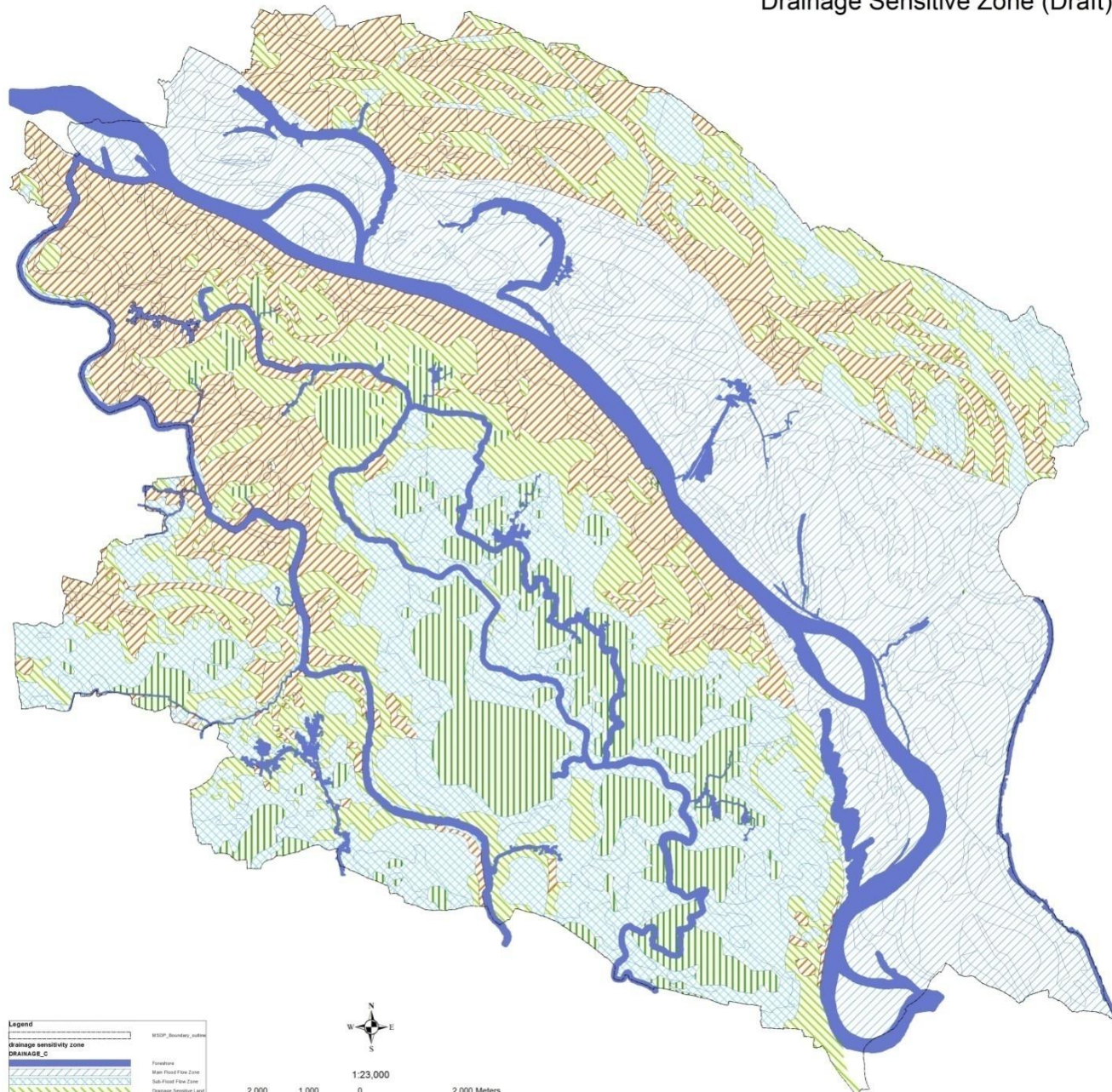
Regional Eco-sensitive landscape



Eco-Sensitive Broad Land Zoning of MSDP Area



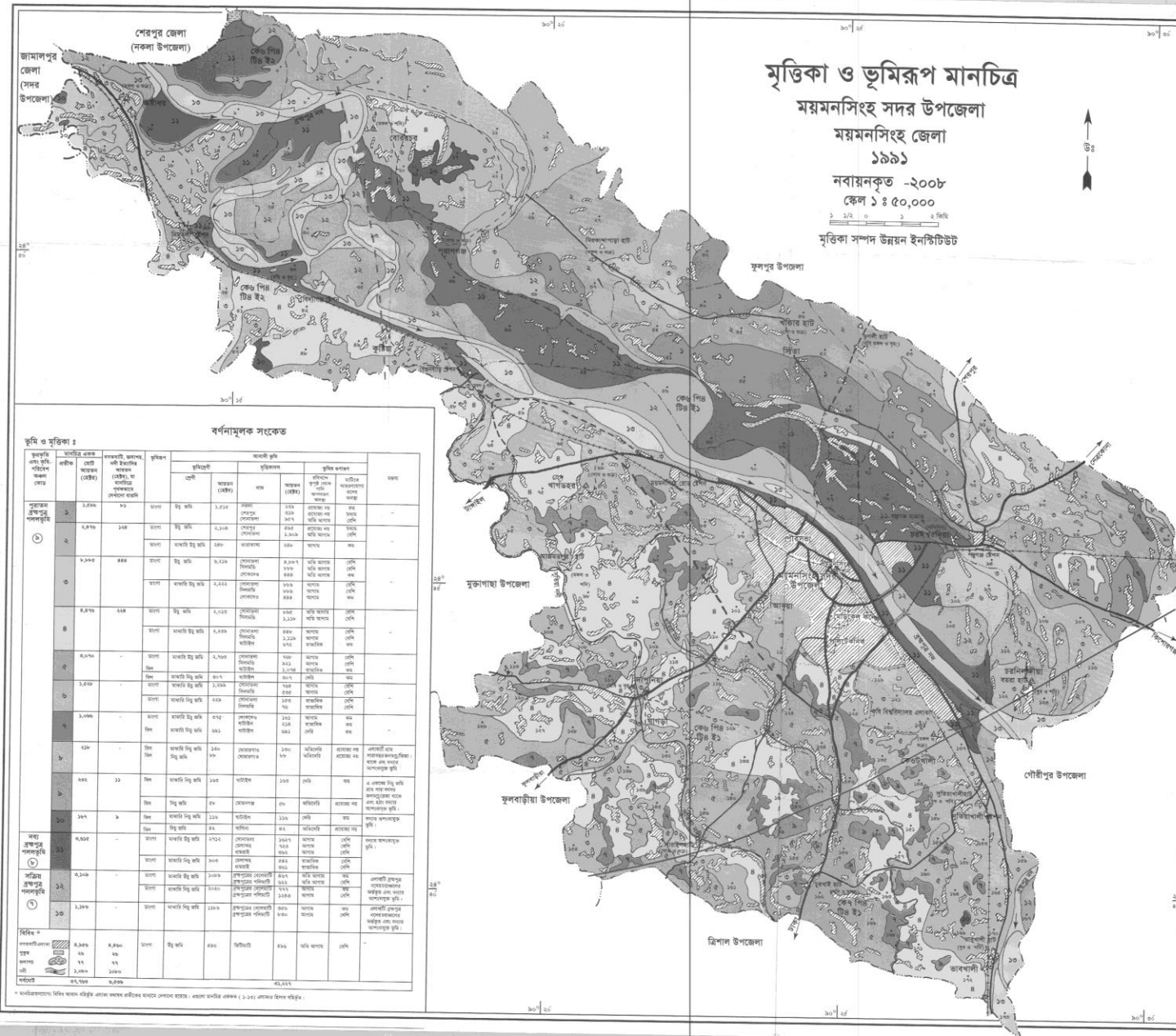
Drainage Sensitive Zone (Draft)





Preparation of Soil Database

Soil Information/Map of Mymensingh Sadar Upazila

[illegible]

Soil Information/Map of Gauripur Upazila

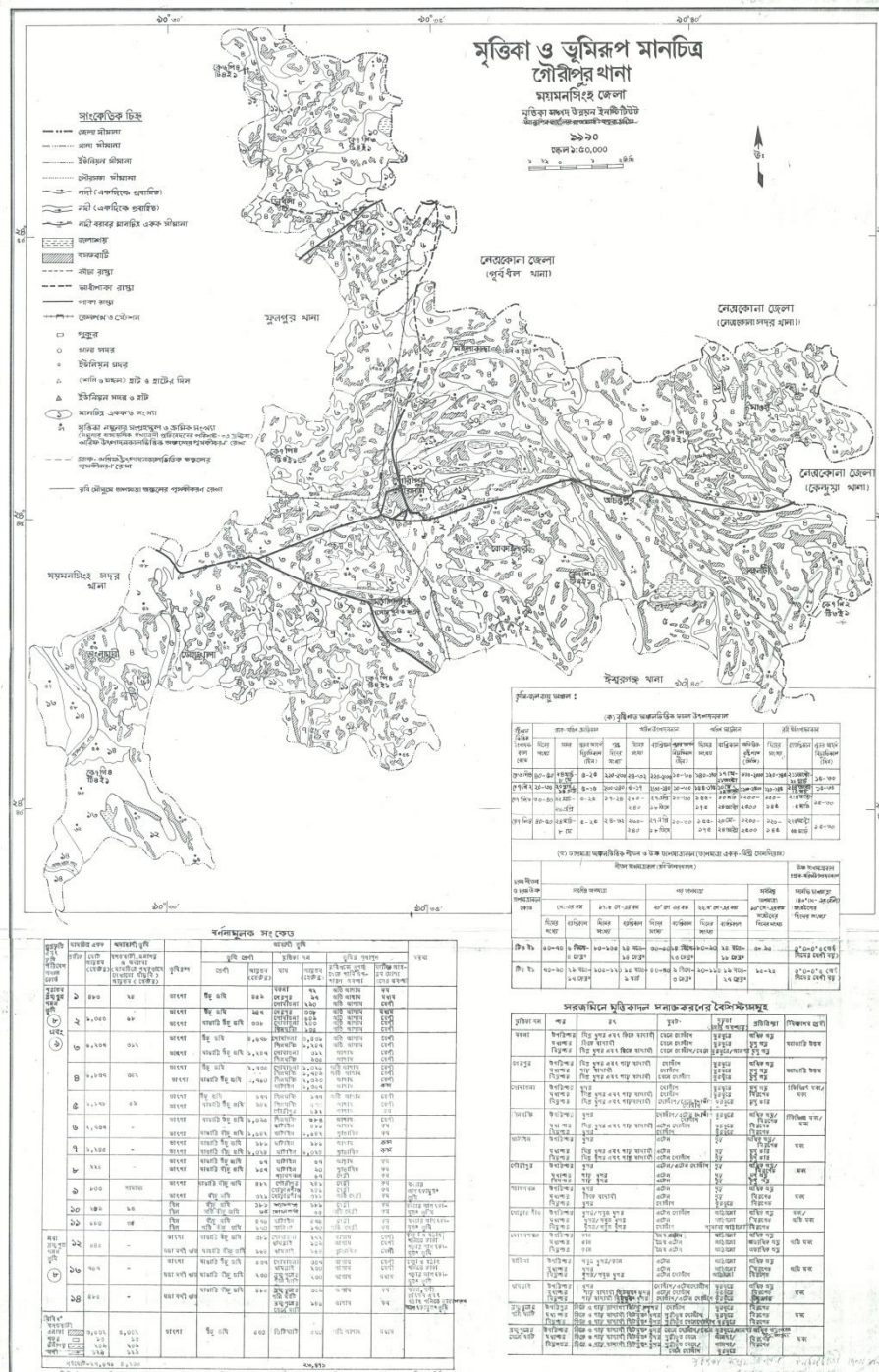


Figure-6 : Top Soil Classification of MSDP Area

Legend

Soil Type of MSDP Area

- Brahmaputra River
- Foundation Soil
- Ghatail/Balina
- Ghatail/Mohonganj
- Ghorargau
- Lokdeu, Ghatail
- Nokla, Sherpur, Sonatola
- Sandy Soil, Silt and Clay of Bh
- Sherpur, Sonatola/Tarsakanda
- Sonatola, Melandah, Dhamrai
- Sonatola, Silmondi, Ghatail/Ghat
- Sonatola, Silmondi, Lokdeu
- Sonatola, Silmondi/Ghatail
- Sonatola, Silmondi

Group of Consultants for MSDP:

- Asian Disaster Preparedness Center (ADPC), Consultant of CDMP-II for Mymensingh Municipality
- Environmental & Geospatial Solution (EGS) Geological Consultant
- Joint Venture Consultants
 - The Decode Ltd, Dhaka
 - Bestway Foundation, Dhaka
 - Geomark Limited

Map History

This map was prepared on the basis of 50cm resolution World view2 image and verified through physical feature survey conducted directly in digital format with BTM projection with the help of RTK+ GPS and Total Station. For physical feature survey 1 BM and 20 GPS points were installed with the help of RTK+ GPS. Available SIOB BM (SIOB- GPS- 300) was used as reference for vertical adjustment.

Projection Parameters:

Projection System: Bangladesh Transverse Mercator (BTM)
 Ellipsoid: Everest 1830
 False Easting: 500000
 False Northing: 2000000
 Central Meridian: 90
 Scale Factor: 0.9996
 Latitude of Origin: 0

Map Scale:
 1:46,000
 1 inch = 1,168.4 meters
 1 inch = 3,833.33 feet

Map Information:
 Map Collected, Digitized & Geo Referenced By: Geomark Limited
 House-23, Road-12, Picnic House Housing Society, Mohammadpur, Dhaka. geomark3@gmail.com

Physical Feature Survey Consultant:
 Asian Disaster Preparedness Center (ADPC)
 House # 477, Road # 32, New DOHS, Mohakhali, Dhaka.

Geological Consultant:
 Environmental & Geospatial Solution (EGS)
 Dr. Mohsin Complex, 377, Pallabi (1st floor), Mirpur 12, Dhaka 1215, Bangladesh
 Ph: +882 982 7155, Email: info@egsbd.org, www.egsbd.org

Financed by: Comprehensive Disaster Management Programme (CDMP II), Ministry of Disaster Management & Relief, The People's Republic of Bangladesh

Printed by: GIS Lab, MSDP, UDD, MoHPW, GoB

Partner Agencies

Updated by: MSDP Team
 Urban Development Directorate (UDD)
 R2, Segunbagicha, Dhaka- 1000
 Ministry of Housing & Public Works
 The People's Republic of Bangladesh

Figure-6 : Top Soil Classification of MSDP Area

Legend

Soil Type of MSDP Area

- Brahmaputra River
- Foundation Soil
- Ghatal/Balina
- Ghatal/Mohonganj
- Ghorargau
- Lokdeu, Ghatali
- Nokla, Sherpur, Sonatola
- Sandy Soil, Silt and Clay of Bh
- Sherpur, Sonatola/Tarsakanda
- Sonatola, Melandah, Dhamrai
- Sonatola, Silmondi, Ghatali/Ghat
- Sonatola, Silmondi, Lokdeu
- Sonatola, Silmondi/Ghatali
- Sonatola, Silmondi

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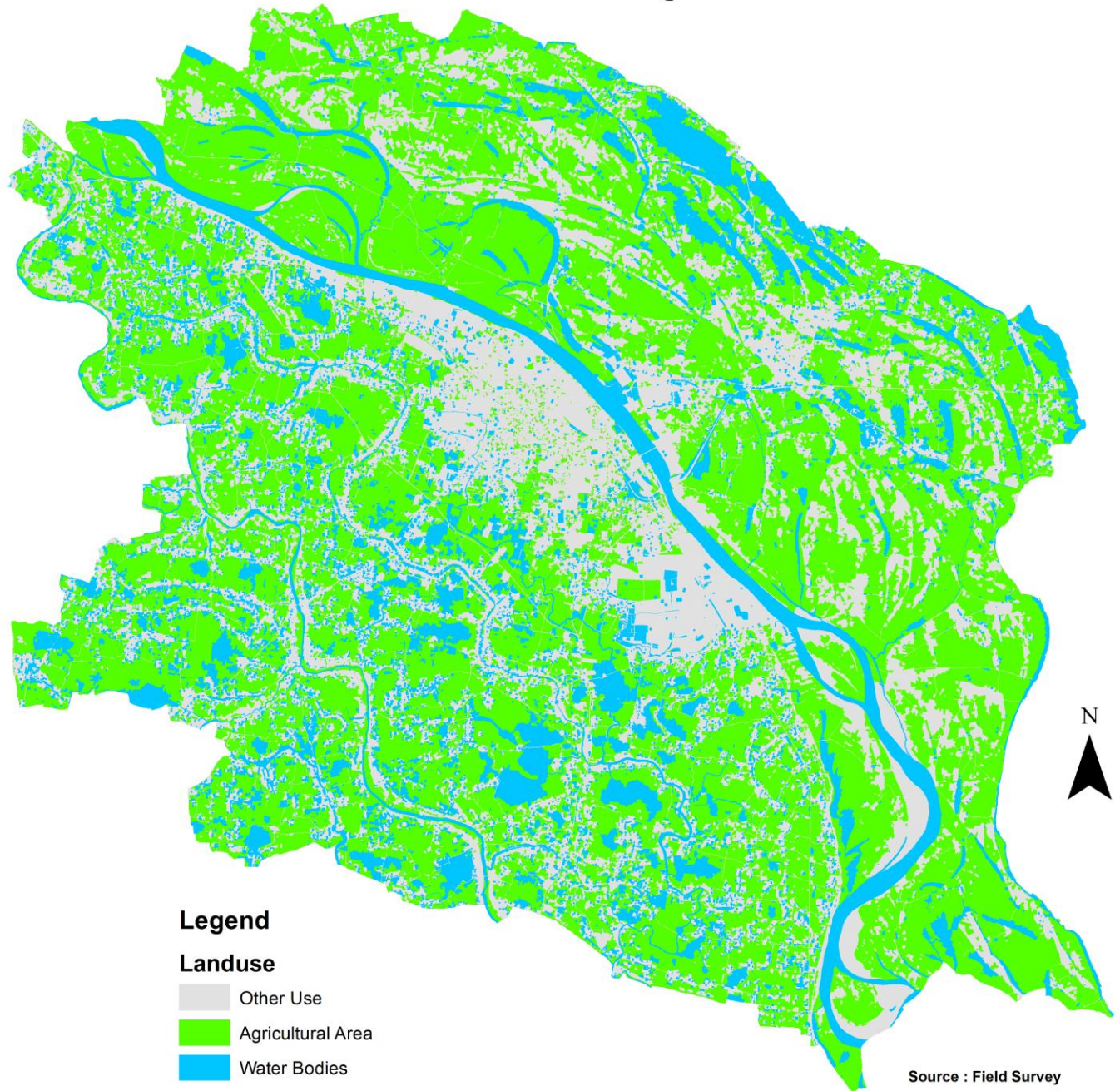
Partner Agencies

Updated by: MSDP Team
 Urban Development Directorate (UDD)
 R2, Segunbagicha, Dhaka-1000,
 Ministry of Housing & Public Works
 The People's Republic of Bangladesh

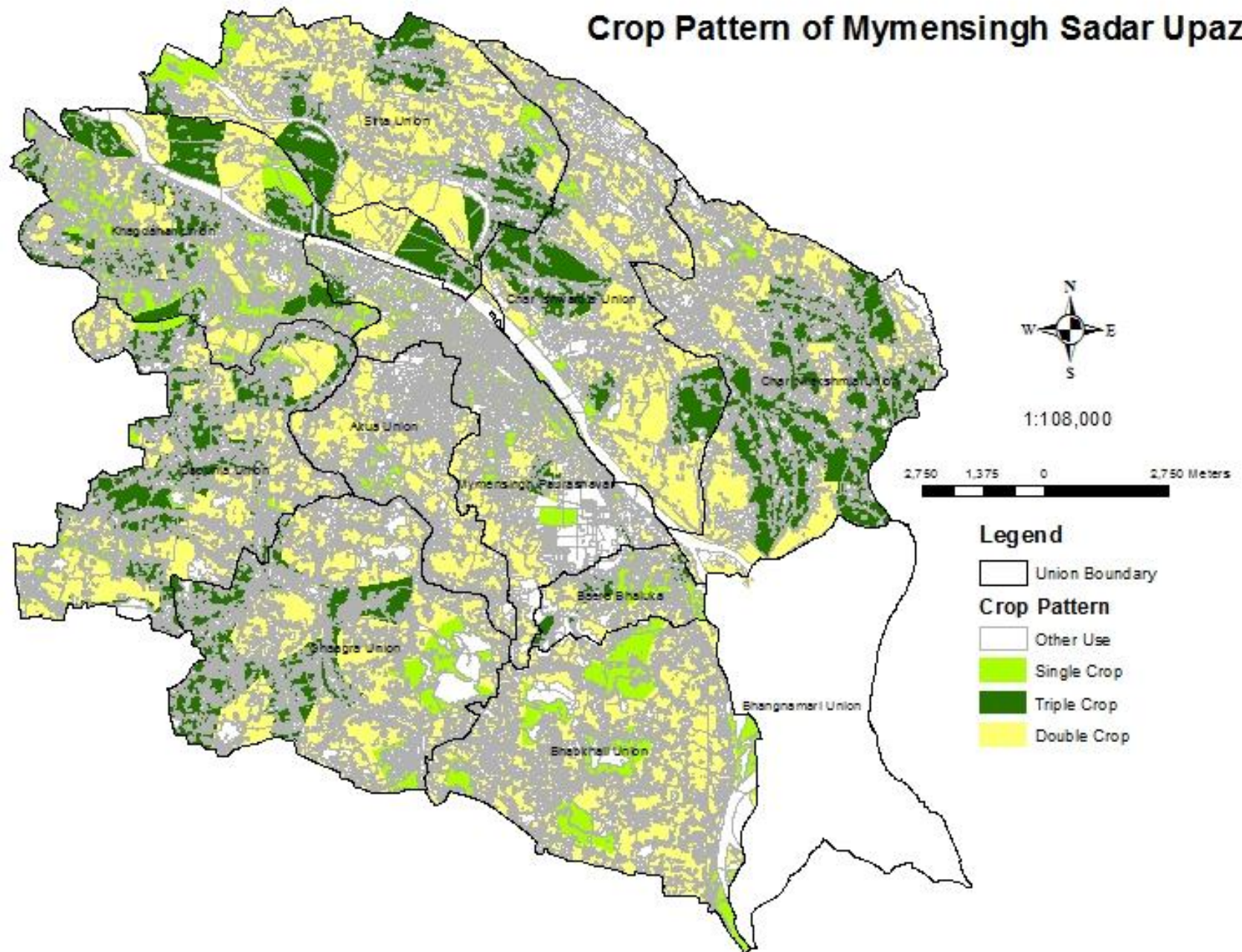
Preparation of Agricultural Database

1	Agriculture Map Prepared from Image
2	Agriculture Map Verified from PRA with Sub Assistant Agriculture Officer
3	Edit Agricultural data
4	Reform and Update Agricultural Data
5	Verification of Agricultural Map from Agri Office of Mymensingh
6	Re Update of Agri Database
7	Prepare Cropping Pattern Map and print
8	Add Agricultural data of Bhangnamari Union
9	Finalization of Agricultural Map

Agricultural Land of MSDP Area



Crop Pattern of Mymensingh Sadar Upazila



Crop Pattern of MSDP Area (From PRS Session)

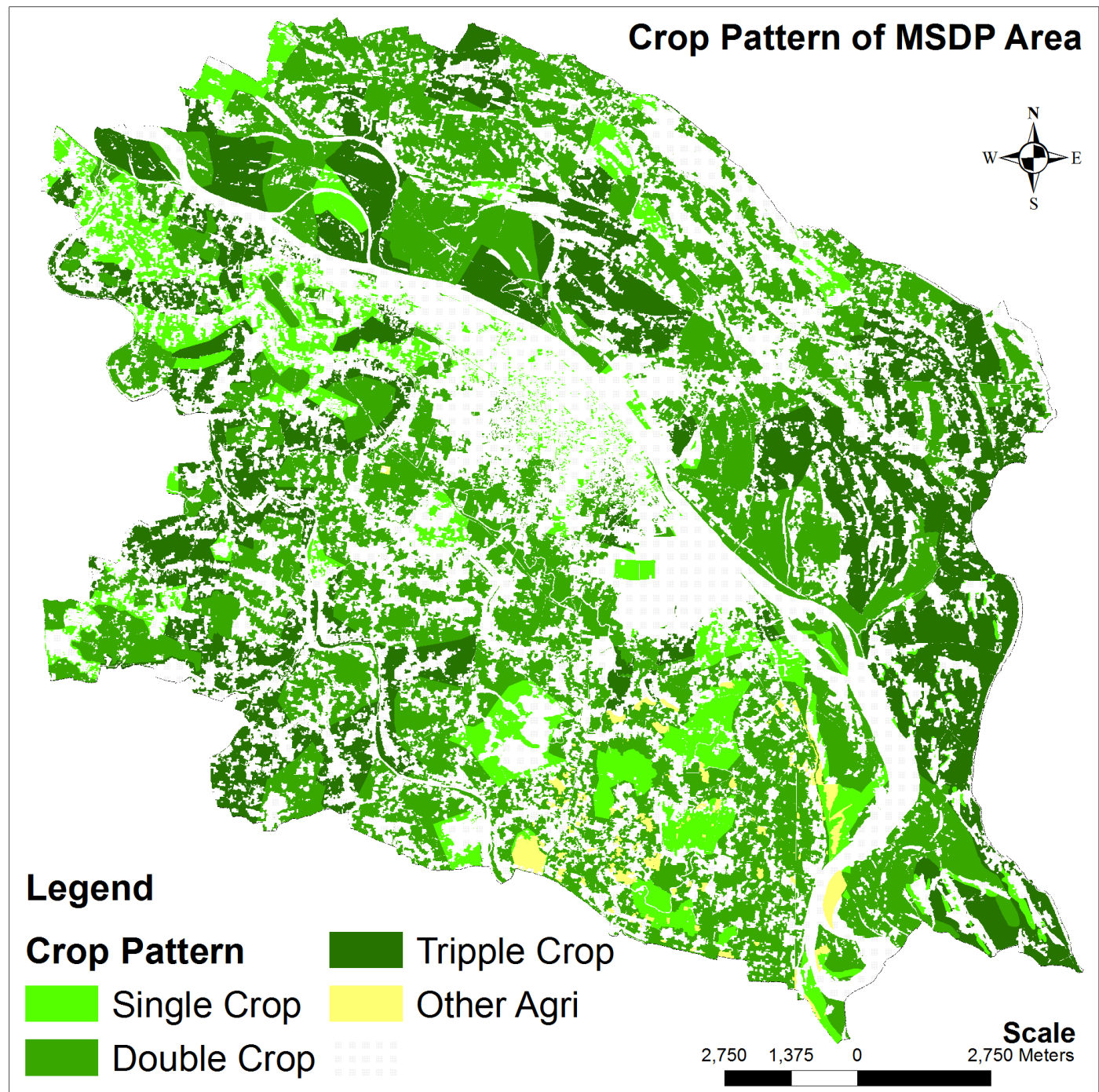
There is no triple Crop Land in Akua & Bhabkhali

Highest Agricultural Land : Khagdahar Union

Lowest Agricultural Land : Baera Union

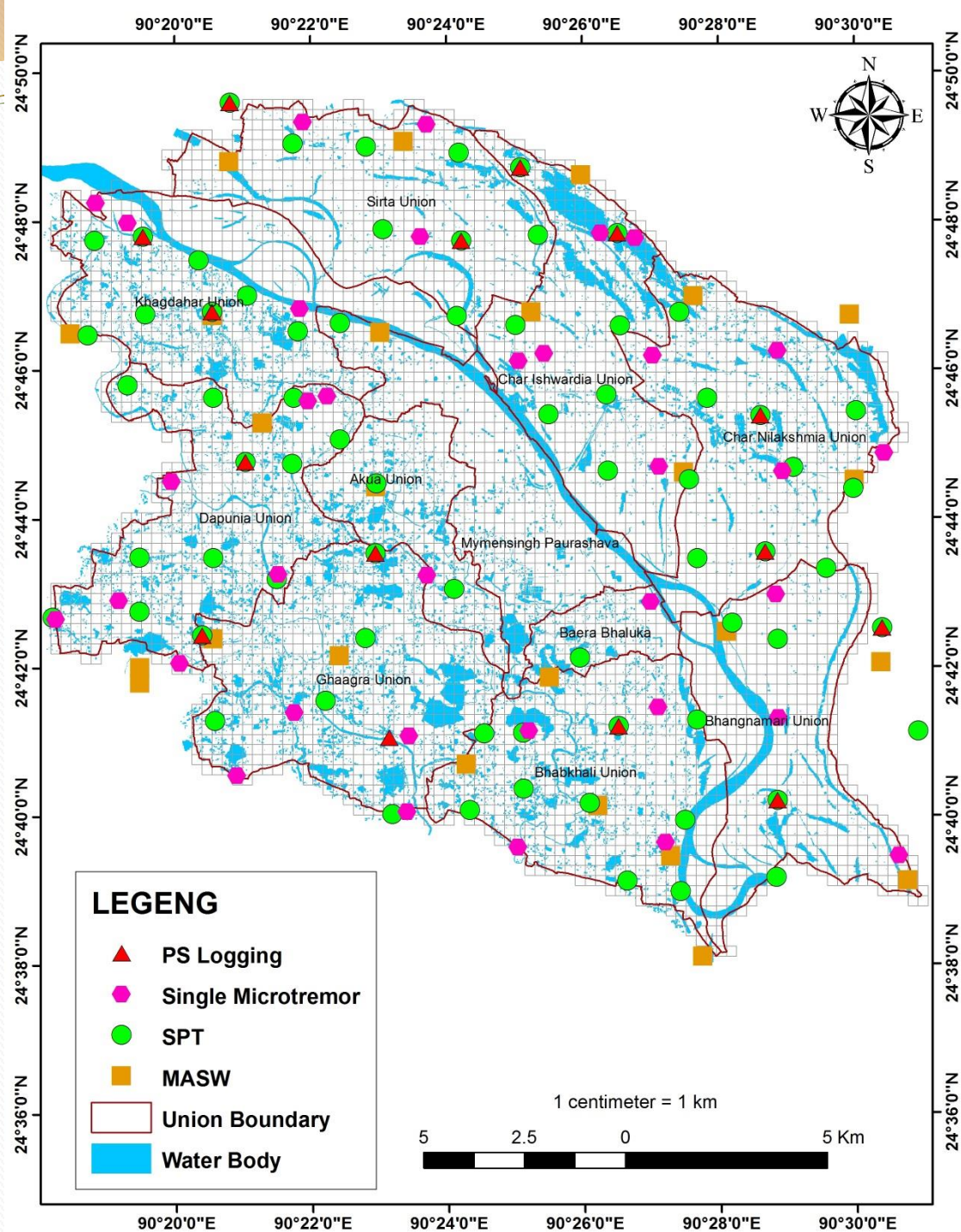
Union Name	Crop Pattern (Area in Acre)				
	Single Crop	Double Crop	Triple Crop	Grand Total	%
Akua Union	109.55	1470.84		1580.40	4.35
Baera Bhaluka	196.70	327.81	152.50	677.02	1.87
Bhabkhali	1194.96	3346.95		4541.92	12.51
Char Ishwardia Union	145.80	2853.12	1107.99	4106.92	11.32
Char Nilakshmia Union	79.48	2233.65	2591.71	4904.83	13.51
Dapunia Union	371.15	2388.01	1637.54	4396.70	12.11
Ghaagra Union	471.24	2808.74	1420.07	4700.04	12.95
Khagdahar Union	1409.57	1507.65	2051.93	4969.16	13.69
Mymensingh Paurashava	350.59	827.94	104.78	1283.31	3.54
Sirta Union	431.74	3305.71	1397.43	5134.88	14.15
Grand Total	4760.79	21070.42	10463.95	36295.17	100.00

