

# Paro Valley Development Plan MAPS

Vol -II



DEPARTMENT OF HUMAN SETTLEMENT,  
MINISTRY OF WORKS & HUMAN SETTLEMENT

APRIL, 2017

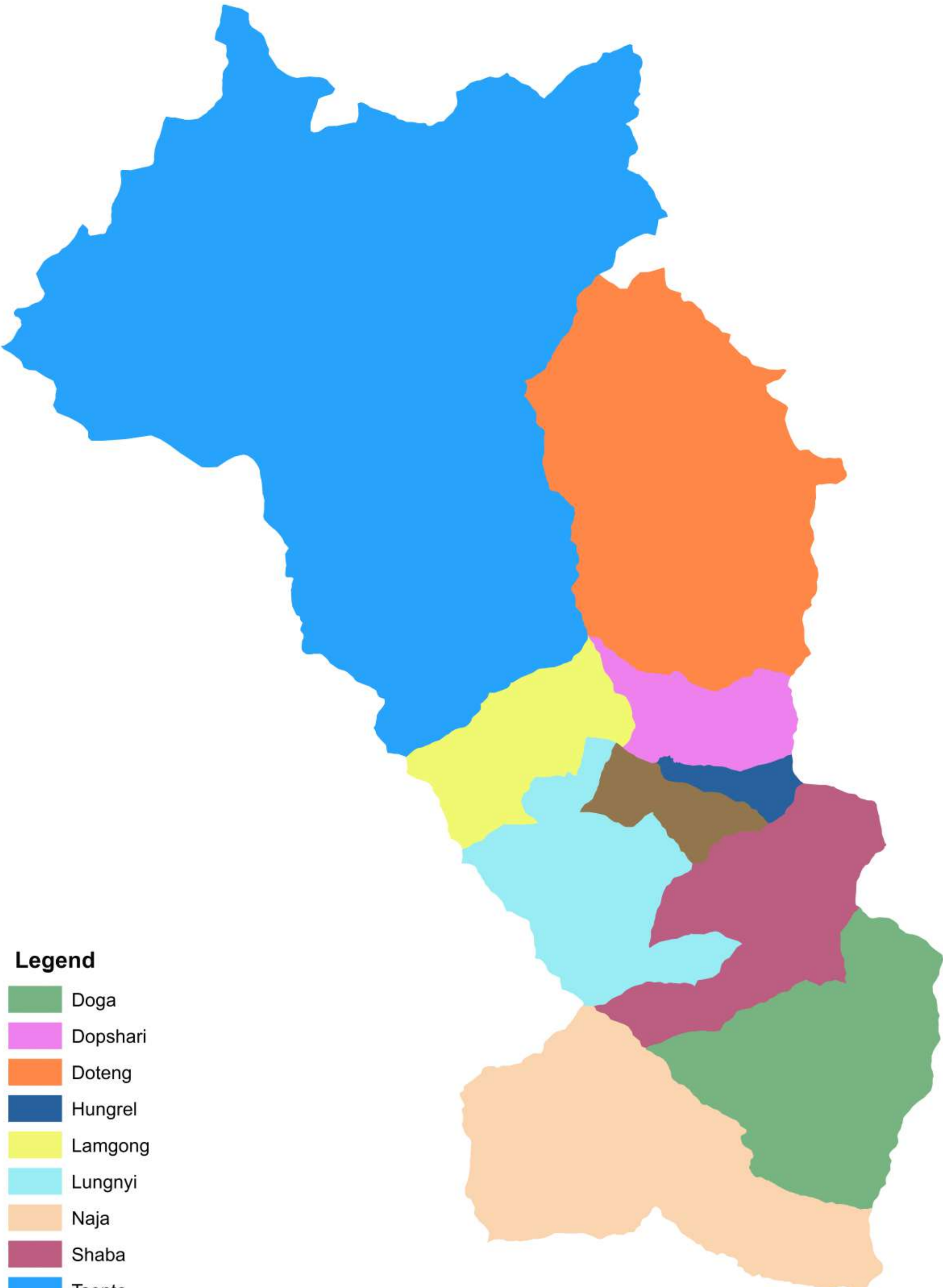


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# Existing Scenario

Gewogs in Paro Dzongkhag



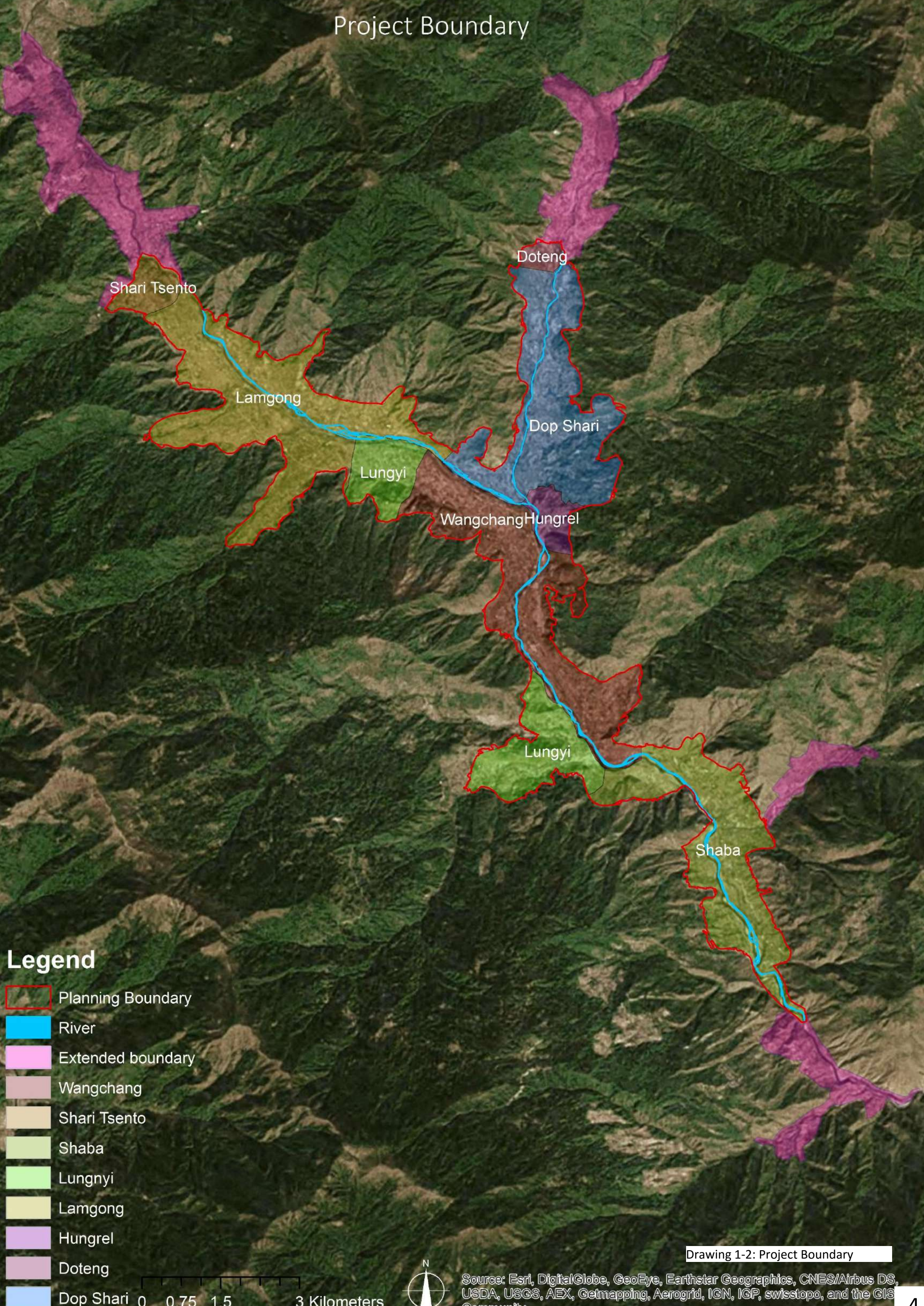
- Legend**
- Doga
  - Dopshari
  - Doteng
  - Hungrel
  - Lamgong
  - Lungnyi
  - Naja
  - Shaba
  - Tsento
  - Wangchang

Drawing 1-1: Gewogs of Paro

0 1.75 3.5 7 10.5 Kilometers



Project Boundary



Legend

- Planning Boundary
- River
- Extended boundary
- Wangchang
- Shari Tsento
- Shaba
- Lungnyi
- Lamgong
- Hungrel
- Doteng
- Dop Shari

0 0.75 1.5 3 Kilometers

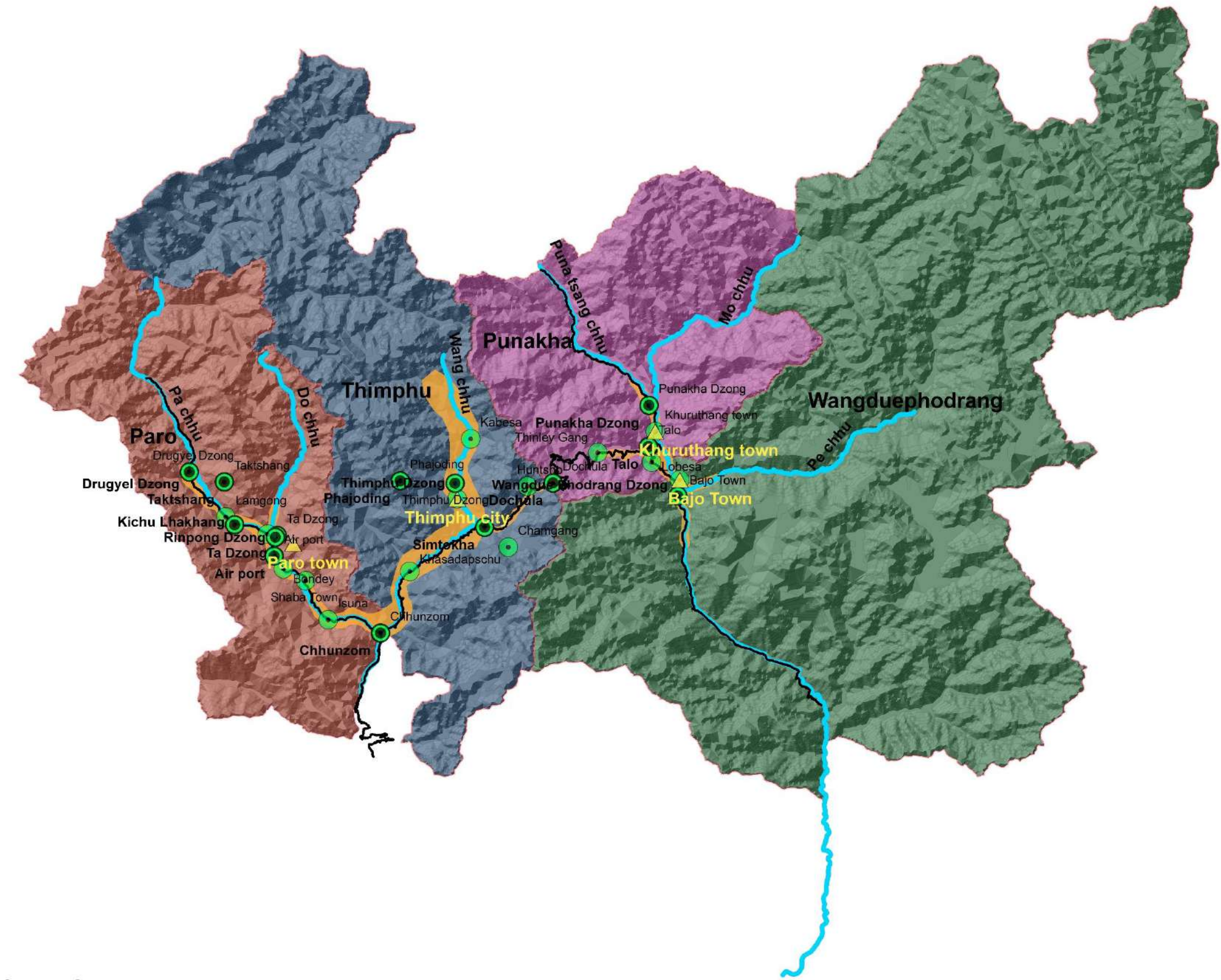


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS Community

Drawing 1-2: Project Boundary



# Regional Context



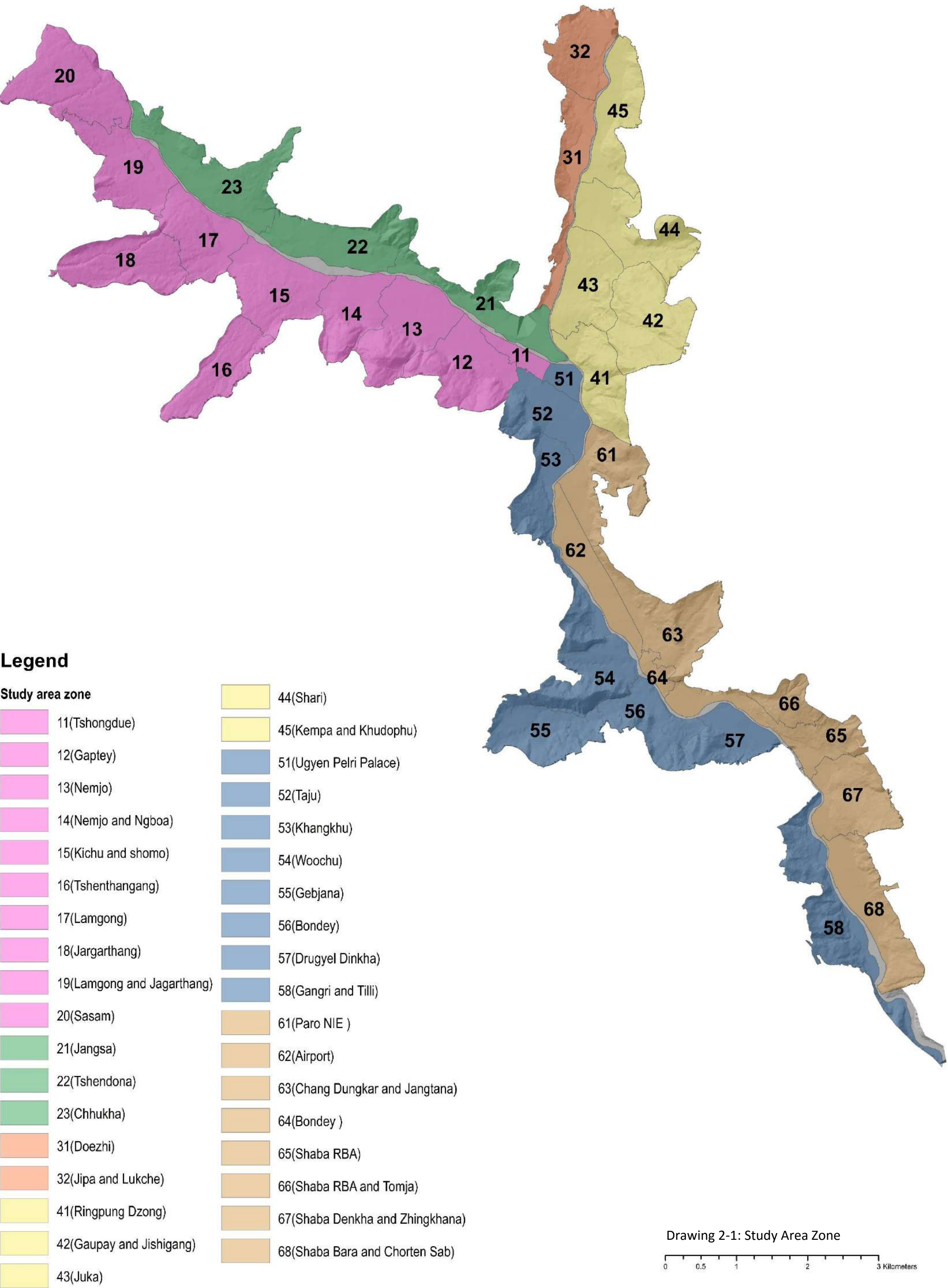
## Legend

- Towns
- Tourist hot spots
- Roads
- River
- Developing area
- Wangduephodrang
- Thimphu
- Punakha
- Paro

Drawing 1-3: Regional Context

0 5 10 20 30 Kilometers





Base Map



Legend

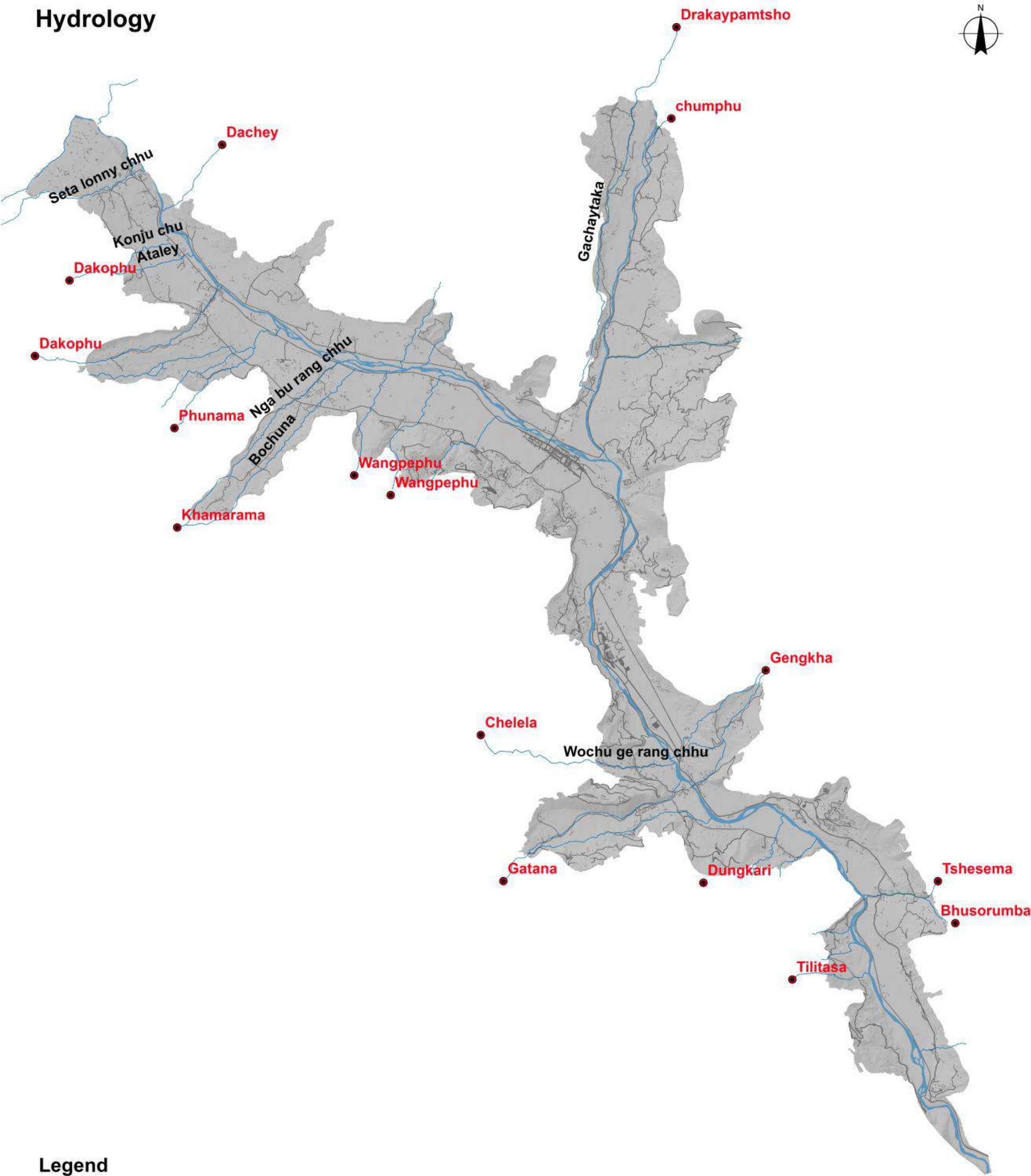
- Stream
- River
- Building
- Road
- Planning boundary
- Contour 5 m

Drawing 3-1: Base Map

0 0.5 1 2 3 Kilometers



Hydrology



Legend

- Stream source
- Stream
- River
- Building
- Road
- Planning boundary
- Contour 5 m