Finalization of Crop Pattern of MSDP Area

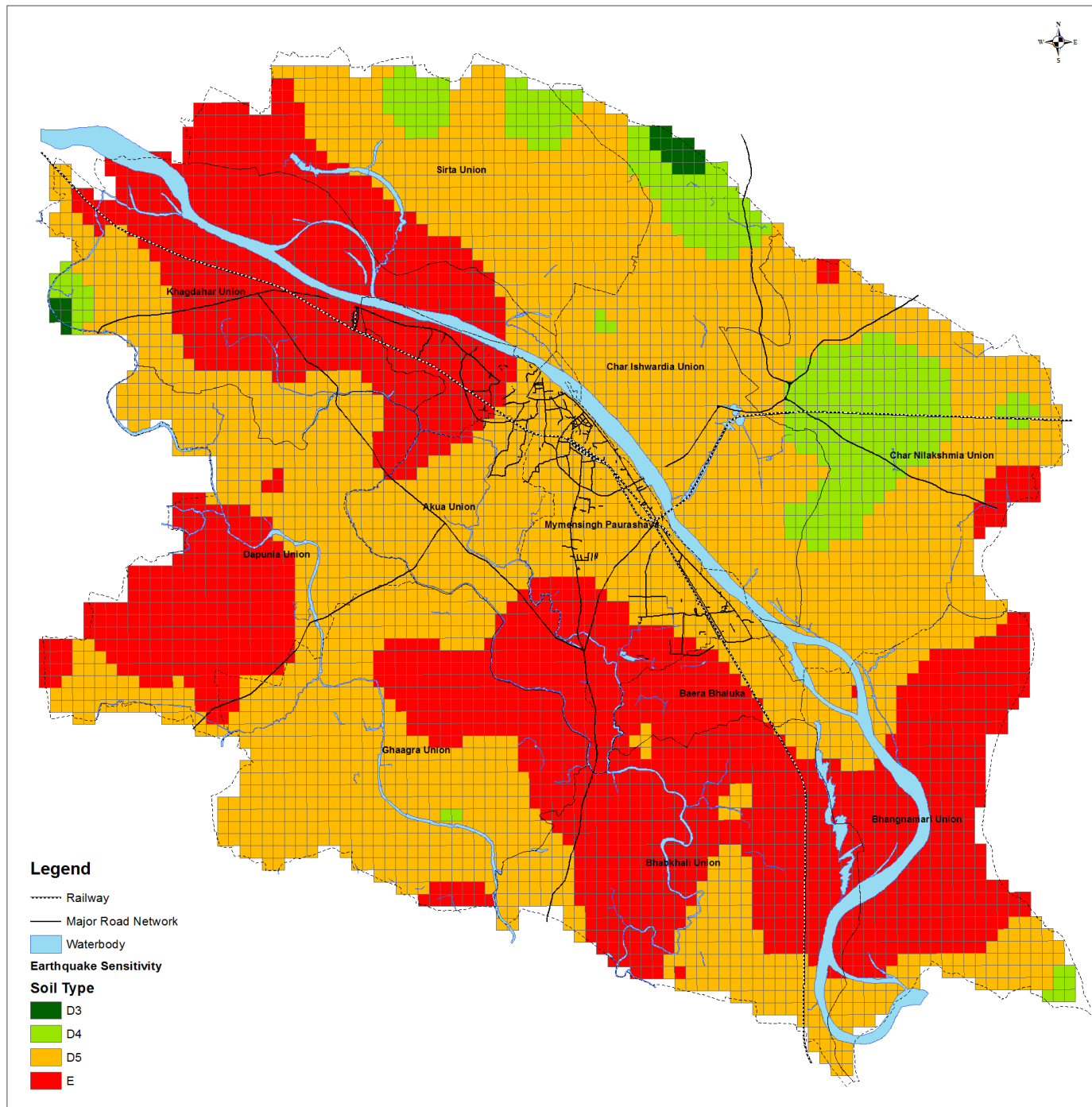


Preparation of Geological Map

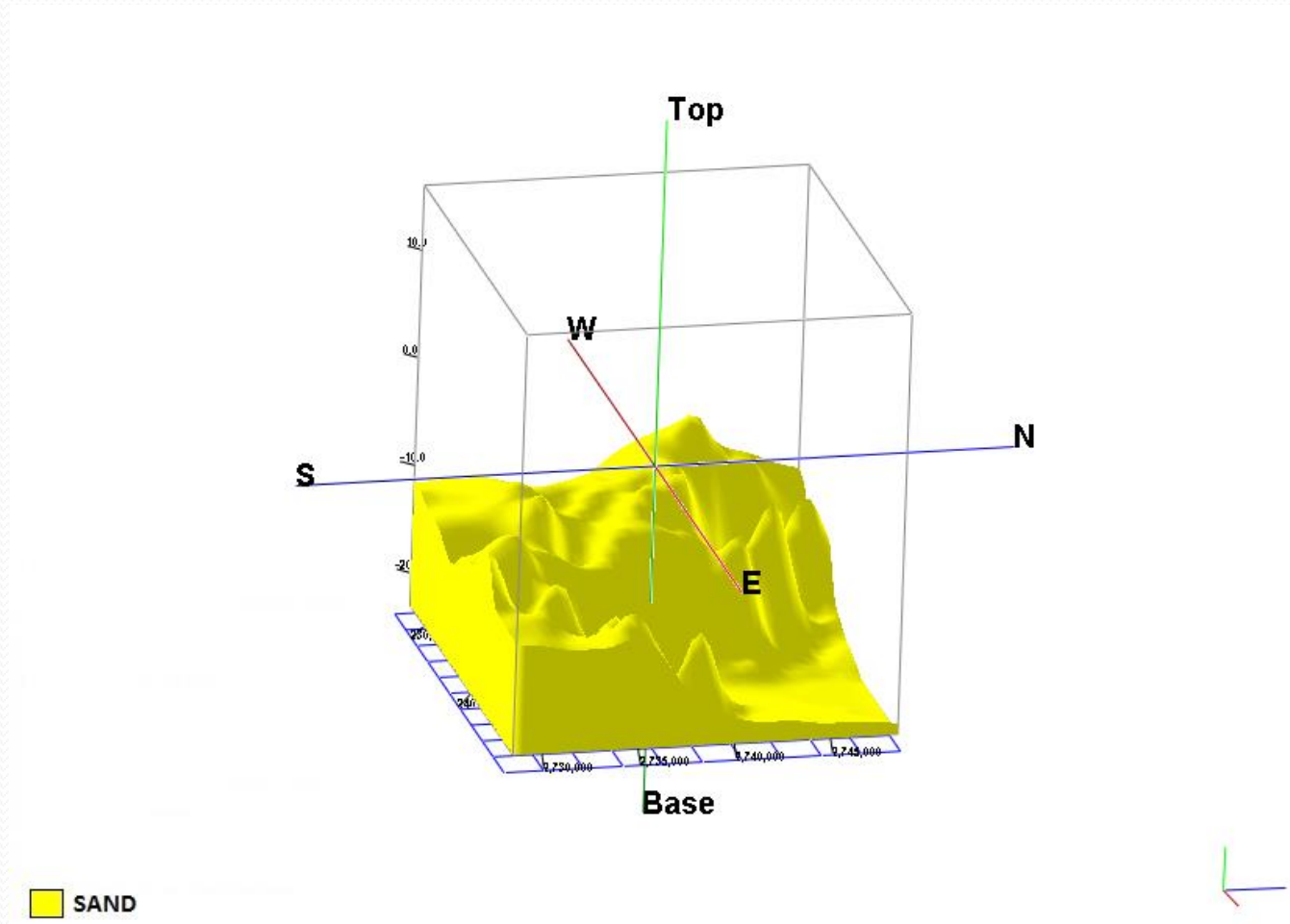
1	Geological Survey (SPT, Borehole, MT, MSAW)
2	Geological Survey Checking By MSDP Team
3	Collection and Analysis of Geological Data
4	Raster Data Preparation
5	.shp file Prepared from Raster data
6	Database Prepare for all type of Geological Survey
7	Synchronization of all Type of Geological Data
8	Geological Map Prepared and Print
9	Explanatory Map prepared from analysis of Geological Data
10	Height Sensitive Map Prepared from Geological Data
11	Foundation Depth map Prepare
12	Soil Layer Map Prepare
13	Earthquake map Prepare
14	Earthquake Intensity Map Prepare
15	Varification of Geological Data from Expert
16	A 2 Days Workshop on Geological Data and Map
17	Re-Explanatory Map prepared from analysis of Geological Data
18	Re Prepare of Height Sensitive Map
19	Re Prepare Foundation Depth map
20	Re Prepare Soil Layer Map
21	Re Varification of Geological Data from Expert
22	Re Prepare Earthquake map
23	Re Prepare Earthquake Intensity Map
24	Finalization of Geological Map
25	Prepare Earthquake Impact Analysis Map Based on Building Height
26	Demark Hot spot Zone After Earthquake