Drawing 3-2: Existing Water body





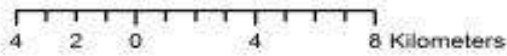


Legend

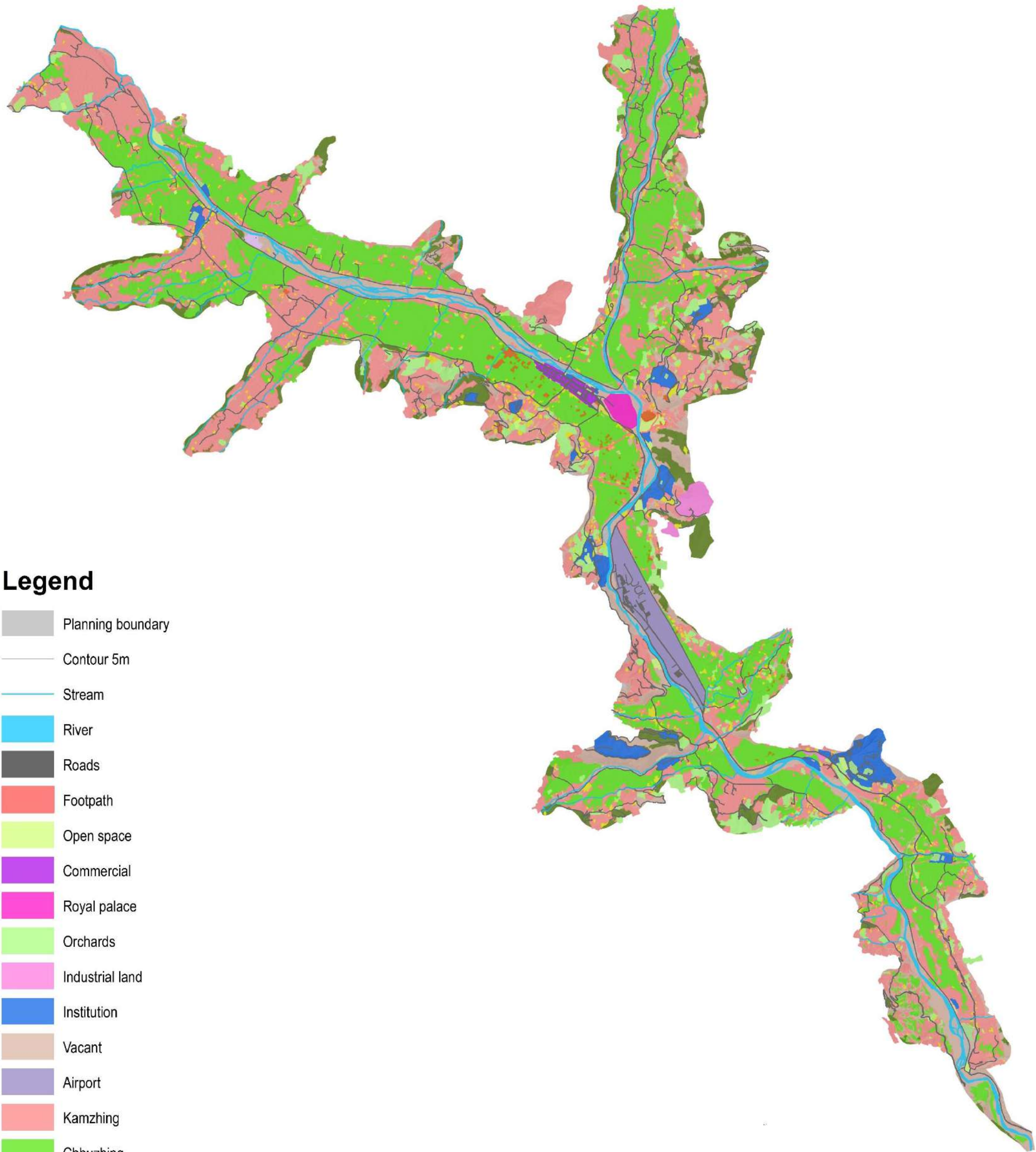
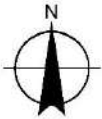
Landuse

- Agriculture
- Bare area
- Builtup area
- Degraded area
- Forest
- Snow cover
- Water bodies

Drawing 3-3: Existing Land Use Map of Paro Dzongkhag







Legend

- Planning boundary
- Contour 5m
- Stream
- River
- Roads
- Footpath
- Open space
- Commercial
- Royal palace
- Orchards
- Industrial land
- Institution
- Vacant
- Airport
- Kamzhing
- Chhuzhing
- Forest
- Community land
- Residential
- Religious
- Sokzhing





Legend

- Plot below 26 decimal
- River
- Building
- Road
- Planning boundary
- Contour 5 m

Drawing 3-5: Transaction below 26 decimal Plot Analysis





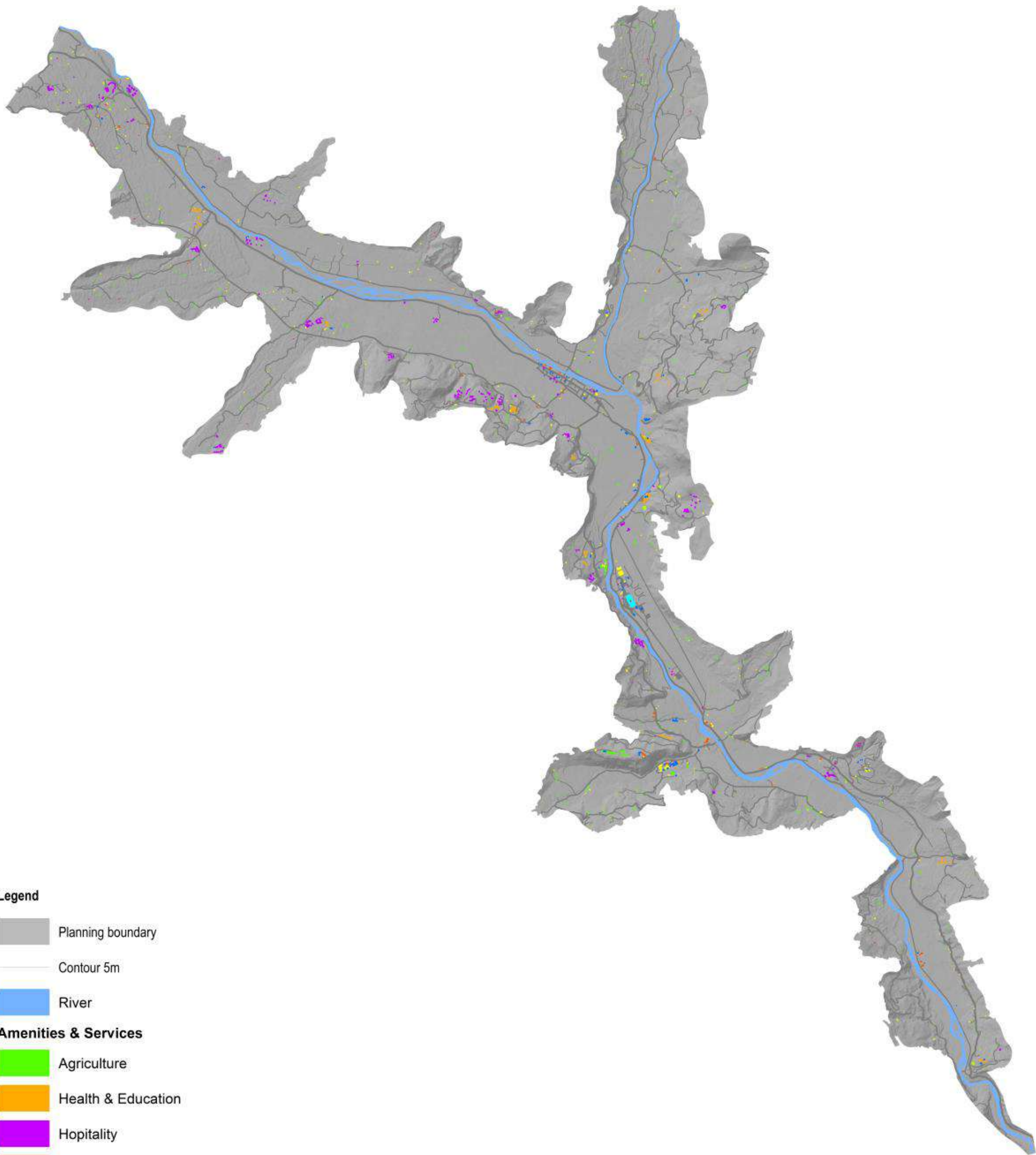


Legend

- Non local owning plot below 26 decimal
- Local owning plot below 26 decimal
- River
- Building
- Road
- Planning boundary
- Contour 5 m

Transaction below 26 decimal Plot  
Analysis (Local & Non-local)



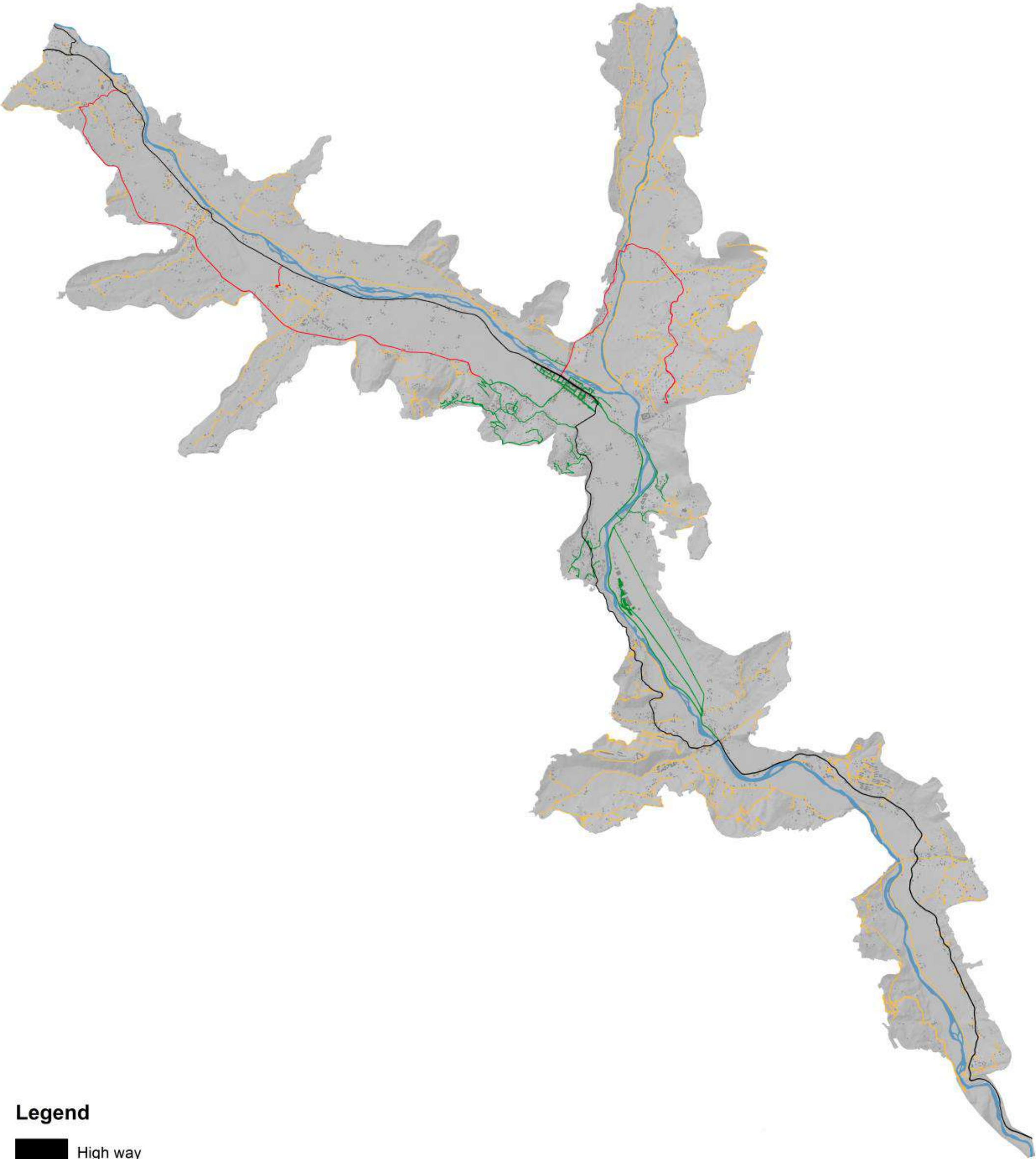


- Legend**
- Planning boundary
  - Contour 5m
  - River
- Amenities & Services**
- Agriculture
  - Health & Education
  - Hopitality
  - Industry & Warehouse
  - Office
  - Security
  - Recreational
  - Stores & Warehouse
  - Transport

Drawing 3-6: Existing Amenities

0 0.75 1.5 3 Kilometer





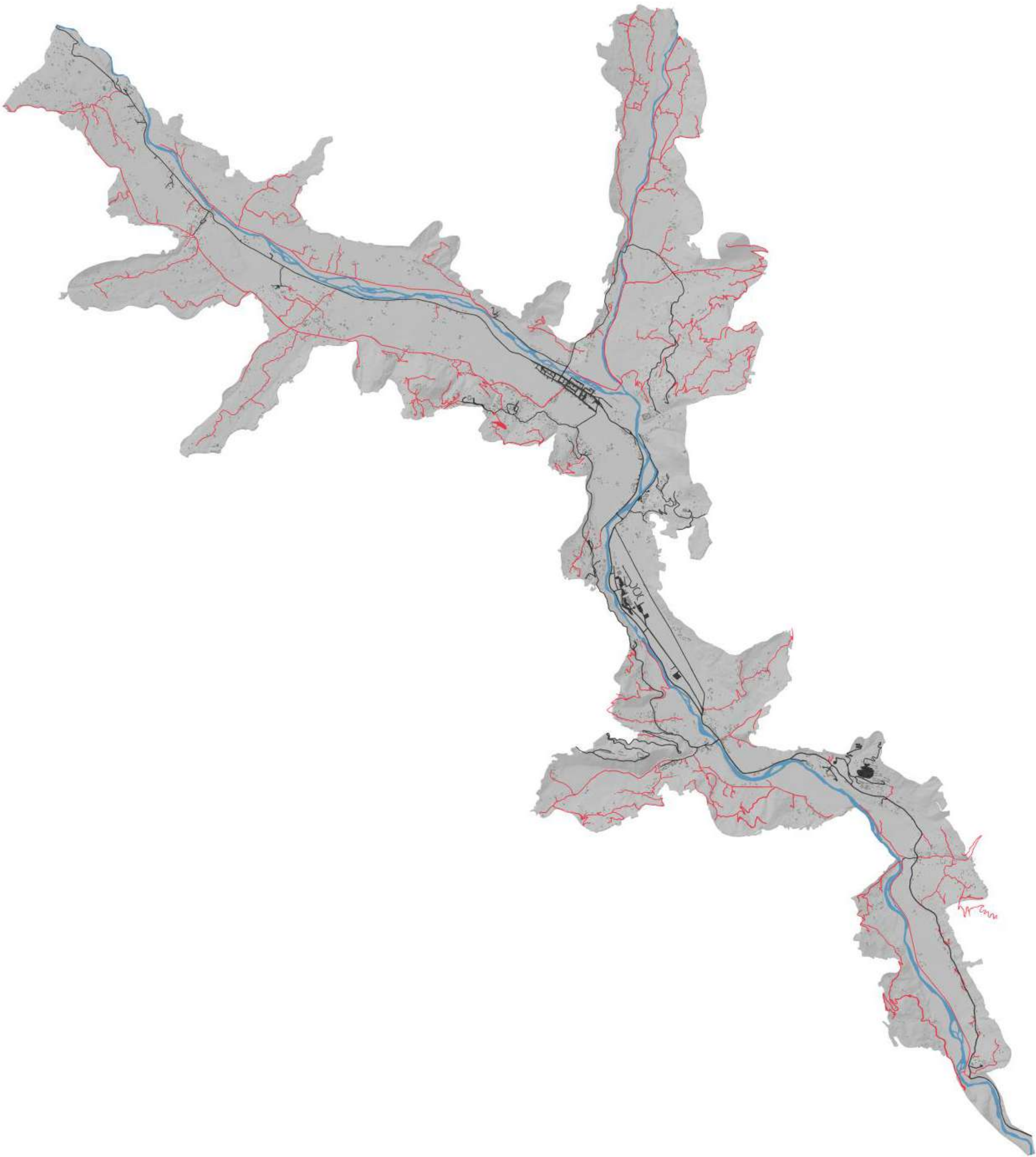
Legend

- High way
- Dzongkhag road
- Thromde road
- Farm road
- River
- Building
- Planning boundary
- Contour 5 m

Drawing 3-7: Existing Road Hierarchy







Legend

- Unpaved road
- Paved road
- River
- Building
- Planning boundary
- Contour 5 m

Drawing 3-8: Existing Road Types


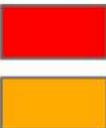










Legend

Water Supply Connections

-  Community
-  Individual
-  RWSS
-  Thromde
-  RWSS and Thromde
-  Individual and Thromde

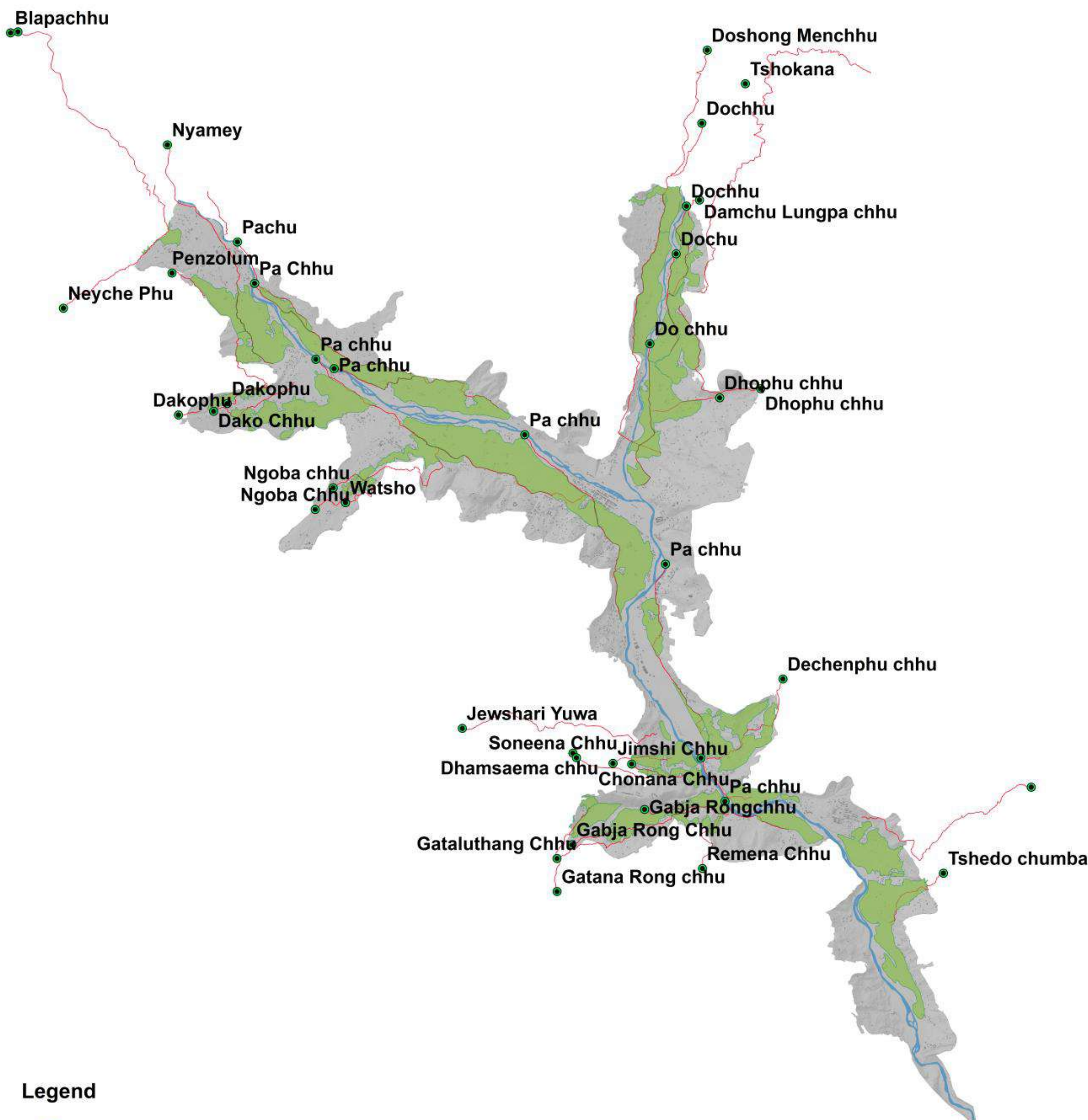
-  Major roads
-  River
-  Study Area Zone