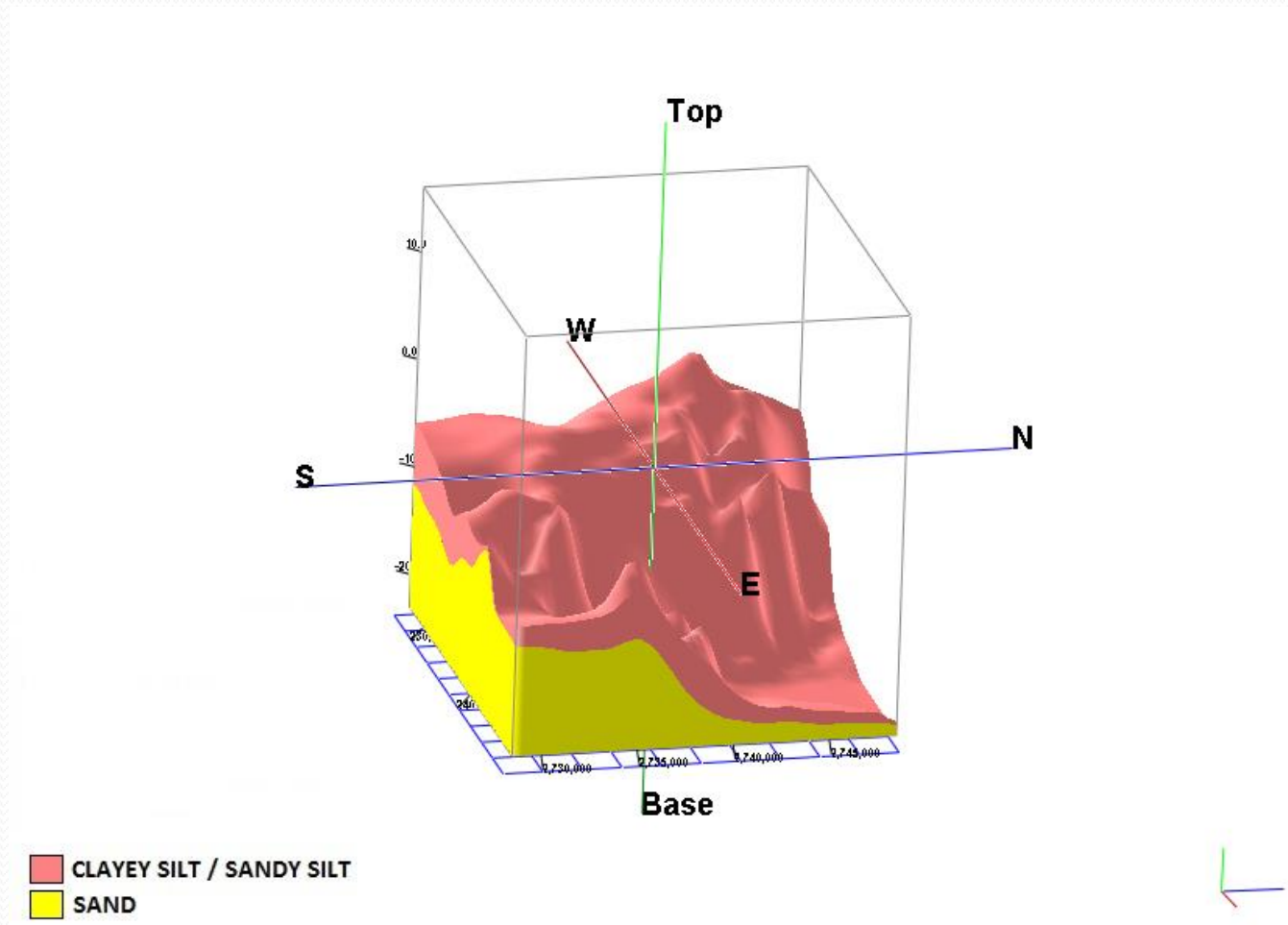
Soil Type Map



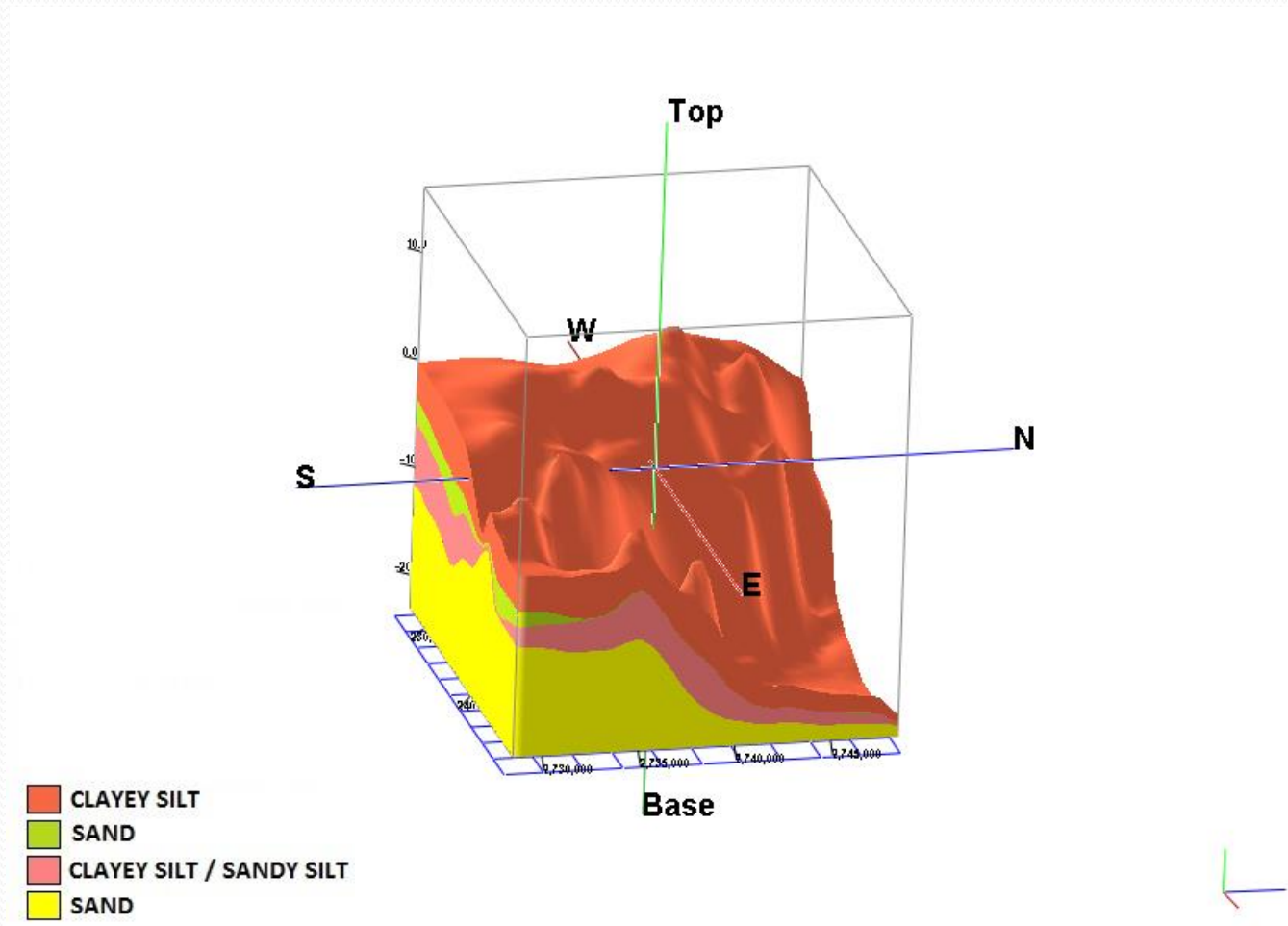
Outcome1: Subsurface 3D Model



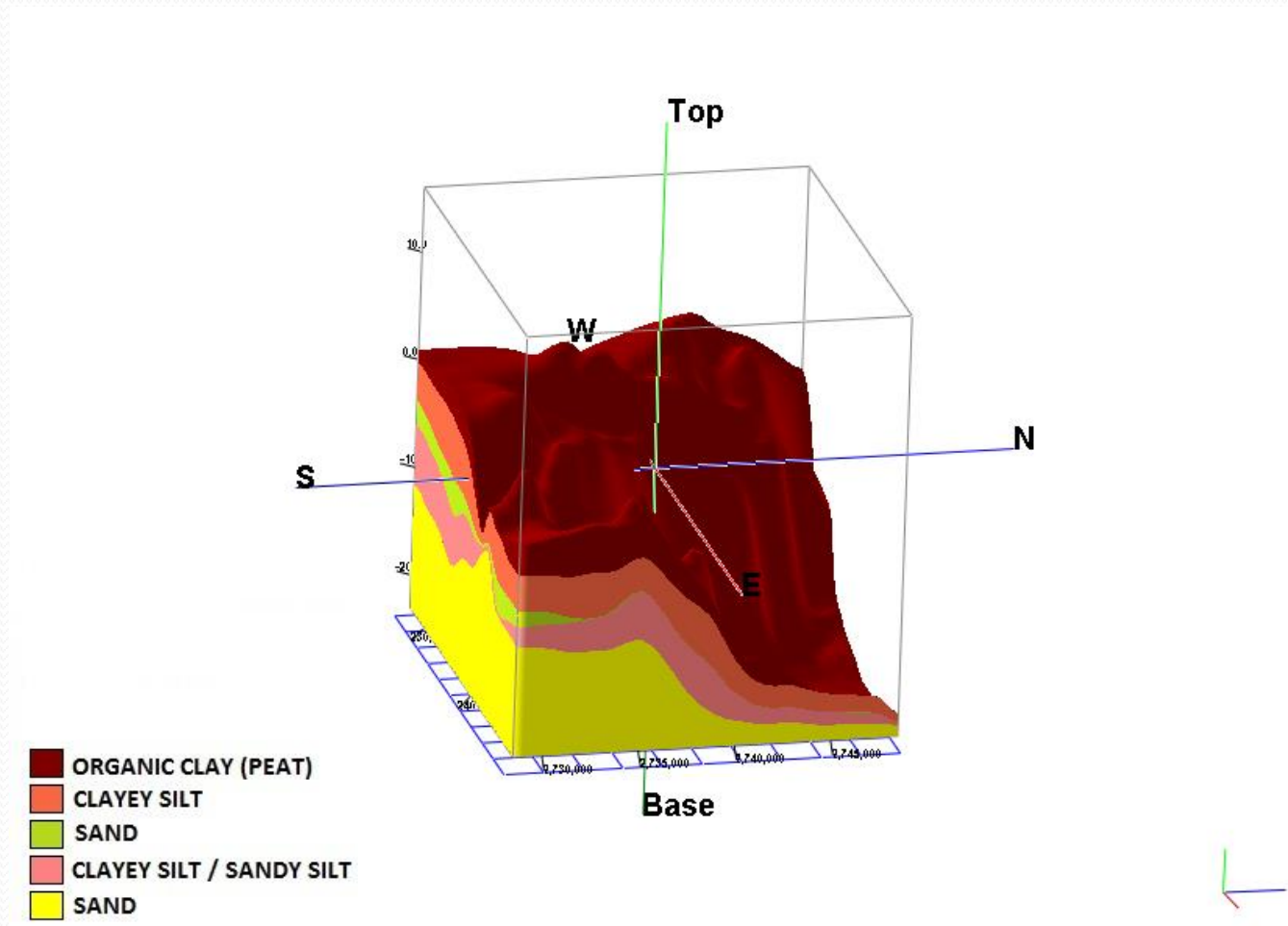
Outcome1: Subsurface 3D Model



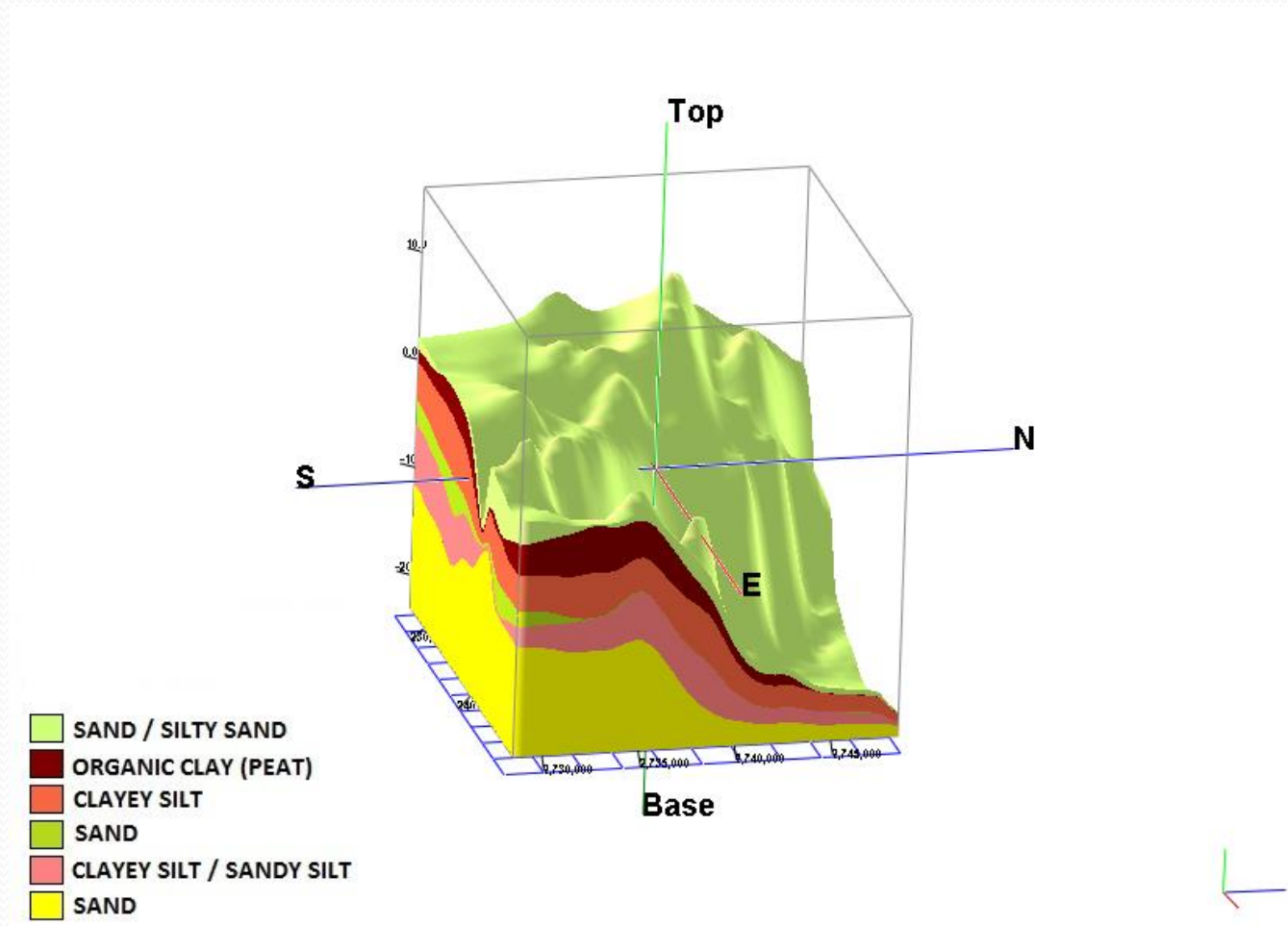
Outcome1: Subsurface 3D Model



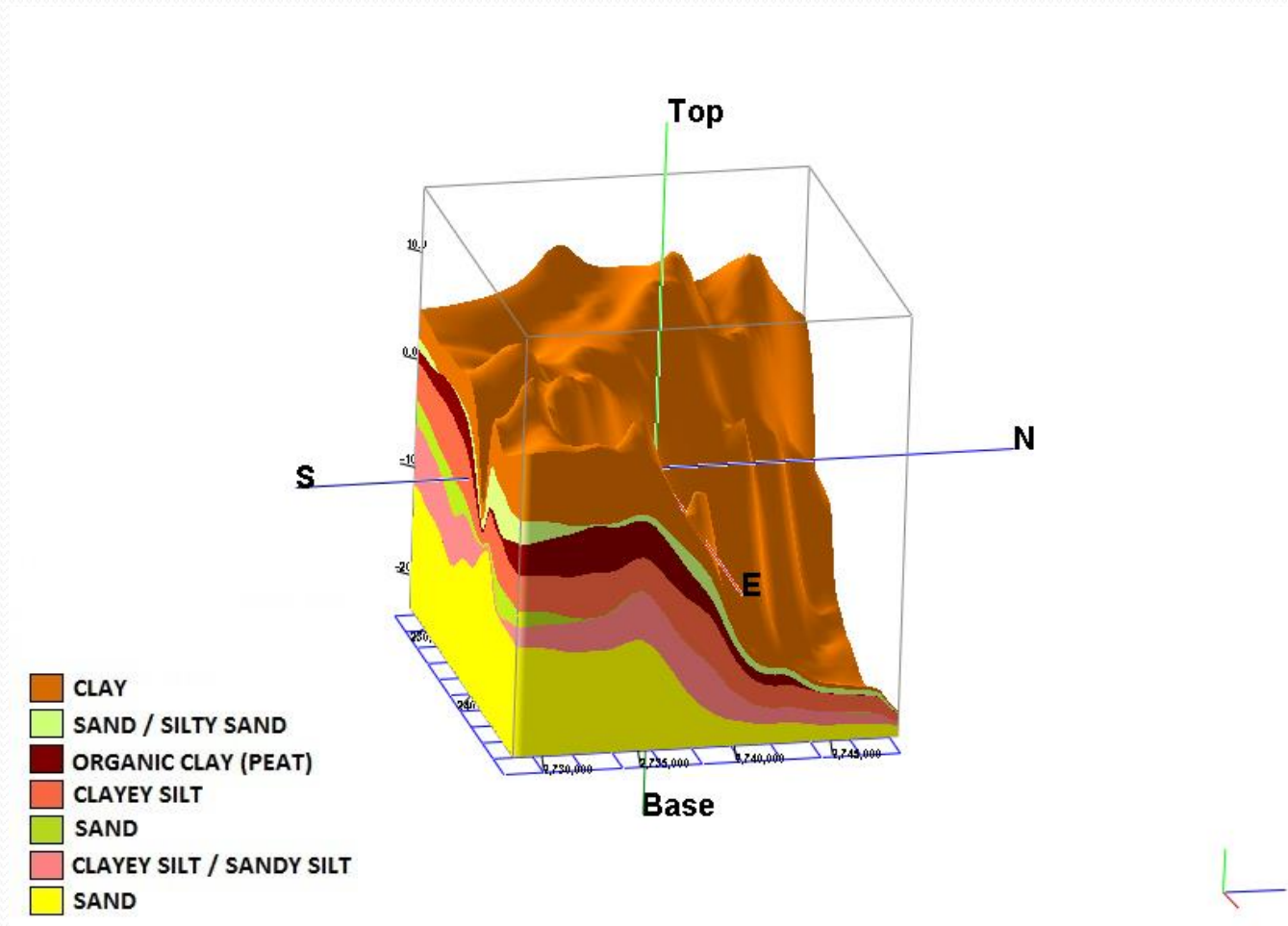
Outcome1: Subsurface 3D Model



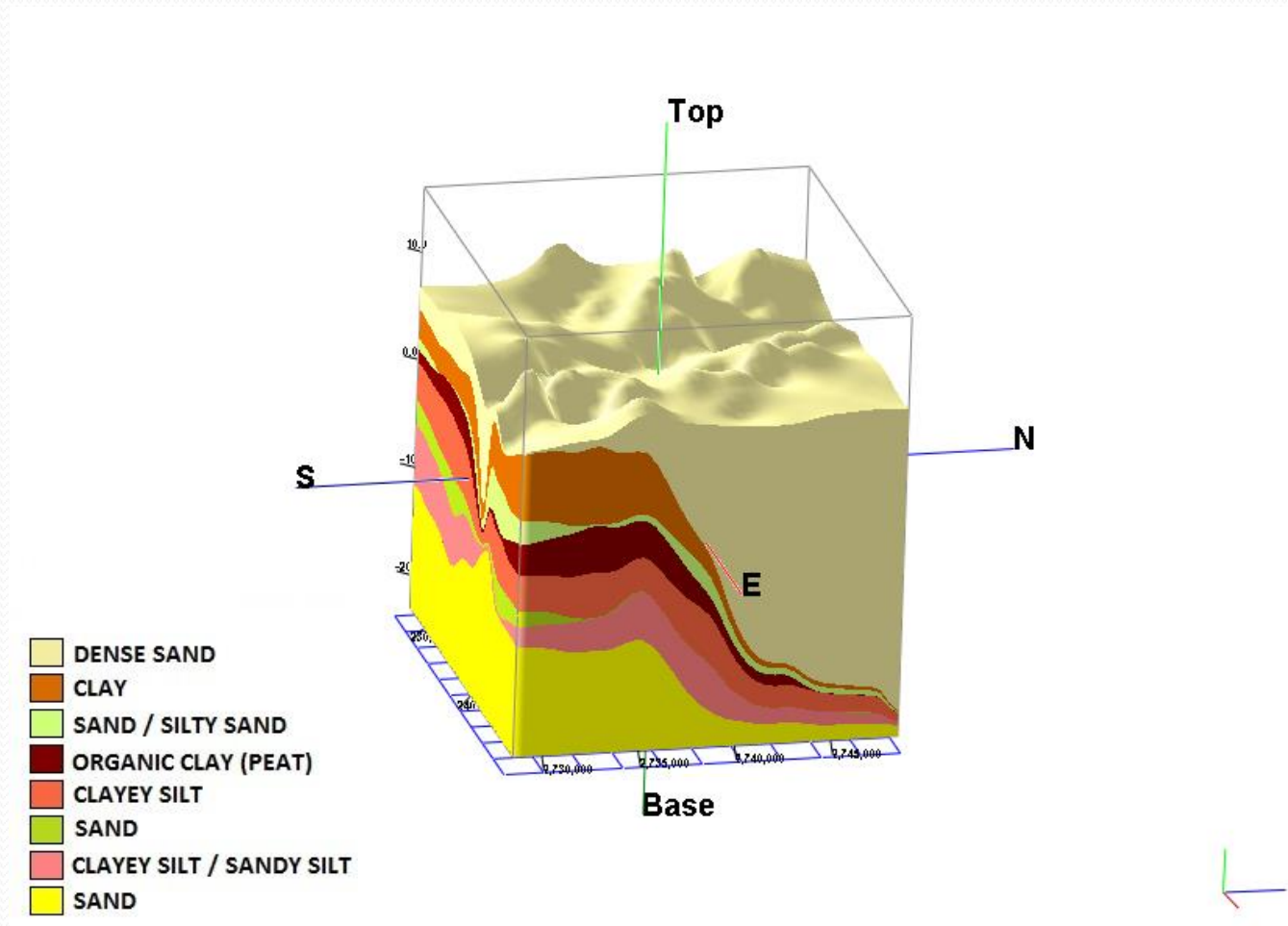
Outcome1: Subsurface 3D Model



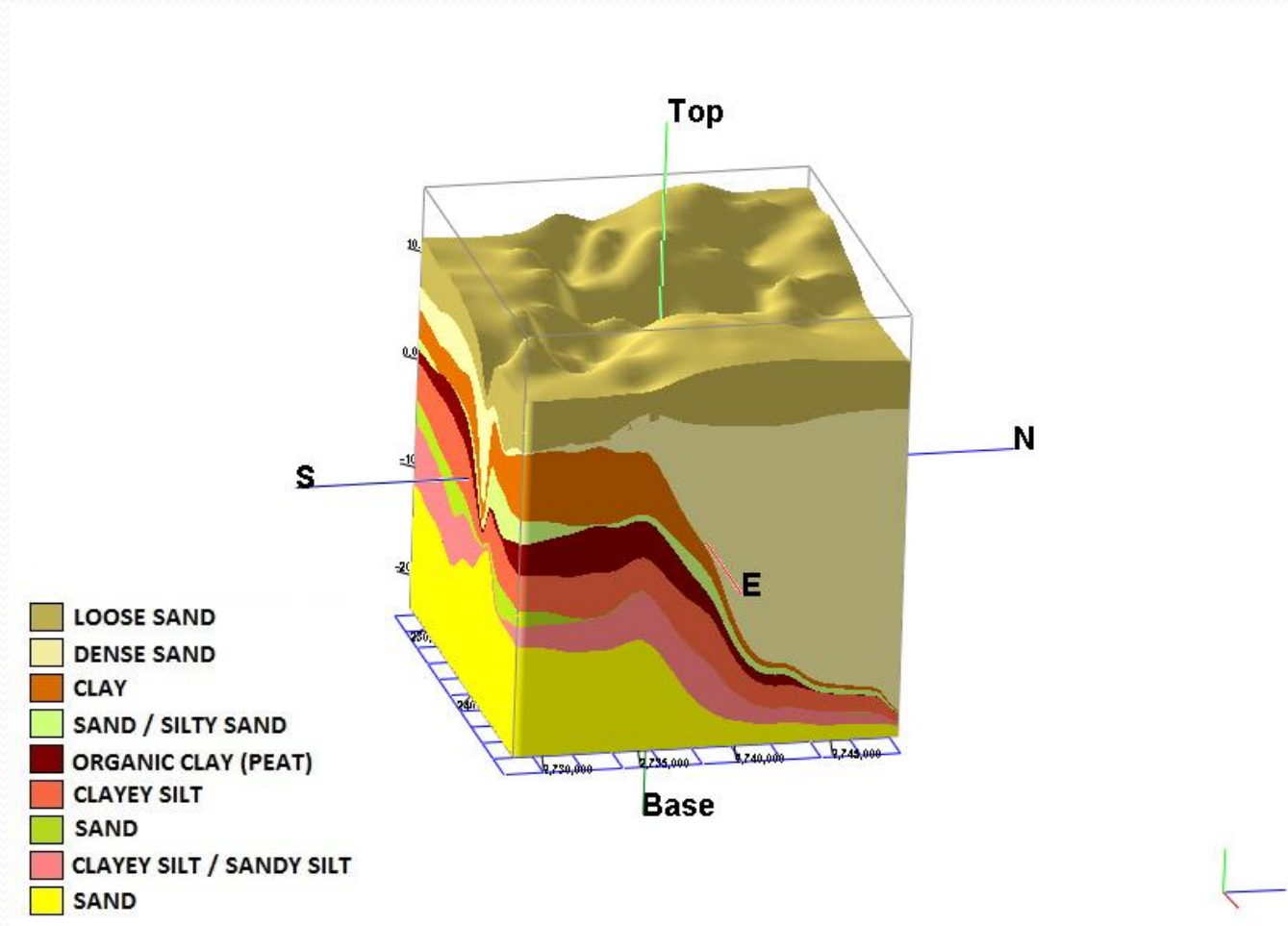
Outcome1: Subsurface 3D Model



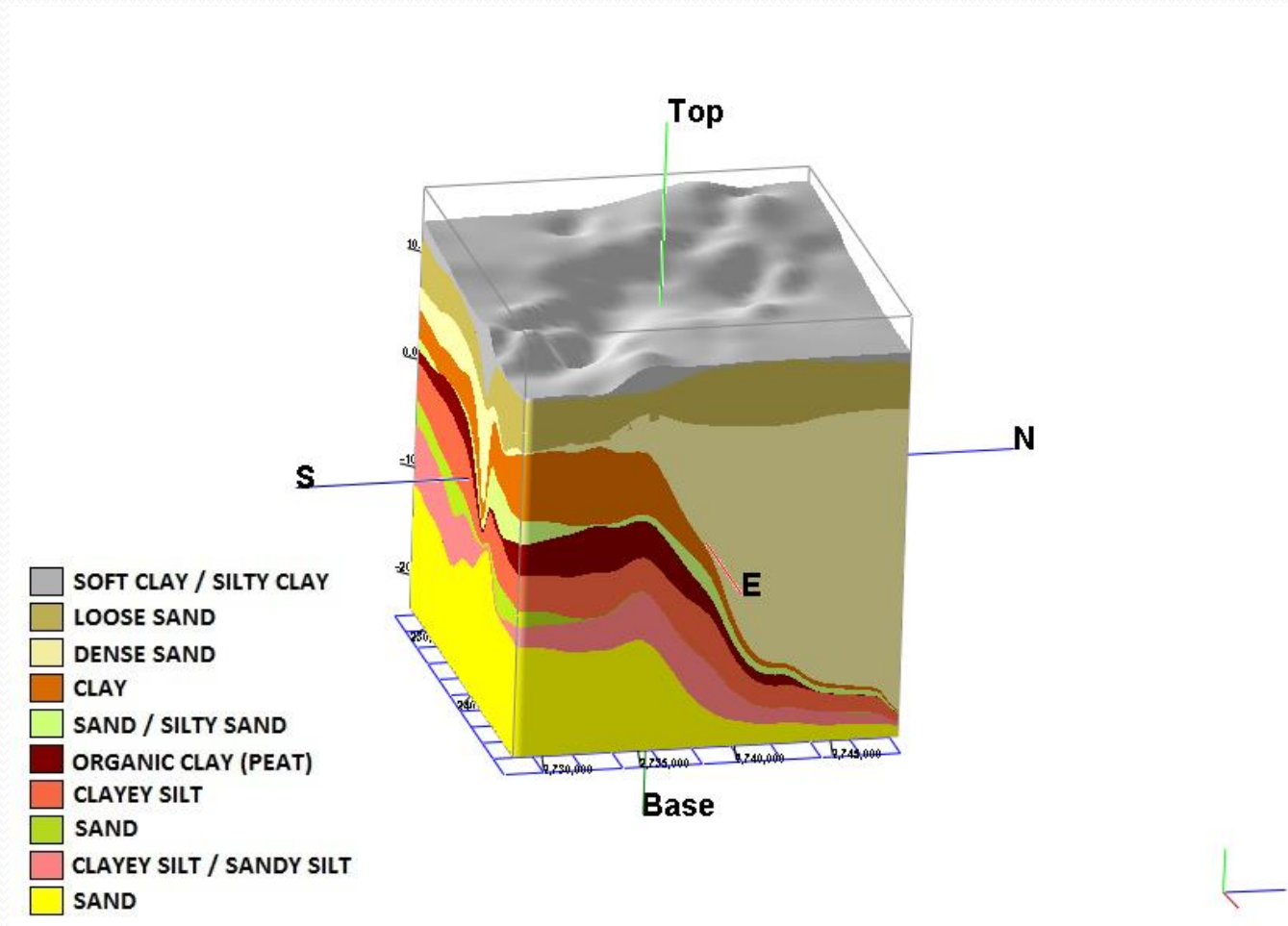
Outcome1: Subsurface 3D Model



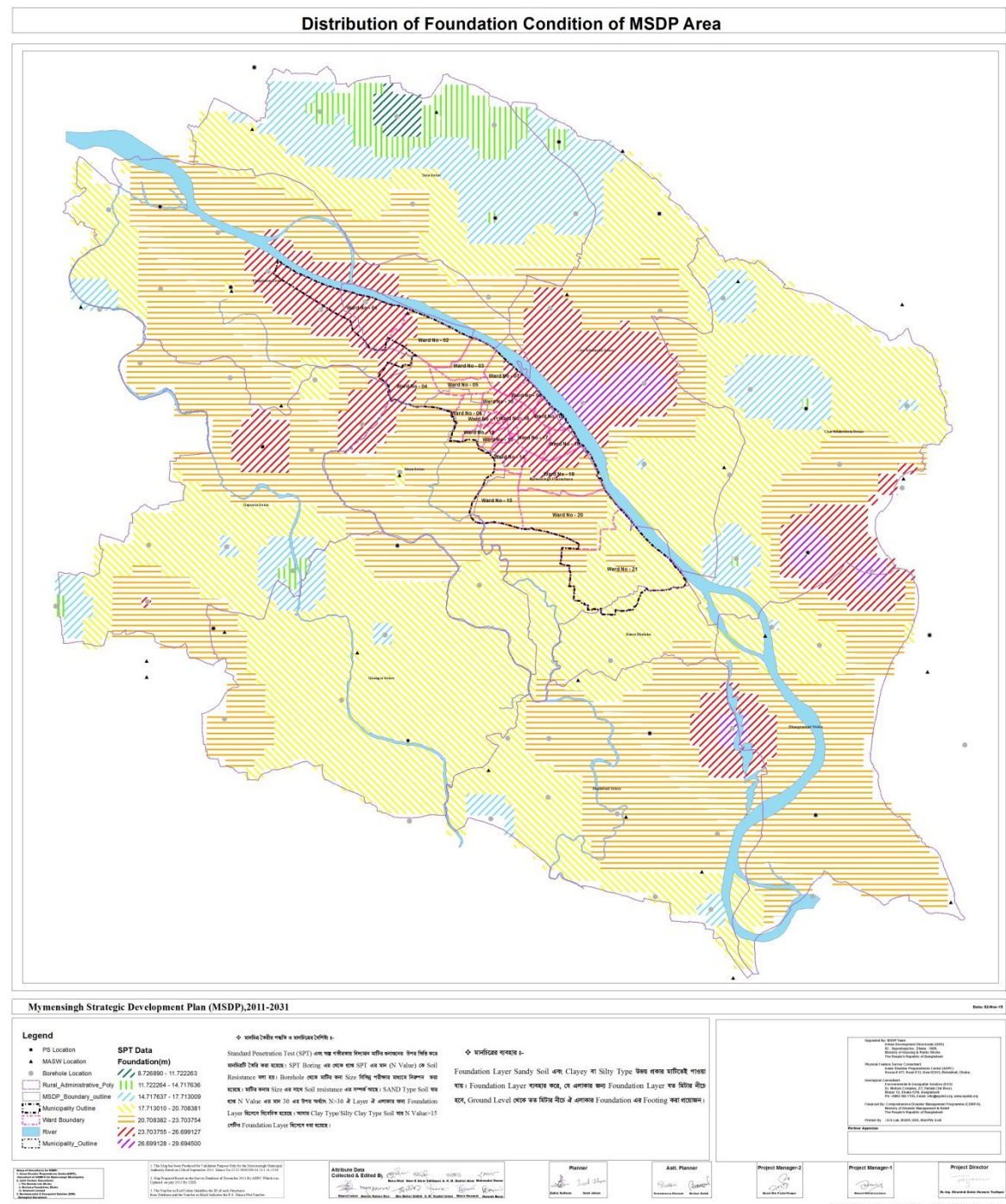
Outcome1: Subsurface 3D Model



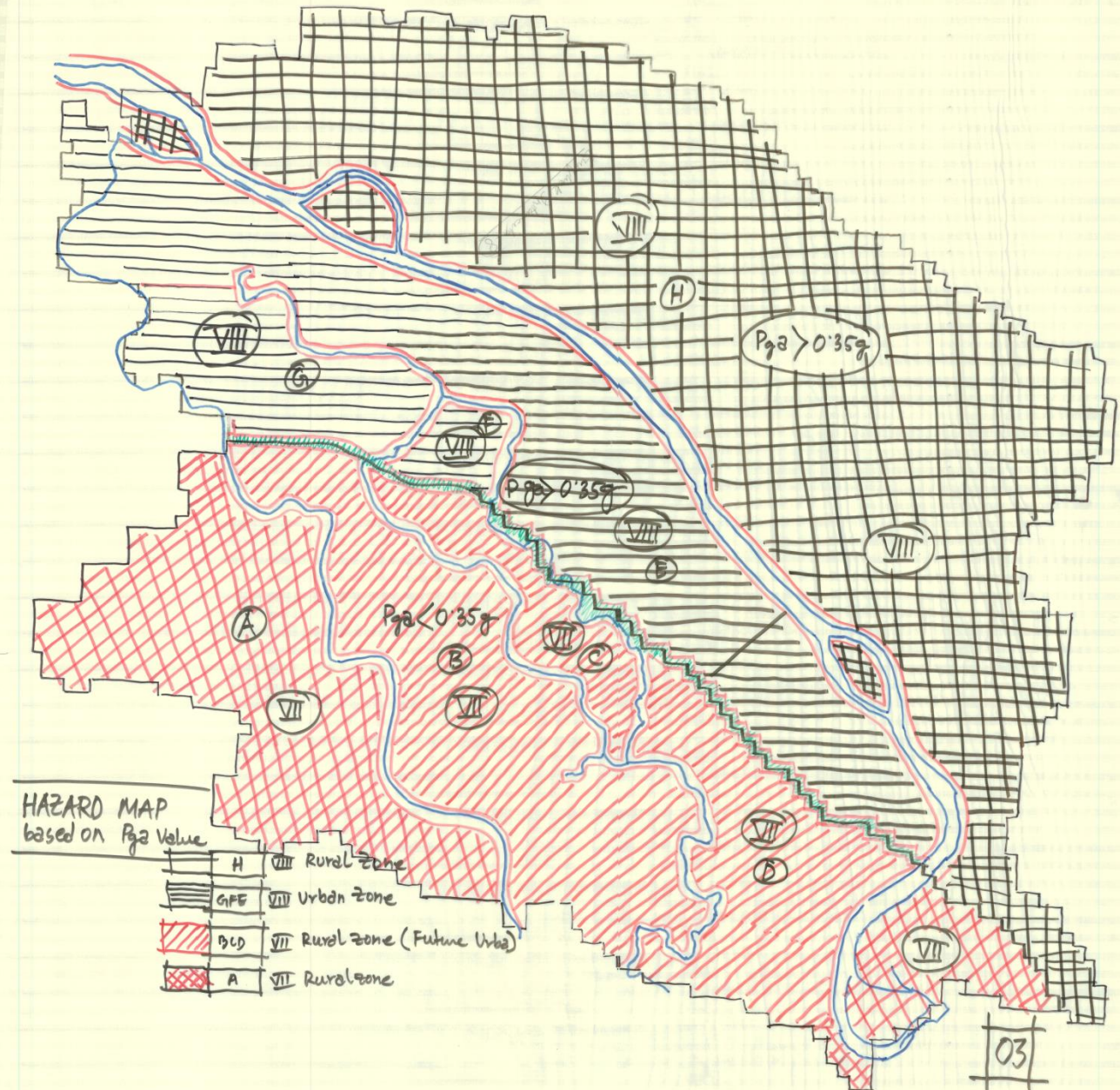
Outcome1: Subsurface 3D Model



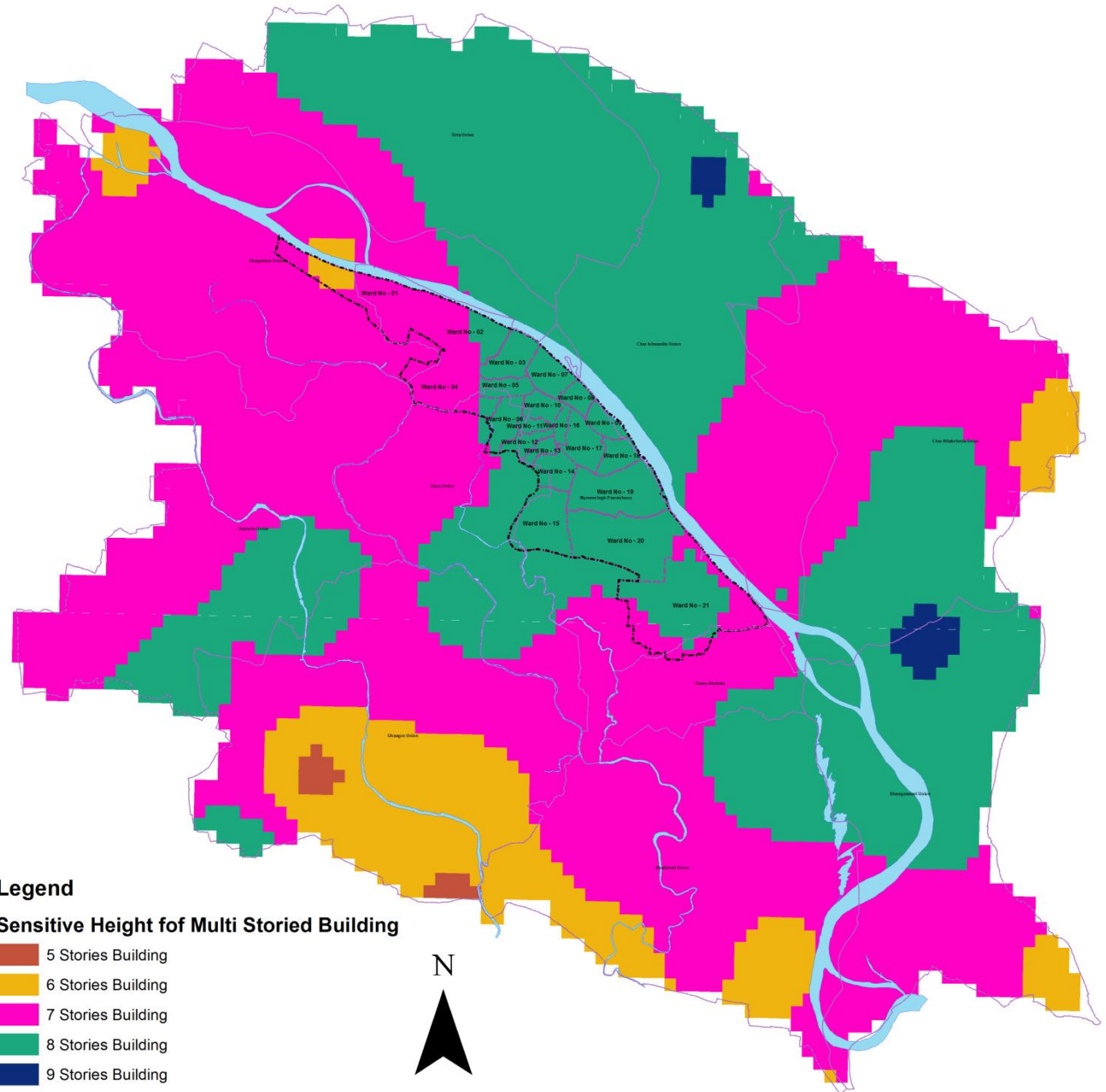
Foundation Depth



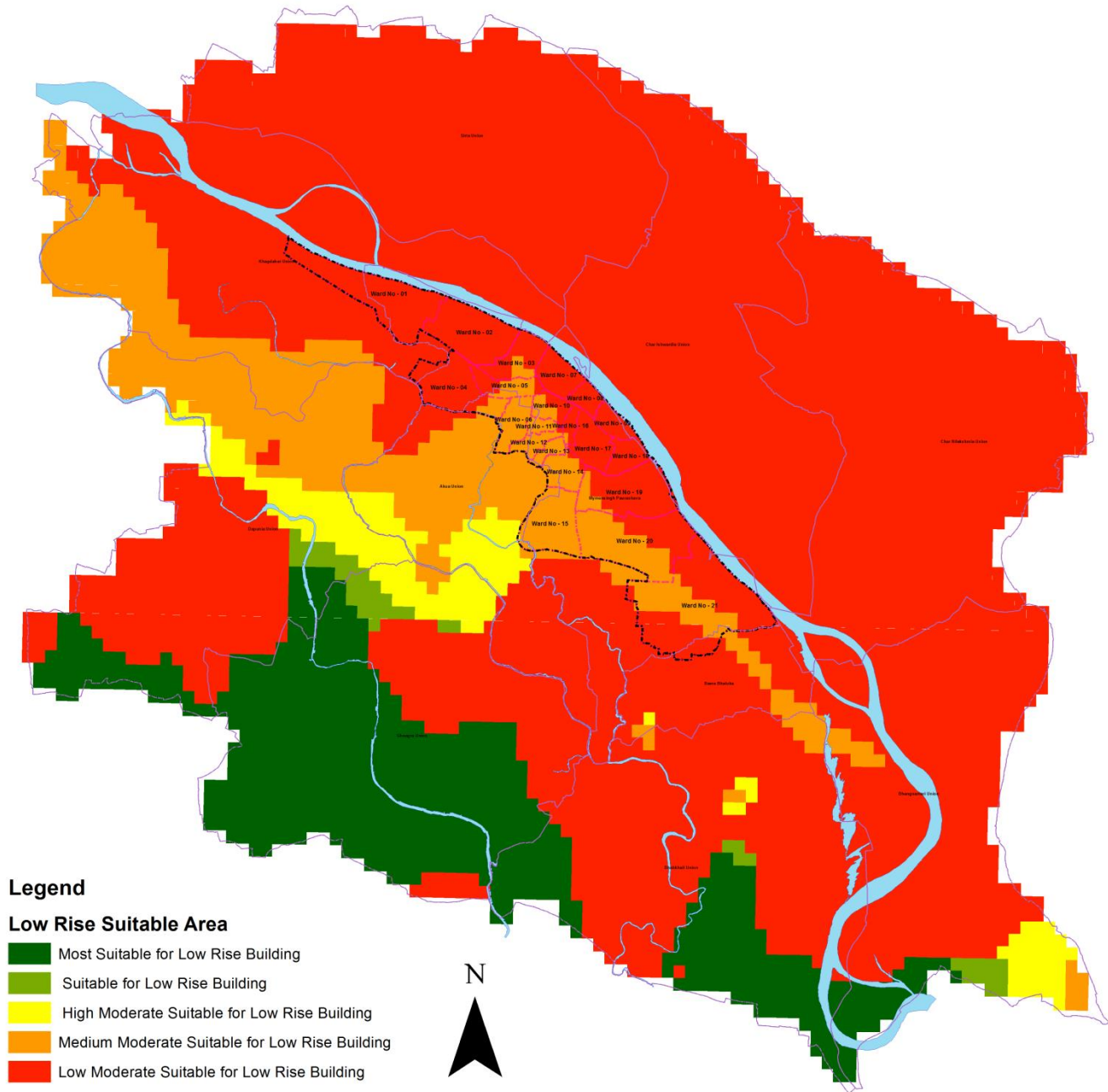
Data /Map Prepared from Workshop



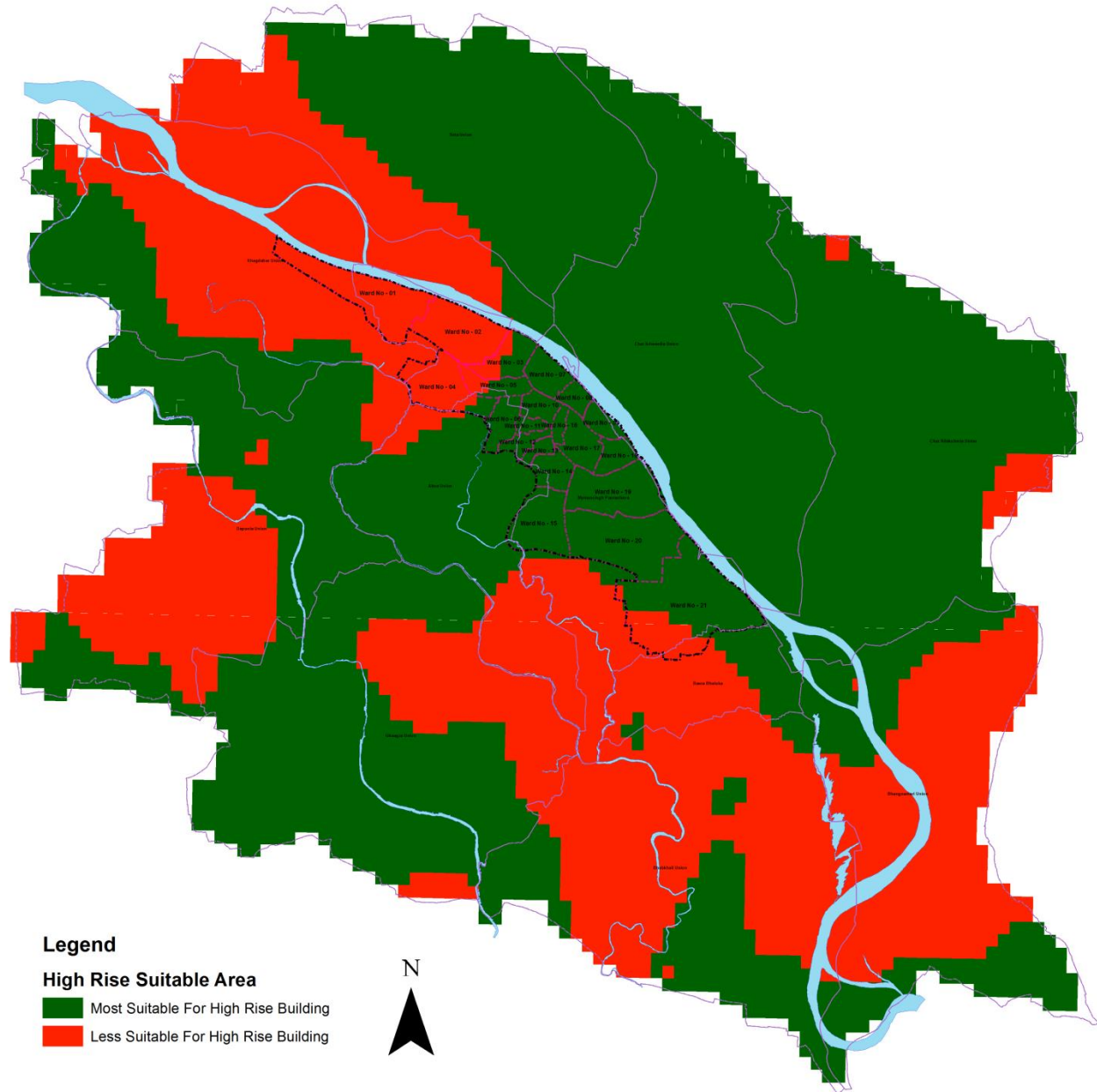
Risk Sensitive Height for Multi-Storied Building



Suitable Area for Low Rise Building



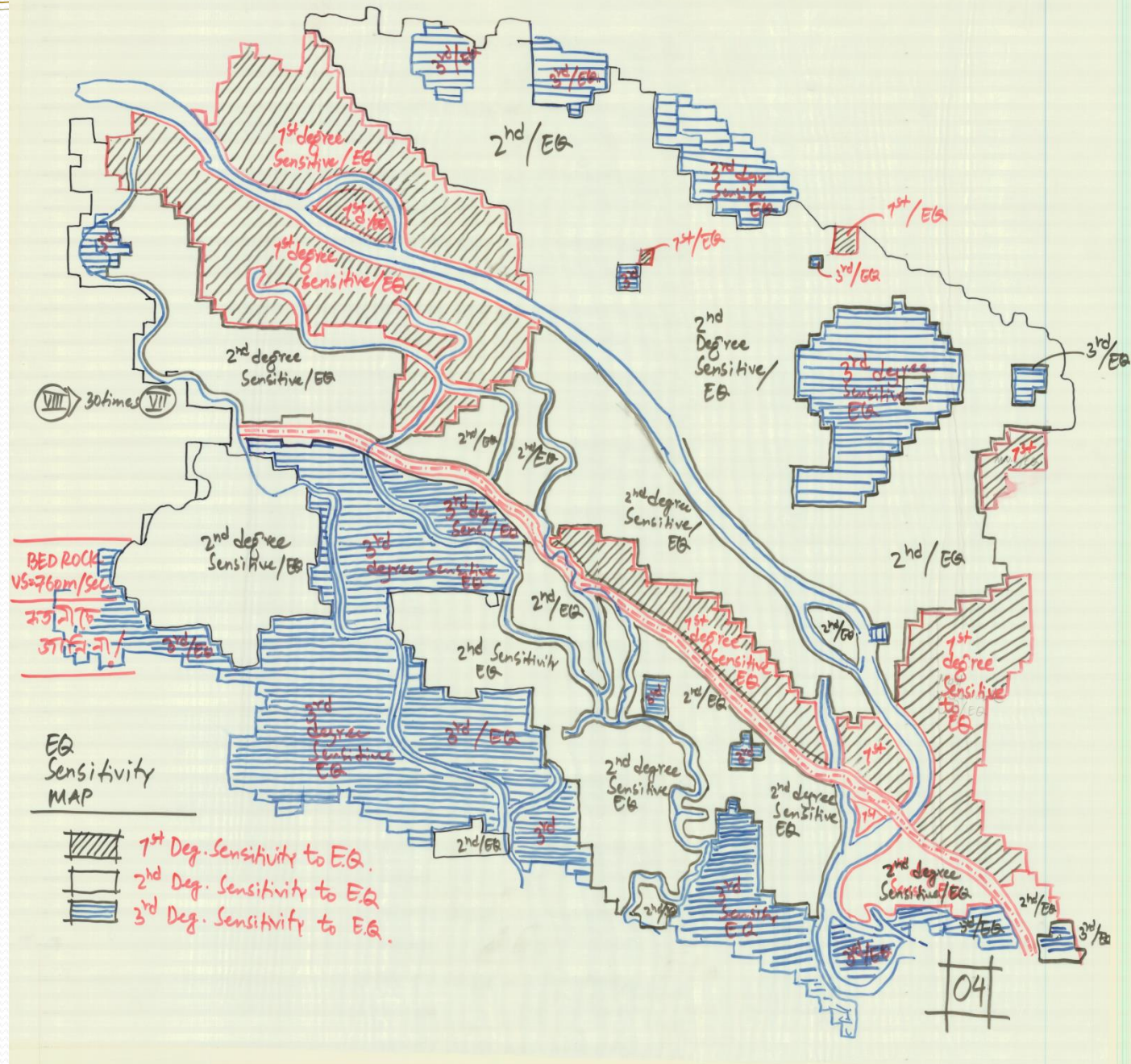
Suitable Area for High Rise Building



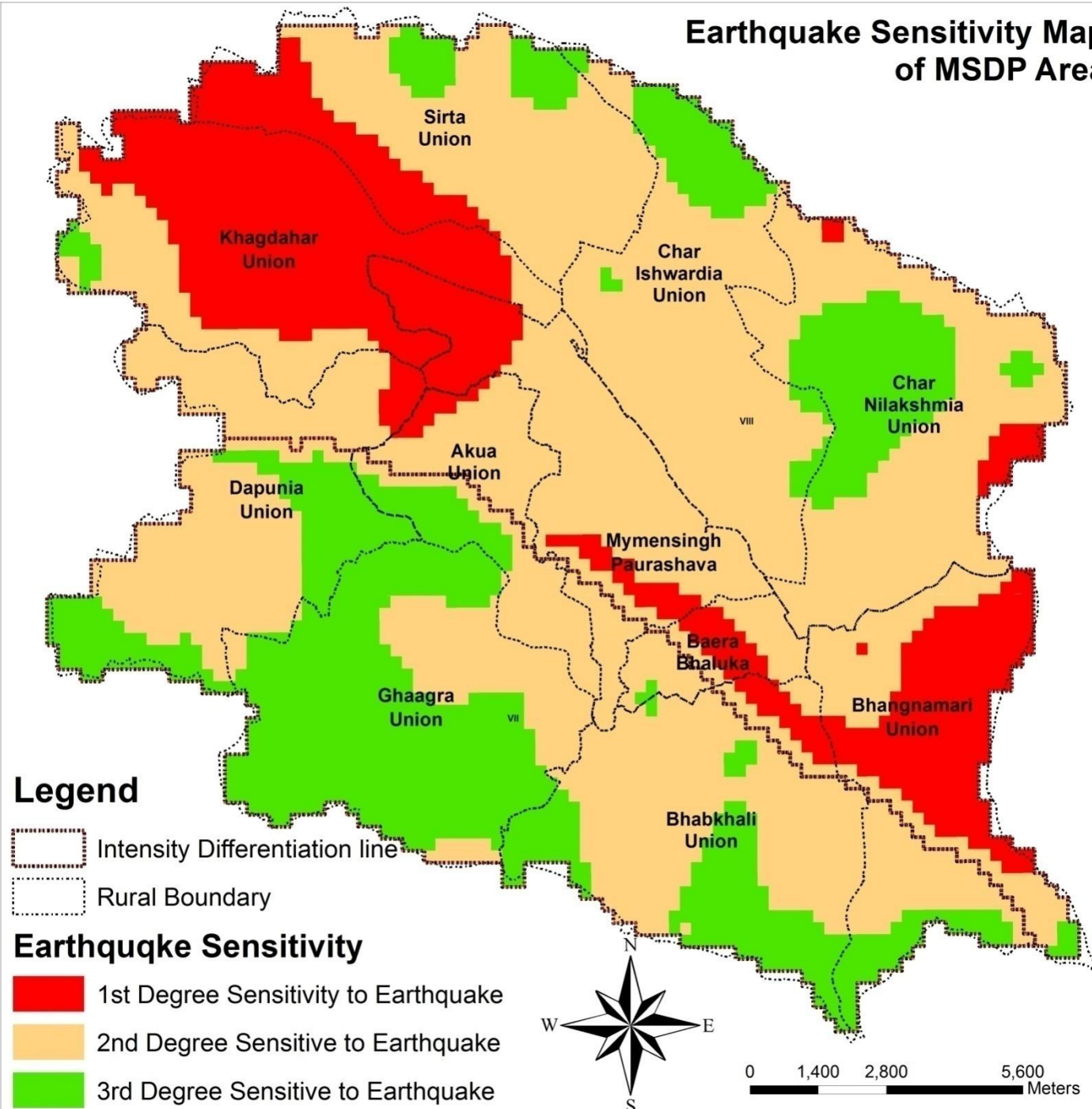


Preparation of Earthquake Sensitive Map

Data /Map Prepared from Workshop



Earthquake Sensitivity Map of MSDP Area



Earthquake Vulnerability Analysis

(British Period Structure of Mymensingh Municipality)



1:30,000

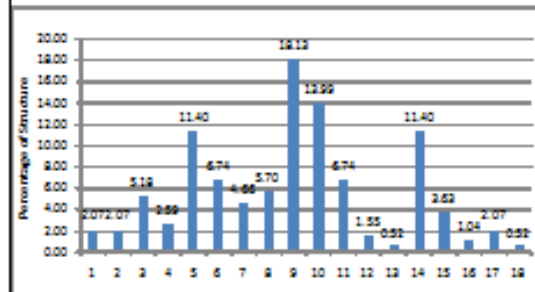
1,200 600 0 1,200 Meters



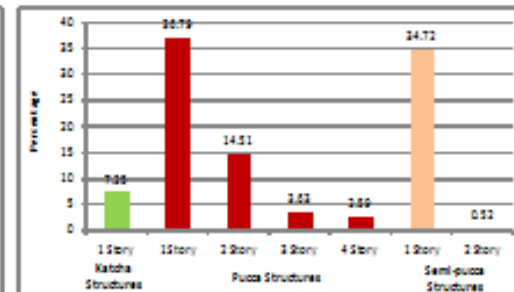
No of British Period Structure and its Percentage

Structure Type and	Ward No.																				Grand Total	%
Katcha	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		
1				1						10								1	2		14	7.25
Total Katcha Structure																					14	7.25
Pucca	1	1	1	5	2	8	6	3	5	8	16	5			2	2		2	1		71	36.79
2	1	2	2		2	2	2	5	2	5	1	1			1						28	14.51
3	1			1		1		1	1	1	1										7	3.63
4						1		1							1	1					5	2.59
Total Pucca Structure																					111	57.51
Semi-pucca	1		1	2	1	9	3	1		13	4	7	2	1	17	3		2			67	34.72
2										1											1	0.52
Total Semi-pucca Structure																					68	35.23
Grand Total	4	4	10	5	22	13	9	11	25	27	13	3	1	22	7	2	4	1			192	100.00
%	2.07	2.07	5.18	2.59	11.40	6.74	4.66	5.70	12.13	13.99	6.74	1.55	0.52	11.40	3.63	1.04	2.07	0.52			100.00	

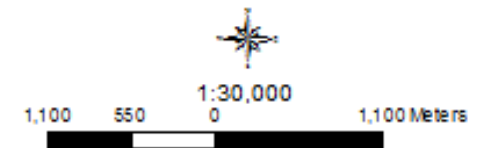
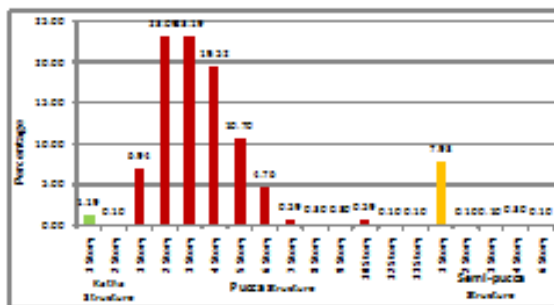
Ward-wise Percentage of Structure



Floor-wise Percentage of Structure



(Heavy Overhang Structures)

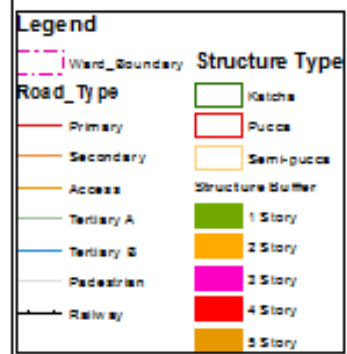
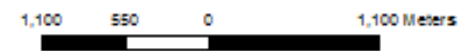


Earthquake Vulnarability Analysis

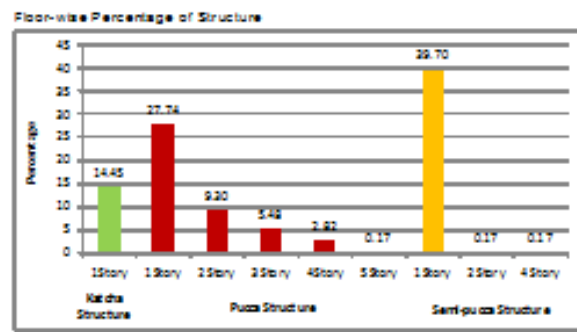
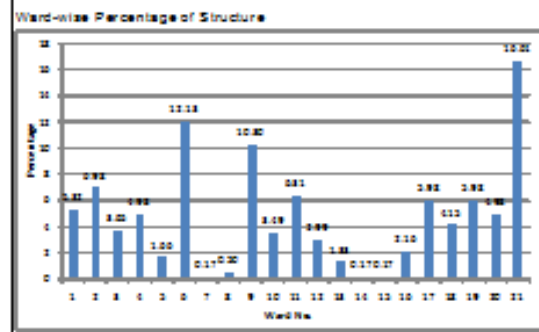
(Pakistan Period Structure of Mymensingh Municipality)



1:30,000



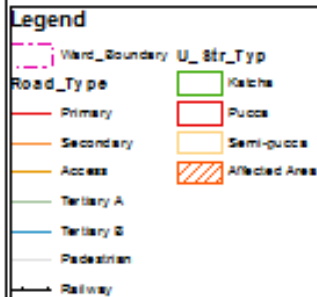
No. of Pakistan Period Structure and Its Percentage																									
Structure Type and Floor	Ward No.																					Grand Total	%		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21				
Katcha	1	1	11	1	7	5				25	1	2	1	1			2	15	4	5	5	97	14.45		
	Total Katcha Structure																					97	14.45		
Pucca	1	21	8	5	7	5	13	1	1	4	10	2	4	5	1		2	16	2	6	7	41	167	27.74	
	2		1	5	5	2	4					2	7	2	1			3	4	2	10	35	56	9.30	
	3			2		1	1	7				2	2	2								11	23	3.48	
	4				1			2									1	1				10	17	2.82	
	5																					1	1	0.17	
	Total Pucca Structure																					274	45.31		
Semi-pucca	1	8	14	10	11	4	41				21	5	19	9	1		1	5	13	7	21	11	23	239	39.70
	2																							1	0.17
	4																							1	0.17
	Total Semi-pucca Structure																					241	40.03		
Grand Total	22	42	25	20	10	75	1	2	52	21	28	18	8	1	1	13	25	25	20	100	502	100.00			
%	5.32	9.98	6.35	4.98	2.65	12.13	0.17	0.50	10.30	2.40	6.31	2.99	1.23	0.17	0.17	2.15	5.98	4.15	5.98	4.98	15.61	100.00			



Earthquake Vulnerability Analysis (Pounding Structures)



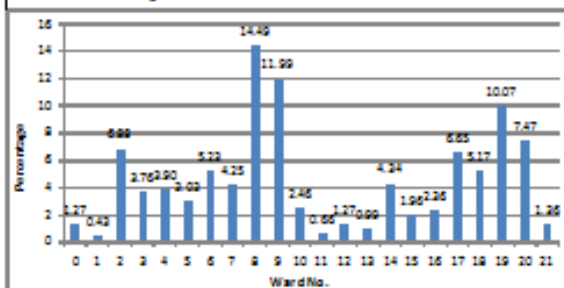
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1,100 550 0 1,100 Meters



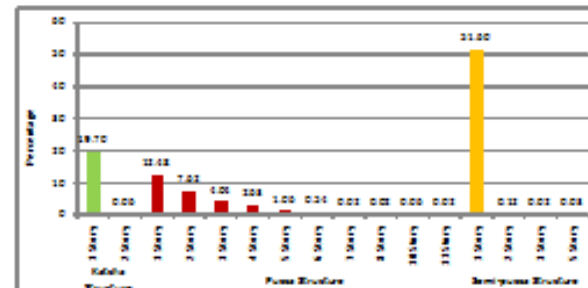
No. of Pounding Structures and its Percentage

Structure Type and Floor	Ward No.																						Grand Total	%	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Katcha	1	0	0	138	07	14	10	31	30	38	838	3	1	0	0	17	10	1	11	100	333	111	0	1280	39.70
	2																							0	0.00
	Total Katcha																						1280	39.70	
Pucca	1	18	0	31	88	81	18	30	84	187	38	30	0	13	7	88	38	30	59	18	83	00	38	338	10.18
	2	7	2	81	33	13	18	33	18	107	33	18	7	9	8	23	0	38	33	3	81	30	10	383	7.82
	3	0	0	11	3	3	13	10	10	70	88	19	0	1	13	3	7	13	1	10	8	11	381	10.01	
	4	0		7	8	8	3	7	0	30	38	8	8	0	10	0	7	11	1	10	1	10	372	2.88	
	5	0			0	2	1	88	0	8	1	1	0	8	7	9	1	1		1	1		89	1.08	
	6	0		1																			88	0.81	
	7																						1	0.02	
	8																						1	0.02	
	9																						0	0.00	
	10																						1	0.02	
	11																						1	0.02	
Total Pucca																						3330	39.17		
Semi-pucca	1	18	10	187	180	107	130	118	270	118	100	70	10	18	30	270	81	80	127	280	271	21	8878	81.80	
	2																						8	0.12	
	3																						1	0.02	
	4																						2	0.08	
Total Semi-pucca																						8877	81.77		
Grand Total	38	28	180	218	288	318	612	272	917	731	182	18	18	88	281	128	181	188	338	881	123	39	6887	100.00	
%	1.27	0.18	6.83	7.78	8.80	8.08	6.38	5.28	15.18	11.88	5.38	0.68	1.27	0.38	1.88	2.88	8.88	6.17	10.07	1.17	1.88	0.08			

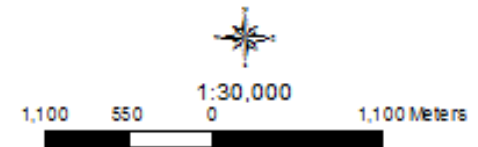
Ward-wise Percentage of Structure



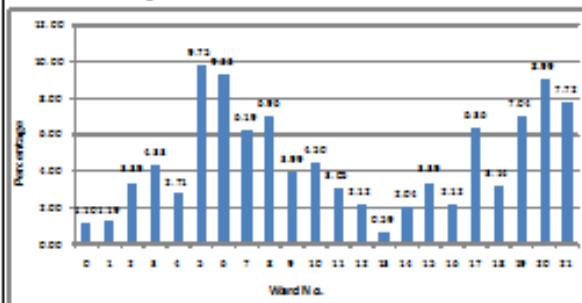
Floor-wise Percentage of Structure



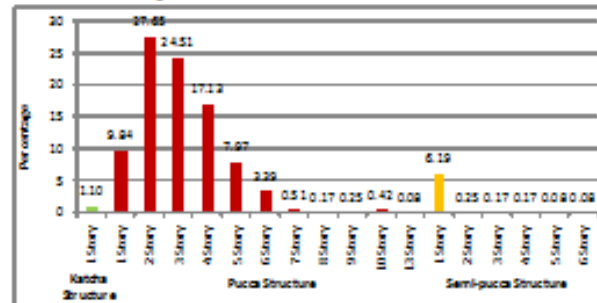
(Short Column Structures)



Ward-wise Percentage of Structure



Building Type	Structure	Percentage (%)
Katcha Structure	1 Storey	1.10
	2 Storey	9.24
Pucca Structure	2 Storey	27.65
	3 Storey	24.51
	4 Storey	17.12
	5 Storey	7.97
	6 Storey	3.39
	7 Storey	0.51
Semi-pucca Structure	8 Storey	0.17
	9 Storey	0.25
	10 Storey	0.42
	11 Storey	0.09
	12 Storey	6.19
	13 Storey	0.25
	14 Storey	0.17
	15 Storey	0.17
	16 Storey	0.09
	17 Storey	0.09

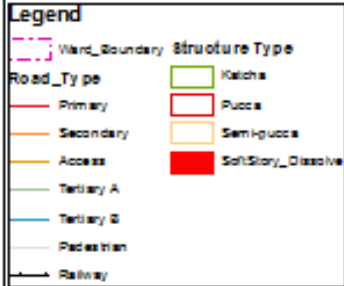


Earthquake Vulnerability Analysis

(Soft Story Structures)



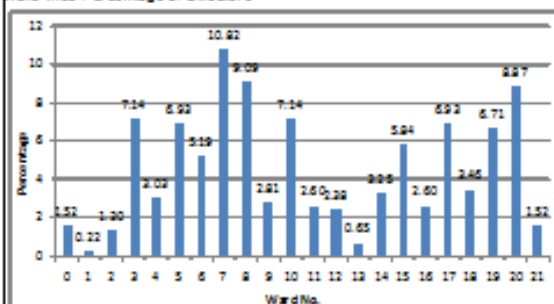
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1,100 550 0 1,100 Meters



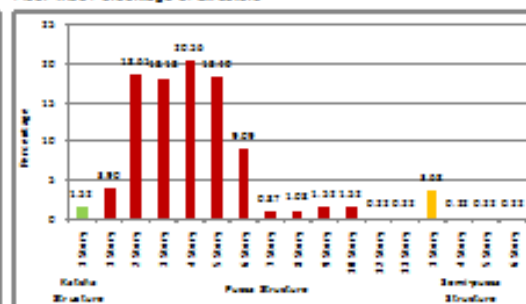
No. of Soft Story Structure and its Percentage

Structure Type and Ward	Ward No.																					Grand Total	%		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			21	
Katcha																									
1		1																			1	1	1	7	1.33
Total Katcha Structure																							7	1.33	
Pucca																									
1																									
2	1		1	1	2																				
3	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18	3.33
4	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	3.67
5	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	3.67
6	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	3.67
7	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20	3.67
8																								5	0.91
9																								5	0.91
10																								7	1.23
11																								7	1.23
12																								1	0.18
13																								1	0.18
Total Pucca Structure																							188	34.10	
Semi-pucca																									
1		1																						17	3.03
2																								1	0.18
3																								1	0.18
4																								1	0.18
Total Semi-pucca Structure																							20	3.48	
Grand Total	7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	182	100.00
%	1.33	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	100.00	100.00

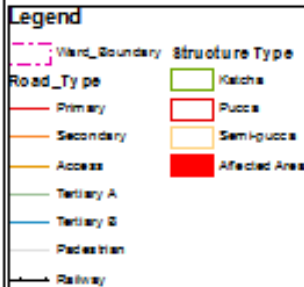
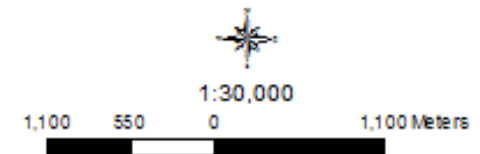
Ward-wise Percentage of Structure



Floor-wise Percentage of Structure

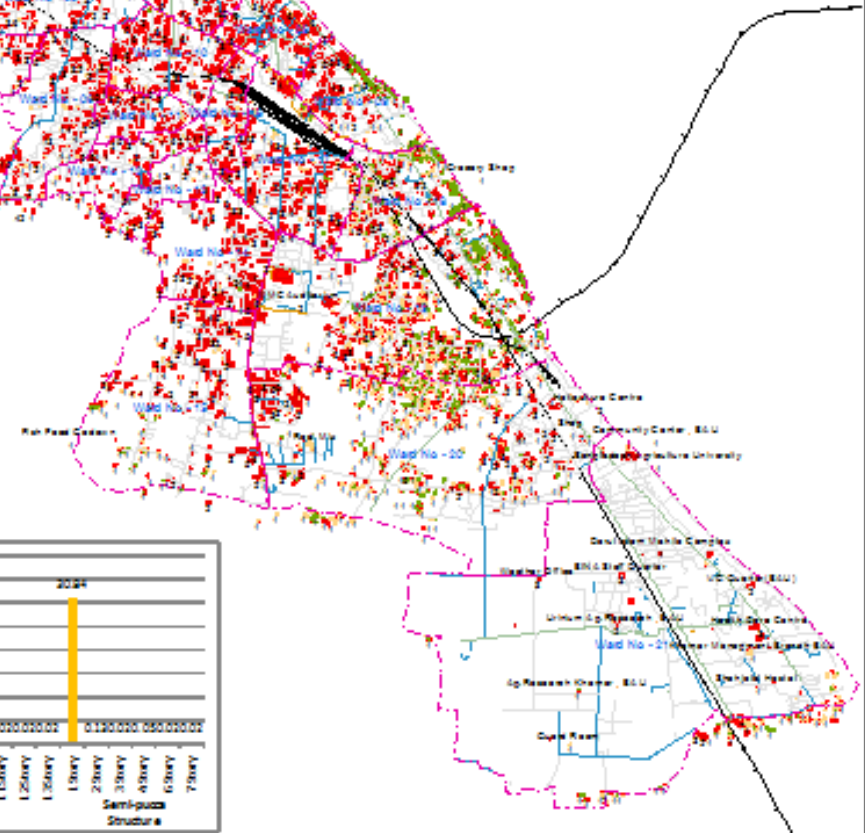


(0 to 10 years Aged Structure)



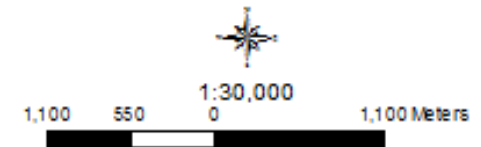
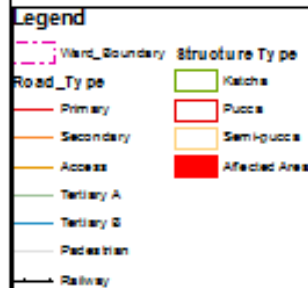
Emission Type and Phase	World No.																					Grand Total	%	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Phase																								
1	15	35	55	6	35	2				1	185	3			2	1	3	25	110	235	185	10	2061	33330
	Total Phase Emissions																					2061	33330	
Phase																								
1	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
2	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
3	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
4	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
6	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
7	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
8	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
9	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
10	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
11	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
12	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
13	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
	Total Phase Emissions																					2338	37110	
Sub-phase																								
1	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
2	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
3	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
4	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	720	11497	
6	22	22	22	22	22</																			

Ward No.	Percentage
0	3.71
1	1.06
2	2.74
3	1.76
4	4.07
5	1.96
6	2.21
7	1.27
8	1.11
9	5.10
10	2.05
11	1.25
12	0.53
13	0.82
14	3.10
15	4.57
16	1.17
17	4.45
18	11.12
19	26.25
20	14.15
21	1.48



Earthquake Vulnerability Analysis

(10 to 30 years Aged Structure)

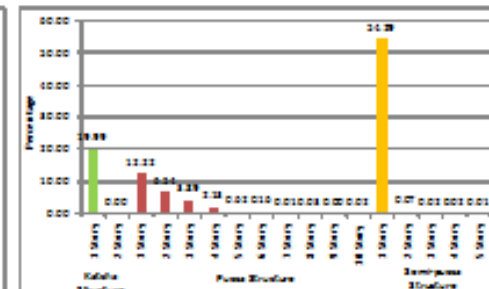
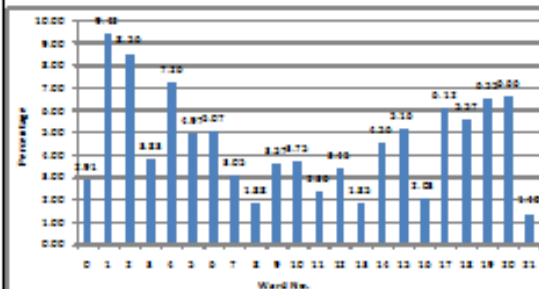


No. of 10 to 30 years Aged Structure and its Percentage

Structure Type and Ward	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Grand Total	%
Katcha																								
1	118	188	813	101	201	178	108	101	88	177	87	18	100	91	182	810	111	107	188	70			809	18.89
2																							1	0.02
Total Katcha Structures																							810	18.89
Pucca																								
1	182	810	887	171	817	118	117	108	70	88	171	111	171	17	118	118	17	107	102	108	810	91	1089	12.12
2	11	81	188	111	118	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111
3	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
4	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
5	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
6	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
7	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
8	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
9	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
10	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Total Pucca Structures																							1717	28.80
Semi-pucca																								
1	110	107	101	70	188	889	810	181	108	111	108	101	101	101	101	101	101	101	101	101	101	101	101	101
2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
3	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
4	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
5	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
6	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
7	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
8	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
9	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
10	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Total Semi-pucca Structures																							1010	16.11
Grand Total	892	807	1881	108	1178	1889	1717	1089	889	1118	1177	101	1178	101	101	101	101	101	101	101	101	101	101	101
%	1.85	8.12	1.88	0.23	1.25	1.97	3.67	2.35	1.83	2.47	2.78	0.21	2.48	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	100.00

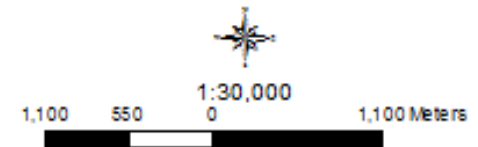
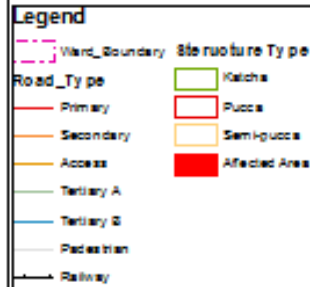
Ward-wise Percentage of Structure

Floor-wise Percentage of Structure



Earthquake Vulnerability Analysis

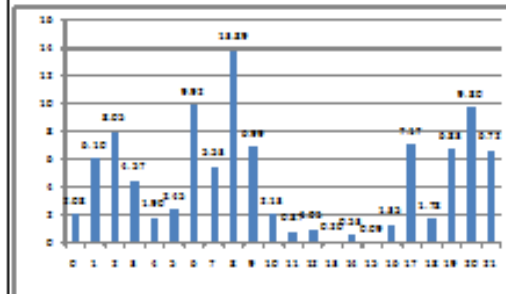
(Above 30 years Aged Structures)



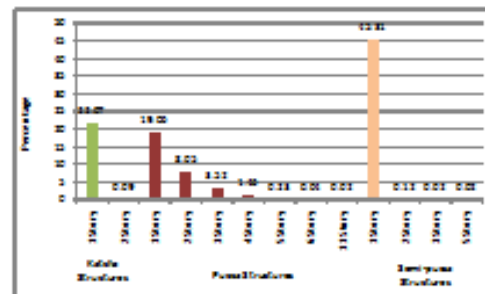
No. of Above 30years Aged Structure and Its Percentage

Structure Use and Road	Ward No.																					Grand Total	N	
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			21
Katcha																								
1	51	174	224	29	44	9	64	74	101	46	11	7	7		1		5	22	9	70	176	57	1361	22.07
2			1						4														5	0.09
Total Katcha Structure																							1366	22.16
Pucca																								
1	14	42	29	42	9	29	70	65	126	76	41	8	15	7	10	2	19	111	22	115	98	102	1072	19.06
2	4	17	14	23	2	20	24	32	103	42	19	3	6	2	4	1	11	24	4	20	12	35	453	8.05
3	1	2	5	8		7	6	6	45	22	10	2	2		7	2	9	12	2	15	6	24	198	3.52
4		2	1	4		5	2	4	15	4	2				2		2	4	2	6	1	24	92	1.46
5	1					1	1	5	2	1													13	0.23
6											2												2	0.04
11																			1				1	0.02
Total Pucca Structure																							1481	22.39
Semi-pucca																								
1	46	106	169	91	51	69	292	129	278	196	26	29	27	2	6		26	215	50	159	257	106	2598	45.31
2									1	4	1												7	0.12
3																					1		1	0.02
5											1												1	0.02
Total Semi-pucca Structure																							2607	45.47
Grand Total	117	345	454	251	107	128	258	511	791	304	120	49	39	11	30	5	76	403	100	264	551	270	524	100.00
%	2.09	6.30	8.05	4.57	1.90	2.45	9.92	5.53	13.99	6.99	2.19	0.87	1.05	0.20	0.53	0.09	1.35	7.17	1.79	6.92	9.80	6.72		

Ward-wise Percentage of Structure

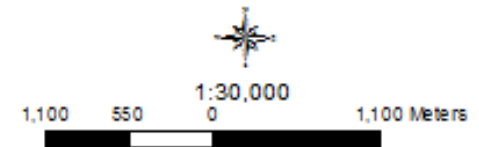
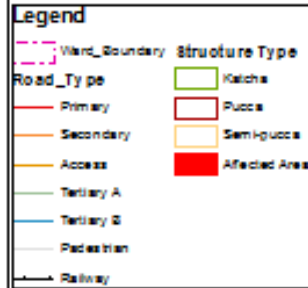


Floor-wise Percentage of Structure



Earthquake Vulnerability Analysis

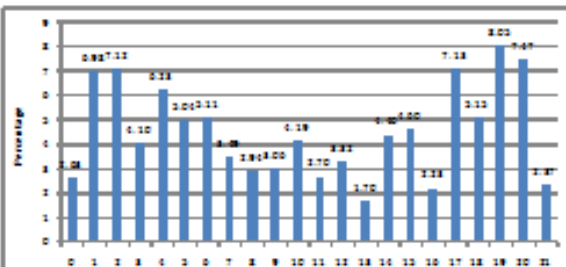
(Average Physical Conditioned Structure)



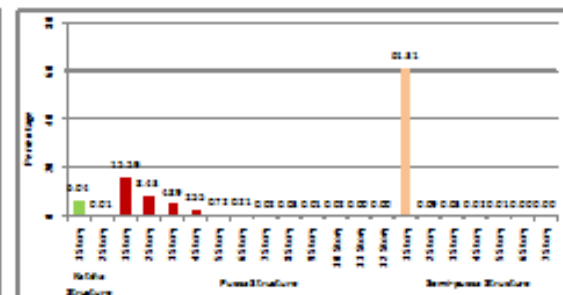
No. of Average Physical Conditioned Structure and Its Percentage

Structure Type and Row	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Total No.	%
Katcha																								
1	11	108	271	31	112	11	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
2																								
Pucca																								
1	17	118	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110	110
2	11	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111	111
3	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
4	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
5	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
6	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
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12	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Semi-pucca																								
1	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
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12	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Total																								
Grand Total	101	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019	1019
%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Ward-wise Percentage of Structure

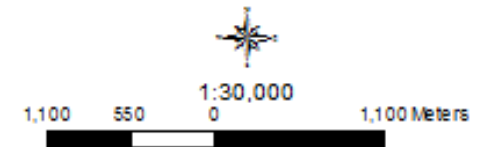
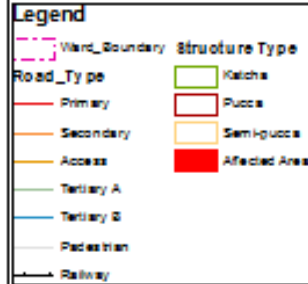


Floor-wise Percentage of Structure



Earthquake Vulnerability Analysis

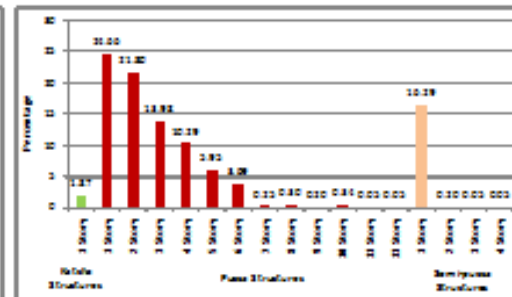
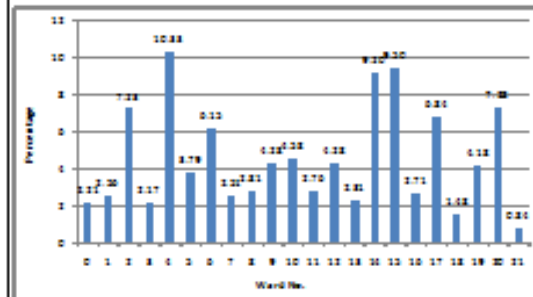
(Good Physical Conditioned Structure)



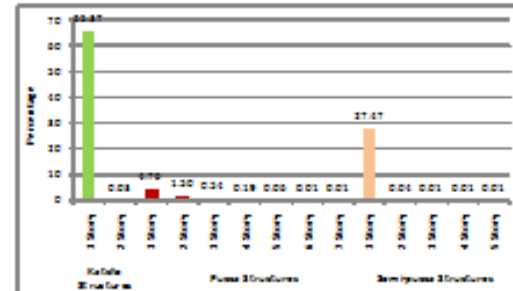
No. of Good Physical Conditioned Structure and its Percentage																										
Structure Type and its	Ward No.																					Grand Total	%			
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21					
Katcha	1																								1	0.01
																									1	0.01
Pucca	1	22	22	10	20	71	18	17	7	0	10	20	9	28	9	17	20	11	28	9	19	20	2	305	10.98	
	2	8	3	03	7	08	10	10	10	0	18	10	17	18	19	09	10	11	12	11	10	28	8	038	11.80	
	3	2	12	9	10	20	18	7	3	18	18	7	18	2	11	27	3	21	1	10	27	2	230	18.98		
	4	8	12	5	19	18	19	8	11	12	21	7	9	9	10	17	8	17	1	20	9	2	209	10.29		
	5	1	0	0	10	0	9	2	11	9	2	3	1	1	2	18	8	7	0	11	5	1	123	8.15		
	6	1			1	1	1	8	8	10	11	11	5	8	9	0	1	1	0					79	8.08	
	7																								0	0.00
	8																								9	0.02
	9																								0	0.00
	10																								7	0.01
	11																								1	0.00
	12																								1	0.00
																									1887	21.88
Semi-pucca	1	7	20	11	5	11	3	18	1	3	10	10	9	9	7	11	11	1	29	10	11	10	1	301	18.29	
	2	1																							0	0.00
	3																								1	0.00
	4																								3	0.00
																									7	0.00
Grand Total		18	30	10	37	102	77	128	10	17	27	30	18	27	17	37	38	18	48	30	39	31	37	302	100.00	
%		2.12	3.60	1.21	4.37	12.68	9.79	15.61	1.26	2.05	3.27	3.60	2.19	3.20	2.05	4.46	4.52	2.19	5.73	3.62	4.59	3.70	4.38	36.00		

Ward-wise Percentage of Structure

Floor-wise Percentage of Structure



(Poor Physial Conditioned Structure)



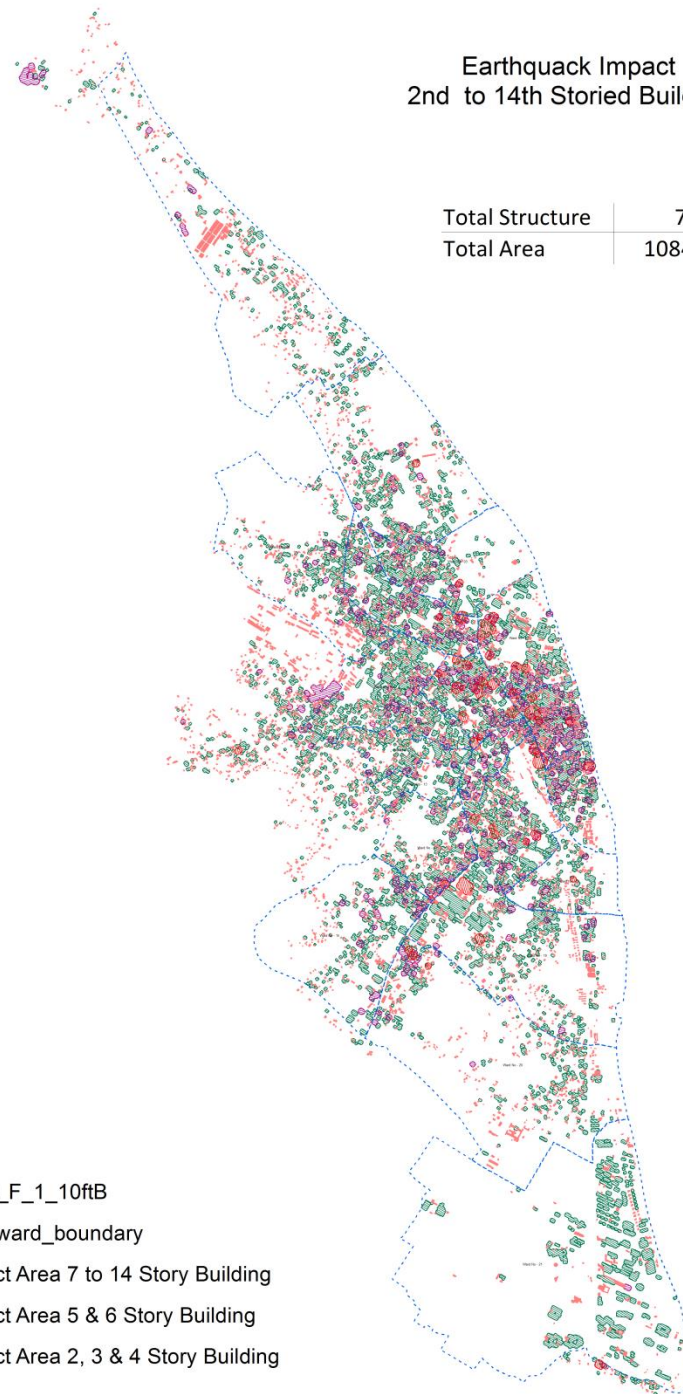
Impact of Earthquake

Legend

- Struc_F_1_10ftB
- City_ward_boundary
- Impact Area 7 to 14 Story Building
- Impact Area 5 & 6 Story Building
- Impact Area 2, 3 & 4 Story Building

Earthquake Impact 2nd to 14th Storied Building

Total Structure	7248
Total Area	1084.56



Preparation of Urban Road Map

1	Prepare and Finalize Road Network from Field survey by Using RTK GPS, Total station	21	Buffer Road centerline According to Road Type and Lane
2	Categorization of Road According to Width	22	Identify Affected Structure
3	Buffer all Road for a road network (12ft, 16ft & 20ft width)	23	Listing of Affected building By Type & Height
4	Find out the Structures which are affected due to Road widening	24	Affected Portion has been Identified from GIS Data
5	Listing of Affected building By Type & Height	25	Prepare Map and database for print
6	Affected Portion has been Identified from GIS Data	26	Re-Demarcation and Make decision on road Network System
7	prepare Map and database for Field survey	27	Re adjust Road centerline According to Decision
8	Map and Database Print for Check from field	28	Buffer Road centerline According to Road Type and Lane
9	Data Check and Additional data has been Collected for Affected building from field Survey	29	Re-Identify Affected Structure
10	Affected Building's Image has been Captured	30	Re Listing of Affected building By Type & Height
11	Database Prepare & Updated	31	Re Identify Affected Portion from GIS Data
12	Database linked with Previous Database	32	Re Prepare Map and database for print
13	Images are linked with the database	33	Again new decisions are made on road Network System
14	prepare Map and database for Print	34	Re adjust Road centerline According to Decision
15	Print Road network Map	35	Buffer Road centerline According to Road Type and Lane
16	Prepare Different Grid For road Network (100m,200m, 250m, 500m)	36	ReIdentify Affected Structure
17	Print Road Network with Grid	37	Re Listing of Affected building By Type & Height
18	Sketch on Printed Road Network Map	38	Re Identify Affected Portion from GIS Data
19	Demarcation and Make decision on road Network System	39	Re Prepare Map and database for print
20	Re adjust Road centerline According to Decision	40	Print Map
		41	Finalize Road network for Urban Area

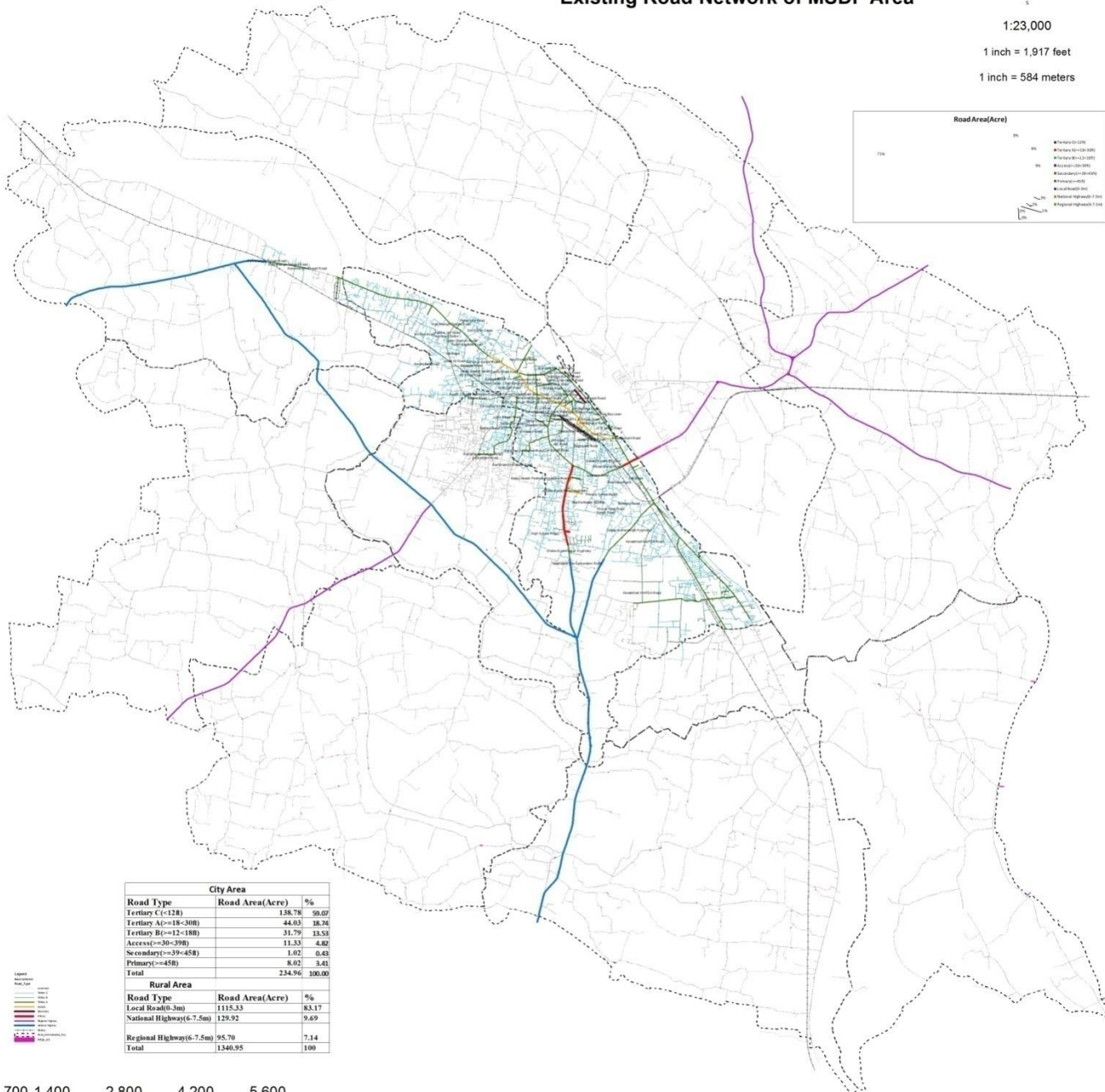
Existing Road Network of MSDP Area



1:23,000

1 inch = 1,917 feet

1 inch = 584 meters



City Area		
Road Type	Road Area(Acre)	%
Tertiary C(<12ft)	138.78	99.02
Tertiary A(>=18-30ft)	44.63	18.74
Tertiary B(>=12-18ft)	31.79	13.53
Access(<=20-29ft)	11.33	4.82
Secondary(>=39-45ft)	1.62	0.42
Primary(>=45ft)	8.62	3.41
Total	234.96	100.00

Rural Area		
Road Type	Road Area(Acre)	%
Local Road(0-3m)	1115.53	83.17
National Highway(6-7.5m)	129.92	9.69
Regional Highway(6-7.5m)	95.70	7.14
Total	1340.95	100

0 700 1,400 2,800 4,200 5,600 Meters

Categorization of Road

From the Road Data 96 type of Road width has been Identified

Sl No.	Road Width(m)	Length(M)	Sl No.	Road Width(m)	Length(M)	Sl No.	Road Width(m)	Length(M)	Sl No.	Road Width(m)	Length(M)
1	1.64	40.66	25	7.54	1361.3	49	12.14	885.56	73	21.32	4116.43
2	1.97	53.54	26	7.71	649.32	50	12.3	910.21	74	21.65	197.46
3	2.62	64.7	27	7.87	1198.99	51	12.46	1303.58	75	22.3	1624.59
4	3.28	4697.58	28	8.2	23300.68	52	12.79	129.41	76	22.96	883.03
5	3.61	235.06	29	8.53	5527.44	53	13.12	13437.2	77	23.94	1697.39
6	3.94	9447.65	30	8.69	14.22	54	13.45	662.63	78	24.6	538.43
7	4	53.39	31	8.86	2351.52	55	13.78	1387.64	79	24.93	10.91
8	4.26	2088.8	32	9.02	1022.19	56	13.91	298.67	80	25.75	104.4
9	4.59	1245.72	33	9.18	4829.82	57	13.94	2002.96	81	26.24	4362.42
10	4.92	18314.8	34	9.28	479.33	58	14.1	507.43	82	27.06	146.21
11	5.25	7394.48	35	9.35	450.01	59	14.76	2470.32	83	27.88	86.55
12	5.41	70.87	36	9.45	137.97	60	15.09	328.7	84	28.21	769.14
13	5.58	1110.94	37	9.51	1875.09	61	15.42	138.62	85	28.54	527.71
14	5.9	5746.58	38	9.74	79.51	62	15.74	2963.16	86	28.86	375.91
15	6.23	956.75	39	9.84	49450.47	63	16.4	4658.66	87	29.52	660.47
16	6.4	59.89	40	10.17	257.79	64	16.76	214.51	88	31.16	13.88
17	6.56	29596.87	41	10.33	1200.51	65	17.38	909.45	89	32.8	1933.6
18	6.72	28.54	42	10.5	8151.92	66	18.04	5805.48	90	34.44	313.27
19	6.89	793.9	43	10.66	83.26	67	18.37	2714.18	91	36.08	1527.5
20	7.02	65.18	44	10.82	3460.76	68	19.02	475.92	92	40.34	327.99
21	7.05	151.71	45	10.99	270.88	69	19.19	591.57	93	49.2	45.27
22	7.12	153.73	46	11.15	1328.86	70	19.68	2189.89	94	52.48	1598.2
23	7.22	6434.38	47	11.48	14695.92	71	20.66	63.27	95	60.68	154.29
24	7.38	72.46	48	11.81	3466.79	72	20.99	166.59	96	65.6	327.01