Drawing 3-9: Existing Water Supply Schemes





# Existing Irrigation Canal



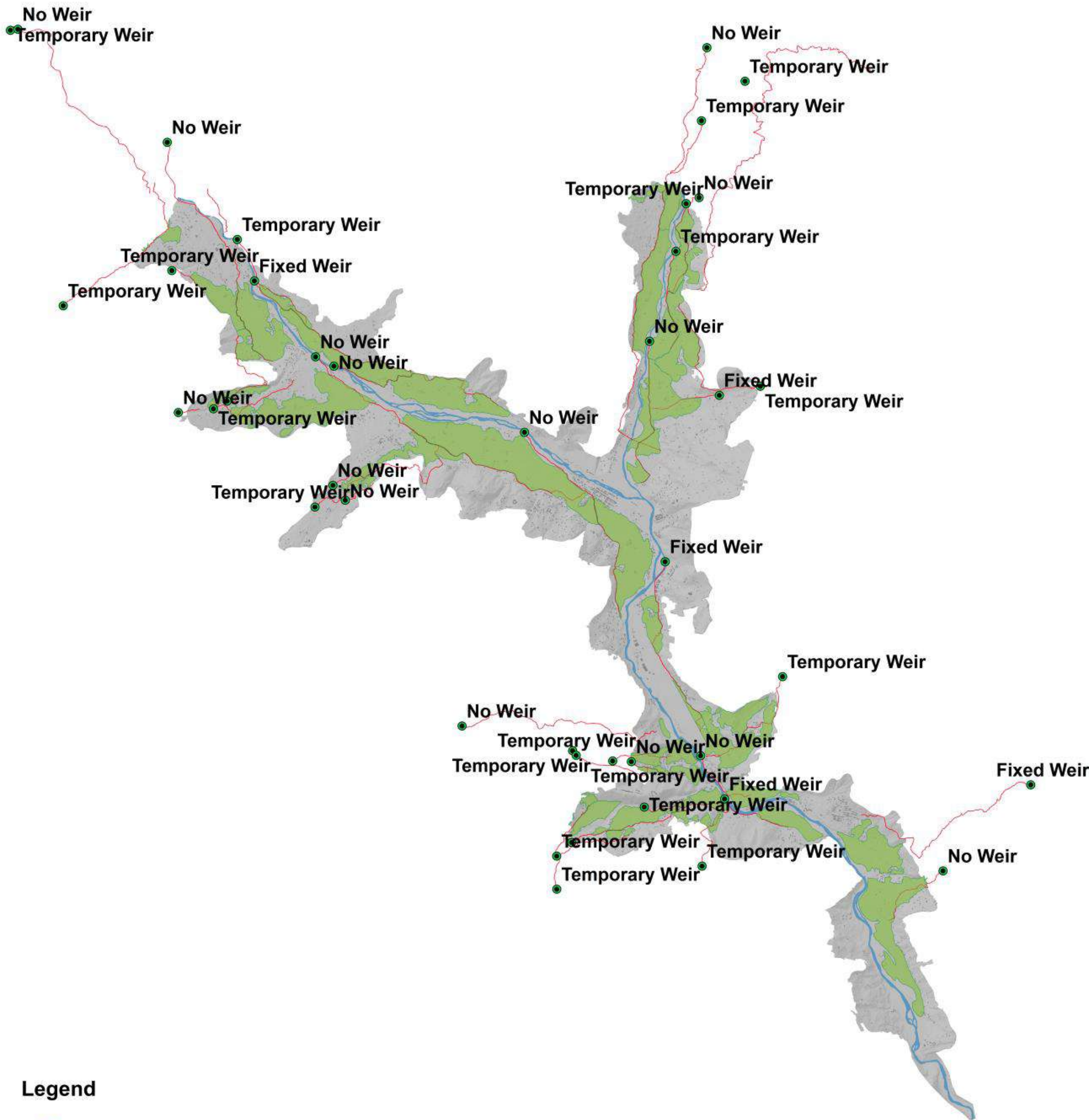
## Legend

- In take source
- Net command area (chhuzhing)
- Irrigation canal
- River
- Building
- Planning boundary
- Contour 5 m

Drawing 3-10: Existing Irrigation Canal

0 0.5 1 2 3 Kilometers



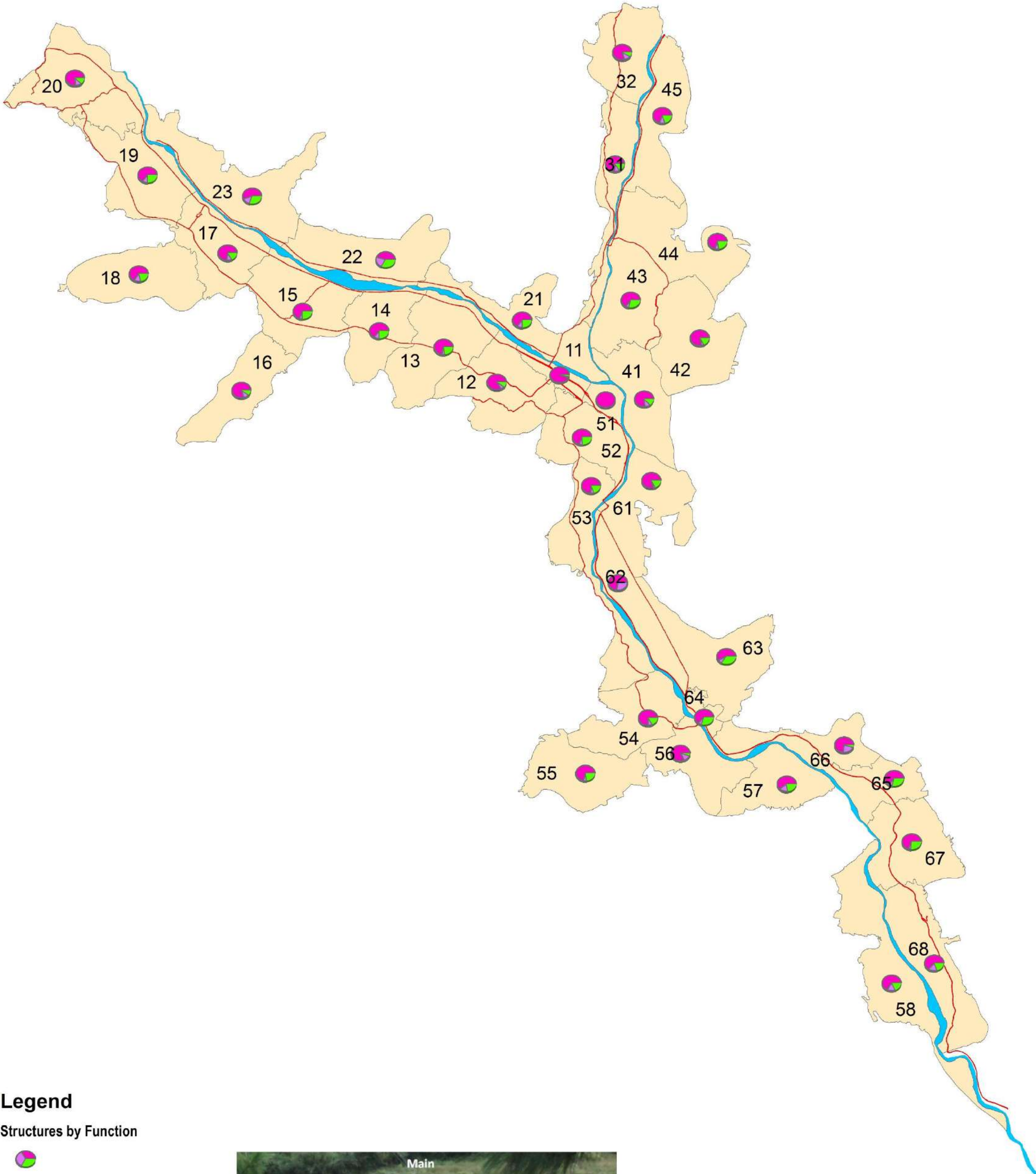


Legend

- Intake source
- Net command area (chhuzhing)
- Irrigation canal
- River
- Building
- Planning boundary
- Contour 5 m






# Functional Layout of Structures in Rural Setting



## Legend

Structures by Function

-  Main structures
-  Ancillary structures
-  Gago
-  River
-  Study Area Zone
-  Major roads

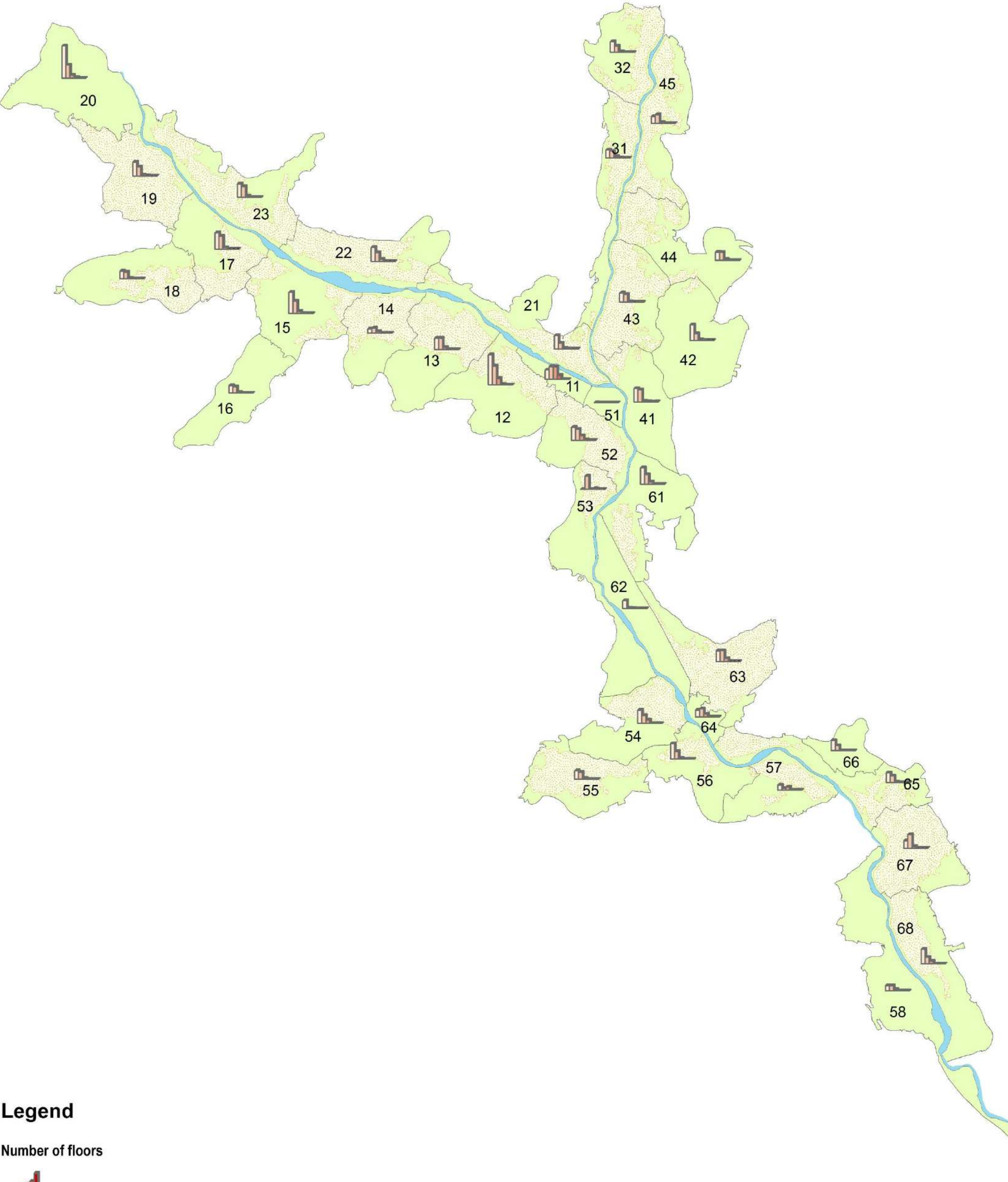


Drawing 3-11: Functional Layout of Structures in Rural Setting





# Distribution of Buildings by Number of Floors



## Legend

Number of floors

- Single storied
- Double storied
- Three storied
- Four storied
- Five storied
- Seven storied

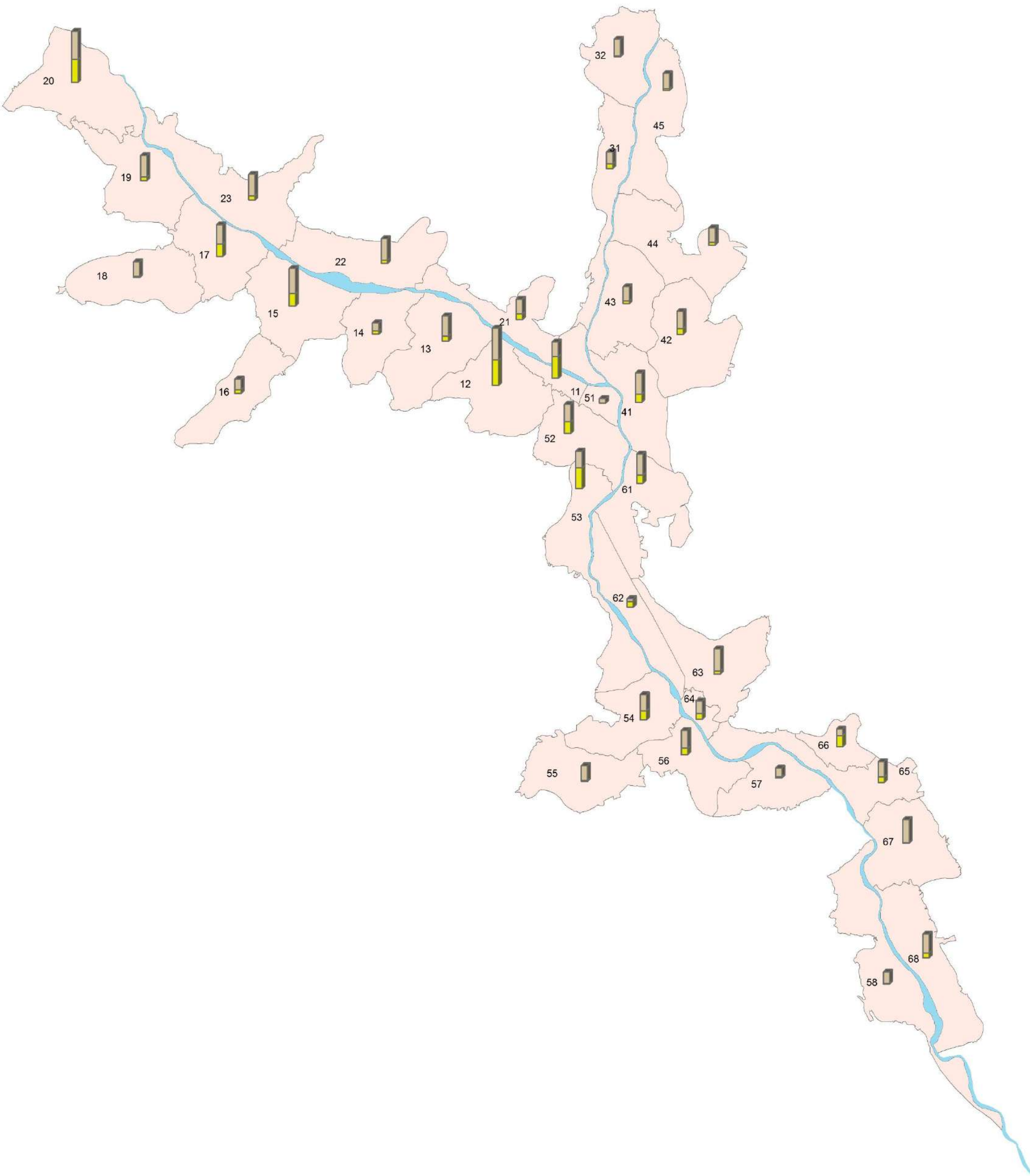
- River
- Chhuzhing
- Study Area Zone

Drawing 4-1: Existing Building Heights






# Types of Existing Buildings




## Legend


Types of buildings




Traditional



Contemporary



River



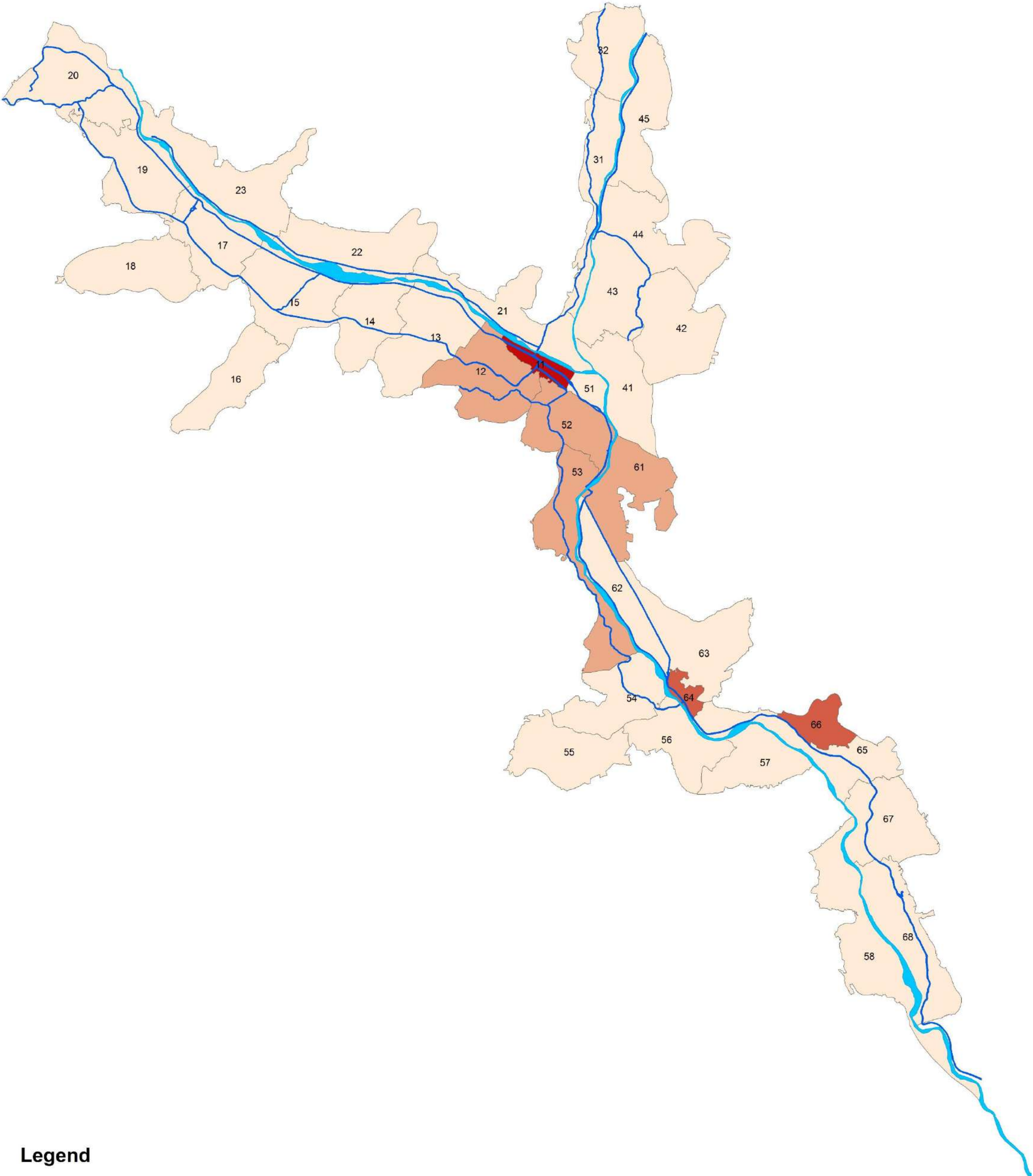
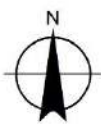
Study Area Zone