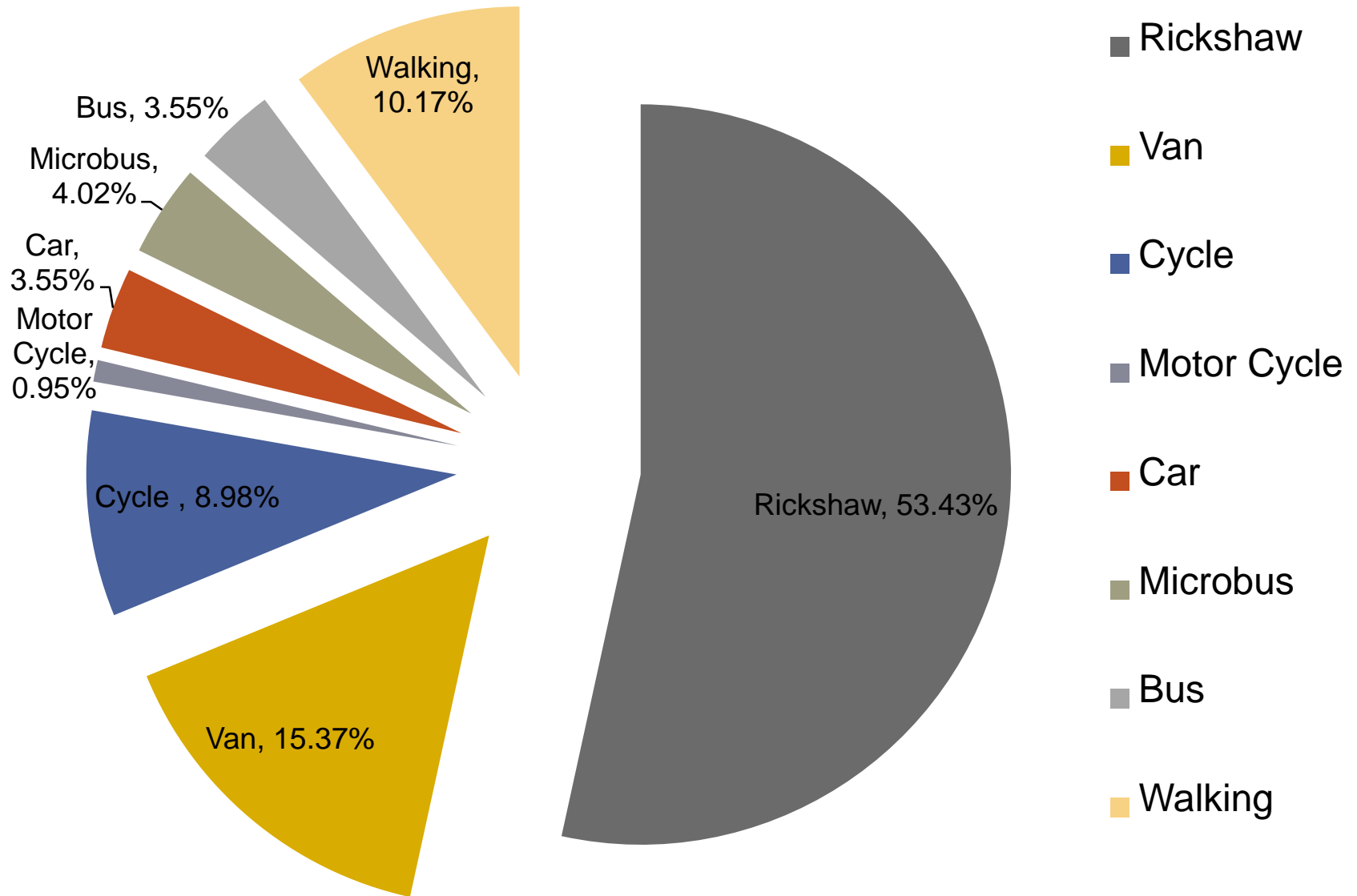
Source : GIS Database

Transport Survey Field Map; MSDP Project



Sl. No.	Location	Time	Vehicle Type	Direction	Count	Remarks
1	Intersection 1	08:00	Motorcycle	North	10	
2	Intersection 2	08:15	Car	South	5	
3	Intersection 3	08:30	Auto Rickshaw	East	15	
4	Intersection 4	08:45	Bus	West	20	
5	Intersection 5	09:00	Motorcycle	North	12	
6	Intersection 6	09:15	Car	South	8	
7	Intersection 7	09:30	Auto Rickshaw	East	18	
8	Intersection 8	09:45	Bus	West	22	
9	Intersection 9	10:00	Motorcycle	North	14	
10	Intersection 10	10:15	Car	South	6	
11	Intersection 11	10:30	Auto Rickshaw	East	16	
12	Intersection 12	10:45	Bus	West	24	
13	Intersection 13	11:00	Motorcycle	North	11	
14	Intersection 14	11:15	Car	South	7	
15	Intersection 15	11:30	Auto Rickshaw	East	17	
16	Intersection 16	11:45	Bus	West	21	
17	Intersection 17	12:00	Motorcycle	North	13	
18	Intersection 18	12:15	Car	South	9	
19	Intersection 19	12:30	Auto Rickshaw	East	19	
20	Intersection 20	12:45	Bus	West	23	
21	Intersection 21	13:00	Motorcycle	North	15	
22	Intersection 22	13:15	Car	South	11	
23	Intersection 23	13:30	Auto Rickshaw	East	21	
24	Intersection 24	13:45	Bus	West	25	
25	Intersection 25	14:00	Motorcycle	North	16	
26	Intersection 26	14:15	Car	South	12	
27	Intersection 27	14:30	Auto Rickshaw	East	22	
28	Intersection 28	14:45	Bus	West	26	
29	Intersection 29	15:00	Motorcycle	North	17	
30	Intersection 30	15:15	Car	South	13	
31	Intersection 31	15:30	Auto Rickshaw	East	23	
32	Intersection 32	15:45	Bus	West	27	
33	Intersection 33	16:00	Motorcycle	North	18	
34	Intersection 34	16:15	Car	South	14	
35	Intersection 35	16:30	Auto Rickshaw	East	24	
36	Intersection 36	16:45	Bus	West	28	
37	Intersection 37	17:00	Motorcycle	North	19	
38	Intersection 38	17:15	Car	South	15	
39	Intersection 39	17:30	Auto Rickshaw	East	25	
40	Intersection 40	17:45	Bus	West	29	
41	Intersection 41	18:00	Motorcycle	North	20	
42	Intersection 42	18:15	Car	South	16	
43	Intersection 43	18:30	Auto Rickshaw	East	26	
44	Intersection 44	18:45	Bus	West	30	
45	Intersection 45	19:00	Motorcycle	North	21	
46	Intersection 46	19:15	Car	South	17	
47	Intersection 47	19:30	Auto Rickshaw	East	27	
48	Intersection 48	19:45	Bus	West	31	
49	Intersection 49	20:00	Motorcycle	North	22	
50	Intersection 50	20:15	Car	South	18	
51	Intersection 51	20:30	Auto Rickshaw	East	28	
52	Intersection 52	20:45	Bus	West	32	
53	Intersection 53	21:00	Motorcycle	North	23	
54	Intersection 54	21:15	Car	South	19	
55	Intersection 55	21:30	Auto Rickshaw	East	29	
56	Intersection 56	21:45	Bus	West	33	
57	Intersection 57	22:00	Motorcycle	North	24	
58	Intersection 58	22:15	Car	South	20	
59	Intersection 59	22:30	Auto Rickshaw	East	30	
60	Intersection 60	22:45	Bus	West	34	
61	Intersection 61	23:00	Motorcycle	North	25	
62	Intersection 62	23:15	Car	South	21	
63	Intersection 63	23:30	Auto Rickshaw	East	31	
64	Intersection 64	23:45	Bus	West	35	
65	Intersection 65	24:00	Motorcycle	North	26	
66	Intersection 66	24:15	Car	South	22	
67	Intersection 67	24:30	Auto Rickshaw	East	32	
68	Intersection 68	24:45	Bus	West	36	
69	Intersection 69	25:00	Motorcycle	North	27	
70	Intersection 70	25:15	Car	South	23	
71	Intersection 71	25:30	Auto Rickshaw	East	33	
72	Intersection 72	25:45	Bus	West	37	
73	Intersection 73	26:00	Motorcycle	North	28	
74	Intersection 74	26:15	Car	South	24	
75	Intersection 75	26:30	Auto Rickshaw	East	34	
76	Intersection 76	26:45	Bus	West	38	
77	Intersection 77	27:00	Motorcycle	North	29	
78	Intersection 78	27:15	Car	South	25	
79	Intersection 79	27:30	Auto Rickshaw	East	35	
80	Intersection 80	27:45	Bus	West	39	
81	Intersection 81	28:00	Motorcycle	North	30	
82	Intersection 82	28:15	Car	South	26	
83	Intersection 83	28:30	Auto Rickshaw	East	36	
84	Intersection 84	28:45	Bus	West	40	
85	Intersection 85	29:00	Motorcycle	North	31	
86	Intersection 86	29:15	Car	South	27	
87	Intersection 87	29:30	Auto Rickshaw	East	37	
88	Intersection 88	29:45	Bus	West	41	
89	Intersection 89	30:00	Motorcycle	North	32	
90	Intersection 90	30:15	Car	South	28	
91	Intersection 91	30:30	Auto Rickshaw	East	38	
92	Intersection 92	30:45	Bus	West	42	
93	Intersection 93	31:00	Motorcycle	North	33	
94	Intersection 94	31:15	Car	South	29	
95	Intersection 95	31:30	Auto Rickshaw	East	39	
96	Intersection 96	31:45	Bus	West	43	
97	Intersection 97	32:00	Motorcycle	North	34	
98	Intersection 98	32:15	Car	South	30	
99	Intersection 99	32:30	Auto Rickshaw	East	40	
100	Intersection 100	32:45	Bus	West	44	

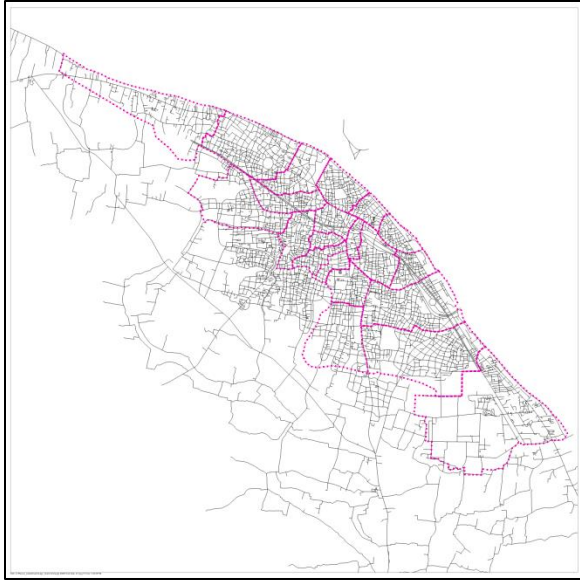
Mode Choice



Existing Road Category According to Width

Ward No.	Road Category (Length in km)					Total
	A(32ft Above)	B (24-31.99ft)	C (16-23.99ft)	D (8-15.99ft)	E (Below 8 ft)	
1			5.41	13.06	7.36	25.82
2	1.33	0.2	4.9	24.86	11.99	43.28
3	2.89	0.79	0.62	11.62	4.09	20.01
4			0.14	8.33	5.68	14.15
5	1.53		0.93	20.59	4.52	27.56
6	0.03		1.99	10	6.91	18.93
7		1.14	3.09	7.74	1.74	13.72
8	0.33	0.33	3.24	3.41	2.54	9.84
9	3.93	1.61	2.21	3.18	4.17	15.09
10	1.53	0.65	1.22	4.68	3.79	11.87
11				3.38	1.57	4.95
12				3.61	2.97	6.58
13			0.78	4.34	1.64	6.77
14				3.65	3.57	7.22
15			0.43	8.01	6.56	15
16	1.53	0.34	3.14	2.39	2.51	9.91
17	4.83	1.03	2.58	6.4	5.67	20.52
18		1.51	0.12	3.39	5.71	10.72
19	4.04	2.14	8.63	20.59	11.11	46.5
20	3.3	3.82	9.69	22.51	9.92	49.25
21	0.02	2.59	7.77	34.63	5.06	50.08
Grand Total	25.28	16.15	56.88	220.37	109.07	427.75

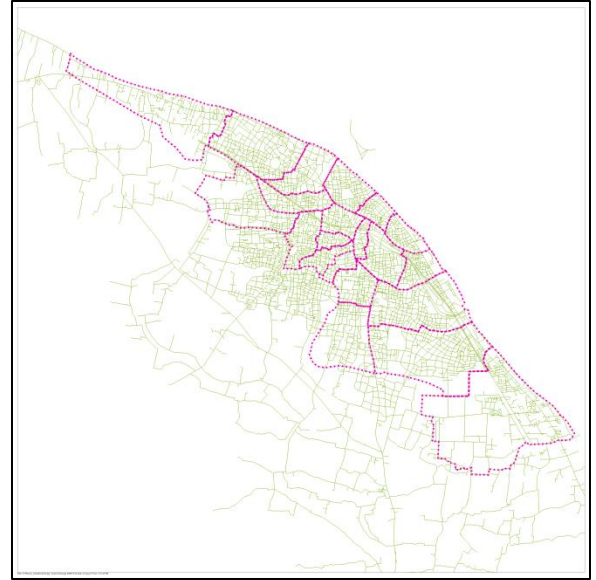
Road Widening



12 ft



16 ft

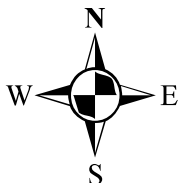
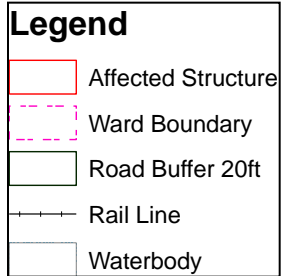


20 ft

Road Width	Affected Structure
12 ft	12013
16 ft	16592
20 ft	20646

Challenge: Total Affected Structure 4471

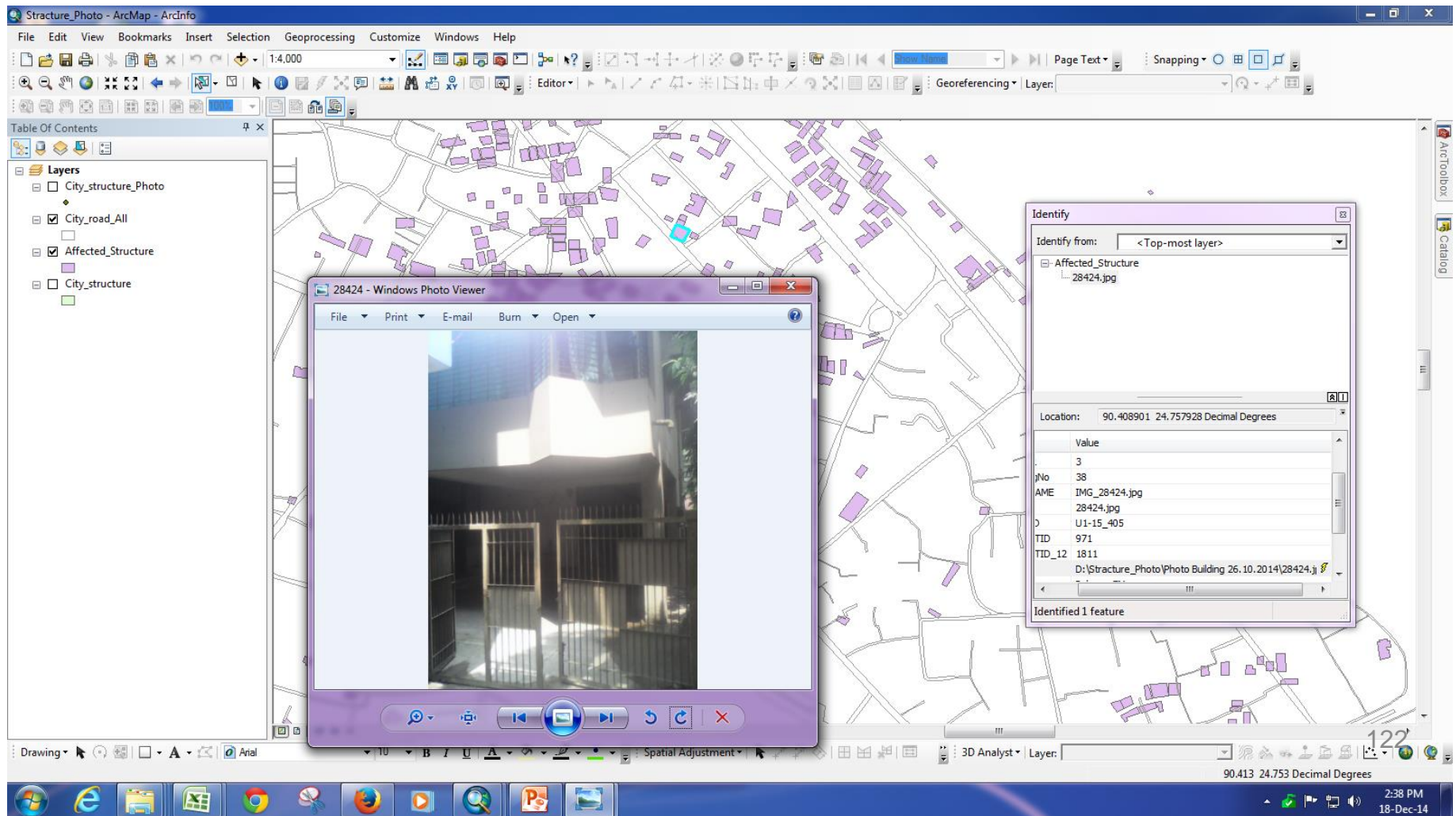
Red Colour In Map Marked The Affected Structures After Widening the Road



Source : GIS Database

Pictures of Affected Structures has been Taken and Attached with Database

An example of Image Linkage with Structure Database



Consideration for Defining Lane

Width of different Vehicle from Field Survey

Truck - 8 ft 4 inch

Bus - 8 ft 3 inch

Microbus - 5 ft 6 inch

Car - 5 ft 5 inch

Rickshaw - 3 ft 11 inch

Define Road Category and Lane

1. Regional Road:

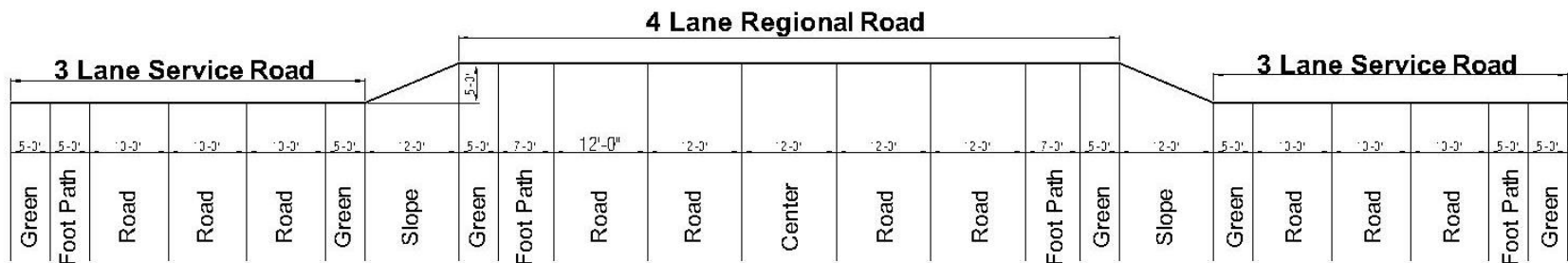
4 Lane (12ft per lane) Regional Road with 3 Lane (10ft per lane)

Service Road

84 ft Regional Road

45 ft Service Road with Footpath

Cross Section of Regional Road:



4 LANE REGIONAL ROAD
WITH 3 LANE SERVICE ROAD

Define Road Category and Lane

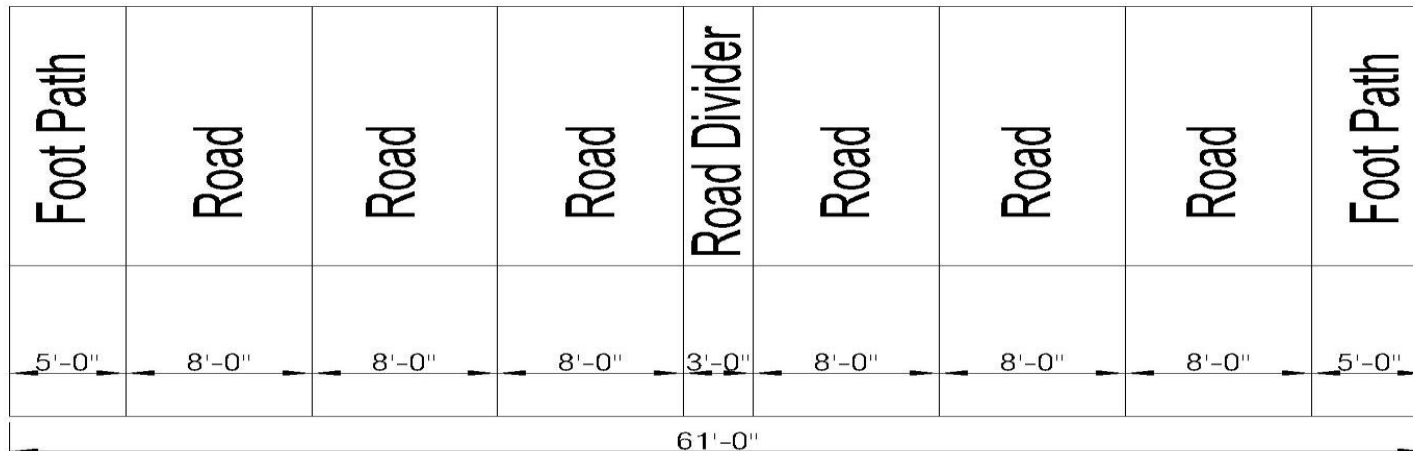
2. Primary Road:

6 Lane (8 ft per lane) Road

3 ft Divider on Center and 5 ft Footpath both side

total 61 ft Primary Road

Cross Section of Primary Road:



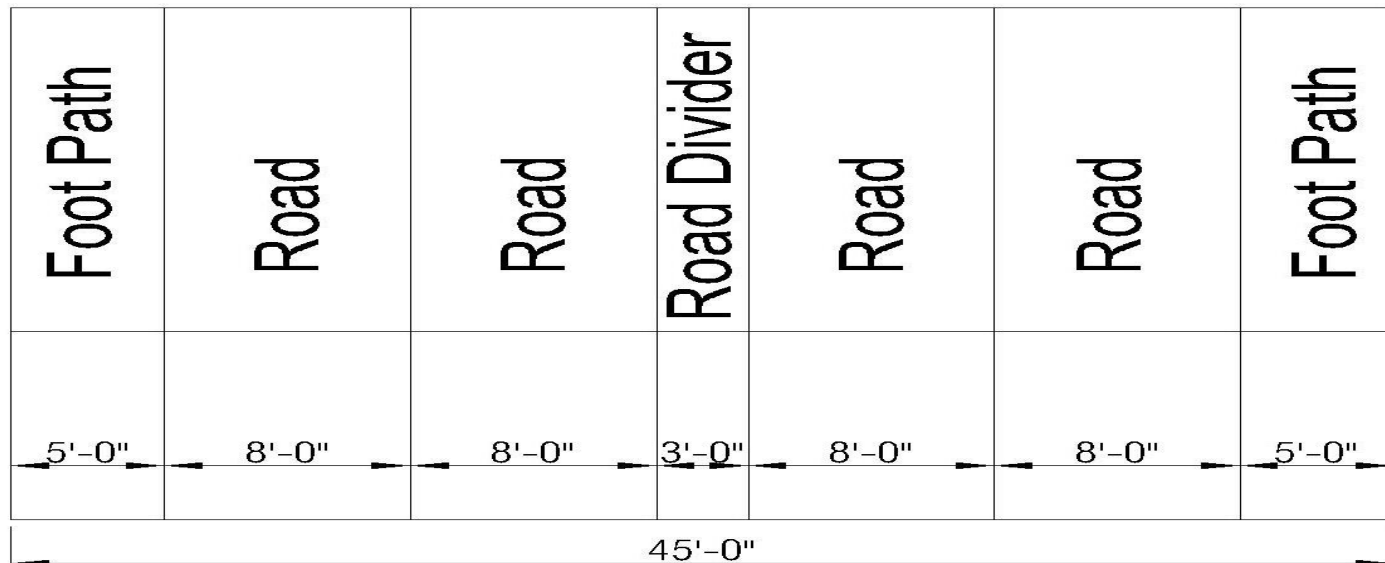
Define Road Category and Lane

3. Secondary Road:

4 Lane (8 ft per lane) Road

3 ft Divider on Center and 5 ft Footpath both side
total 45 ft Secondary Road

Cross Section of Secondary Road:



Define Road Category and Lane

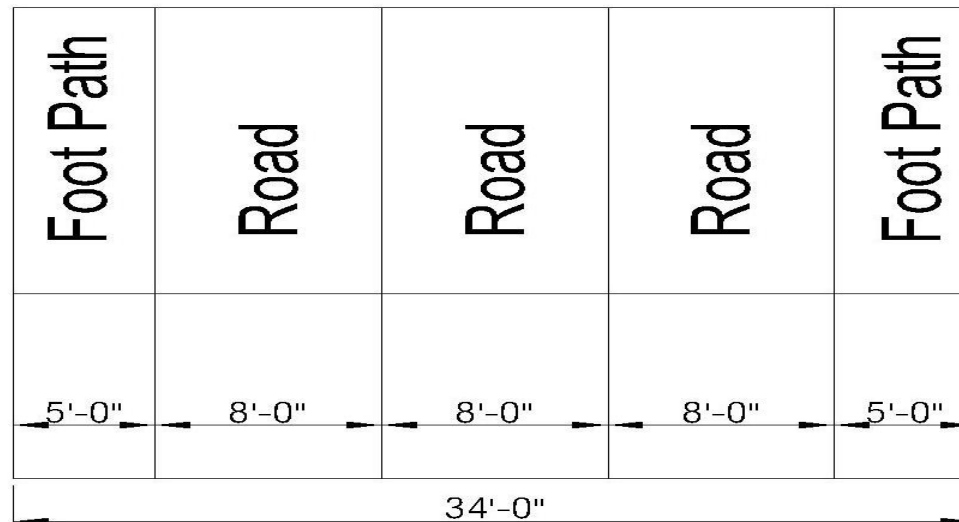
4. Local Road:

3 Lane (8 ft per lane) Road

5 ft Footpath both side

total 34 ft Local Road

Cross Section of Local Road:



Define Road Category and Lane

5. Rail Road:

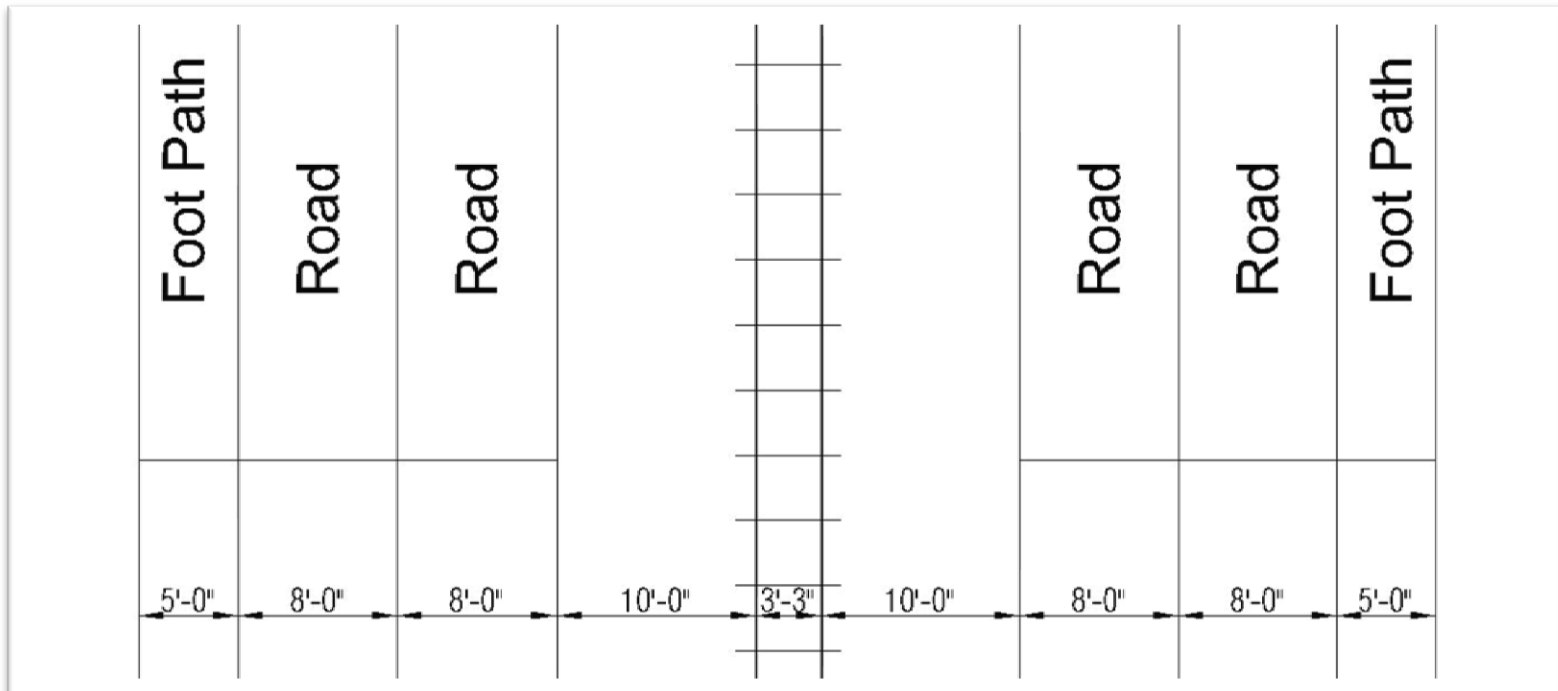
20 ft Rail Buffer

2 Lane Road on both side of Rail Track

5 ft Footpath both side

total 62 ft Rail Road

Cross Section of Rail Road:



Sketch on Tracing while Road Designing














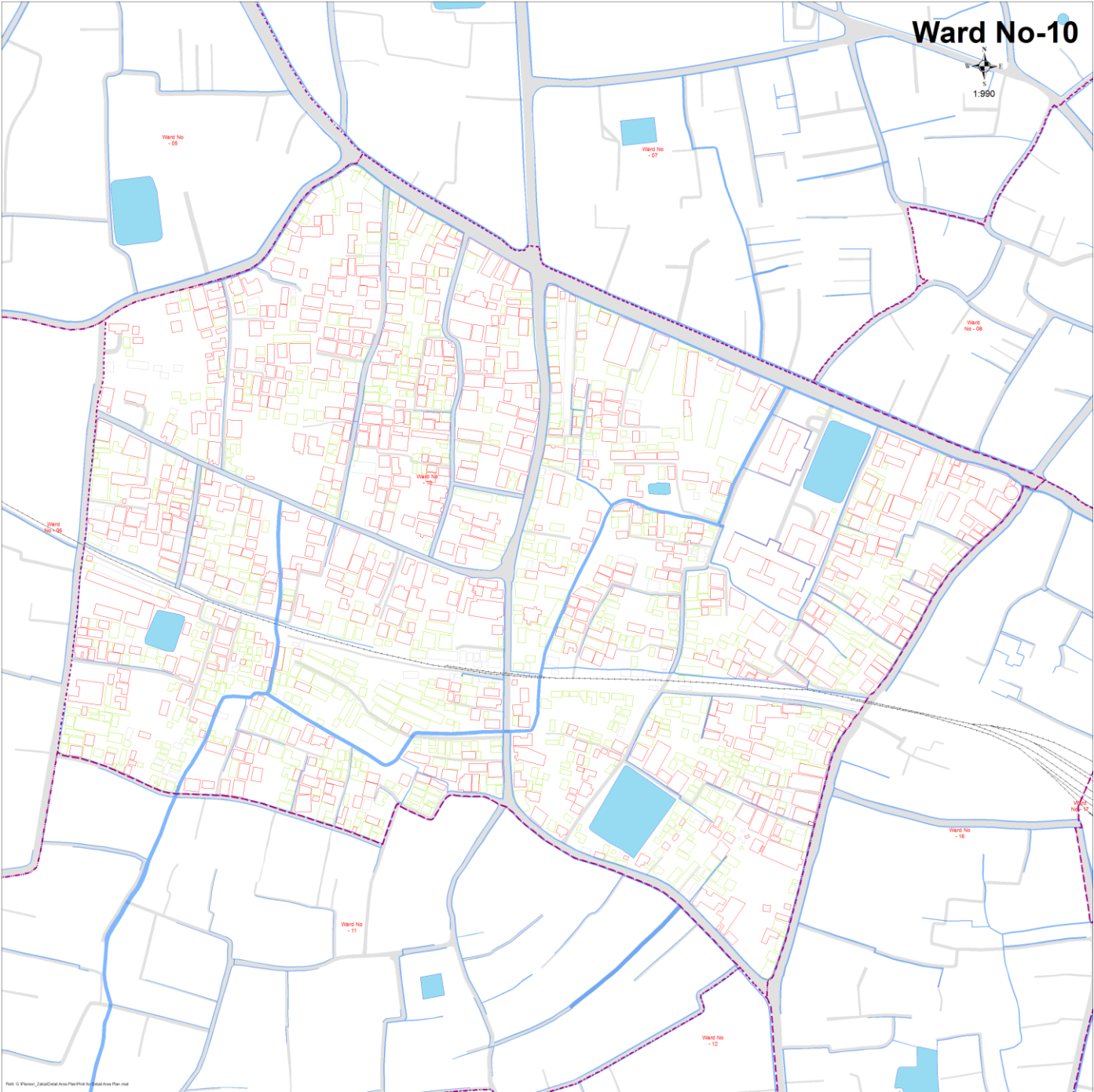


Detailed Road Design

Existing Road Network (Ward-10)

Legend

-  City_Ward_Boundary
-  Existing Road
-  Railway
-  City_Drain
- Structure**
-  Katcha
-  Pucca
-  Semi Pucca
-  Tin-Shed
-  Under Construction
-  Vacant
-  Waterbody



Detailed Road Design (Ward-10)

Proposed Road Network According to Previous Standard

Legend

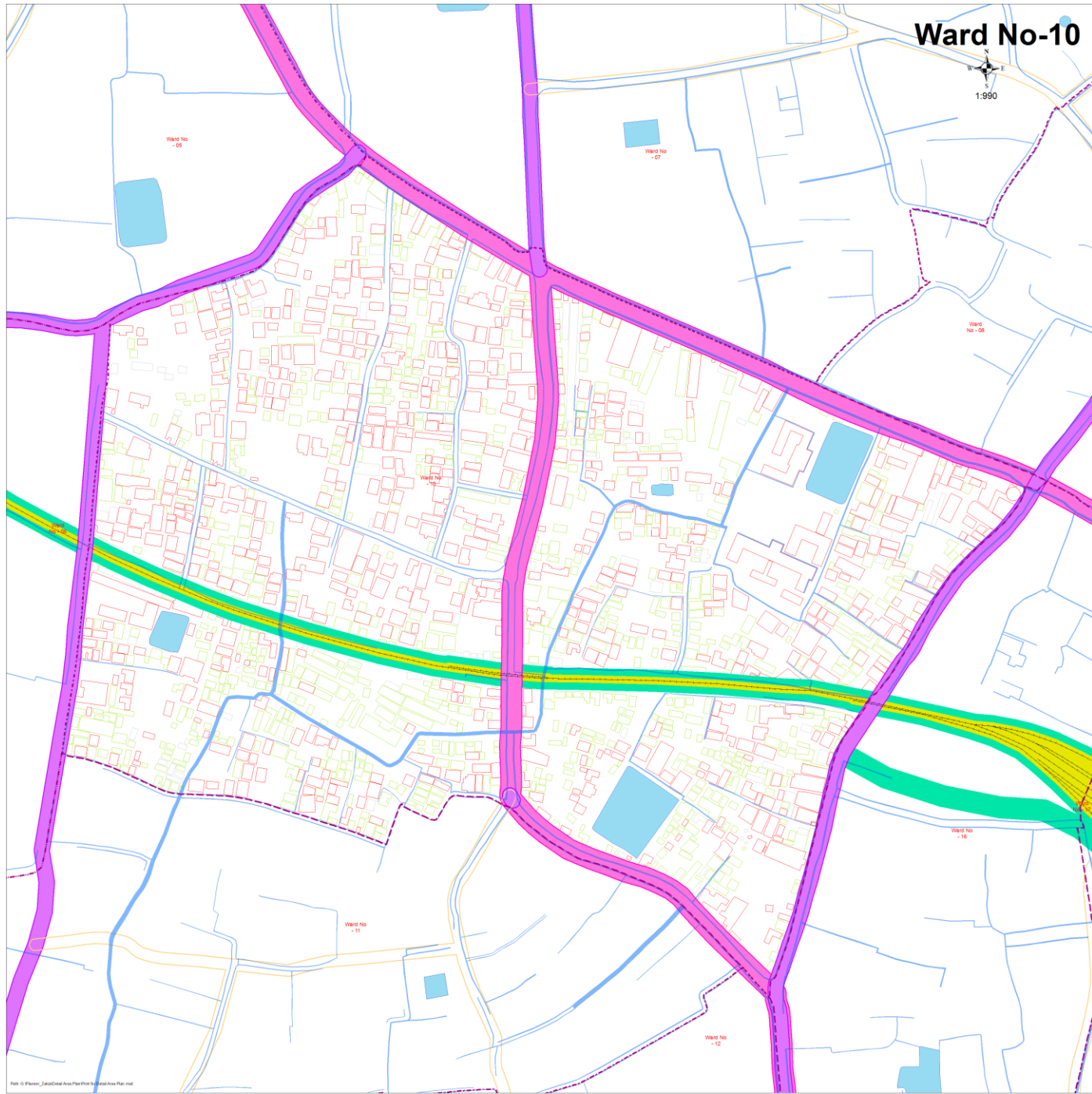
- City_Ward_Boundary
- Railway
- City_Drain

Proposed Road Network

- RD_3 Lane
- RD_4 Lane
- RD_6 Lane
- RD_RH with SR
- RD_RH without SR
- RD_Rail Buffer
- RD_Rail Road

Structure

- Katcha
- Pucca
- Semi Pucca
- Tin-Shed
- Under Construction
- Vacant
- Waterbody



Detailed Road Design (Ward-10)