Drawing 4-2: Existing Building Types





Existing Density Per Study Area Zone



Legend

Persons per hectare

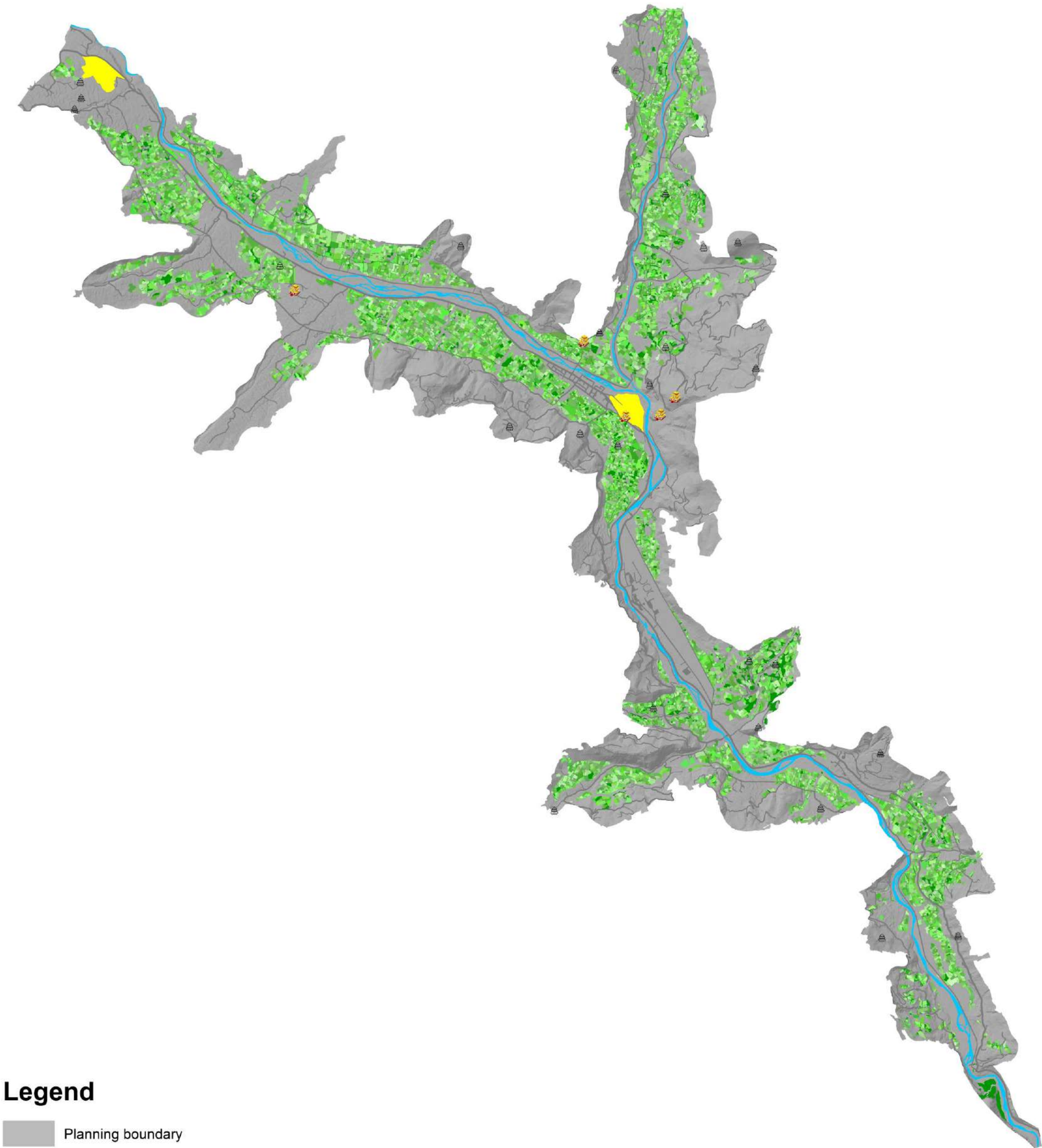
- 0 - 10
- 11 - 50
- 51 - 100
- 101 - 159

- River
- Major roads

Drawing 4-3: Existing Density

0 0.5 1 2 3 Kilometers

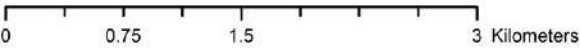




Legend

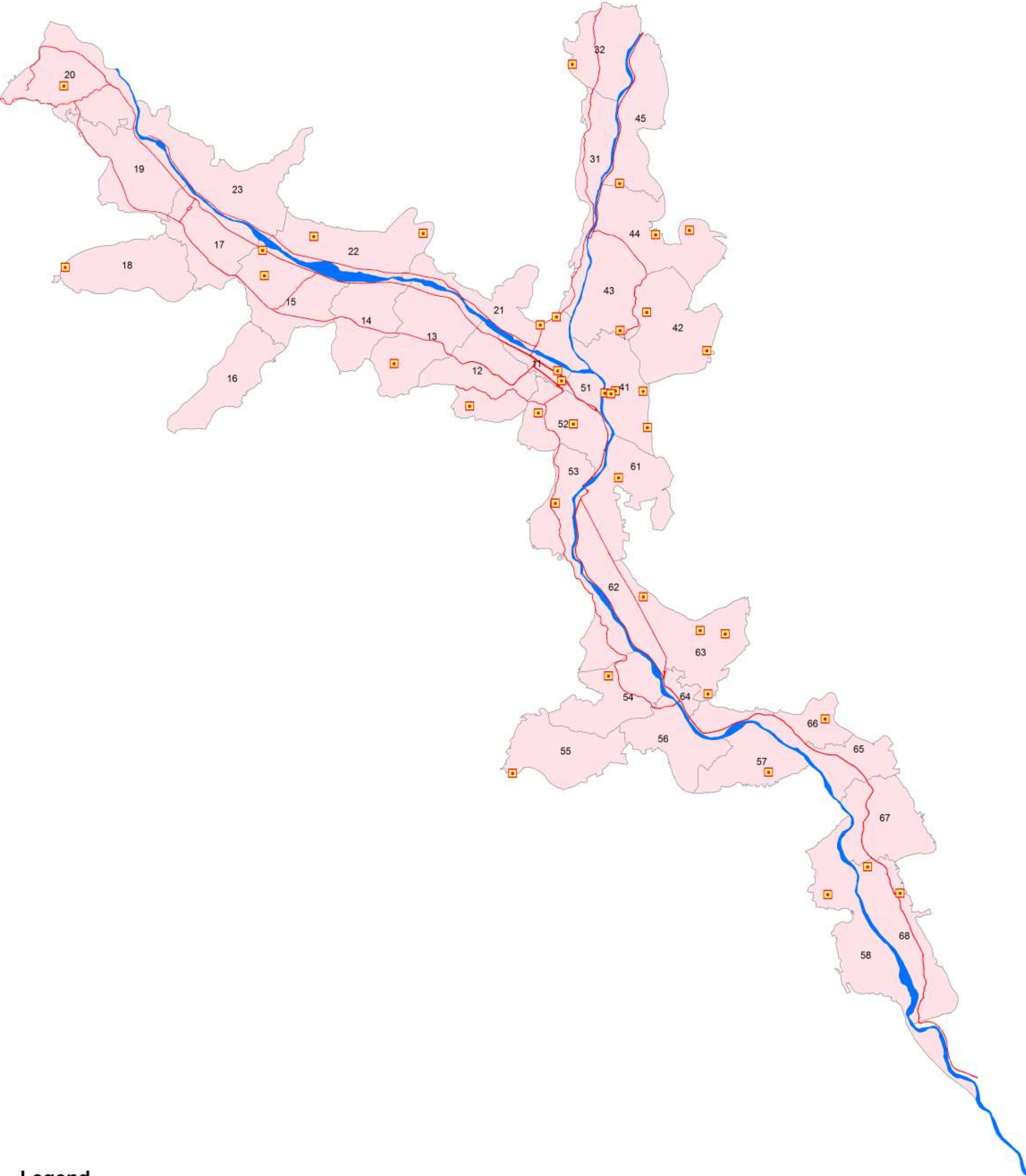
- Planning boundary
- River
- Road
- Contour 5m
- Major lhakhang
- Minor lhakhang
- Agriculture
- Royal palace

Drawing 6-1: Existing Chhuzhing





# Location of Religious Establishments



## Legend

-  Religious establishments
-  River
-  Major roads
-  Study Area Zone

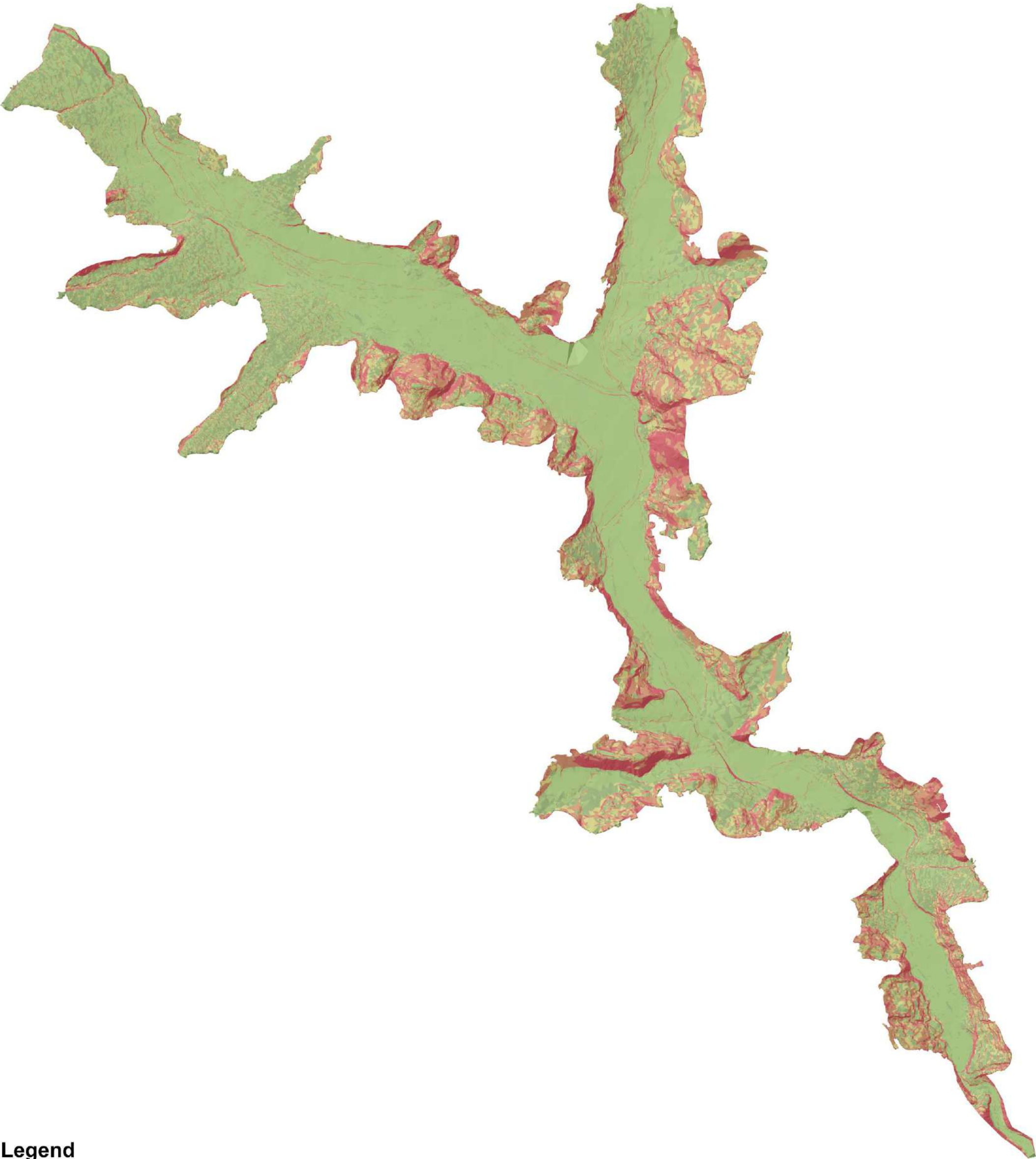
Drawing 6-2: Religious



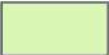
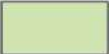





# Analysis

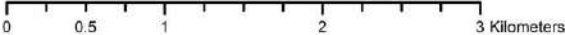




Legend

Slope (%)	
<VALUE>	
	0 - 10
	10 - 20
	20 - 30
	30 - 50
	>50

Drawing 6-3: Slope Analysis







Legend

Hazard type

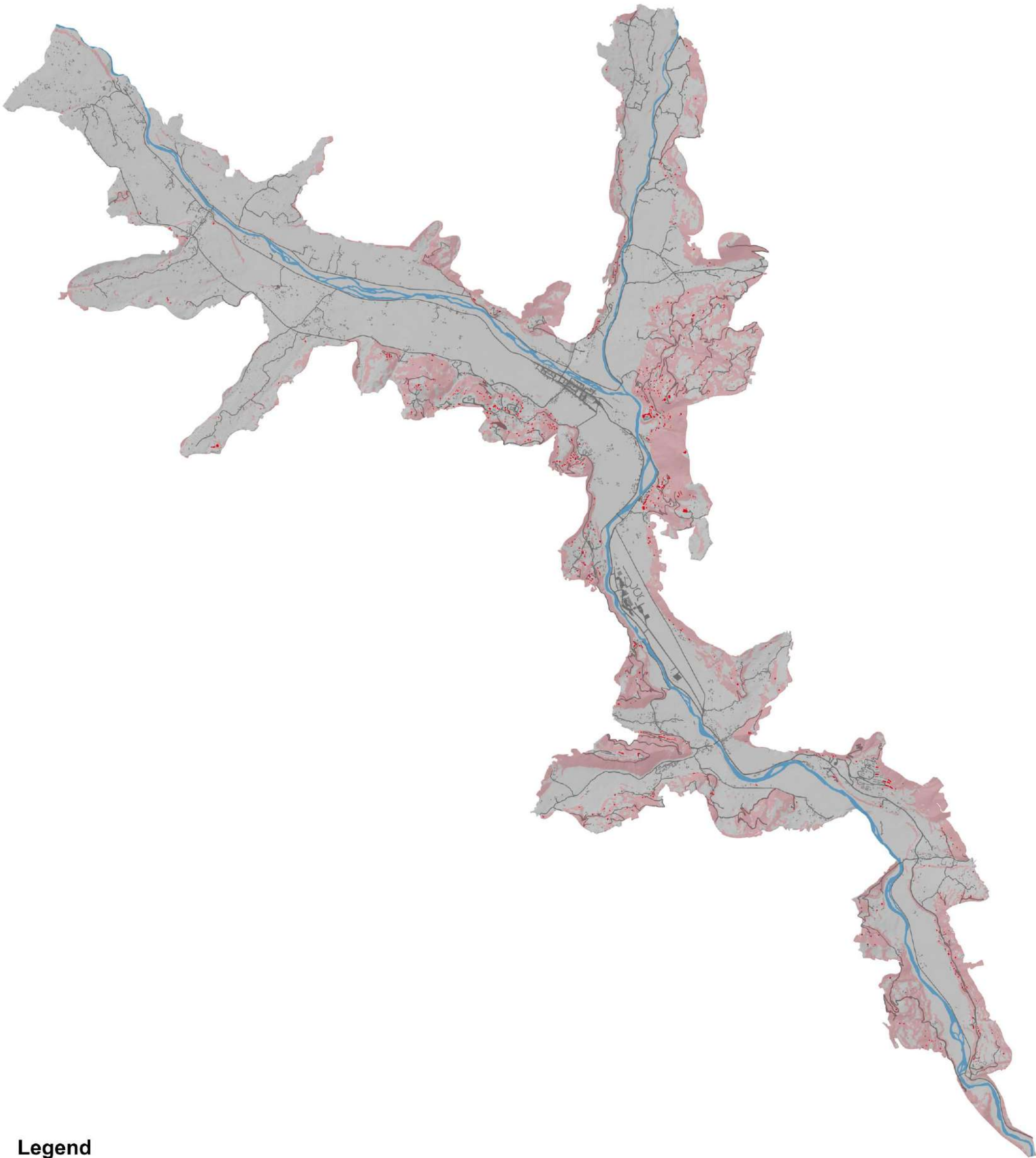
- High
- Medium
- Low

Drawing 7-1: Hazard Analysis












# Existing Buildings in Slope Above 30%



## Legend

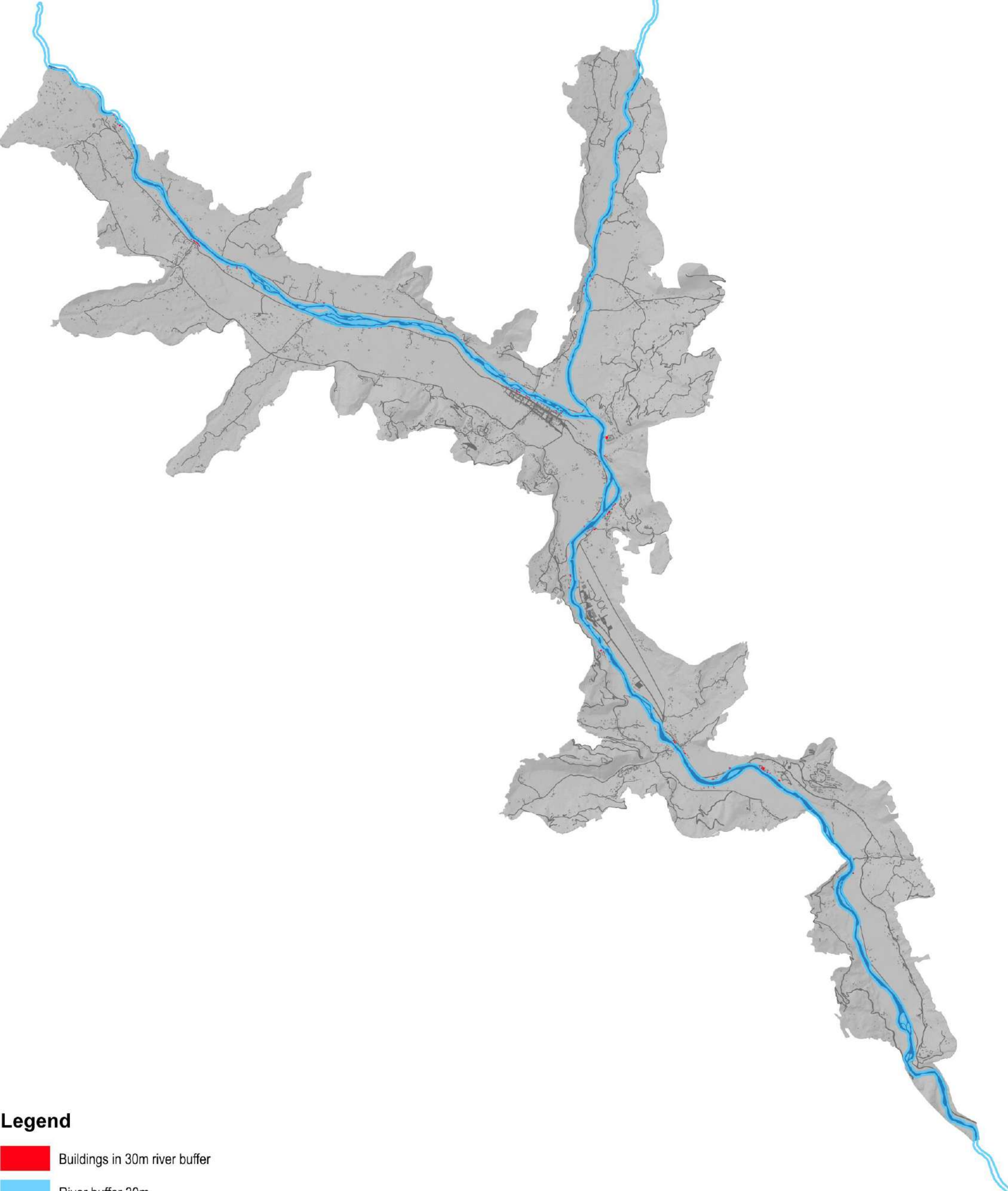
-  Buildings in slope 30% and above
-  Slope above 30%
-  River
-  Building
-  Road
-  Planning boundary
-  Contour 5 m

Drawing 7-2: Existing Building in Slope more than 30%





# Existing Buildings in 30m River buffer



## Legend

- Buildings in 30m river buffer
- River buffer 30m
- River
- Building
- Road
- Planning boundary
- Contour 5 m



Drawing 7-3: Existing Buildings in 30m Buffer Zone from River Bank

0 0.475 0.95 1.9 2.85 Kilometers





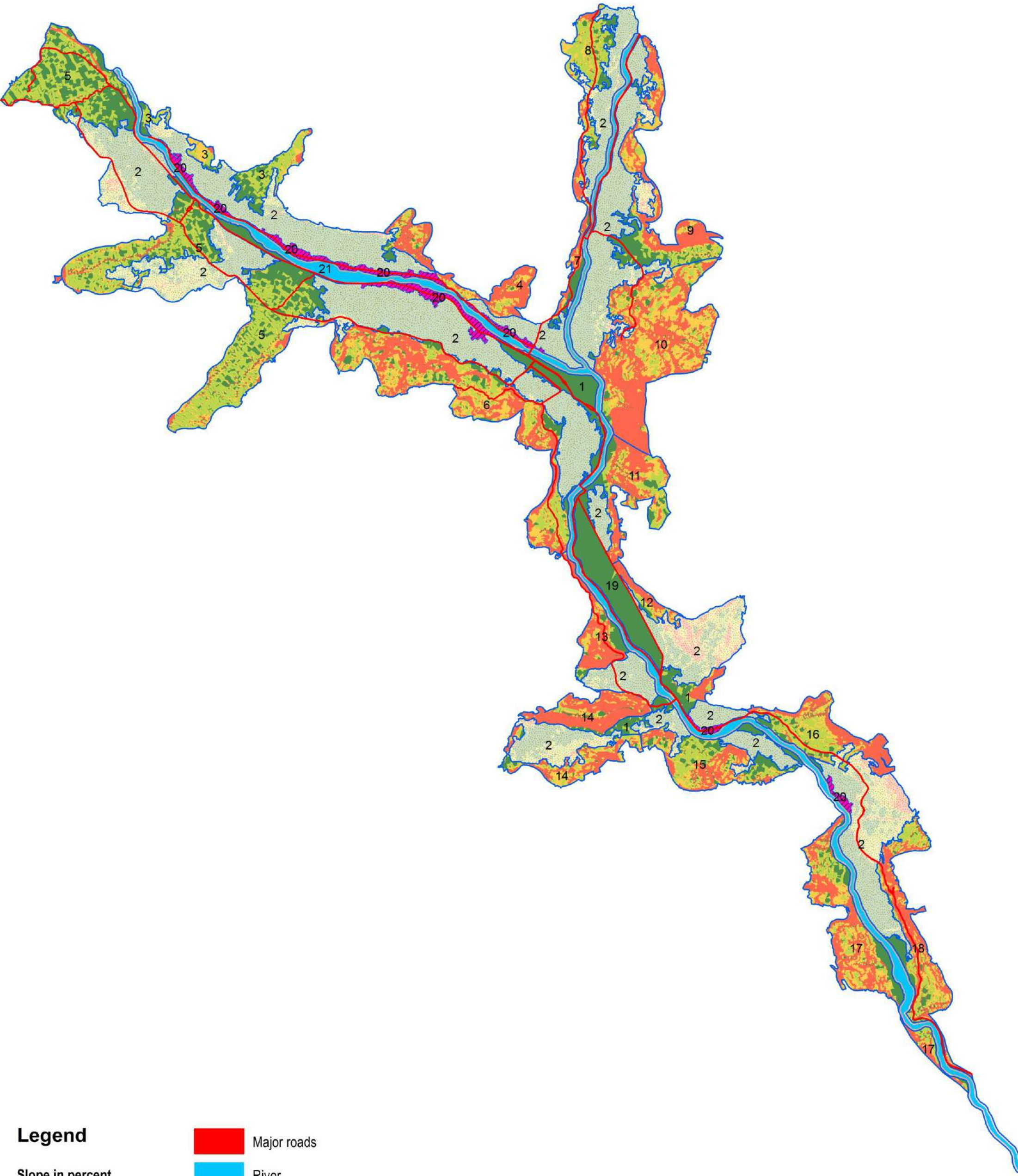
Legend

-  Not suitable area
-  Suitable area

Drawing 7-4: Suitability Analysis







Legend

Slope in percent

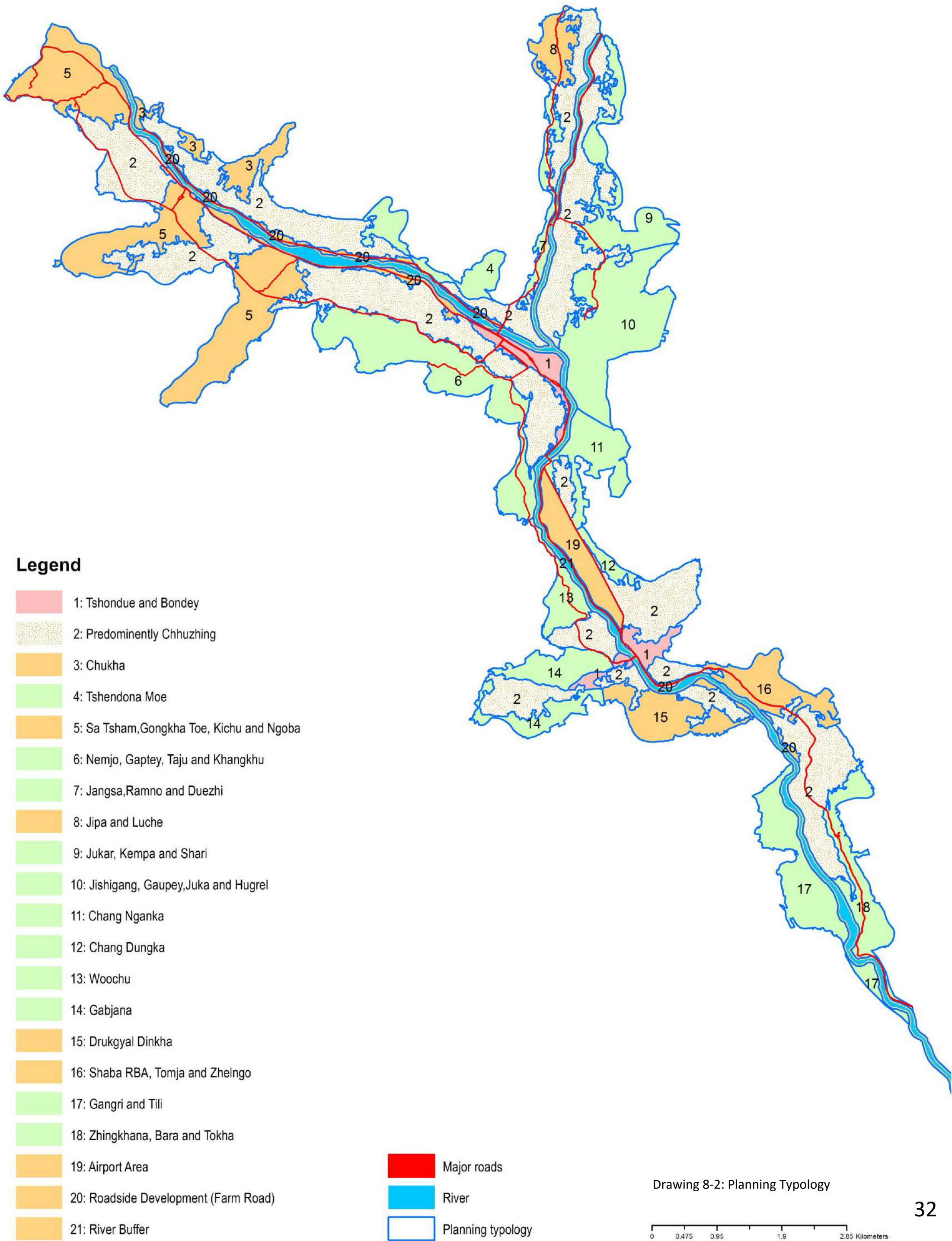
- 0%-10%
- 10%-20%
- 20%-30%
- Above 30%

- Major roads
- River
- Planning typology unit
- Roadside development
- Chhuzhing
- River buffer

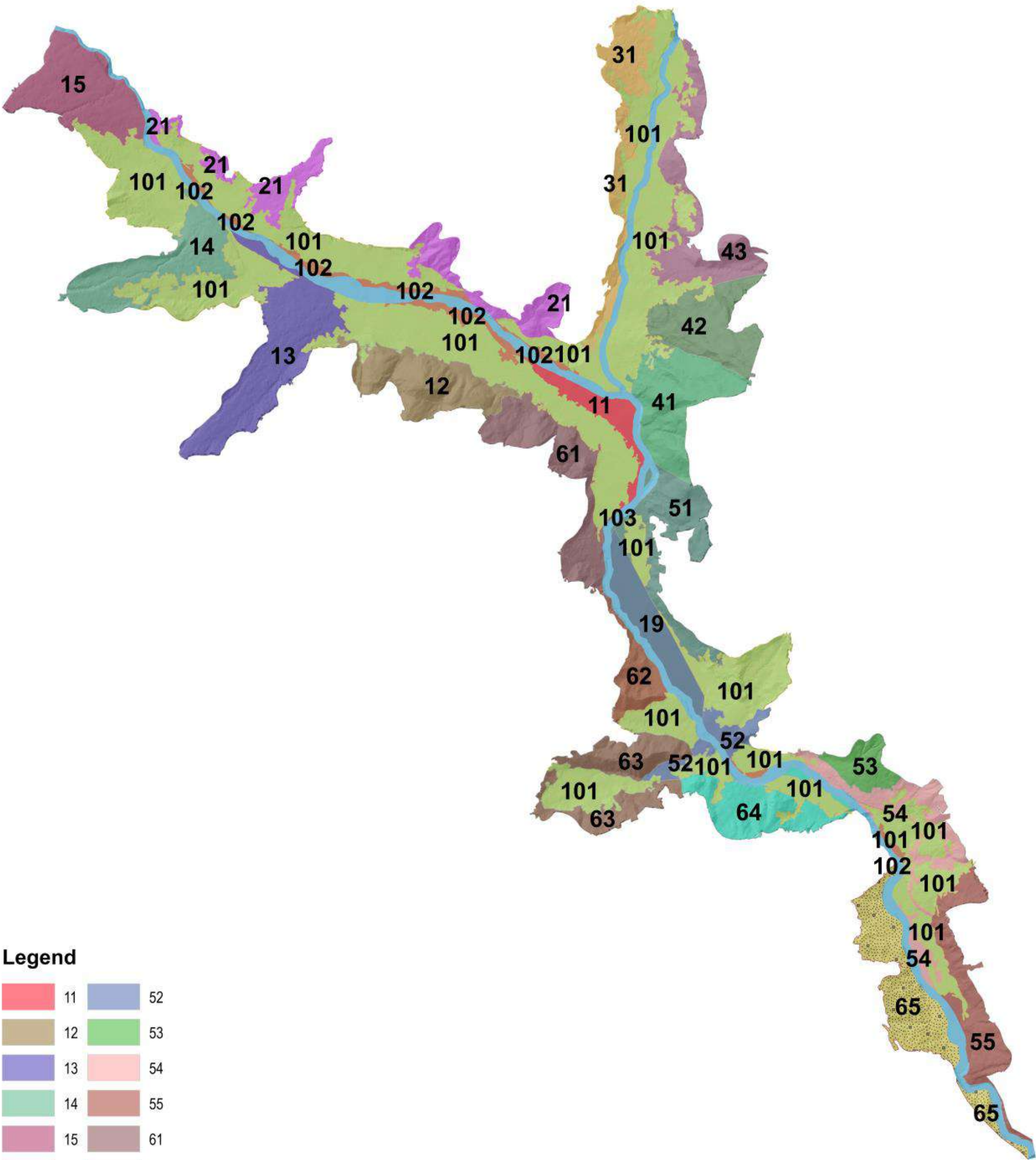
Drawing 8-1: Assignment of Planning Typology

0 0.5 1 2 3 Kilometers



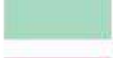


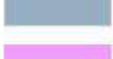



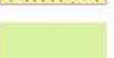











Legend

	11		52
	12		53
	13		54
	14		55
	15		61
	19		62
	21		63
	31		64
	41		65
	42		101 (chhuzhing)
	43		102 (road side)
	51		103 (river buffer)

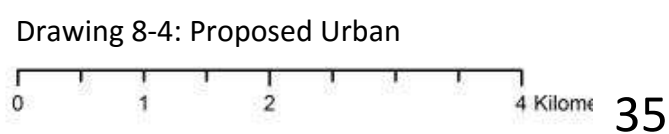
Drawing 8-3: Planning Units





## Proposal for Action





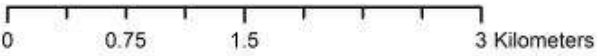




Legend

- Contour 5m
- Built environment zone
- Cultural landscape zone

Drawing 8-5: Proposed Land Use Zone





Preserved Chhuzhing



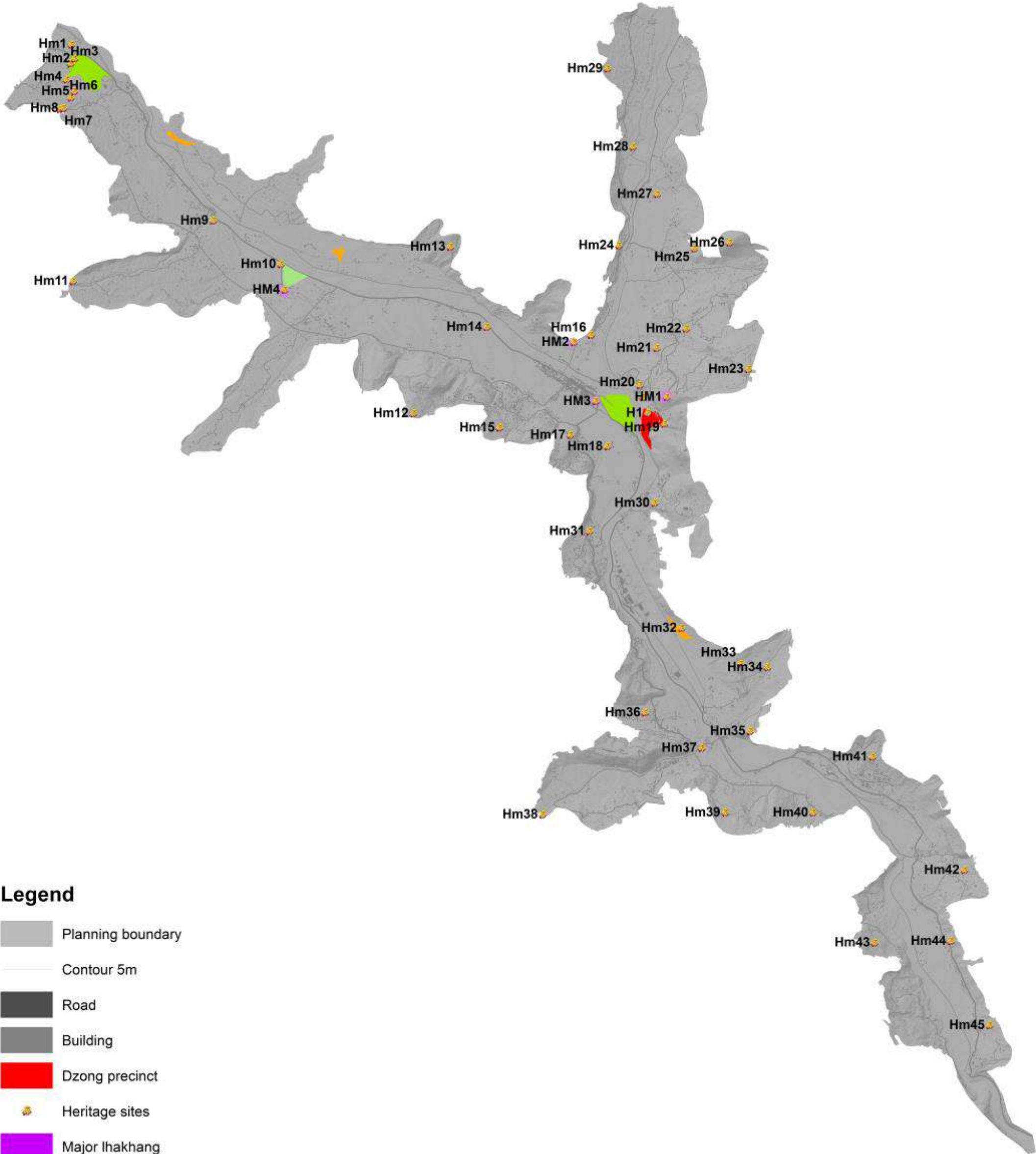
Legend

- Chhuzhing
- River
- Building
- Road
- Planning boundary
- Contour 5 m

Drawing 8-6: Agriculture Precinct  
0 0.5 1 2 3 Kilometers



# Proposed Religious Precinct



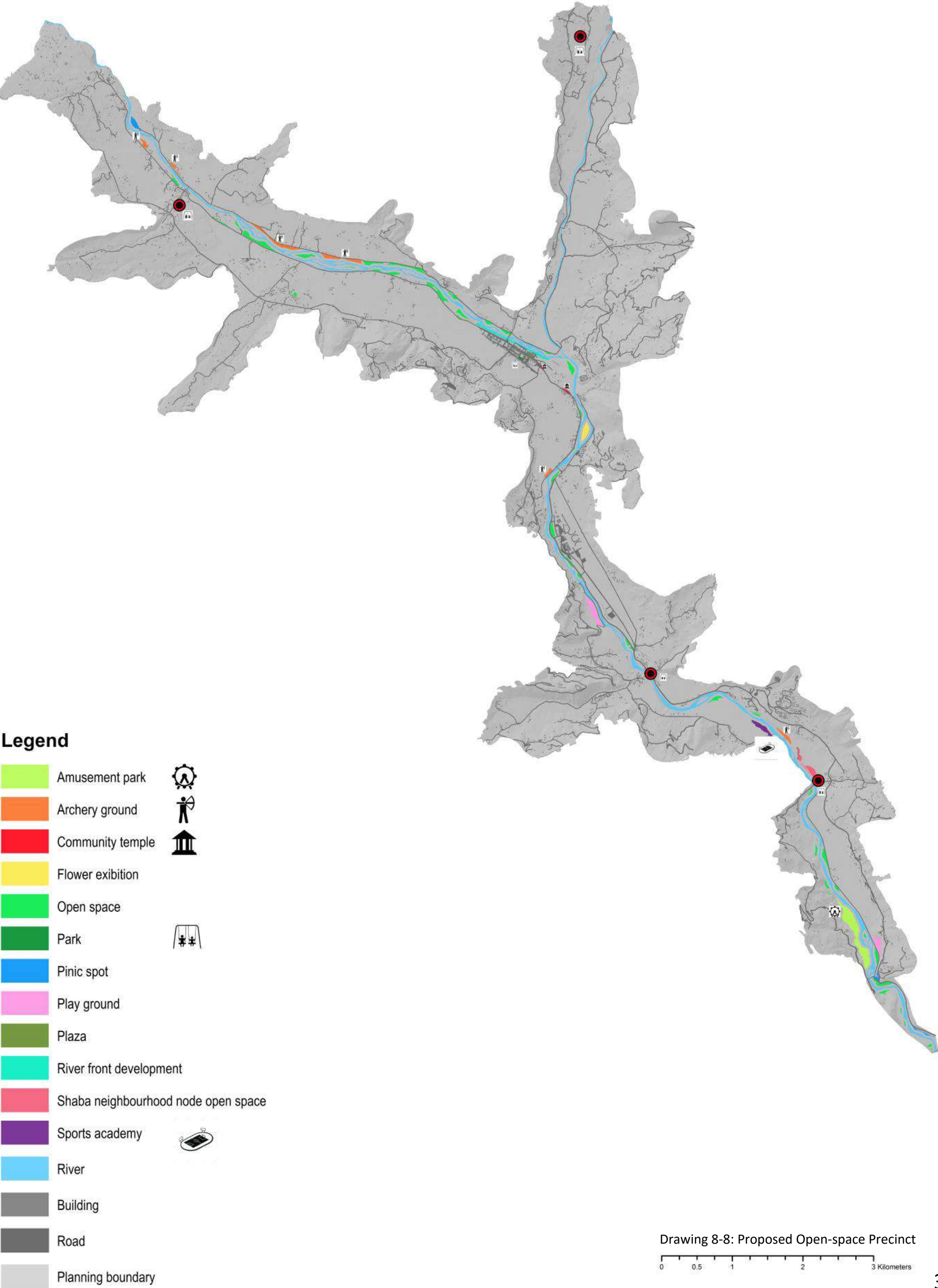
## Legend

- Planning boundary
- Contour 5m
- Road
- Building
- Dzong precinct
- Heritage sites
- Major lhakhang
- Major lhakhang 50m buffer
- Minor lhakhang
- Minor lhakhang 15m buffer
- Angle of vision
- Heritage village
- Royal precinct

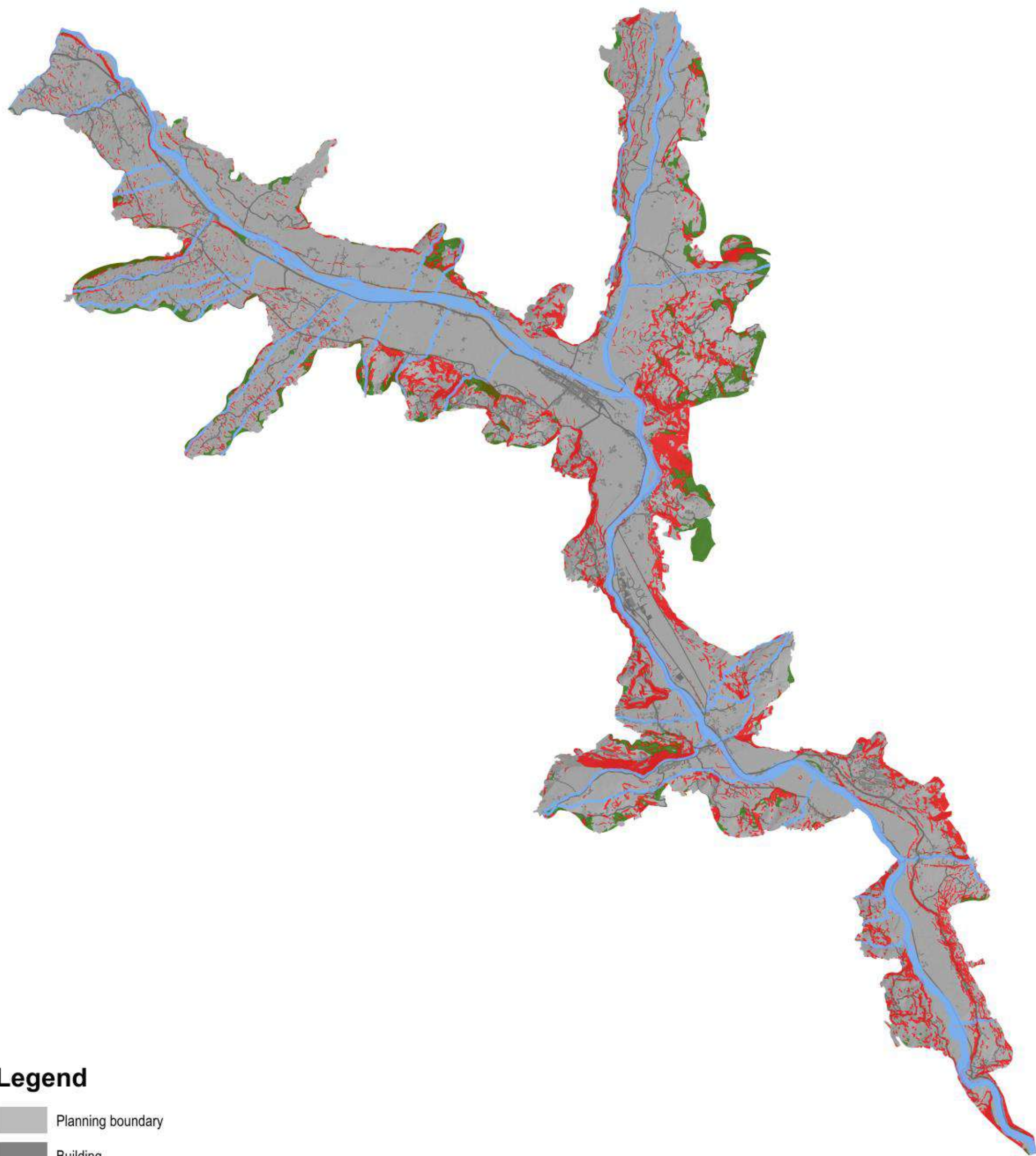
Drawing 8-7: Proposed Religious Precinct