Legend

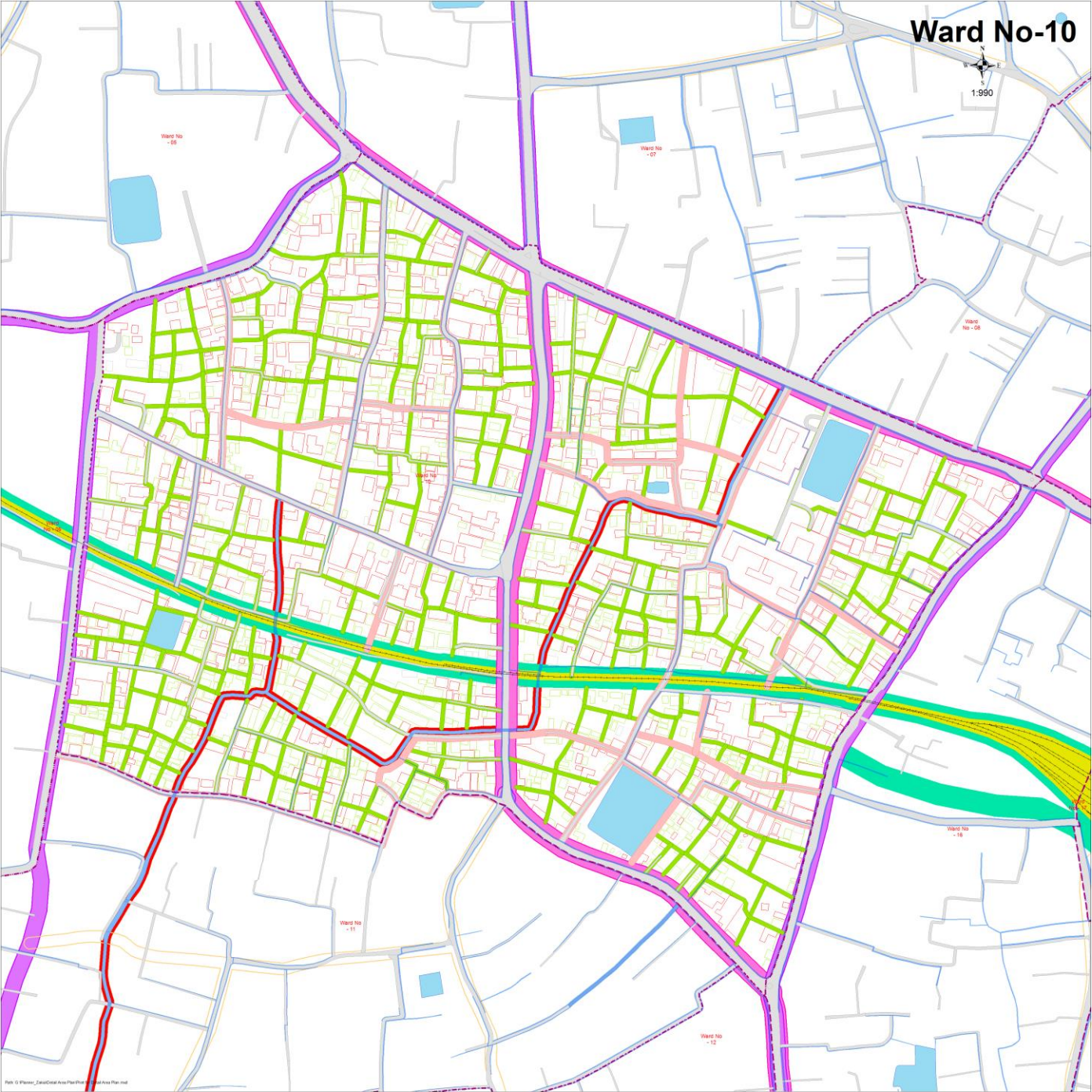
- City_Ward_Boundary
- Existing Road
- Railway
- City_Drain

Proposed Road Network

- RD_3 Lane
- RD_4 Lane
- RD_6 Lane
- RD_RH with SR
- RD_RH without SR
- RD_Rail Buffer
- RD_Rail Road
- RD_Detail_W10_20ft_B1
- RD_Detail_W10_12ft_B1
- RD_Drain_walkway1

Structure

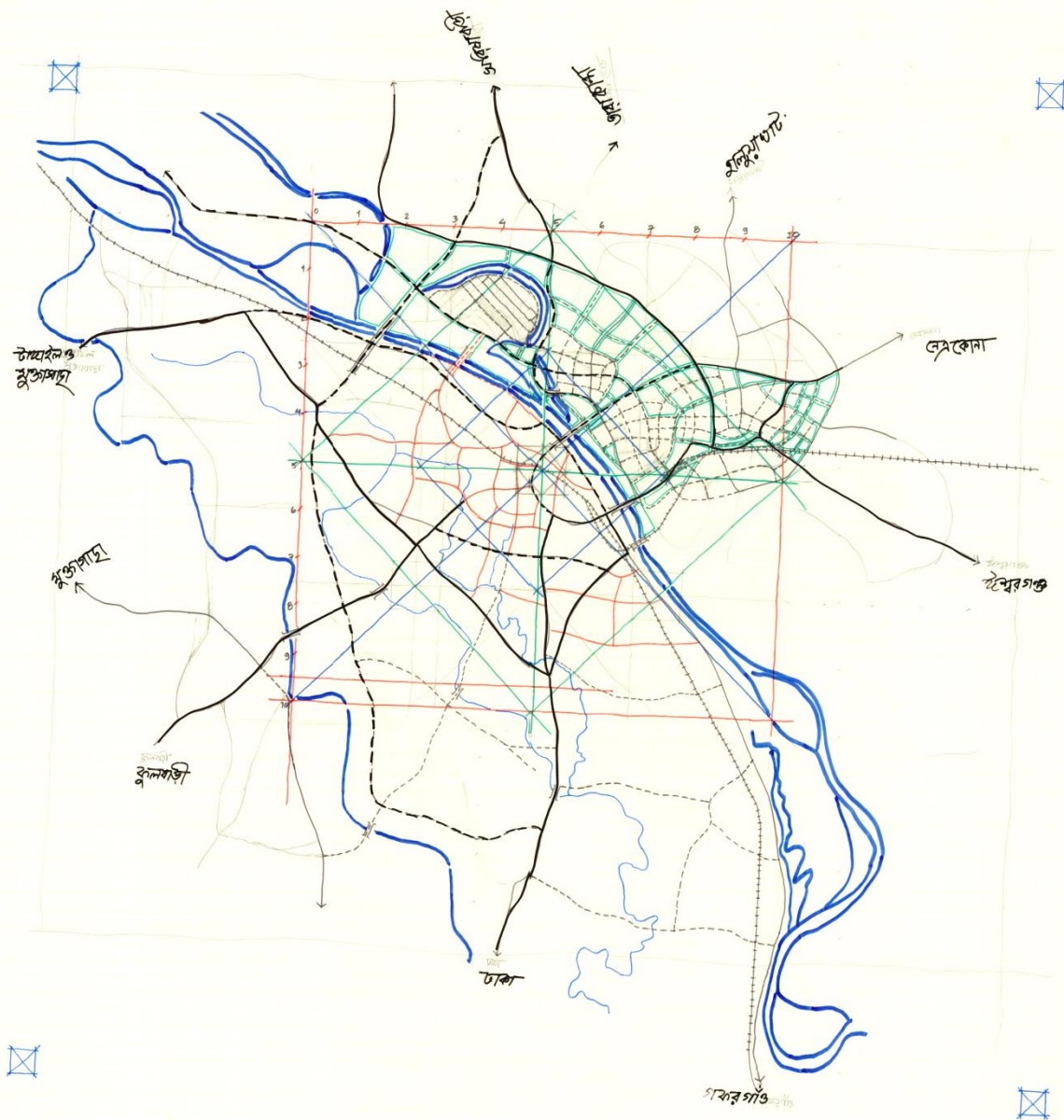
- Katcha
- Pucca
- Semi Pucca
- Tin-Shed
- Under Construction
- Vacant
- Waterbody



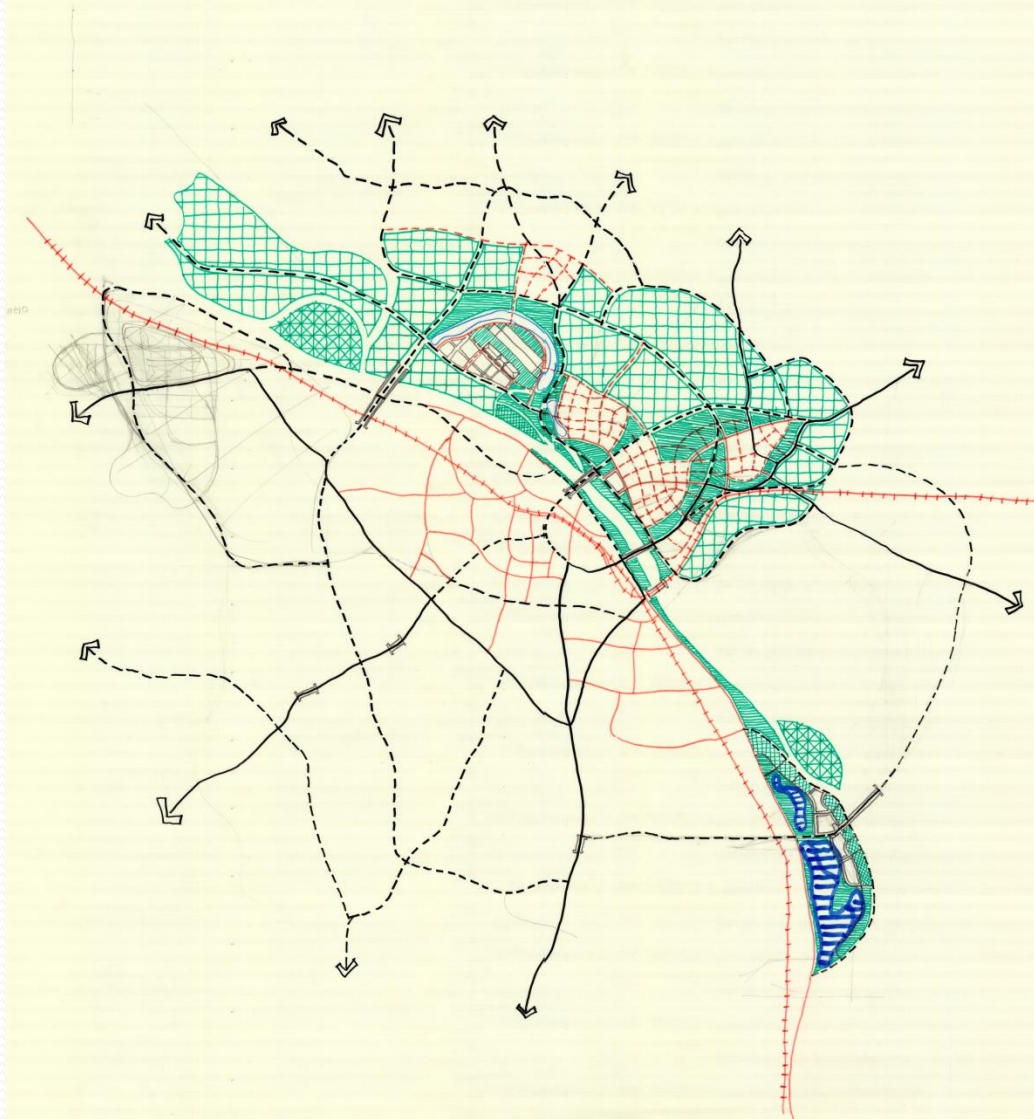
Preparation of Regional Road Map

1	Prepare Physical Feature Map for MSDP Area
2	Sketch on Printed Map for Regional Road Network
3	Scan Map
4	Geo-reference Map
5	Edit and Prepare Road network
6	Print Prepared Road Network
7	Re sketch on Printed Road Network
8	Scan Map
9	Georeference Map
10	Re Edit and Prepare Road network
11	Print Re edited Network on Classification of Elevation
12	Re shuffle Road Network
13	Define Type of Road and Define Width of road
14	Buffer Road centerline According to Road Type and Lane
15	Find out the Structures which are affected due to Road widening
16	Listing of Affected building By Type & Height
17	Affected Portion has been Identified from GIS Data
18	Prepare Database for Regional Road network
19	Database Varified with Expert opinion
20	Finalize Regional Road network for MSDP Area

Sketch on Tracing while Designing Regional Road

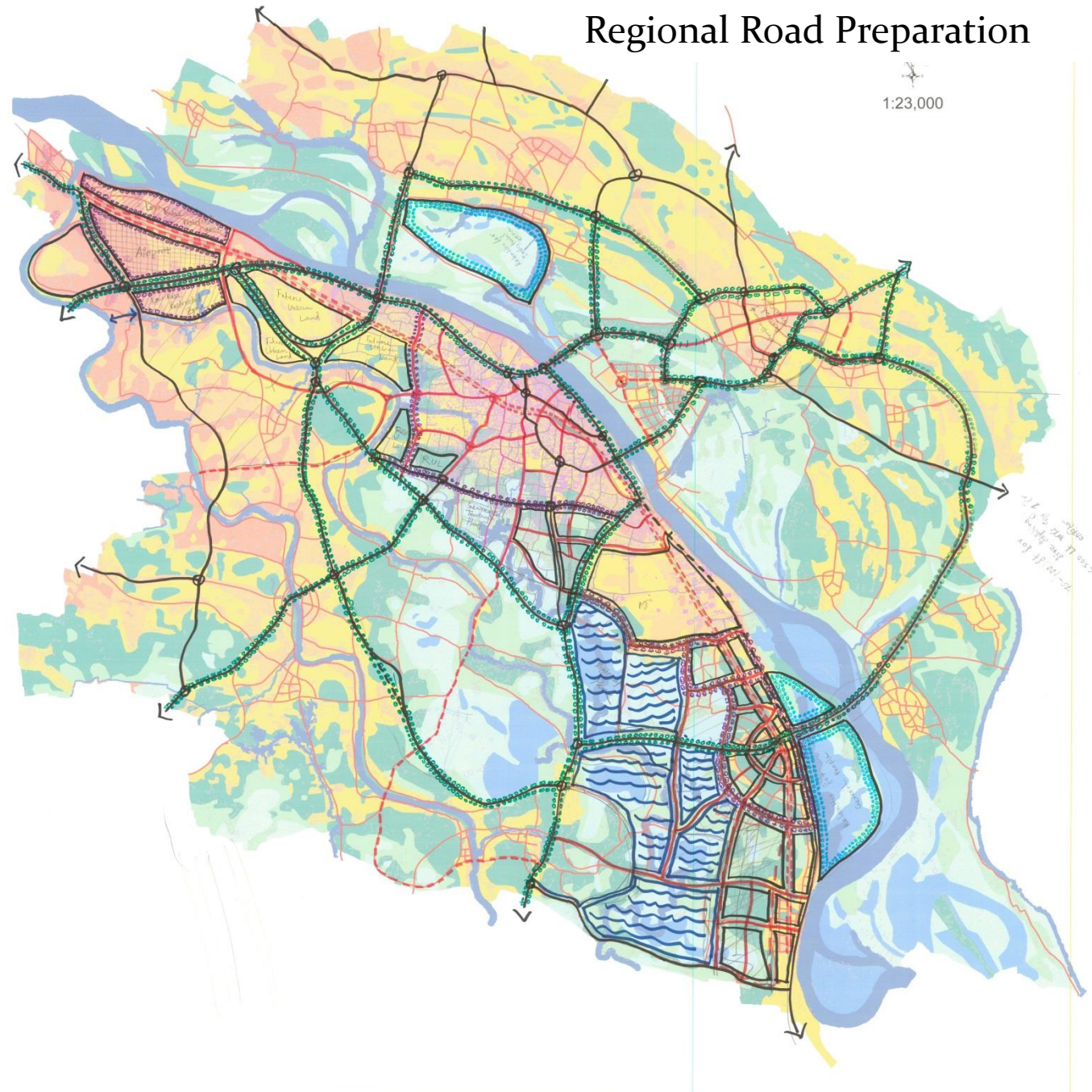


Sketch on Tracing while Designing Regional Road



Regional Road Preparation

1:23,000



Road Print on
Elevation to Avoid
Interruption on
Water body and
Drainage Sensitive
area

Mymensingh Strategic Development Plan (MSDP) 2011-2031

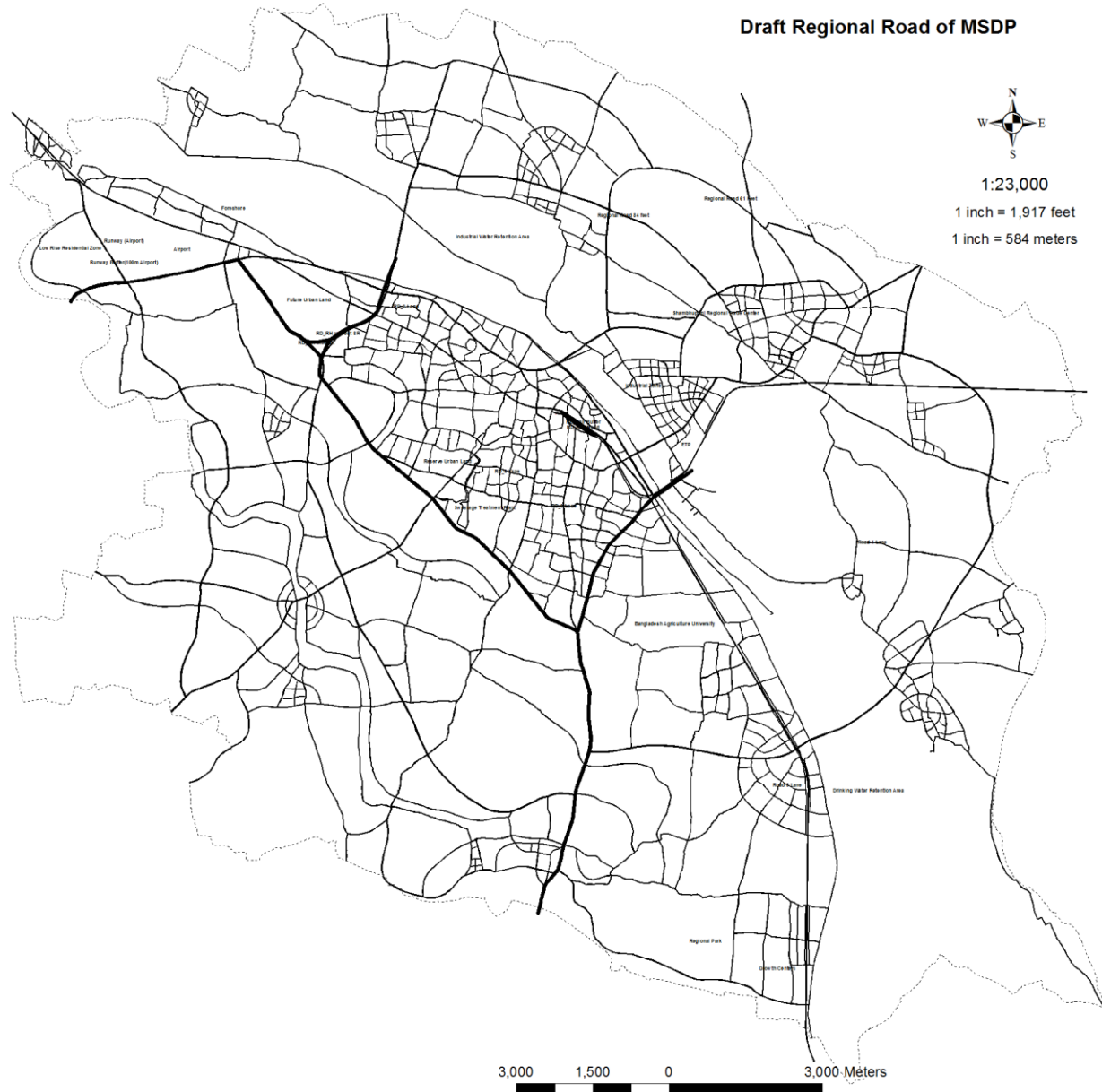
Draft Regional Road of MSDP



1:23,000

1 inch = 1,917 feet

1 inch = 584 meters



3,000 1,500 0 3,000 Meters

Identification & Intervention at Growth Center

1	Identification of Growth Center
2	Prepare growth center Map
3	Add Forshore with Road from Ecological Zone
4	Prepare Map with Road Network and Ecological Zone
5	Print Map
6	Sketch on Map for Designing Growth Center
7	Scan Map
8	Georeference Map
9	Edit Road At Growth Center
10	Buffer Road centerline According to Road Type and Lane
11	Find out the Structures which are affected due to Road widening
12	Listing of Affected building By Type & Height
13	Affected Portion has been Identified from GIS Data
14	Prepare Database for Road network
15	Database Varified with Expert opinion
16	Finalize Road network at growth Centers for MSDP Area

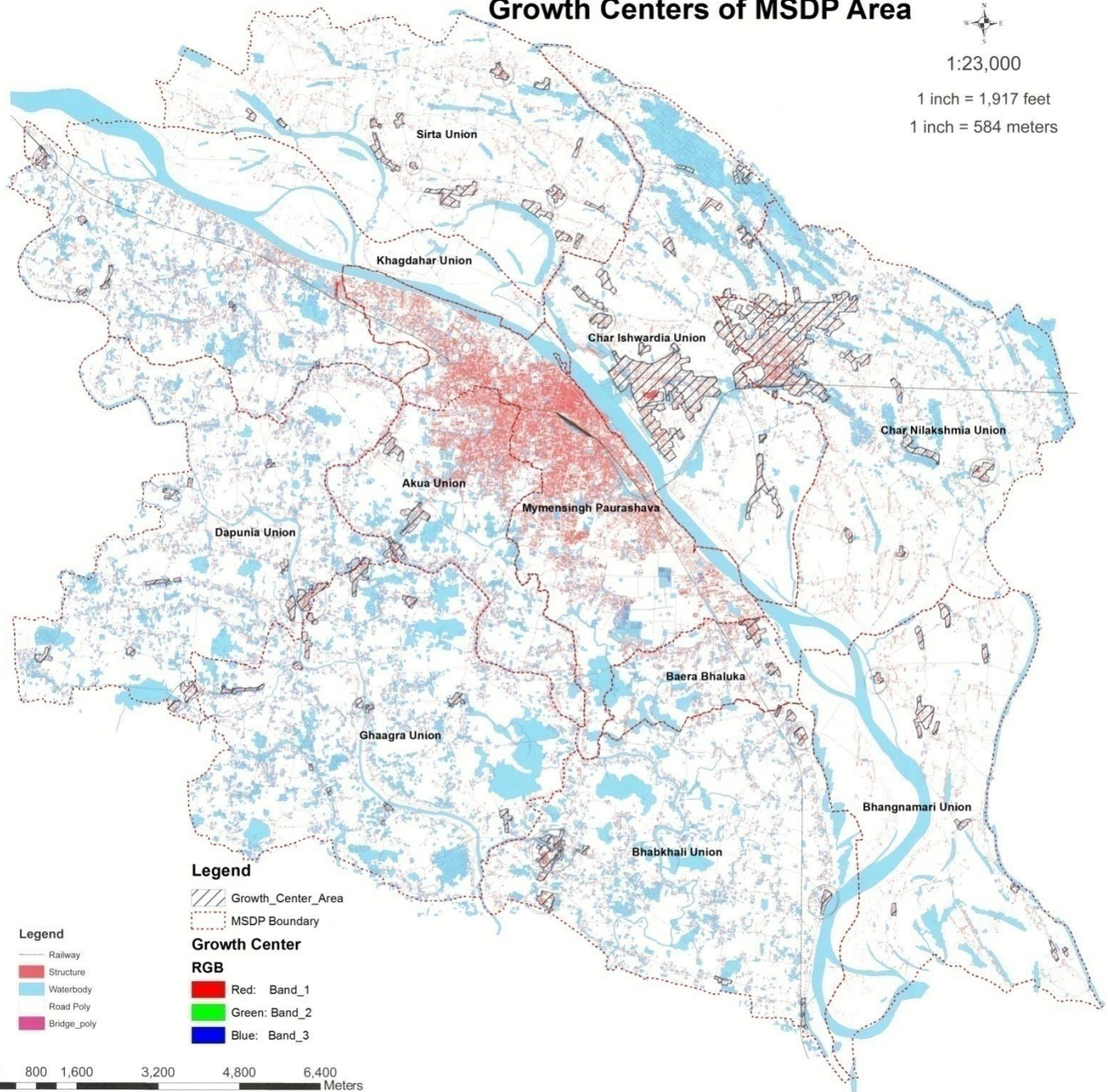
Growth Centers of MSDP Area



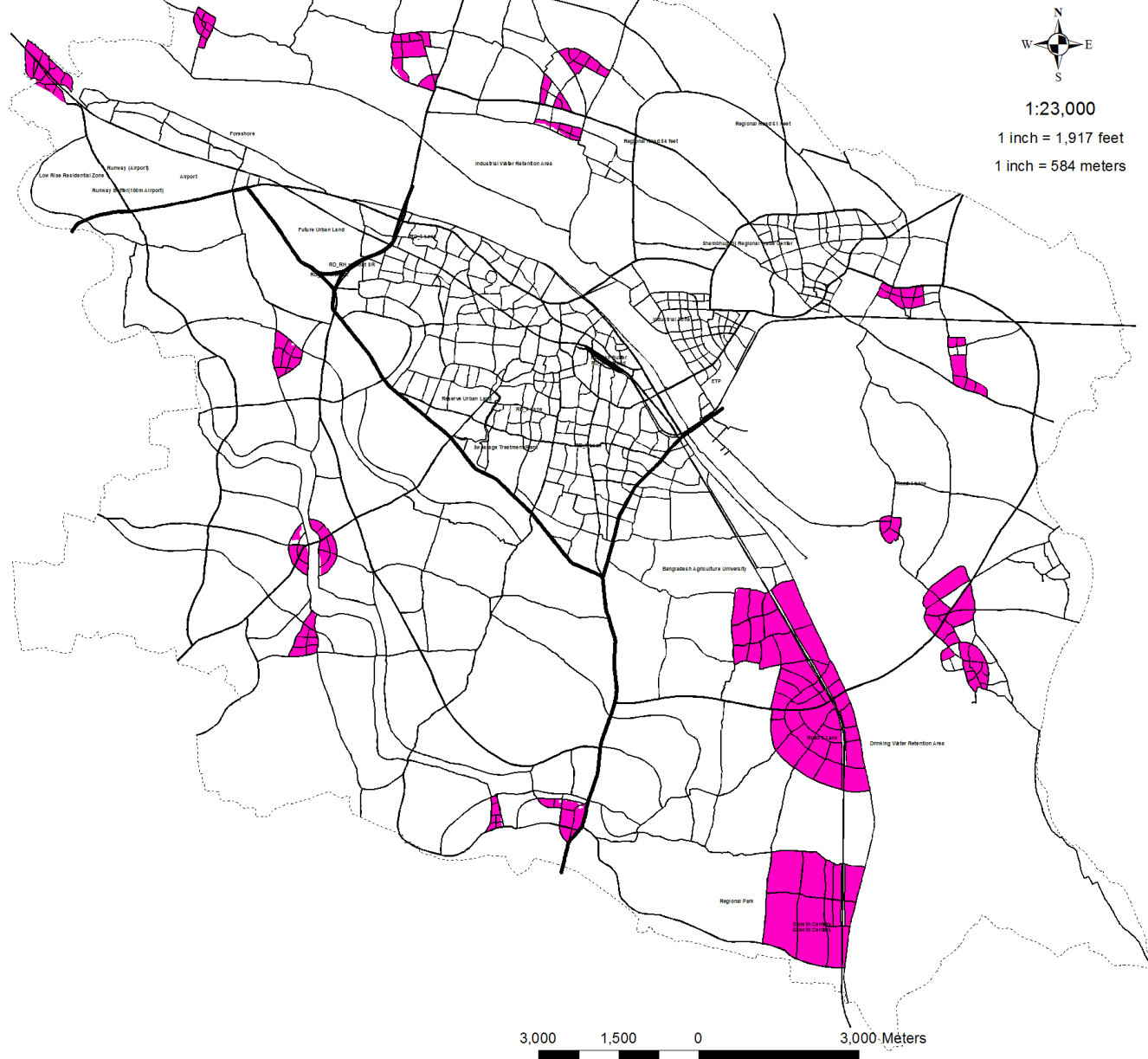
1:23,000

1 inch = 1,917 feet

1 inch = 584 meters



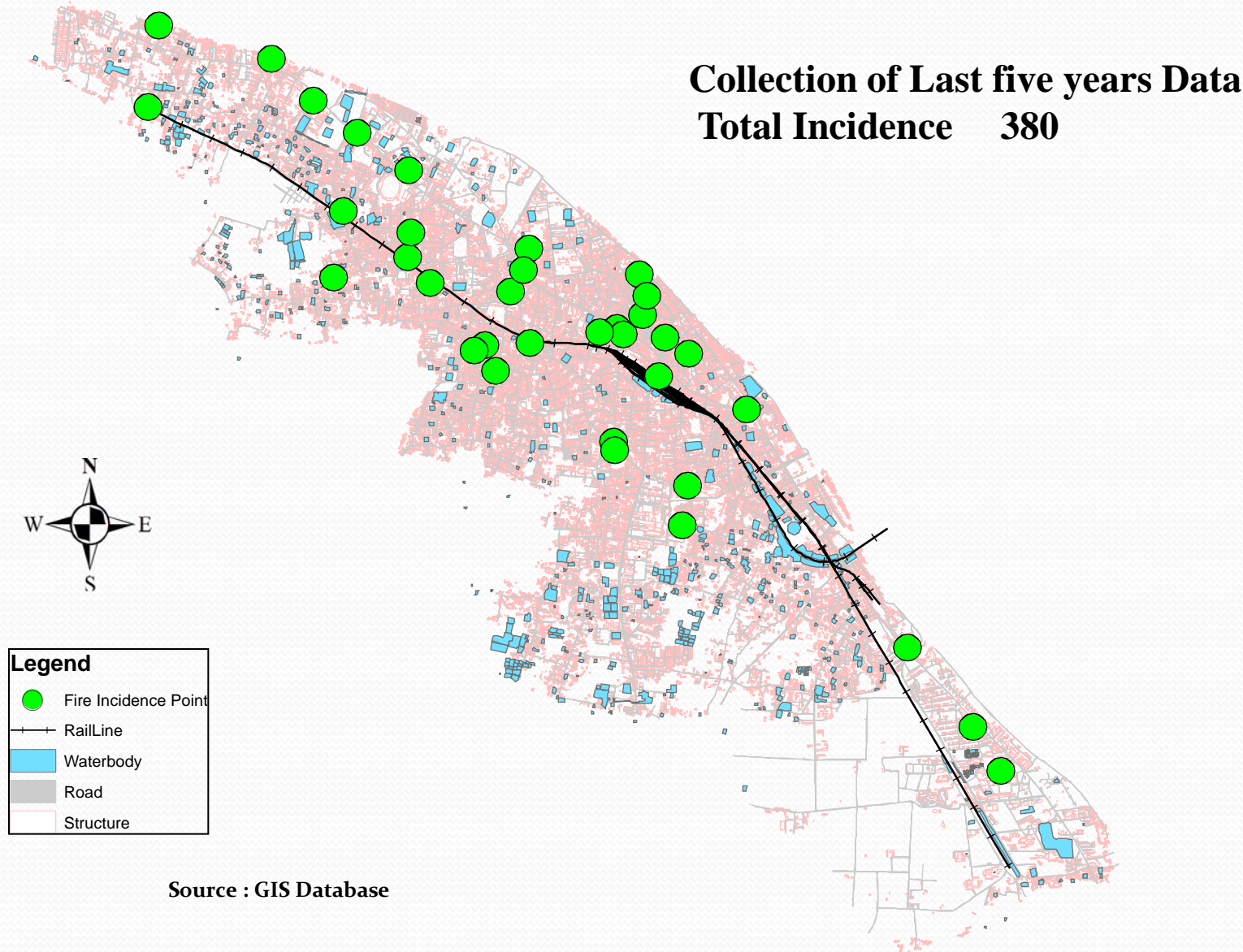
Growth Center of MSDP



Preparation of Fire Escape Map

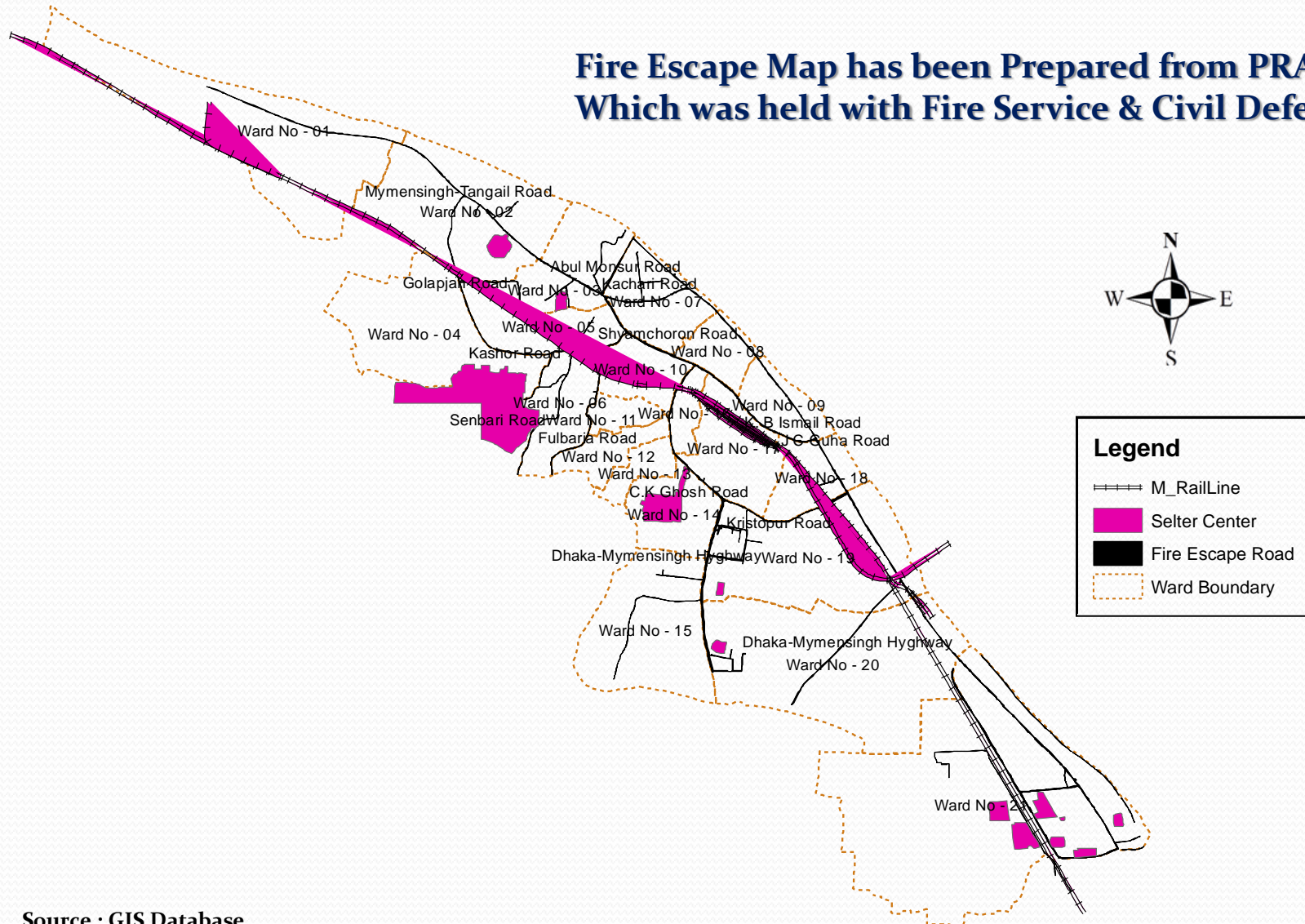
1	Prepare Physical Feature Map of Municipality For Fire Service and civil Defense
2	Map Print
3	Sketch Drawn By Fire Service and civil Defense on Map at PRA
4	Data Collected from Fire Service and civil Difence through PRA
5	Scan Map
6	Georeference Map
7	Prepare & Update Database for fire escape Route
8	Prepare fire incidence .shp file and database
9	Prepare Map and Print
10	Analyze Fire Incidence Data and Find out Hot Spot
11	Prepare Escape Route
12	Finalize Fire Escape Route