0 0.5 1 2 Kilometers

# Proposed Open Space Types



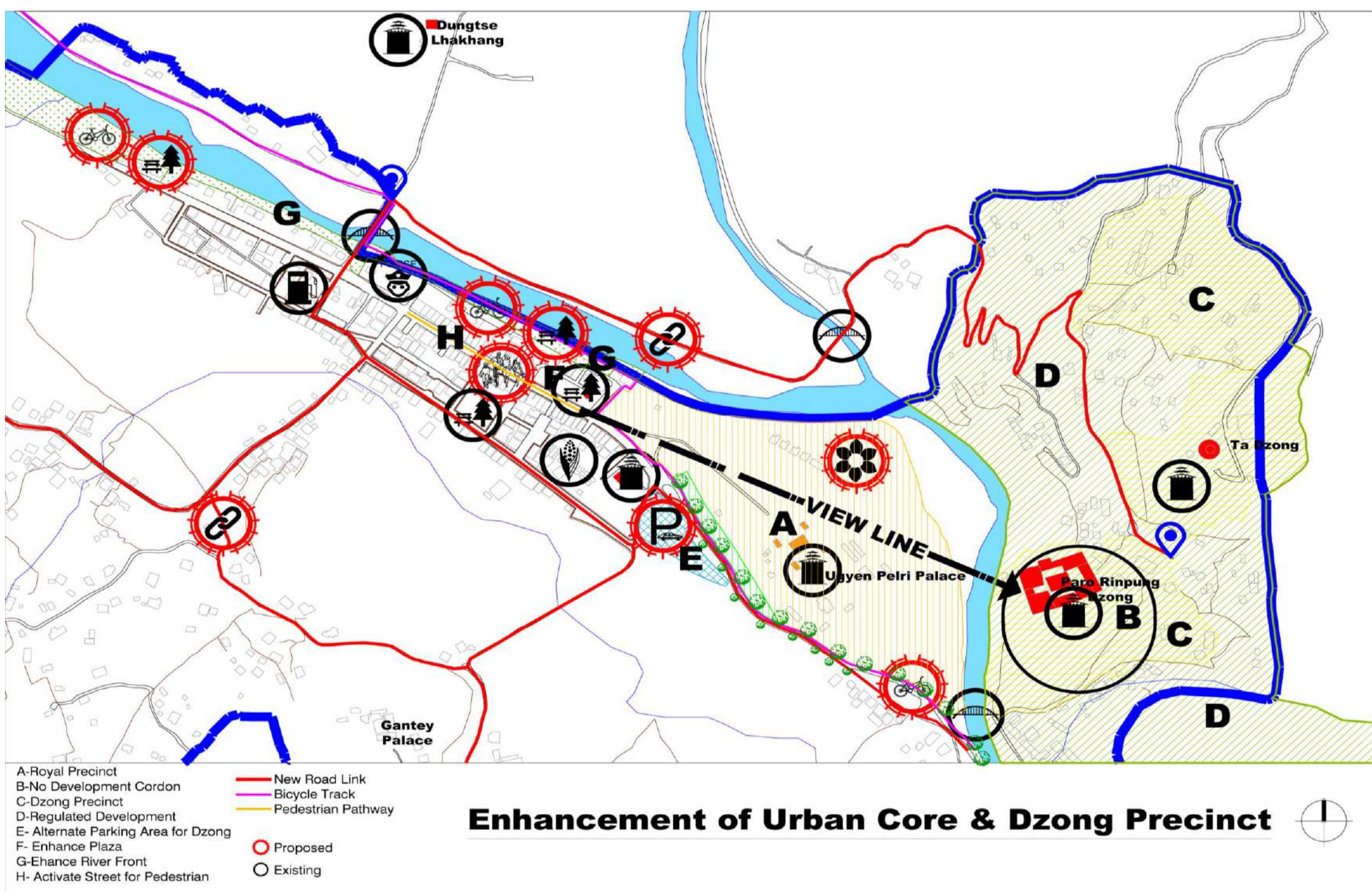




Legend

-  Planning boundary
-  Building
-  Road
-  Contour 5m
-  Stream & River with buffer
-  Forest
-  Slope above 50%

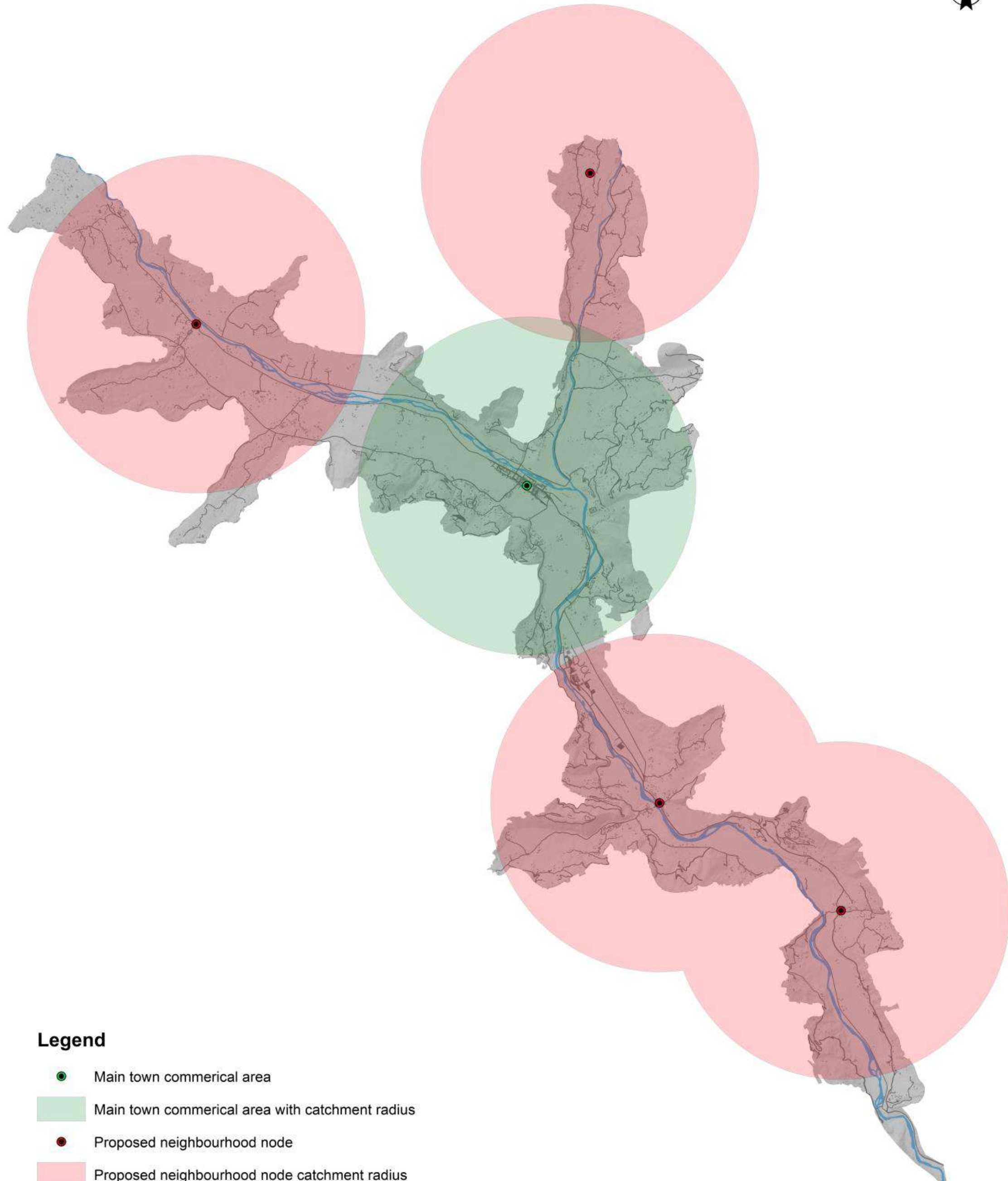




Drawing 8-10: Urban Design for the Core Area



Proposed Neighbourhood Node with Catchment radius



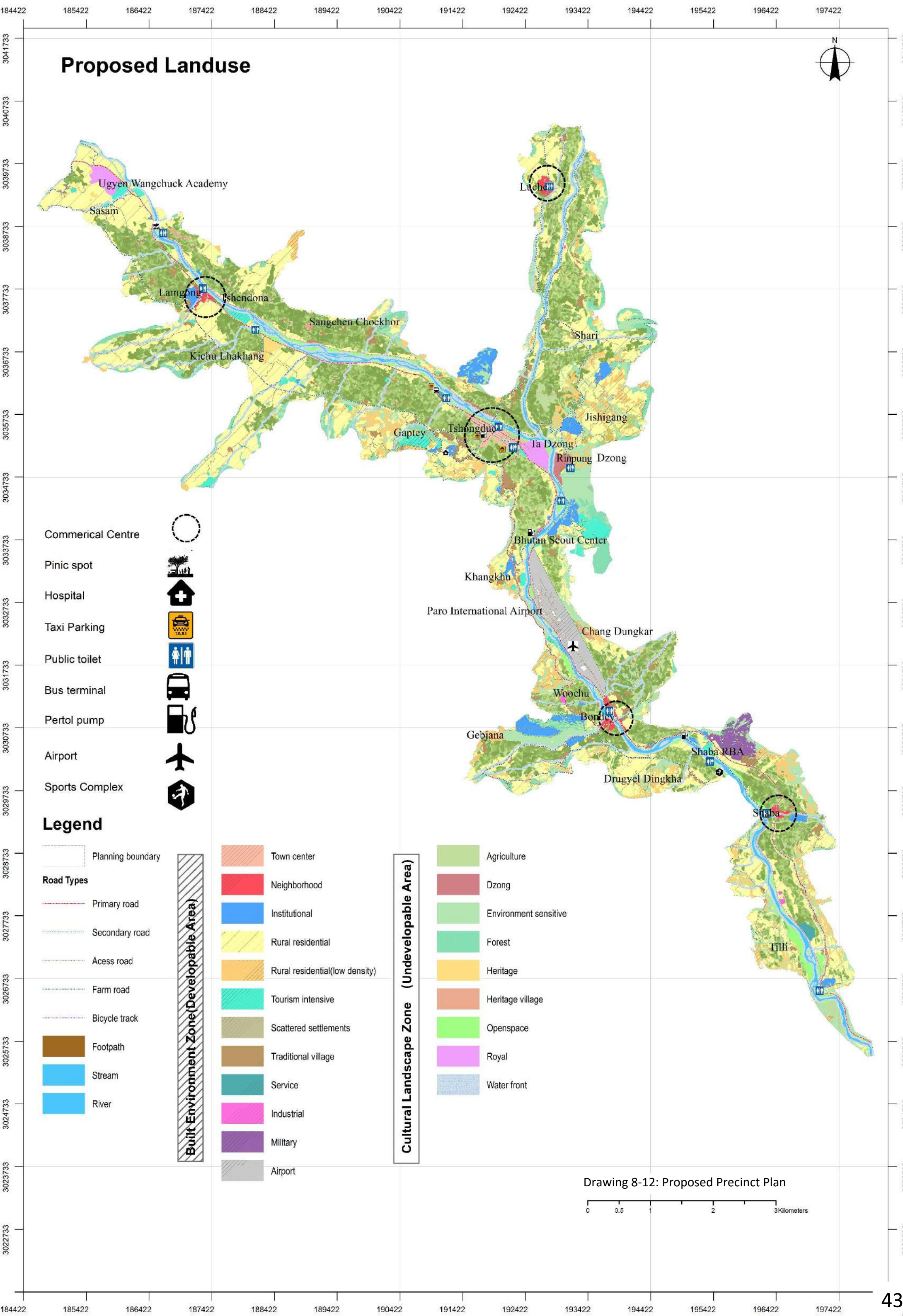
Legend

- Main town commerical area
- Main town commerical area with catchment radius
- Proposed neighbourhood node
- Proposed neighbourhood node catchment radius
- River
- Building
- Road
- Planning boundary
- Contour 5 m

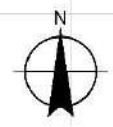
Drawing 8-11: Proposed Neighborhood Nodes

0 0.5 1 2 3 Kilometers





# Proposed Landuse



- Commerical Centre
- Pinic spot
- Hospital
- Taxi Parking
- Public toilet
- Bus terminal
- Pertol pump
- Airport
- Sports Complex

## Legend

- Planning boundary
- Road Types
  - Primary road
  - Secondary road
  - Acess road
  - Farm road
  - Bicycle track
- Footpath
- Stream
- River
- Built Environment Zone (Developable Area)
- Town center
- Neighborhood
- Institutional
- Rural residential
- Rural residential (low density)
- Tourism intensive
- Scattered settlements
- Traditional village
- Service
- Industrial
- Military
- Airport

## Cultural Landscape Zone (Undevelopable Area)

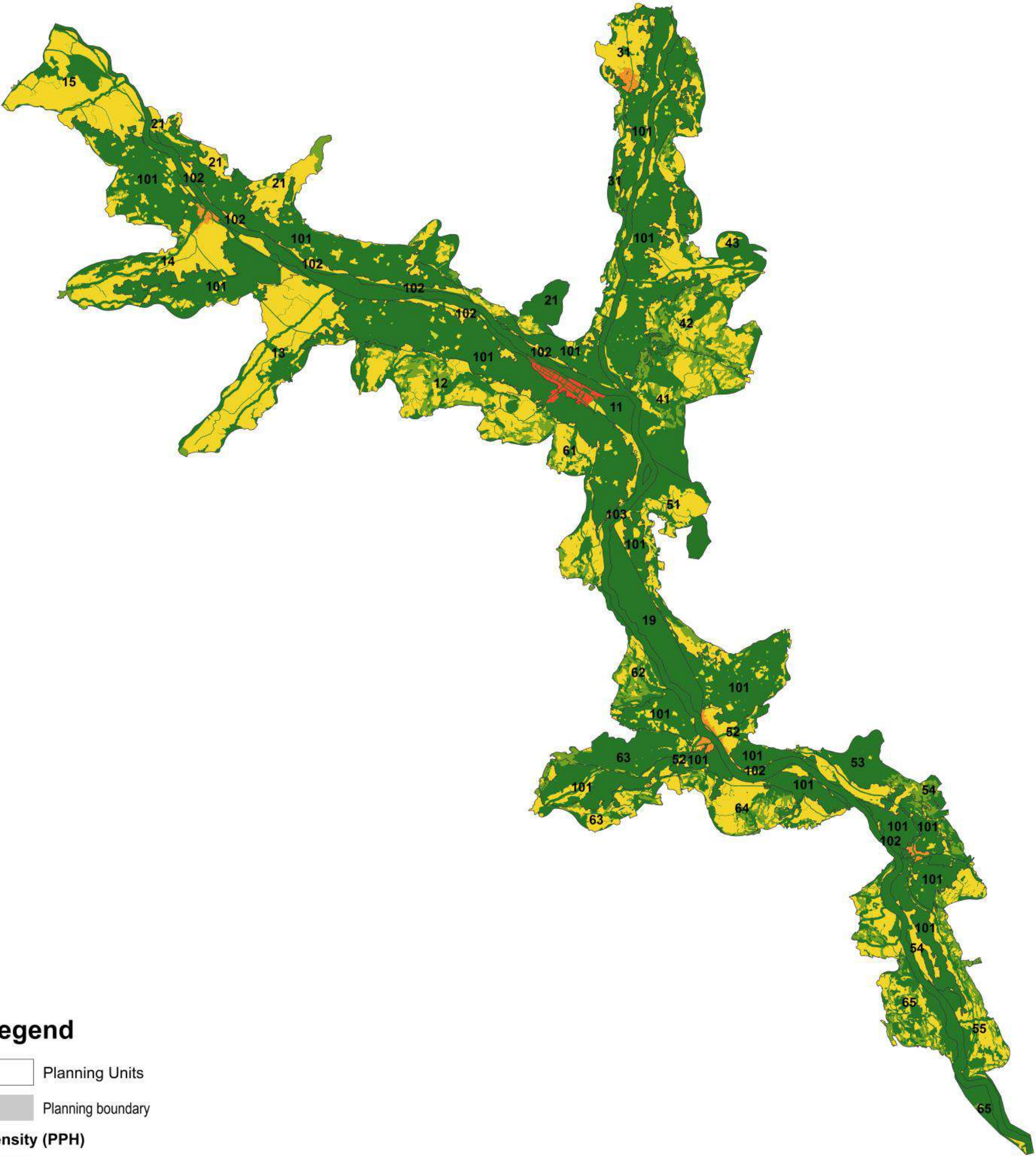
- Agriculture
- Dzong
- Environment sensitive
- Forest
- Heritage
- Heritage village
- Openspace
- Royal
- Water front