Fire Incidence Data Collection and Database Preparation



Fire Escape Road of Municipality Proposed By Fire Service & Civil Defense

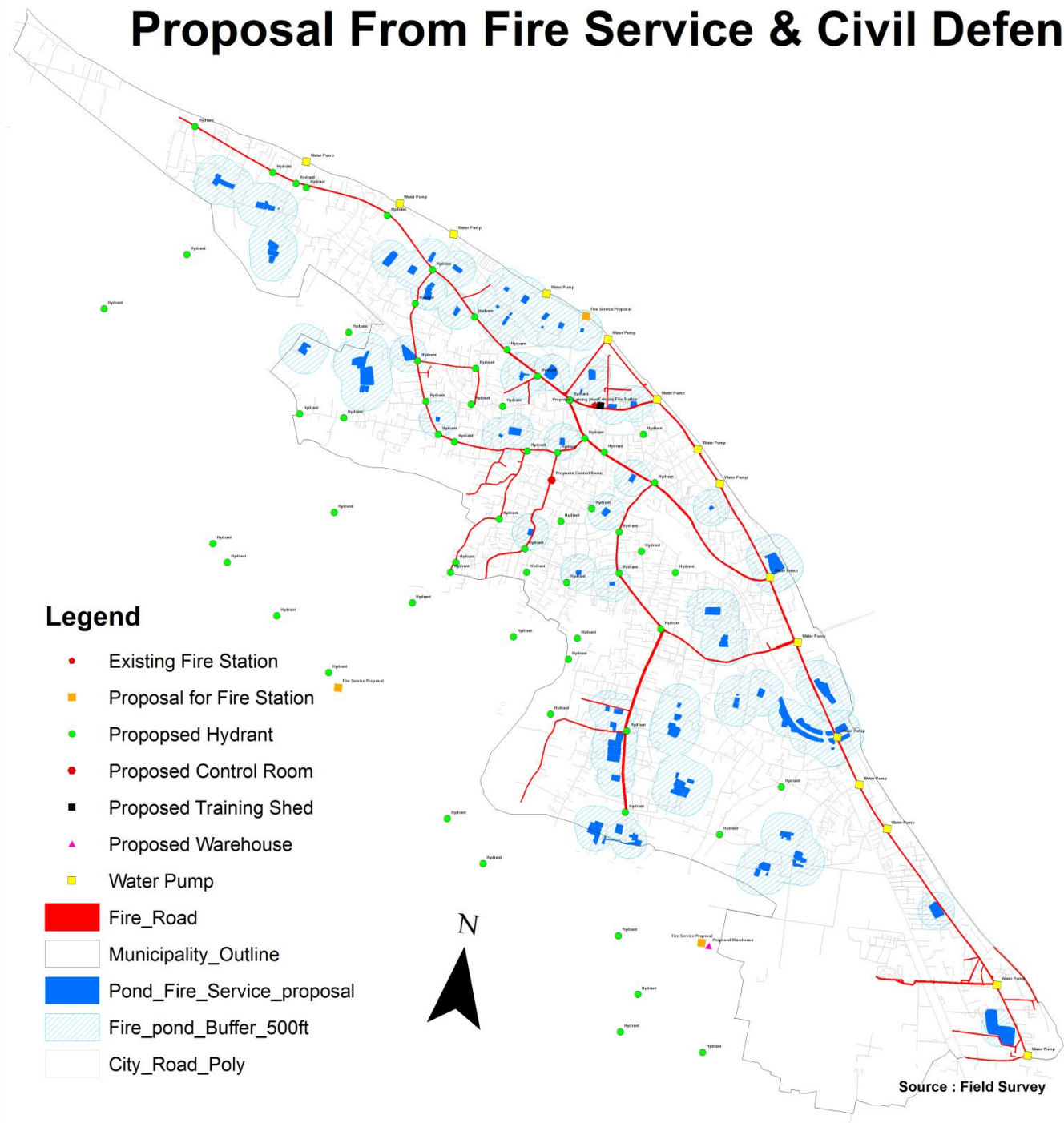
Fire Escape Map has been Prepared from PRA Session
Which was held with Fire Service & Civil Defense



Proposal From Fire Service & Civil Defence

Legend

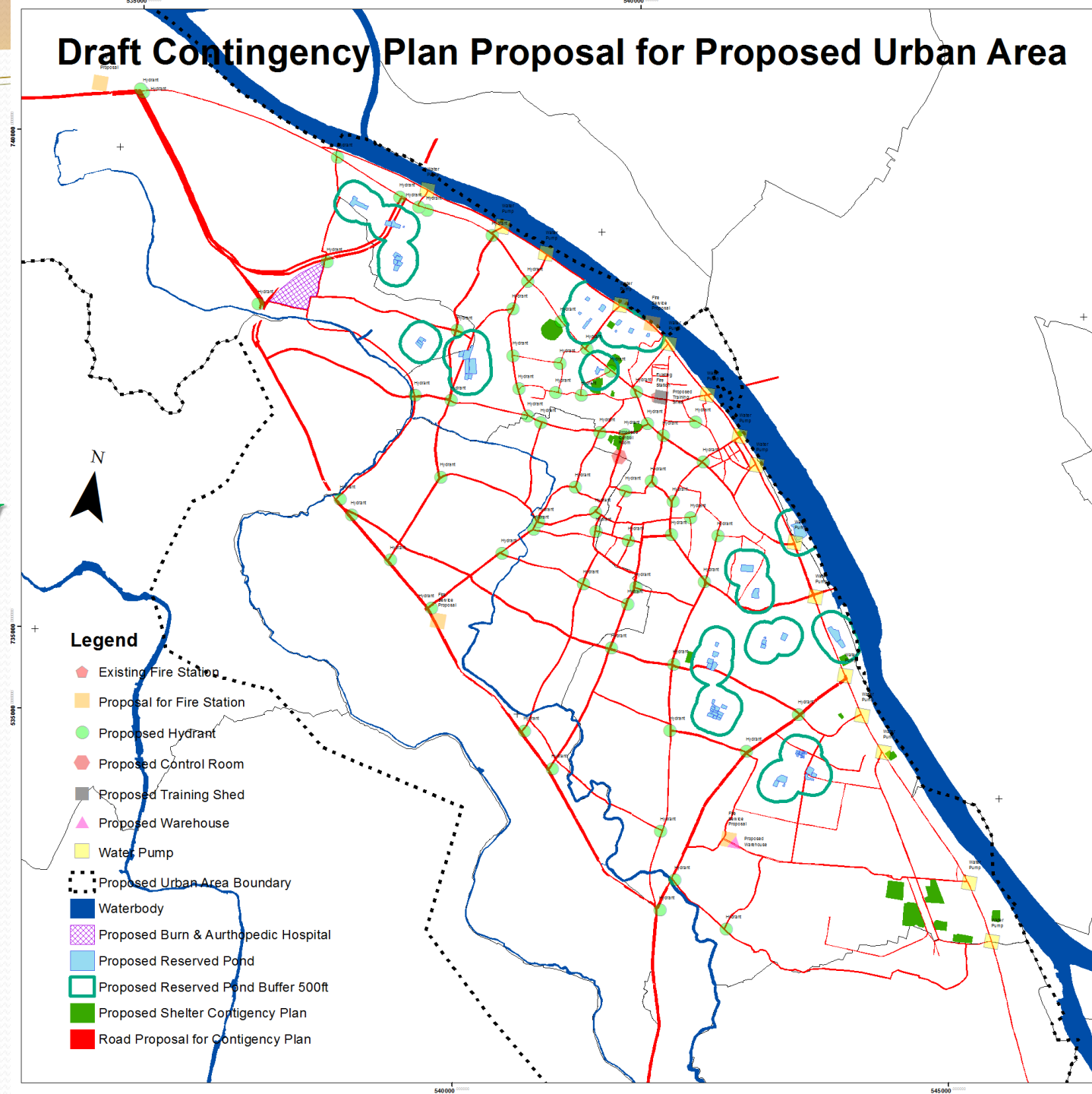
- Existing Fire Station
- Proposal for Fire Station
- Propopsed Hydrant
- Proposed Control Room
- Proposed Training Shed
- ▲ Proposed Warehouse
- Water Pump
- Fire_Road
- Municipality_Outline
- Pond_Fire_Service_proposal
- Fire_pond_Buffer_500ft
- City_Road_Poly



Source : Field Survey

Draft Contingency Plan Proposal for Proposed Urban Area

Draft Contingency Plan



31st August, 2015

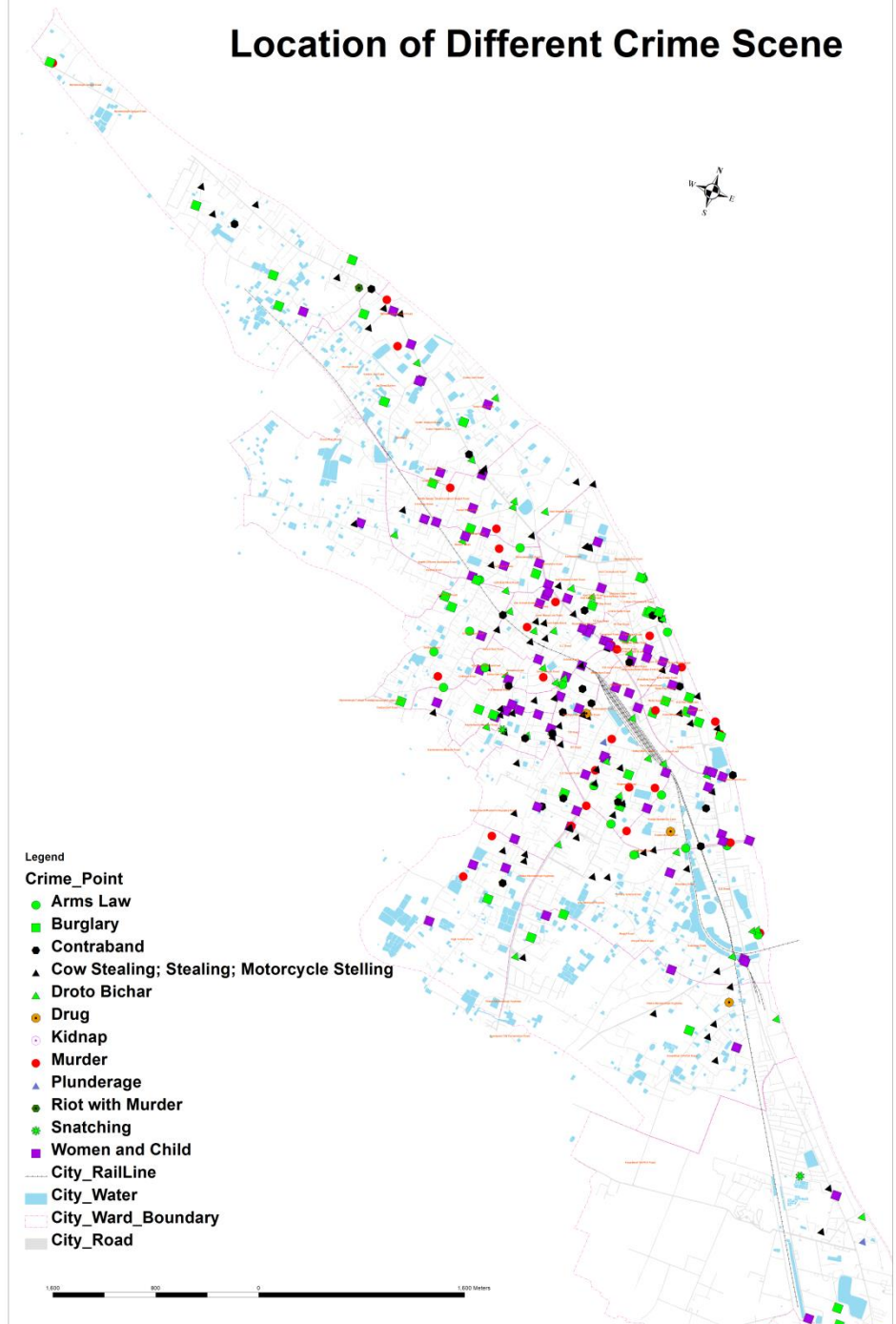
Preparation of Crime Map

1	Collect Crime Data from Thana
2	Prepare .shp file for Crime Data
3	Analyze Data
4	Prepare Crime hot Zone Map & Database

Sample Database

Type of Crime	Location	Time	Date
Women and Child	Maskanda Notun Bazar near Hanif Mass	10	1/1/2008
Arms Law	Bura Pir Mazar	20	1/9/2008
Stealing	Gulkibari	6	1/11/2008
Murder	Baghmara Medical college Hostel	17	1/17/2008
Arms Law	Nasirabad College Field North East side	2	1/24/2008
Stealing	18/8, Power House Road, Kawatkhali	11	1/25/2008
Contraband	197/C, Kalibari Road, Jannatabad Building	4	2/2/2008
Women and Child	31. Goailkandi Khondokar Bari	12	2/4/2008
Stealing	Academi Road Taz Bhaban	5	2/4/2008
Burglary	37/1, Baghmara	18	2/6/2008
Women and Child	BKB Sas Mor	14.3	2/12/2008
Contraband	kalibari Road Building of Mintu Mia	15.3	2/20/2008
Contraband	Katgola tinrasta Mor	20	3/5/2008

Location of Different Crime Scene



Sample Analysis

Crime type	Land use Category												Grand Total
	Administ rative	Agricu lture	Comme rcial	Educati onal	Hea lth	Recrea tion	Red Light Area	Reside ntial	Restri cted	Ro ad	Socio- Culture	Urban Service	
Arms Law		1	4			1		7	1		1	1	16
Burglary	2	2	2	2				26			2		36
Contraband		6	1	3	1	1	1	8			1	1	23
Cow Stealing	1								1				2
Droto Bichar	1	9	3	4	3	2		13	2		1	4	42
Drug		2						1					3
Kidnap					2								2
Motorcycle													
Stelling				1	1	1		3					6
Murder		4	2	1	3			13	1	4			28
Plunderage						1		1					2
Riot with													
Murder											1		1
Snatching				1				1					2
Stealing	6	8	5	4	4	1		33	1	4	1	2	69
Women and													
Child	3	10	11	12	2	3	1	35		6	2	3	88
Grand Total	13	42	28	28	16	10	2	141	6	14	9	11	320

Network Analysis (Social & Mental Interface)

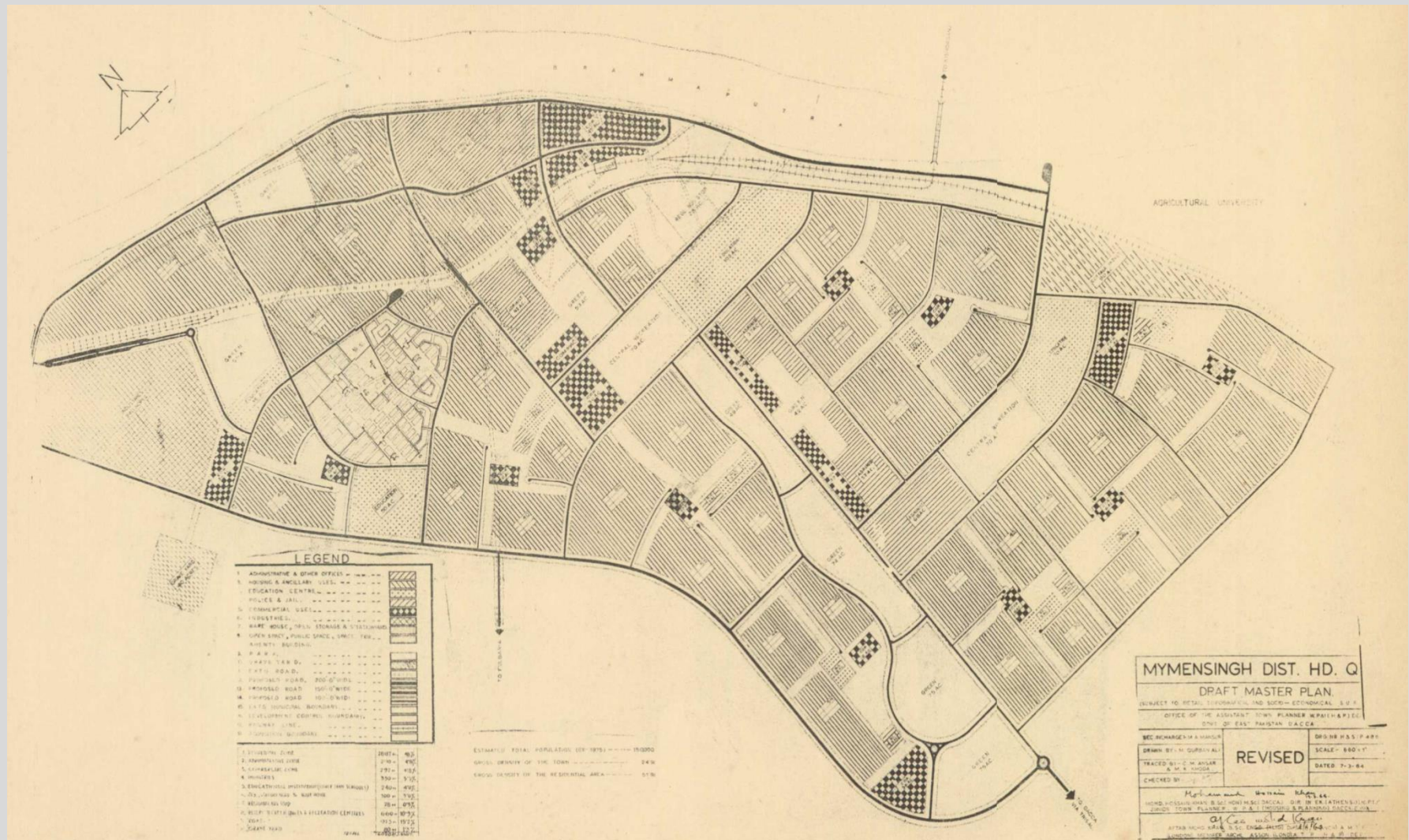
1	Sample Data Collected from Socio Economic Survey for Educational Network Analysis
2	Prepare .shp file for Primary Educational Institute Analysis
3	Analyze and prepare Map
4	Prepare .shp file for Secondary Educational Institute Analysis
5	Analyze and prepare Map
6	Prepare .shp file for Higher Secondary Educational Institute Analysis
7	Analyze and prepare Map
8	Prepare .shp file for University Analysis
9	Analyze and prepare Map
10	Sample Data Collected from Socio Economic Survey for Bazaar Network Analysis
11	Prepare .shp file for Bazar Analysis
12	Analyze and prepare Map
13	Sample Data Collected from Socio Economic Survey for Health Facility Network Analysis
14	Prepare .shp file for Health Facilities Analysis
15	Analyze and prepare Map
16	Sample Data Collected from Socio Economic Survey for Religious Facility Network Analysis
17	Prepare .shp file for Religious Facilities Analysis
18	Analyze and prepare Map

Preparation of Draft Structure Plan

1	Proposals of Draft Structure Plan were Drafted Synchronizing all of the data (Drainage, Road, land elevation, Geology, Land use, PRA Data, Network Analysis)
2	Draft Structure Plan Map Prepared
3	Print of Draft Structure Plan Map
4	In house Dialogue of Professionals has been performed on this Draft Plan
5	Edit of Structure Plan Proposals
6	Draft Structure Plan Map Prepared
7	Print of Draft Structure Plan Map
8	Again In house Dialogue of Professionals has been performed on this Draft Plan
9	Edit of Structure Plan Proposals
10	Prepare Structure Plan Map

Background Analysis

FIRST MASTER PLAN WAS PREPARED BY UDD



Mymensingh Town Master Plan, 1964

31st August, 2015

WC_Structure Plan_UDD,MoHPW

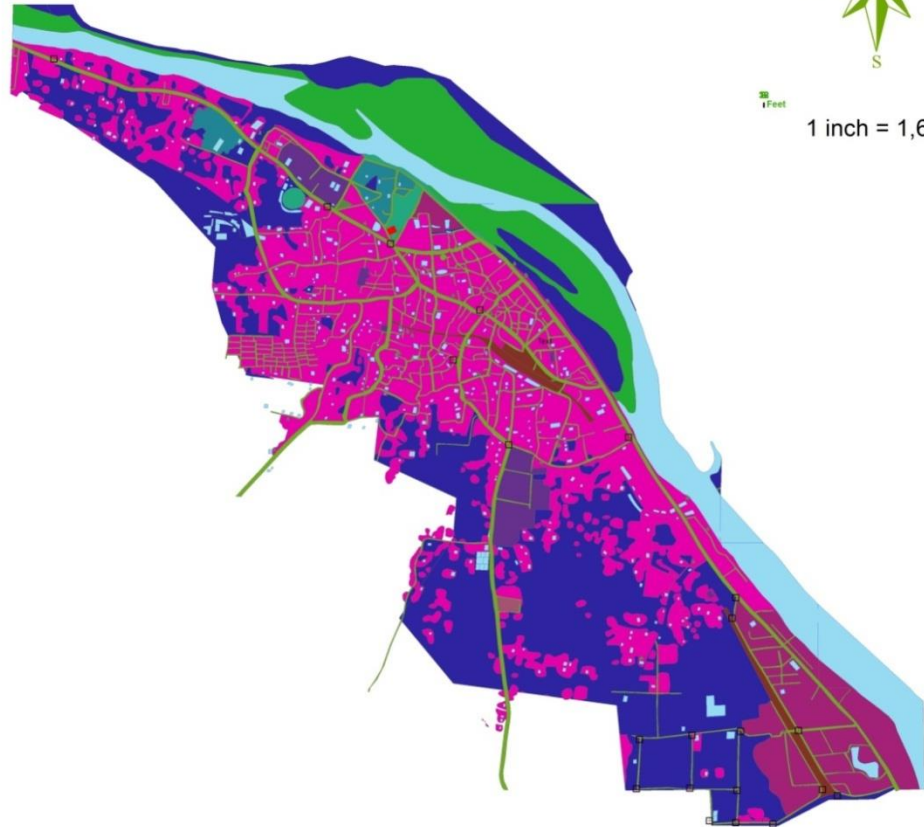
Background Analysis

Landuse Plan, 1977

31st August, 2015

WC_Structure Plan_UDD,MoHPW

Land Use Plan(1977) of Mymensingh Paurashava



1 Feet

1 inch = 1,667 feet



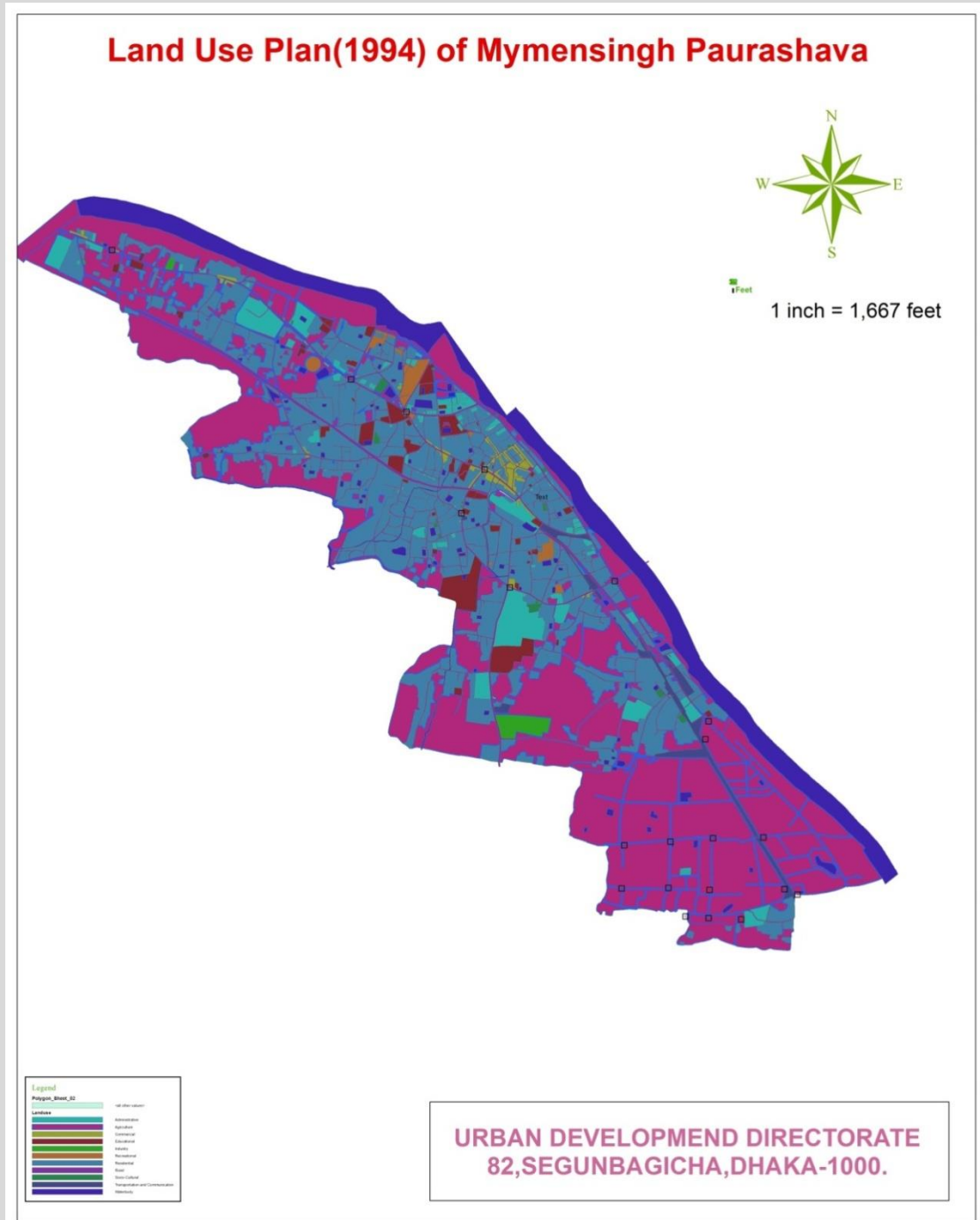
URBAN DEVELOPMENT DIRECTORATE
82, SEGUNBAGICHA, DHAKA-1000.

Background Analysis

**Landuse Plan, 1994
By
LGED**

31st August, 2015

WC_Structure Plan_UDD,MoHPW



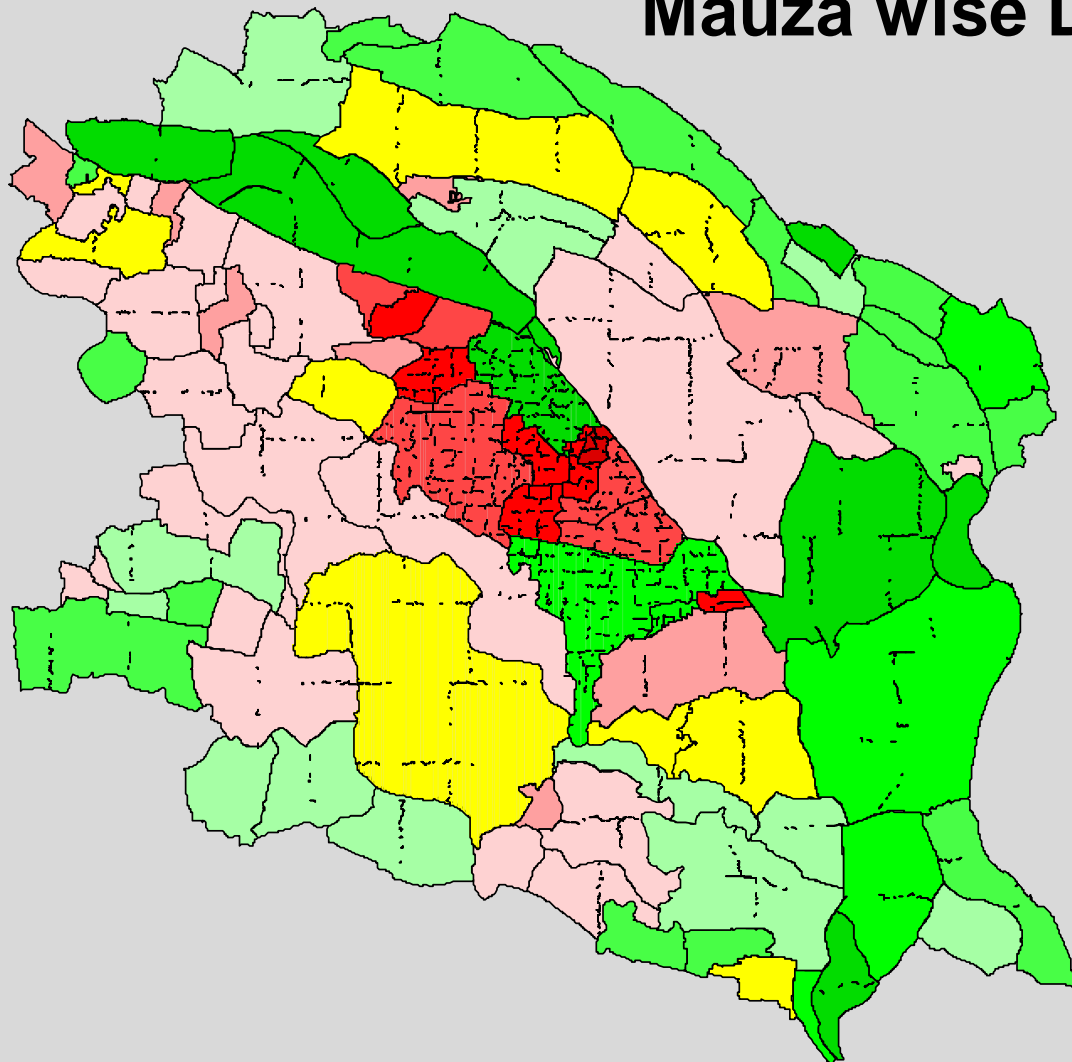
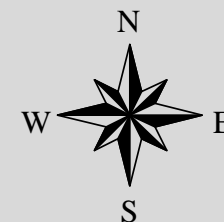
Existing Landuse, 2012 By UDD



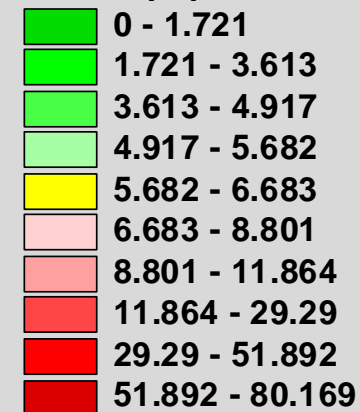
Land Use comparison in three different Years (Percent)

land Use	2012	1994	1977
Administrative	2.01	4.35	1.16
Agriculture	13.17	44.36	34.73
Commercial	1.56	0.65	0.02
Educational	16.43	2.60	6.44
Health	1.00	0.00	0.00
Industrial	0.63	0.56	0.10
Recreation	1.53	0.70	0.62
Residential	34.64	29.18	32.68
Restricted Area	2.71	0.00	0.00
Road	4.06	5.65	8.35
Socio-Culture	0.76	0.26	0.16
Urban Service	1.22	0.00	2.16
Transportation and Communication	0.00	1.24	0.00
Waterbody	20.29	10.44	13.58
Total	100.00	100.00	100.00

Mauza wise Density, 2011

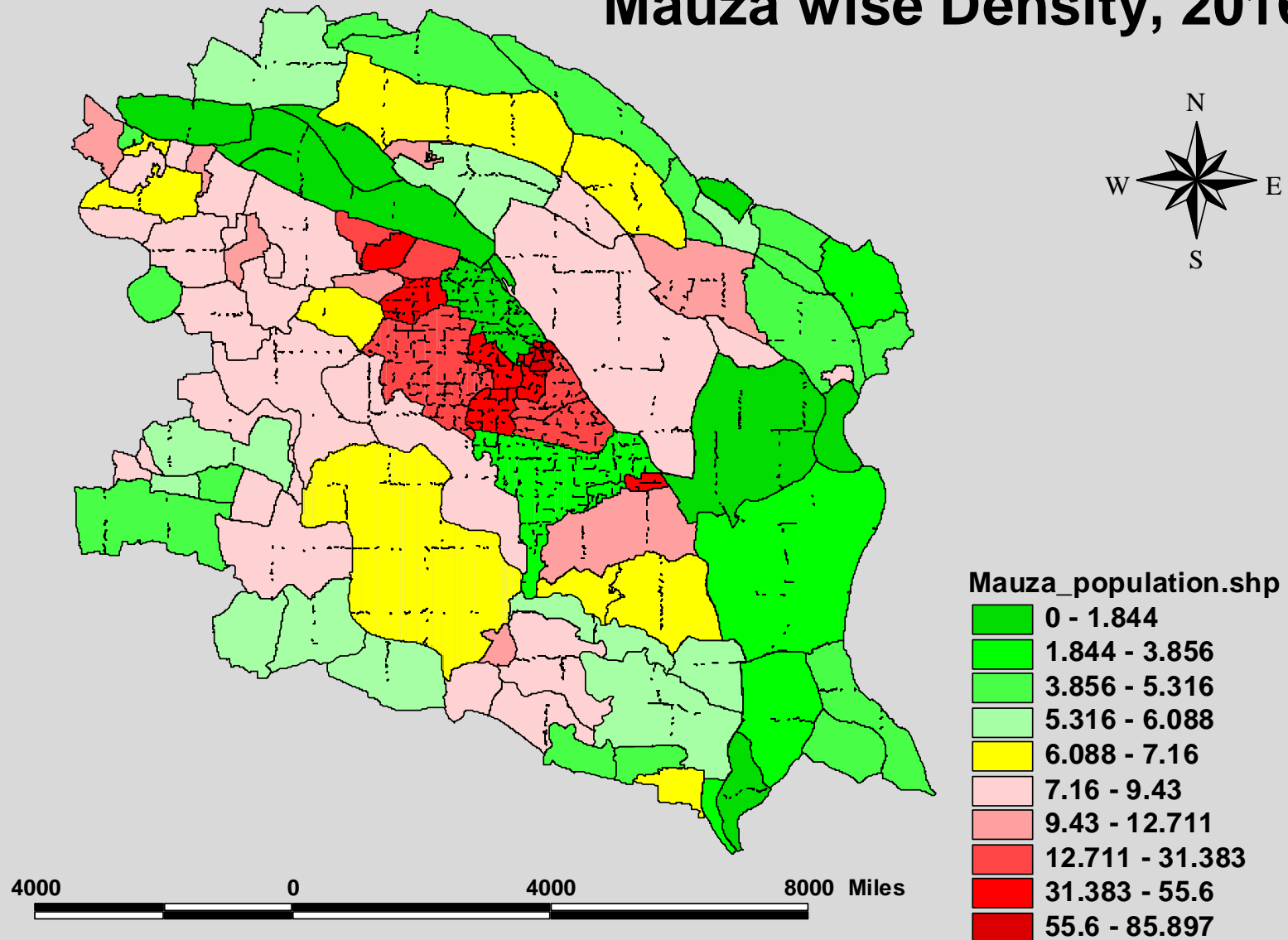


Mauza_population.shp

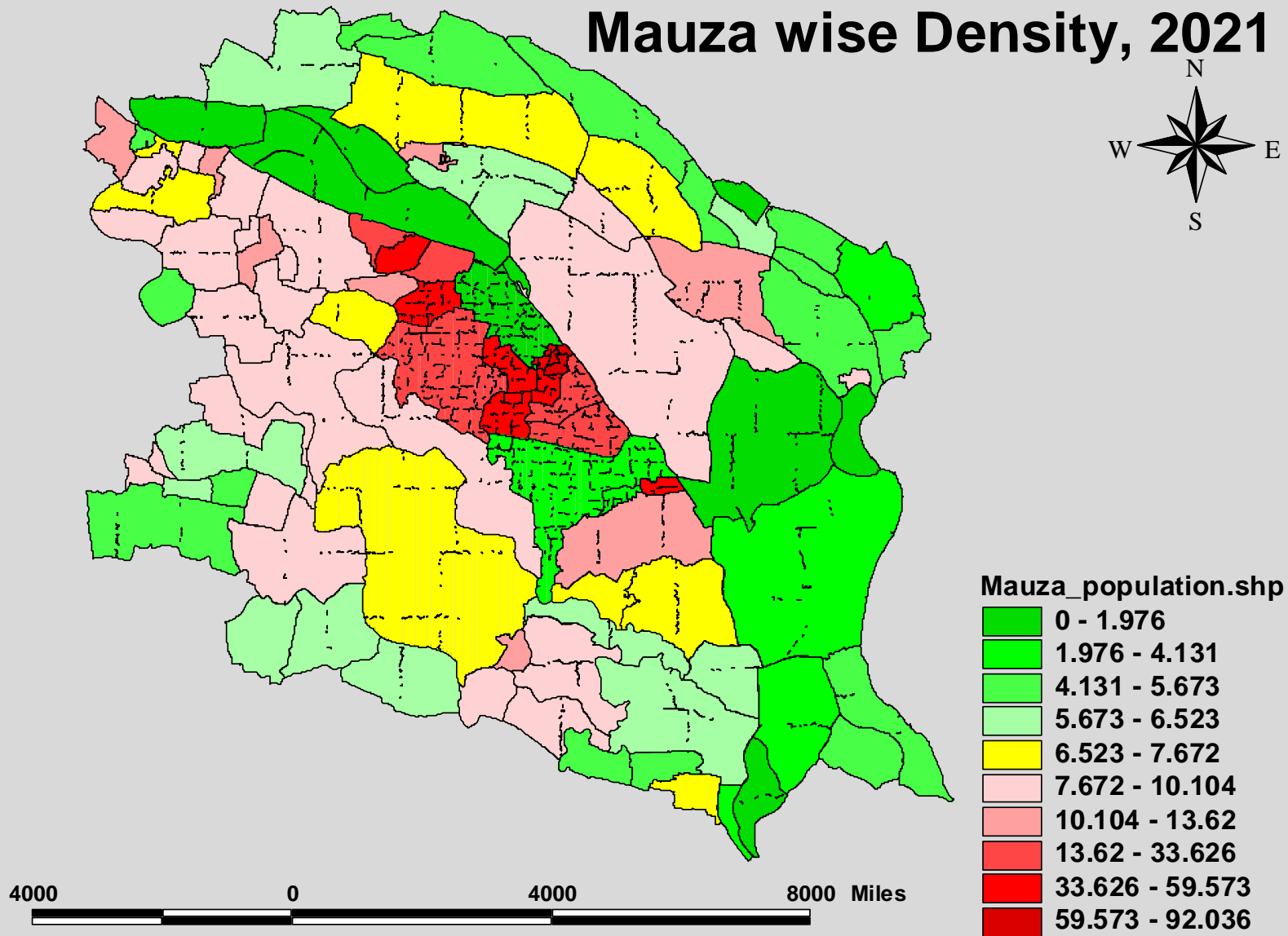


4000 0 4000 8000 Miles

Mauza wise Density, 2016

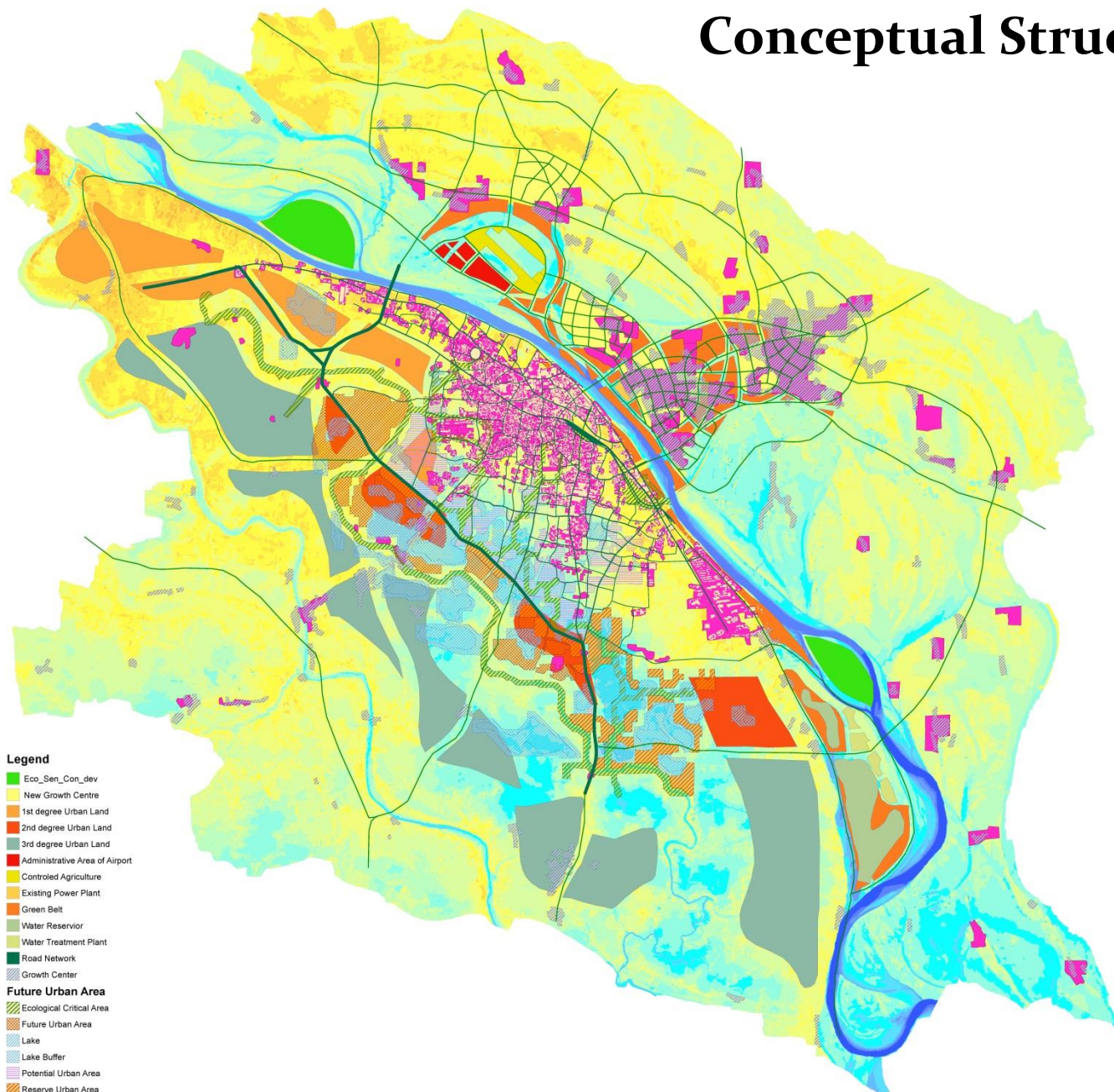


Mauza wise Density, 2021



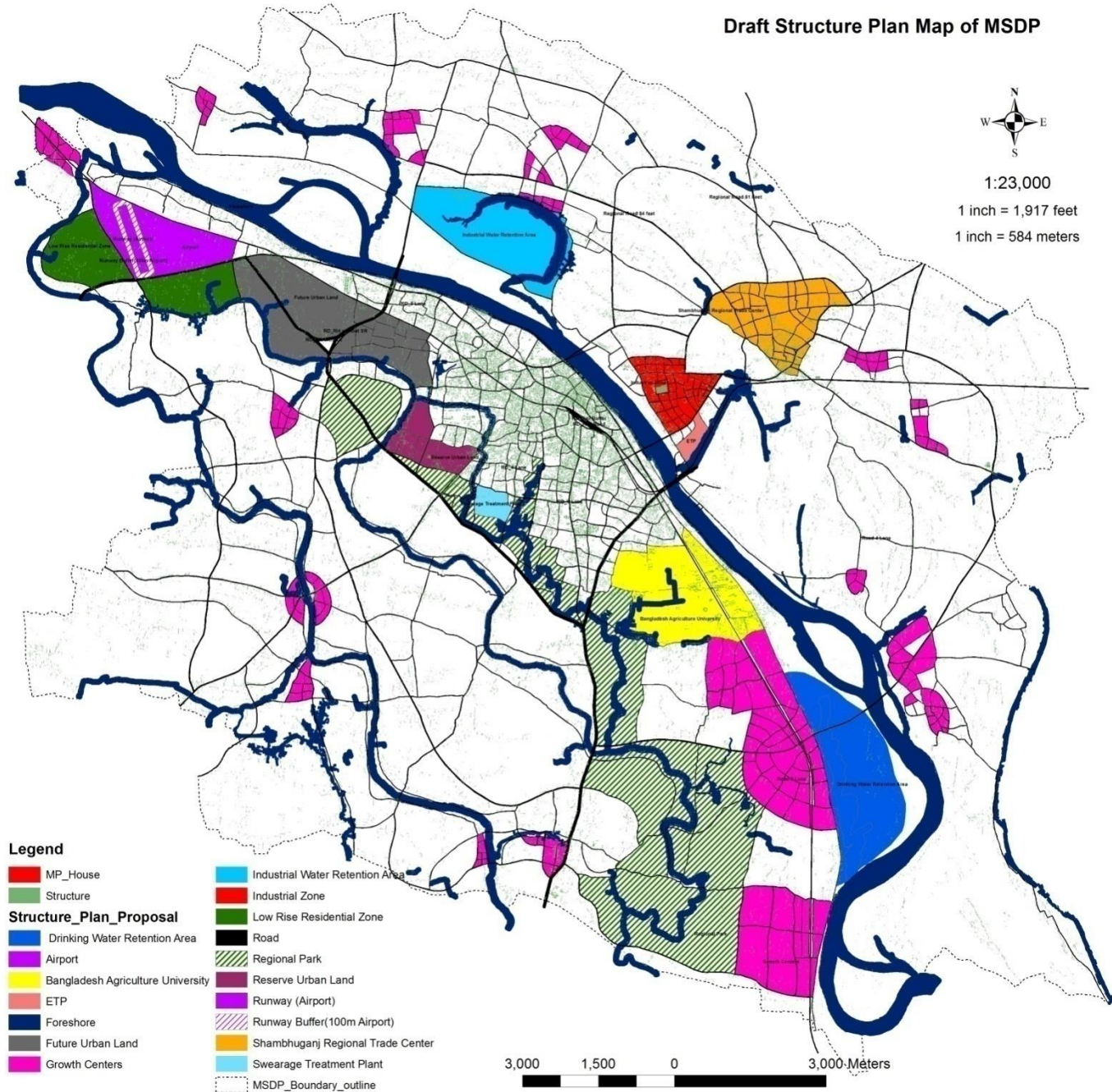


Conceptual Structure Plan

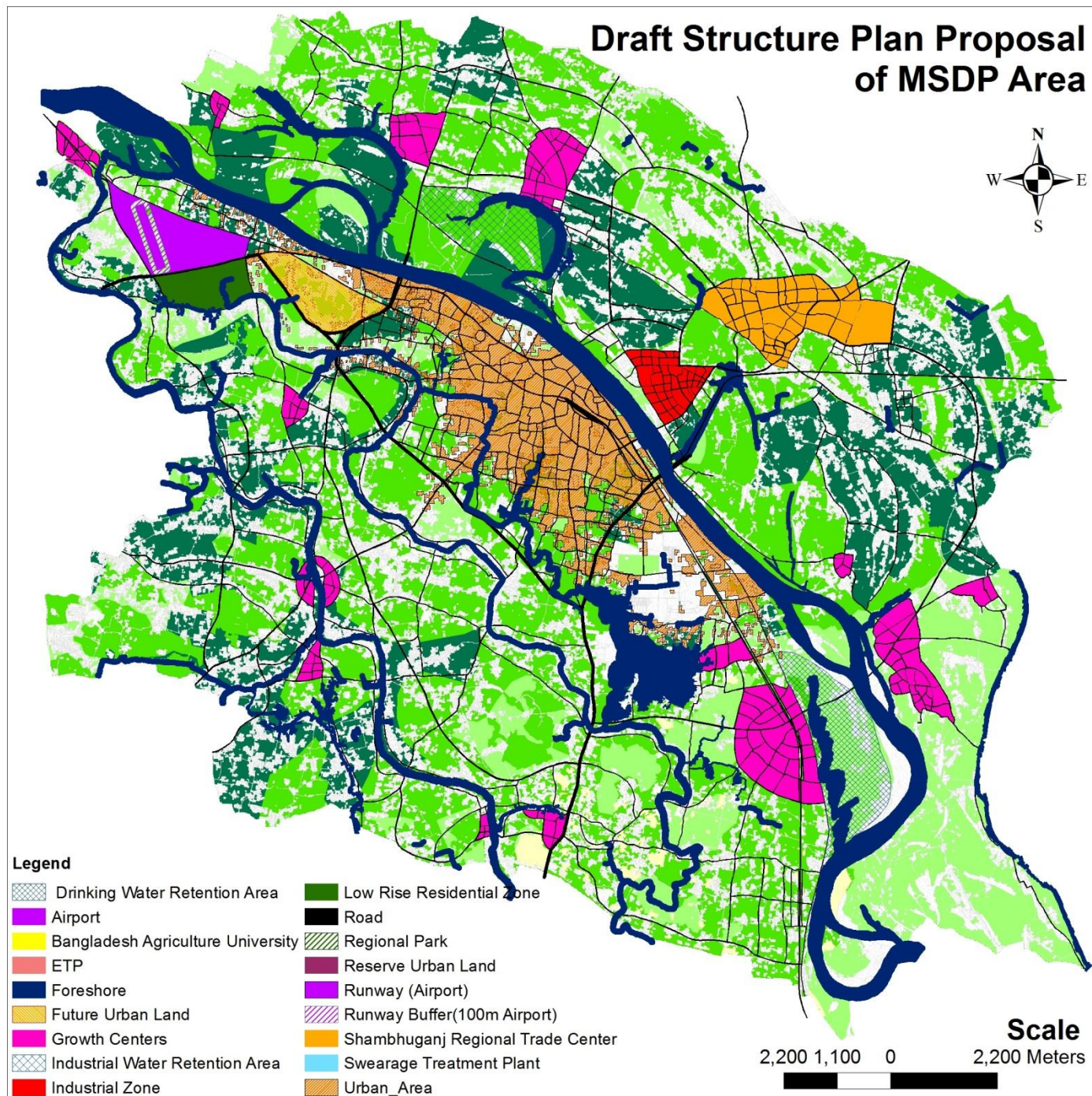


Mymensingh Strategic Development Plan (MSDP) 2011-2031

Draft Structure Plan Map of MSDP



Draft Structure plan Proposal with Proposed Land use





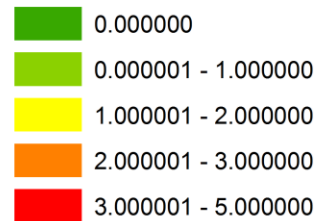
DRR Information of Mymensingh Municipality

Condition of Municipality Depending on DRR Information

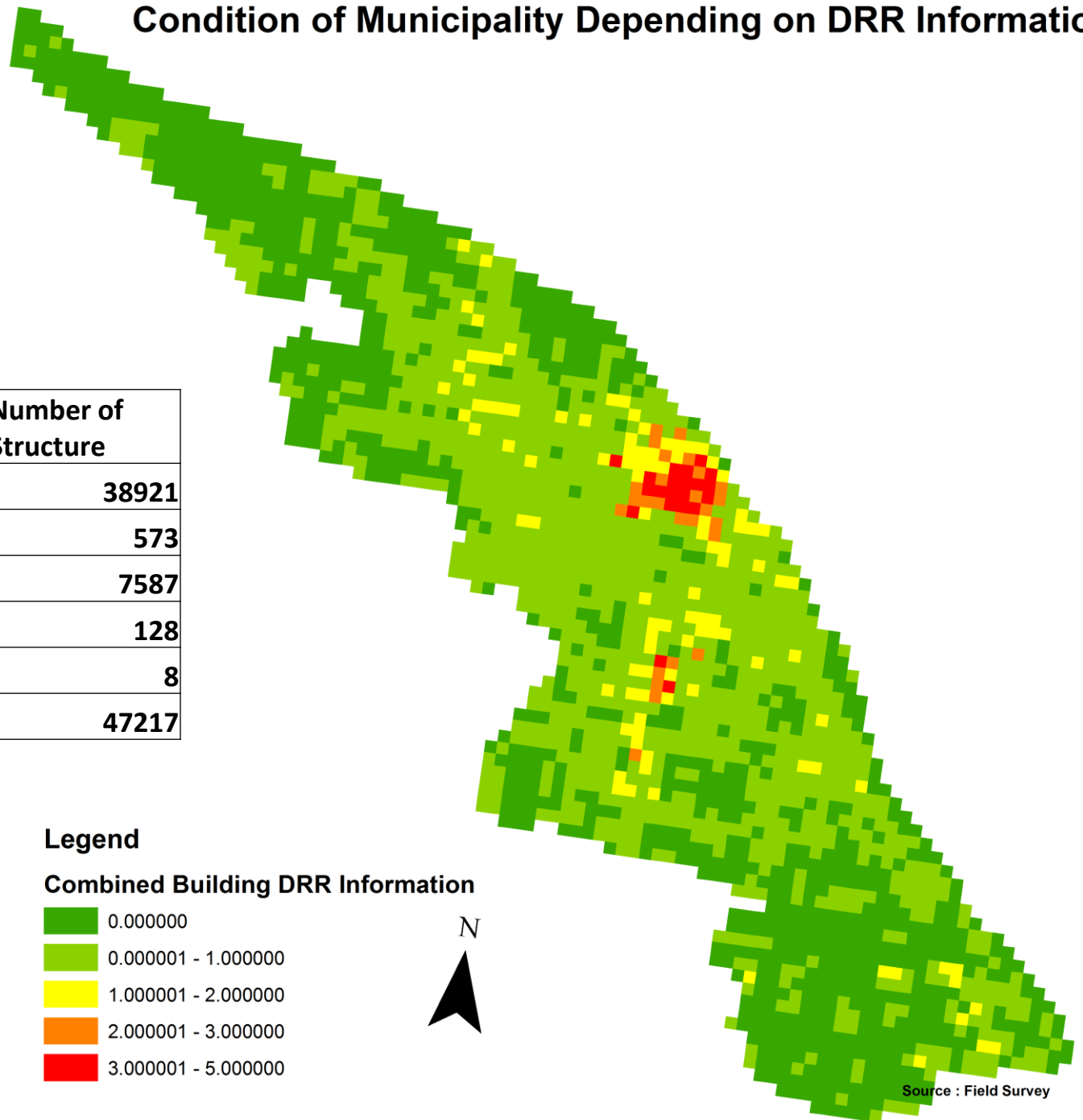
Condition of Structure	Number of Structure
Best Condition	38921
Average Condition	573
Good Condition	7587
Poor ondition	128
Worst Condition	8
Grand Total	47217

Legend

Combined Building DRR Information



Source : Field Survey

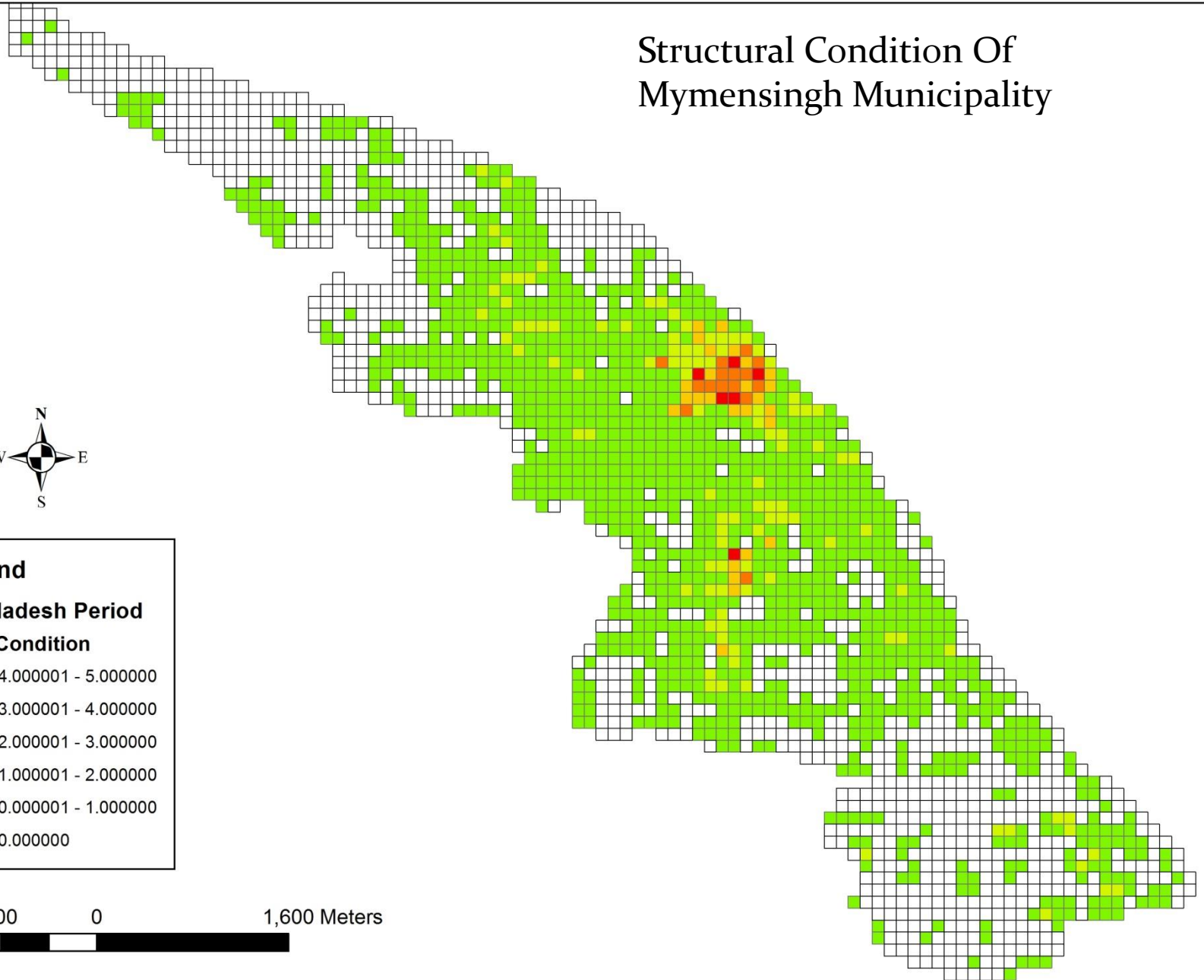
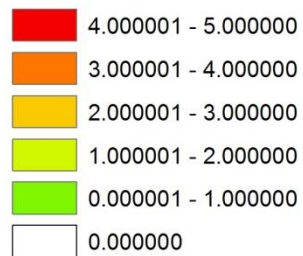


Structural Condition Of Mymensingh Municipality



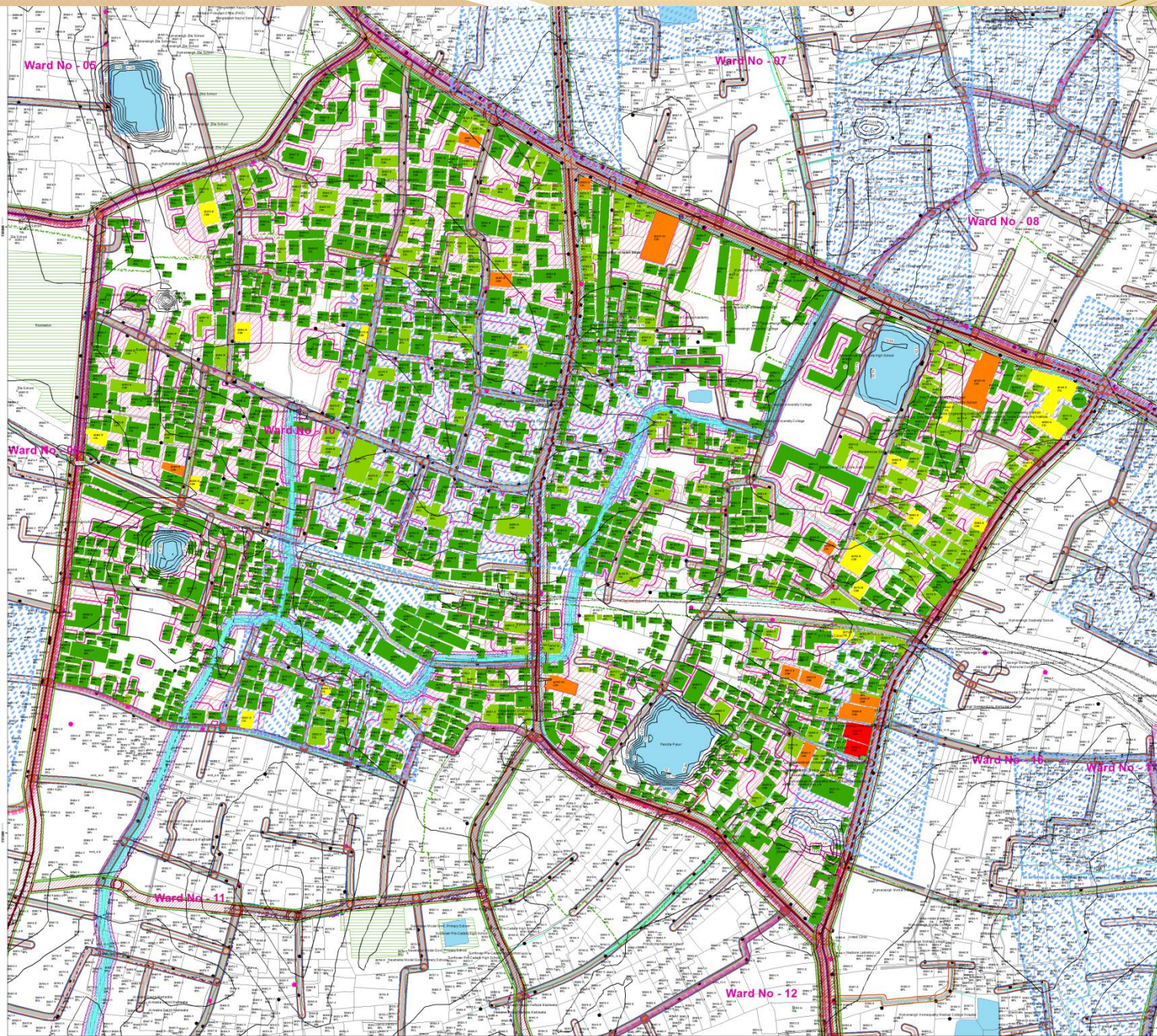
Legend

Bangladesh Period Final Condition



Detail Area Plan

DRR
Information
on Ward #10



Geological Engineering Data Table (Ward- 10)

Page Name	Soil Layer Depth (m)											Soil Formation			Engineering Rise Layer Depth(m)/from Existing Ground	Vs	Soil_Type	PGA value(g)			Spectral Acceleration(SA) Value at Baseroack		Amplification of Spectral Acceleration(SA) Value		Spectral Acceleration(SA) Value at Surface		MT Period	Sensitive Height	Recommended Height for Low Rise Building	Recommended Height for High Rise Building	Sensitivity for High Rise Building	Suitability for High Rise Building	Sensitivity for Low Rise Building	Suitability for Low Rise Building
	Soft CLAY / SILTY CLAY	Very loose to loose SAND	Medium dense to very dense SAND	Medium stiff CLAY / CLAY WITH SILT	Medium dense SAND / SILTY SAND	Soft to medium stiff ORGANIC CLAY	Medium stiff to stiff CLAYEY SILT	Medium dense SAND Layer 9: Stiff to very stiff SILT / CLAYEY	Stiff to very stiff SILT / CLAYEY SILT / SANDY SILT	Dense to very dense SAND	Base Layers	Alluvium/ Holocene	Modhupur	Dupitila				Base rock	Amplification	Surface	SA 0.2 sec	SA 1 sec	Amplification of SA 0.2 sec	Amplification of SA 1 sec	SA 0.2 sec	SA 1 sec								
AG47	1.16	4.28	11.69	2.23	1.41	0.70	2.24	1.44	2.87	1.98	4.53	23.69	6.55	1.98	23	184	D5(180m/s to200m/s)	0.33	1.17	0.38	0.73	0.23	1.22	1.93	0.89	0.45	0.82	72.01	52.01	92.01	5th Degree Sensitive	MS-HRB	1st Degree	LMS-LRB
AG48	1.11	4.04	14.32	1.92	1.14	0.68	1.83	1.30	2.33	1.34	4.49	25.50	5.46	1.34	24	184	D5(180m/s to200m/s)	0.33	1.17	0.38	0.73	0.23	1.21	1.93	0.89	0.45	0.82	72.47	52.47	92.47	5th Degree Sensitive	MS-HRB	1st Degree	LMS-LRB
AH46	1.48	4.24	9.48	2.37	1.47	0.79	2.79	1.61	2.78	2.98	4.60	21.32	7.18	2.98	24	183	D5(180m/s to200m/s)	0.32	1.18	0.38	0.72	0.23	1.22	1.93	0.88	0.45	0.81	71.40	51.40	91.40	5th Degree Sensitive	MS-HRB	2nd Degree	MMS-LRB
AH47	1.31	4.30	11.14	2.16	1.32	0.80	2.39	1.47	2.67	2.42	4.47	22.97	6.54	2.42	24	184	D5(180m/s to200m/s)	0.32	1.18	0.38	0.73	0.23	1.22	1.93	0.89	0.45	0.82	71.85	51.85	91.85	5th Degree Sensitive	MS-HRB	2nd Degree	MMS-LRB
AH48	1.20	4.14	13.16	1.96	1.12	0.80	2.07	1.32	2.35	1.89	4.44	24.26	5.74	1.89	24	185	D5(180m/s to200m/s)	0.33	1.17	0.38	0.73	0.23	1.22	1.93	0.89	0.45	0.82	72.27	52.27	92.27	5th Degree Sensitive	MS-HRB	1st Degree	LMS-LRB
AH49	1.05	4.10	14.97	1.73	0.92	0.79	1.77	1.13	2.07	1.48	4.42	26.02	4.97	1.48	24	187	D5(180m/s to200m/s)	0.33	1.17	0.38	0.73	0.23	1.21	1.93	0.89	0.45	0.83	72.54	52.54	92.54	5th Degree Sensitive	MS-HRB	1st Degree	LMS-LRB
AH50	0.79	4.24	16.80	1.47	0.69	0.76	1.46	0.88	1.82	1.11	4.38	27.70	4.16	1.11	25	188	D5(180m/s to200m/s)	0.33	1.17	0.38	0.74	0.23	1.21	1.93	0.89	0.45	0.83	72.81	52.81	92.81	5th Degree Sensitive	MS-HRB	1st Degree	LMS-LRB
AI46	1.66	4.29	8.75	2.32	1.45	0.81	2.93	1.68	2.69	3.43	4.54	21.22	7.30	3.43	24	183	D5(180m/s to200m/s)	0.32	1.18	0.38	0.72	0.23	1.22	1.94	0.88	0.45	0.81	71.31	51.31	91.31	5th Degree Sensitive	MS-HRB	2nd Degree	MMS-LRB
AI47	1.46	4.34	10.70	2.09	1.29	0.82	2.47	1.52	2.56	2.75	4.47	22.75	6.55	2.75	24	184	D5(180m/s to200m/s)	0.32	1.18	0.38	0.72	0.23	1.22	1.94	0.88	0.45	0.82	71.72	51.72	91.72	5th Degree Sensitive	MS-HRB	2nd Degree	MMS-LRB
AI48	1.32	4.23	12.74	1.89	1.09	0.83	2.13	1.35	2.26	2.16	4.44	24.23	5.75	2.16	24	185	D5(180m/s to200m/s)	0.32	1.18	0.38	0.73	0.23	1.22	1.93	0.89	0.45	0.82	72.08	52.08	92.08	5th Degree Sensitive	MS-HRB	2nd Degree	MMS-LRB
AI49	1.17	4.14	14.59	1.67	0.91	0.82	1.82	1.17	1.99	1.71	4.42	25.58	4.98	1.71	24	187	D5(180m/s to200m/s)	0.32	1.18	0.38	0.73	0.23	1.21	1.93	0.89	0.45	0.82	72.28	52.28	92.28	5th Degree Sensitive	MS-HRB	1st Degree	LMS-LRB
AI50	0.99	4.17	16.03	1.45	0.80	0.81	1.56	0.99	1.78	1.44	4.38	26.82	4.33	1.44	25	188	D5(180m/s to200m/s)	0.33	1.17	0.38	0.74	0.23	1.21	1.93	0.89	0.45	0.83	72.50	52.50	92.50	5th Degree Sensitive	MS-HRB	1st Degree	LMS-LRB
AI47	1.61	4.36	9.44	2.16	1.36	0.83	2.75	1.58	2.56	3.35	4.45	21.77	6.89	3.35	24	185	D5(180m/s to200m/s)	0.32	1.18	0.38	0.72	0.23	1.22	1.94	0.88	0.45	0.82	71.62	51.62	91.62	5th Degree Sensitive	MS-HRB	2nd Degree	MMS-LRB
AI48	1.43	4.32	11.83	1.90	1.13	0.85	2.29	1.41	2.27	2.58	4.43	23.21	5.96	2.58	24	186	D5(180m/s to200m/s)	0.32	1.18	0.38	0.73	0.23	1.22	1.94	0.89	0.45	0.82	71.94	51.94	91.94	5th Degree Sensitive	MS-HRB	2nd Degree	MMS-LRB
AI49	1.28	4.21	14.16	1.64	0.89	0.85	1.89	1.22	1.94	1.92	4.42	24.77	5.04	1.92	24	187	D5(180m/s to200m/s)	0.32	1.18	0.38	0.73	0.23	1.22	1.94	0.89	0.45	0.82	72.12	52.12	92.12	5th Degree Sensitive	MS-HRB	1st Degree Sensitive	LMS-LRB

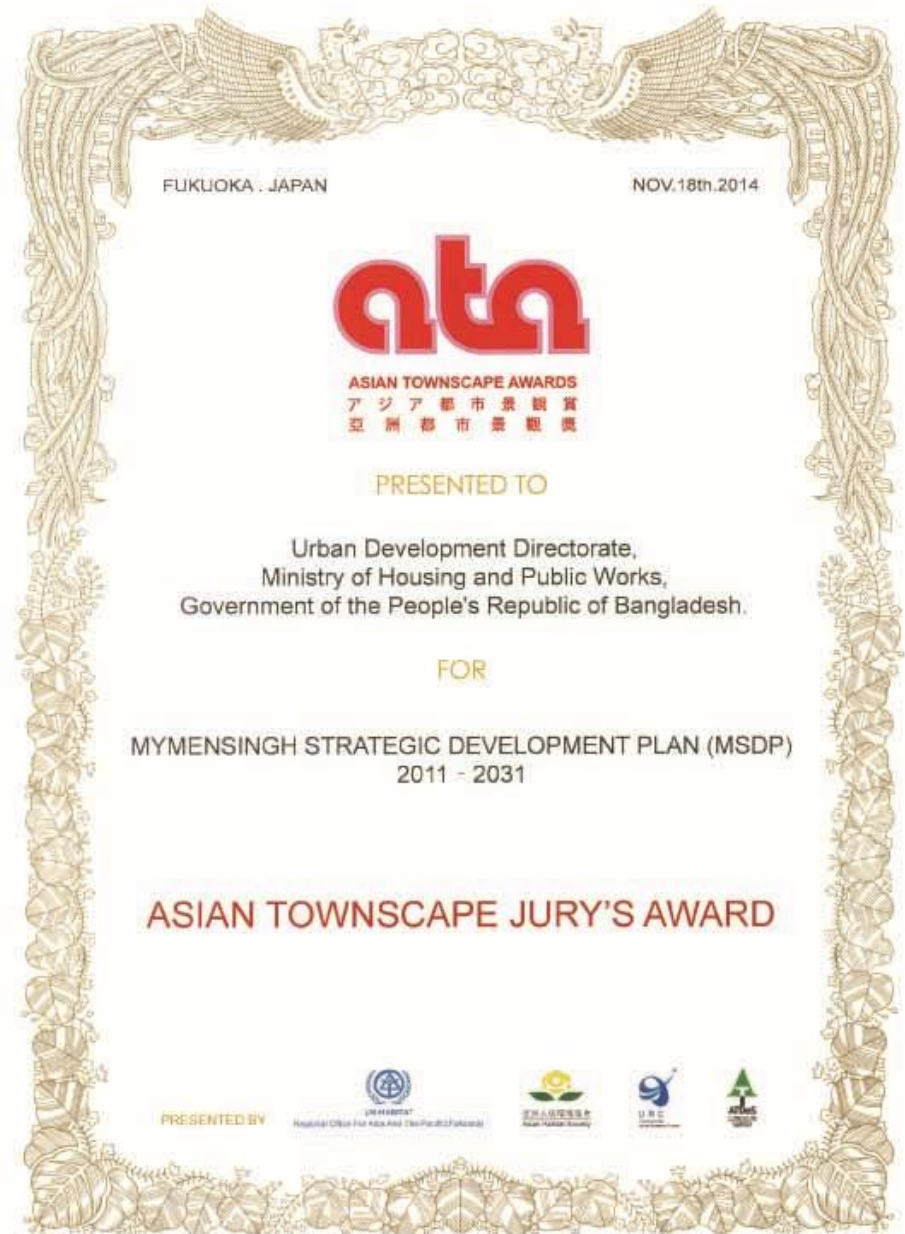
Note : MMS-LRB=Medium Moderate Suitable for Low Rise Building, LMS-LRB=Low Moderate Suitable for Low Rise Building, MS-HRB=Most Suitable For High Rise Building



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Thanks