Drawing 8-12: Proposed Precinct Plan

0 0.5 1 2 3 Kilometers

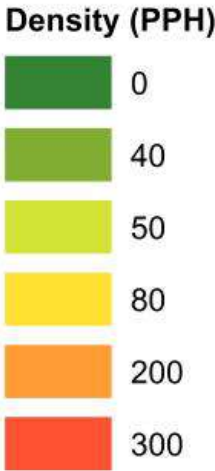


Carrying Capacity



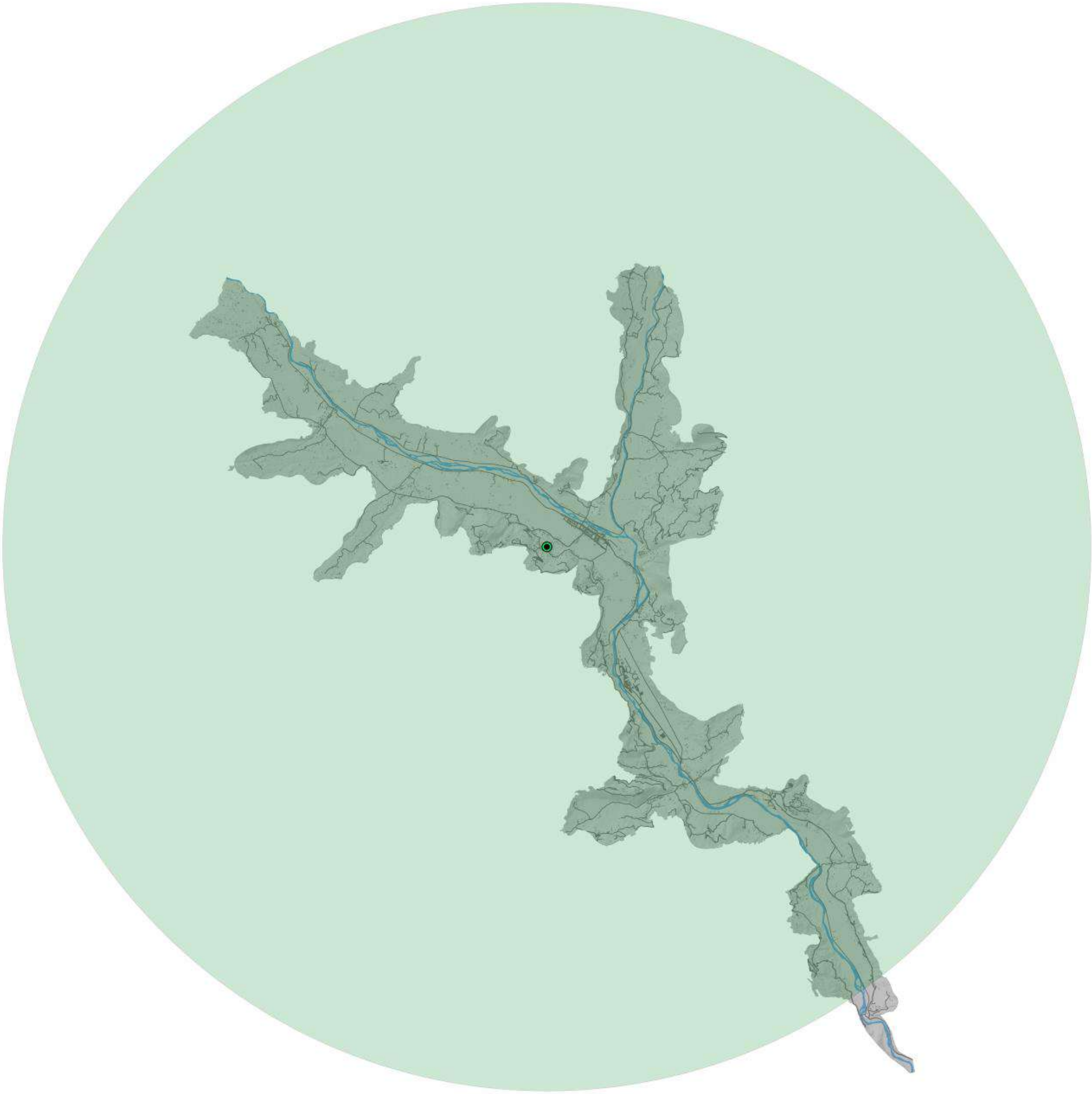
Legend

- Planning Units
- Planning boundary


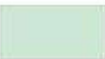







Drawing 8-13: Carrying Capacity

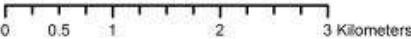
0 0.475 0.95 1.9 2.85 Kilometers



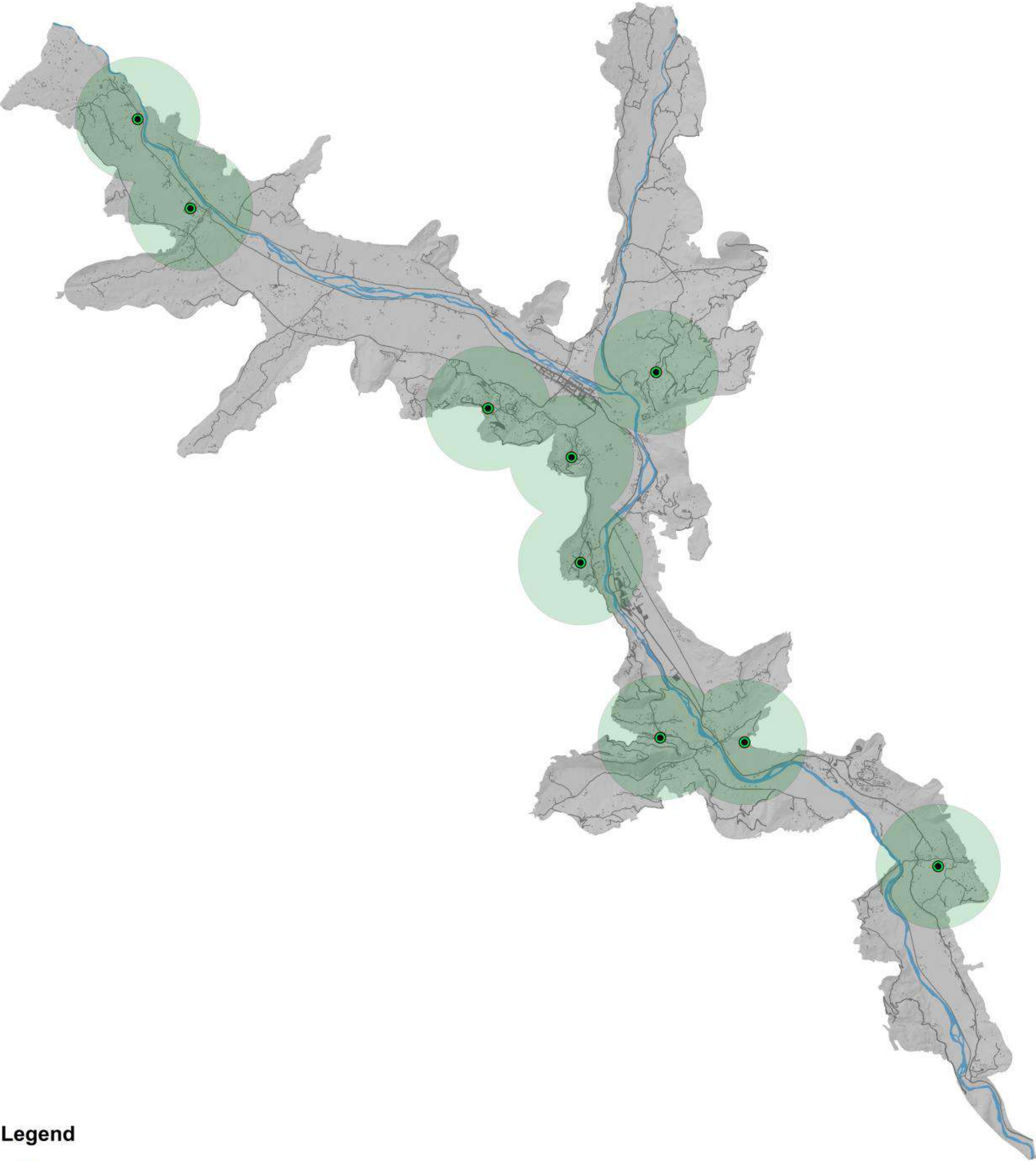
Legend

-  Existing hospital
-  Existing hospital catchment radius
-  River
-  Building
-  Road
-  Planning boundary
-  Contour 5 m

Drawing 8-14: Hospital Catchment Radius







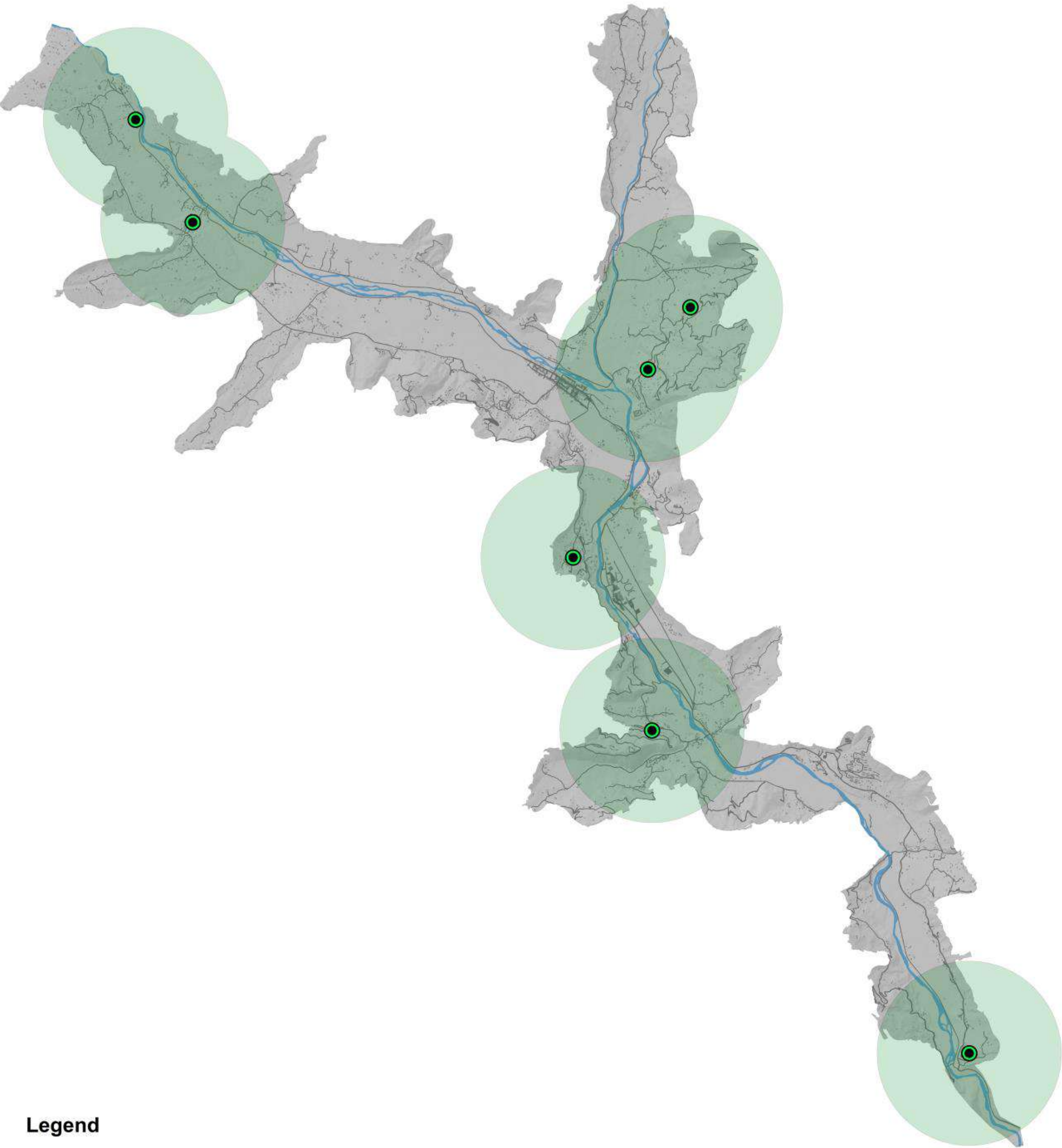
Legend

- Existing primary school
- Primary school catchment radius
- River
- Building
- Road
- Planning boundary
- Contour 5 m


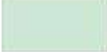
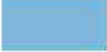
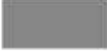
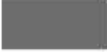
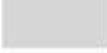

Drawing 8-15: Primary School Catchment



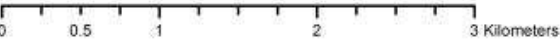
Existing Lower School with Catchment Radius



Legend

-  Existing lower school
-  Existing lower school with catchment radius
-  River
-  Building
-  Road
-  Planning boundary
-  Contour 5 m








Drawing 8-16: Lower Secondary School  
Catchment Radius





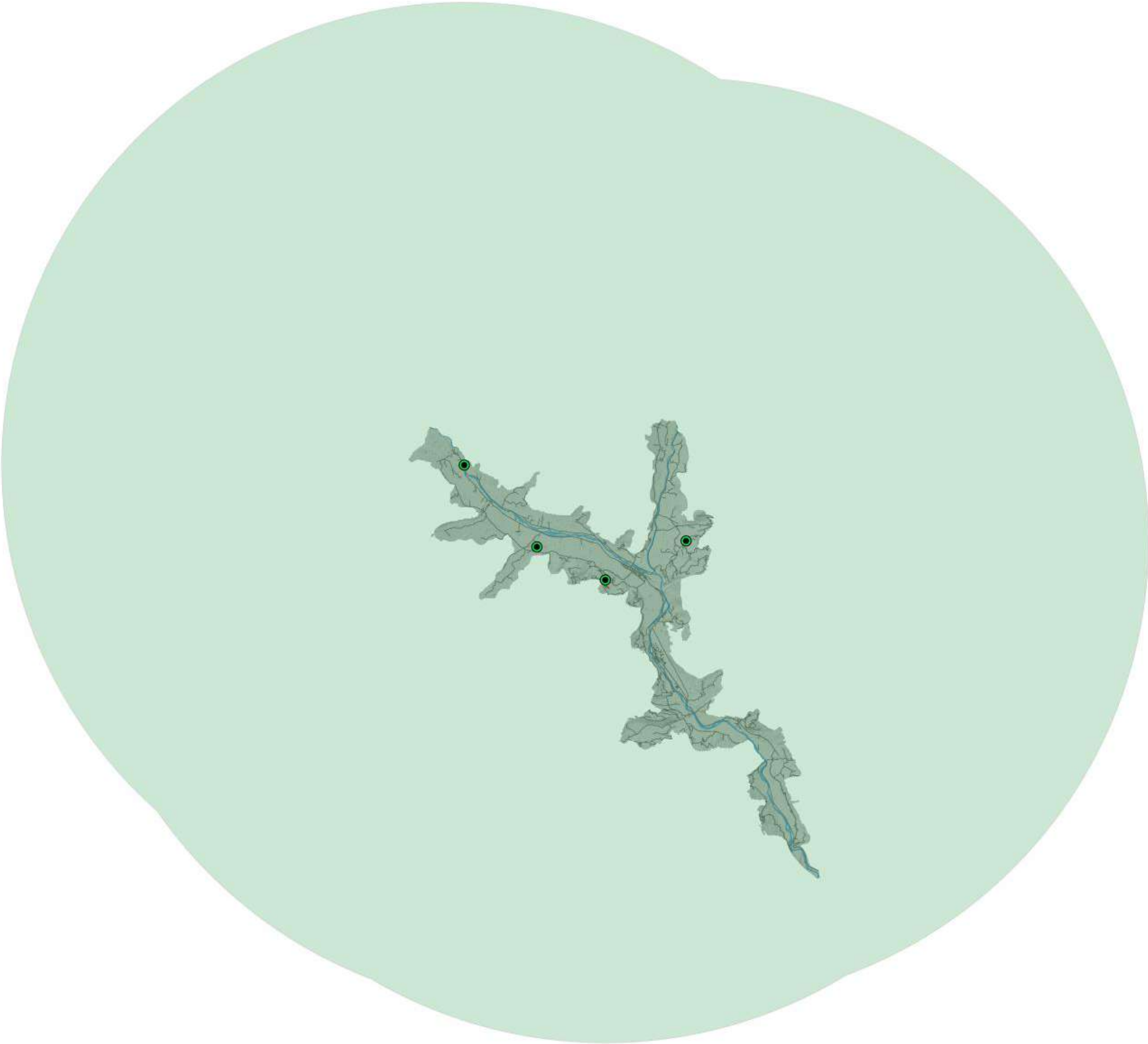


Legend

-  Existing middle secondary school
-  Existing middle secondary school with catchment radius
-  River
-  Building
-  Road
-  Planning boundary
-  Contour 5 m

Drawing 8-17: Middle Secondary School Catchment Radius





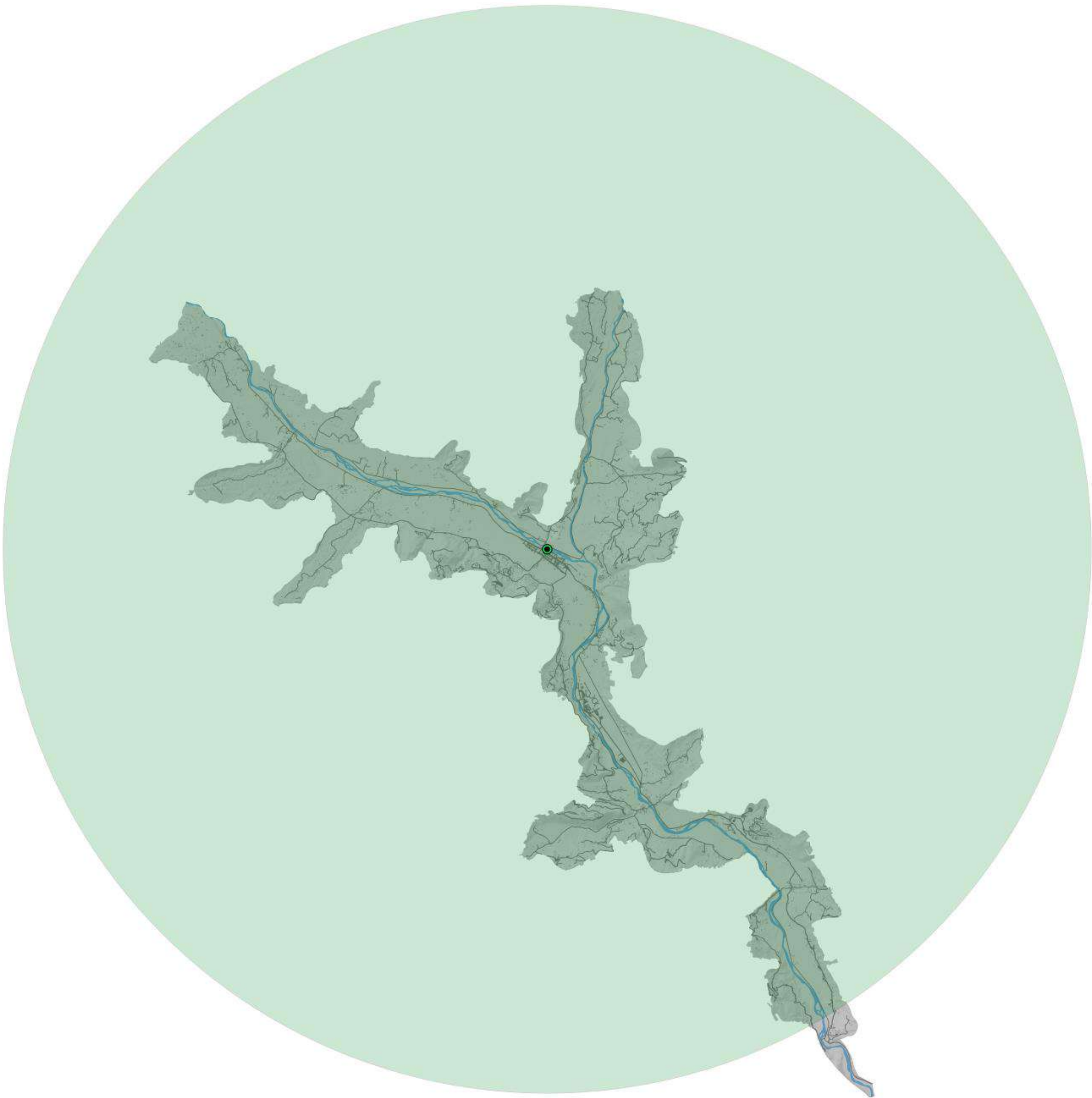
Legend

- Existing high school
- Existing high school with catchment radius
- River
- Building
- Road
- Planning boundary
- Contour 5 m

Drawing 8-18: High School Catchment





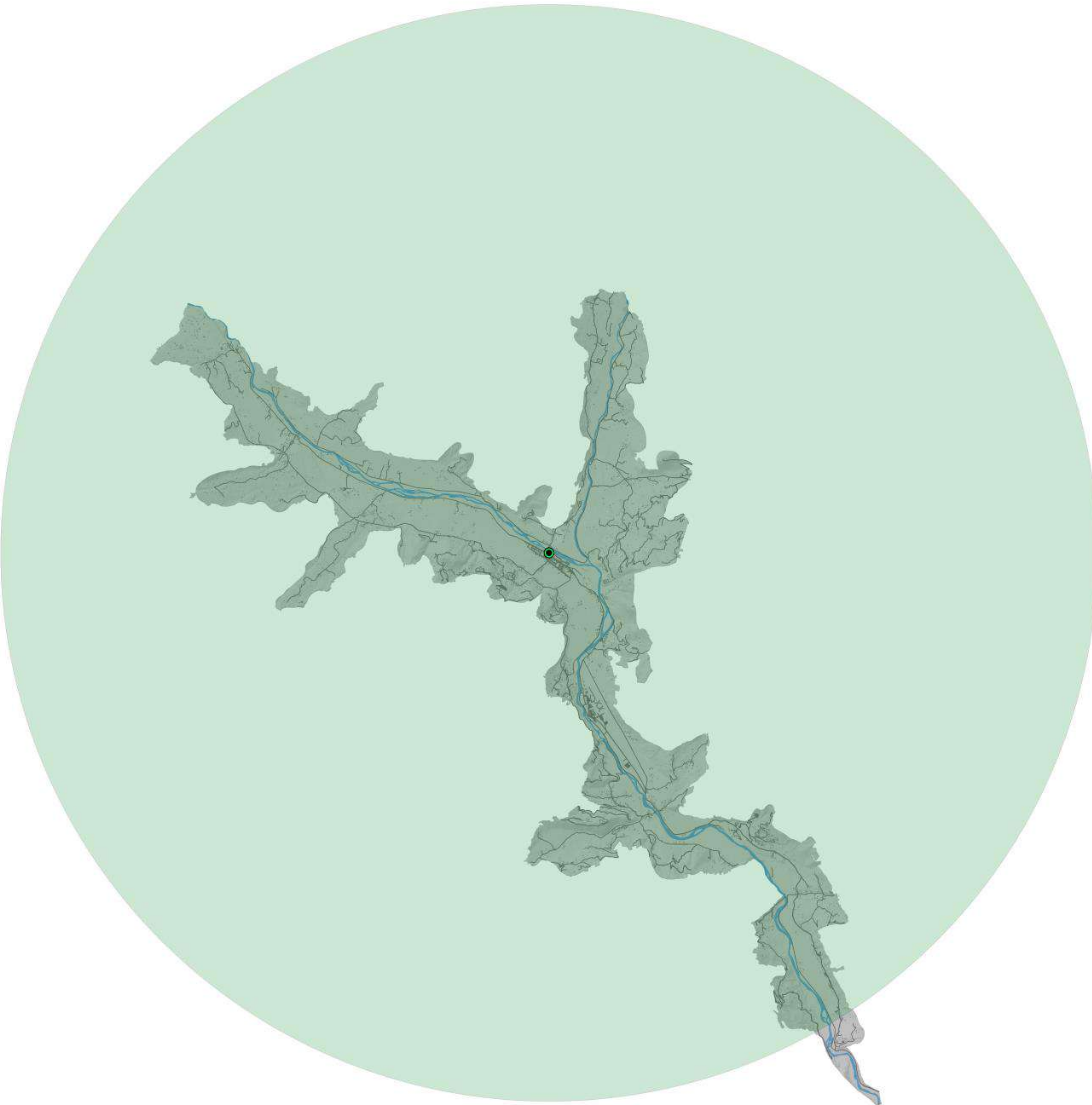


Legend

- Existing Firefight
- Existing firefight catchment radius
- River
- Building
- Road
- Planning boundary
- Contour 5 m

Drawing 8-19: Firefighting Catchment Radius

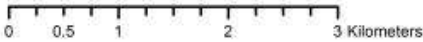




Legend

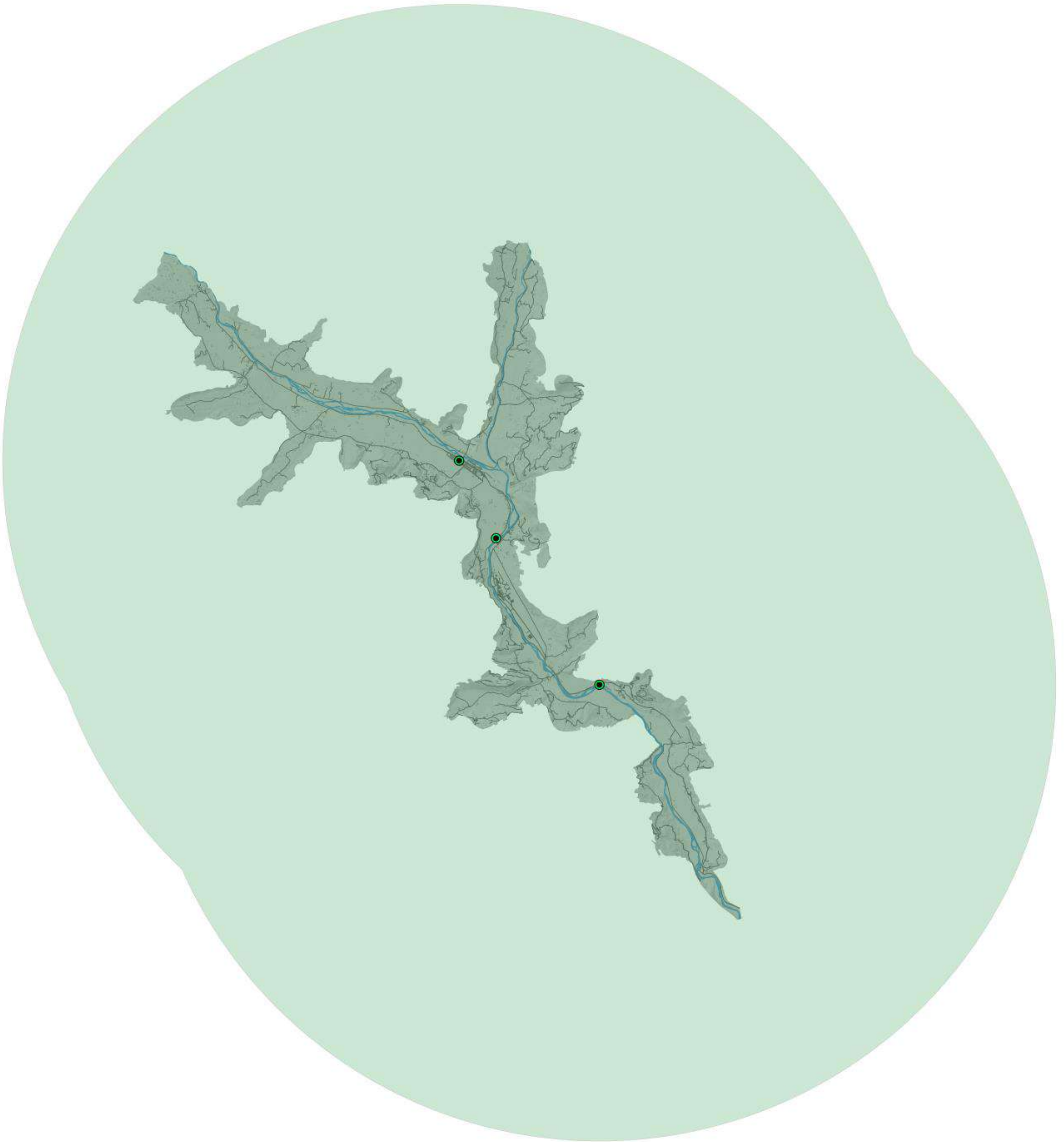
- Existing police station
- Existing police station with catchment radius
- River
- Building
- Road
- Planning boundary
- Contour 5 m

Drawing 8-20: Police Station Catchment


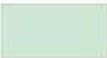









# Existing Petrol Pump with Catchment Radius

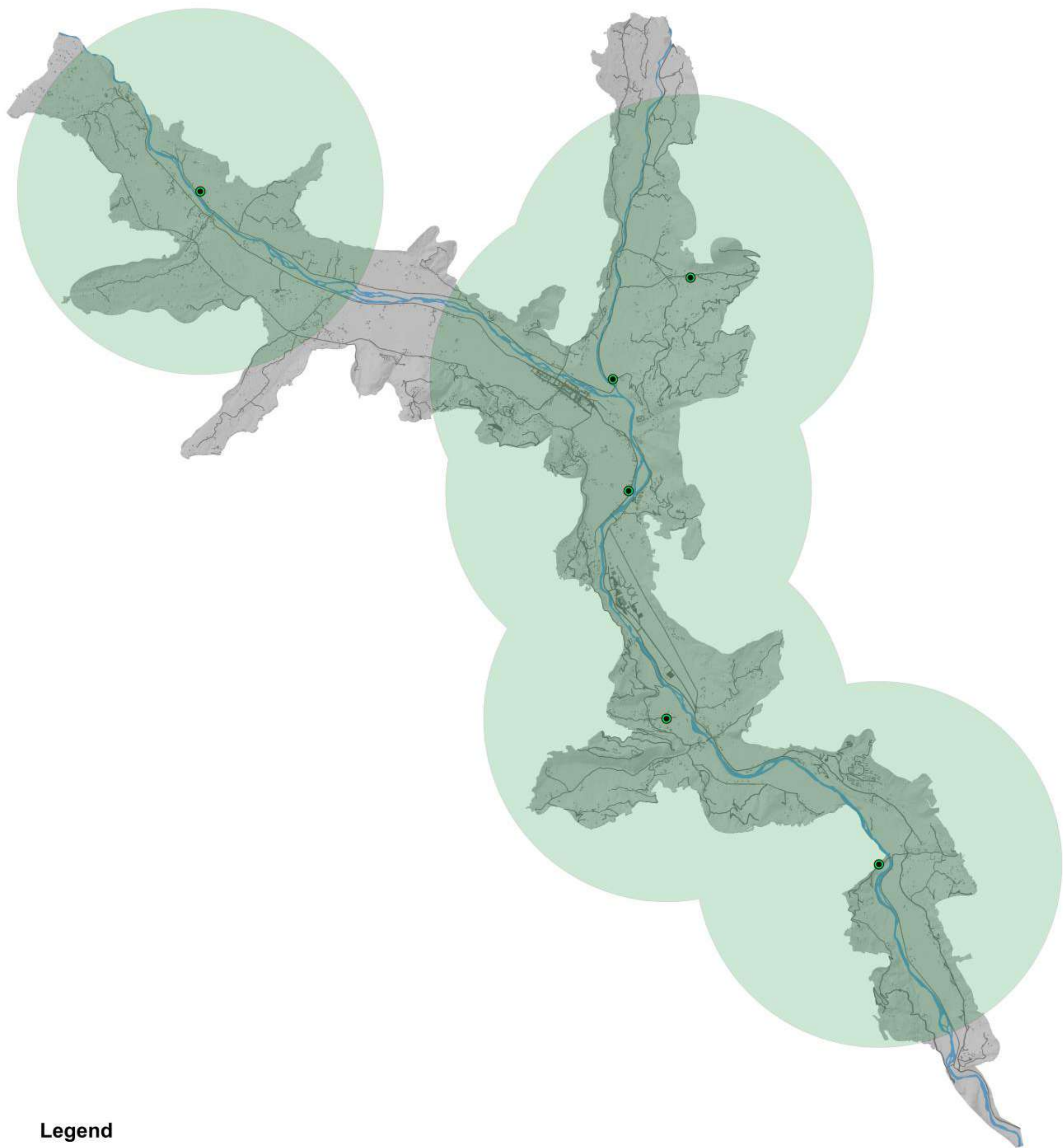


## Legend



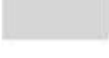
-  Existing petrol pump
-  Existing petrol pump with catchment radius
-  River
-  Building
-  Road
-  Planning boundary
-  Contour 5 m

Drawing 8-21: Petrol Pump  
Catchment Radius

0 0.75 1.5 3 4.5 Kilometers



Legend

-  Local government
-  Local government catchment radius
-  River
-  Building
-  Road
-  Planning boundary
-  Contour 5 m

Drawing 8-22: Local Government Office Catchment radius





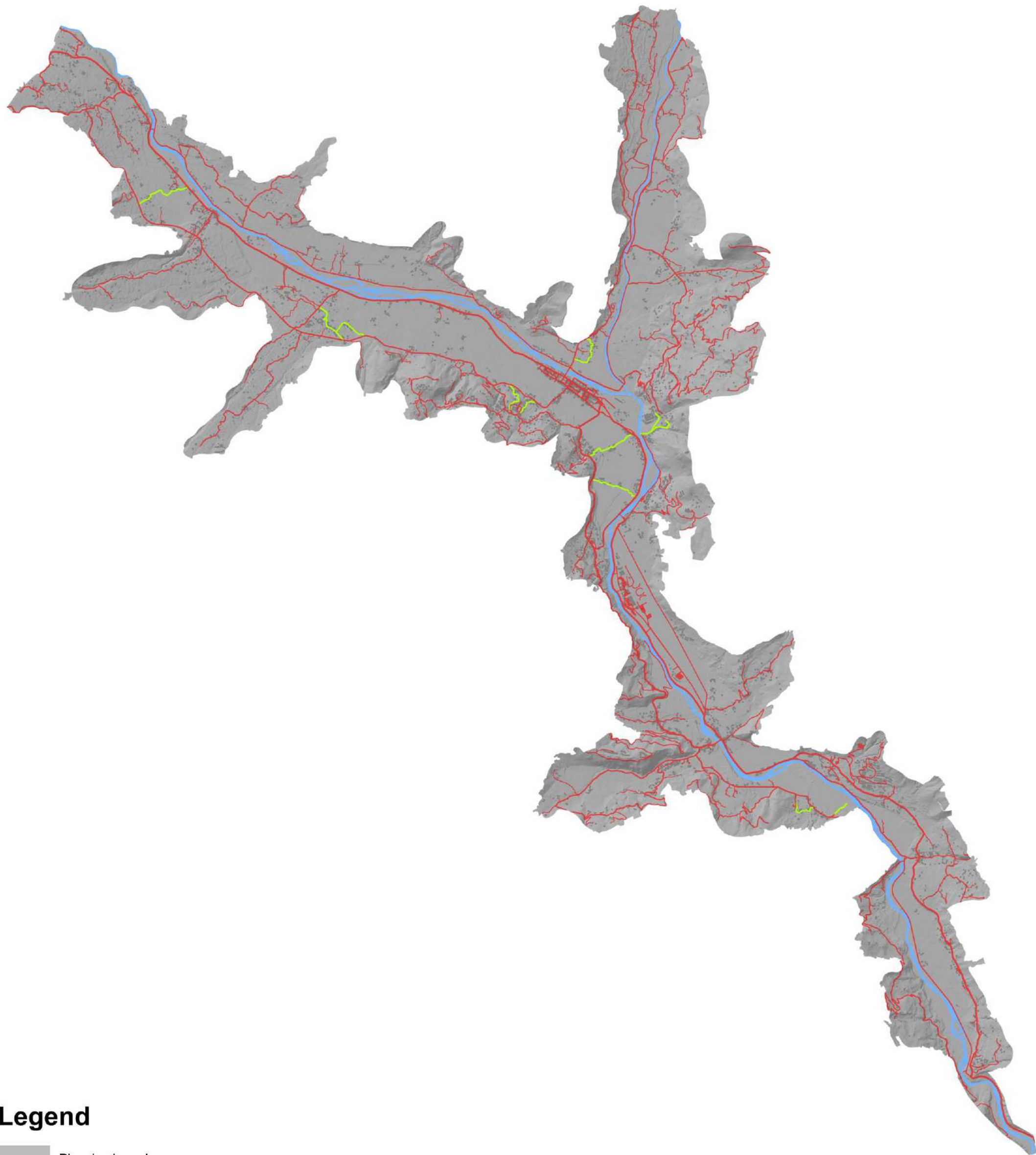


## Legend

- Primary road
- Secondary road
- Access road
- Farm road
- Bicycle track
- Footpath
- Building
- Planning boundary
- Contour 5 m

Drawing 8-23: Proposed Road Hierarchy

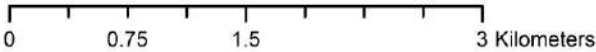
0 0.5 1 2 3 Kilometers



Legend

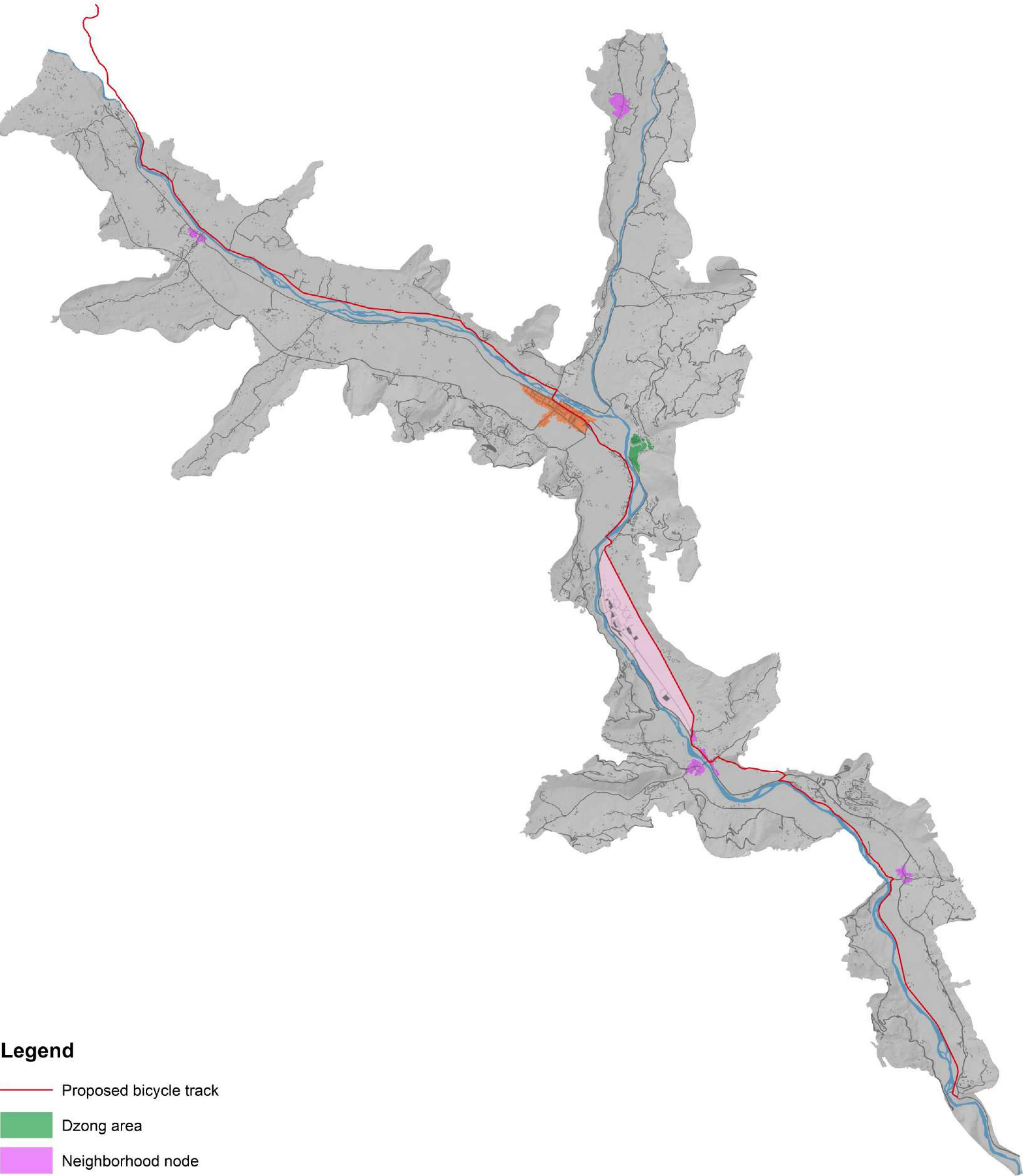
- Planning boundary
- Building
- River
- Contour 5m
- Road-side footpath
- Off-road footpath

Drawing 8-24: Pedestrian Circulation





# Proposed Bicycle Track



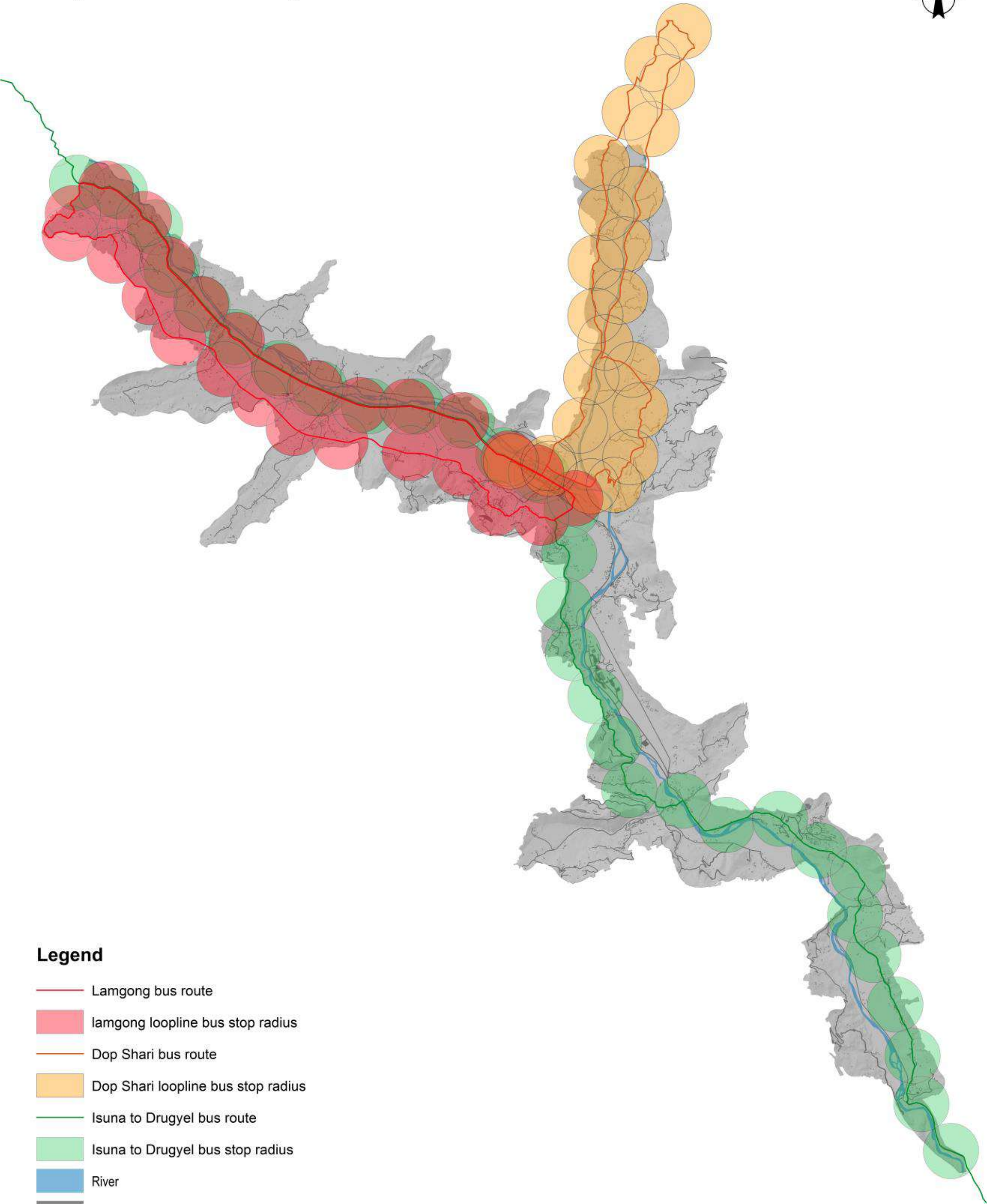
## Legend

- Proposed bicycle track
- Dzong area
- Neighborhood node
- Town centre
- Airport area
- River
- Building
- Road
- Planning boundary
- Contour 5 m

Drawing 8-25: Proposed Cycling Route



Proposed Public Transport Bus Services



Legend

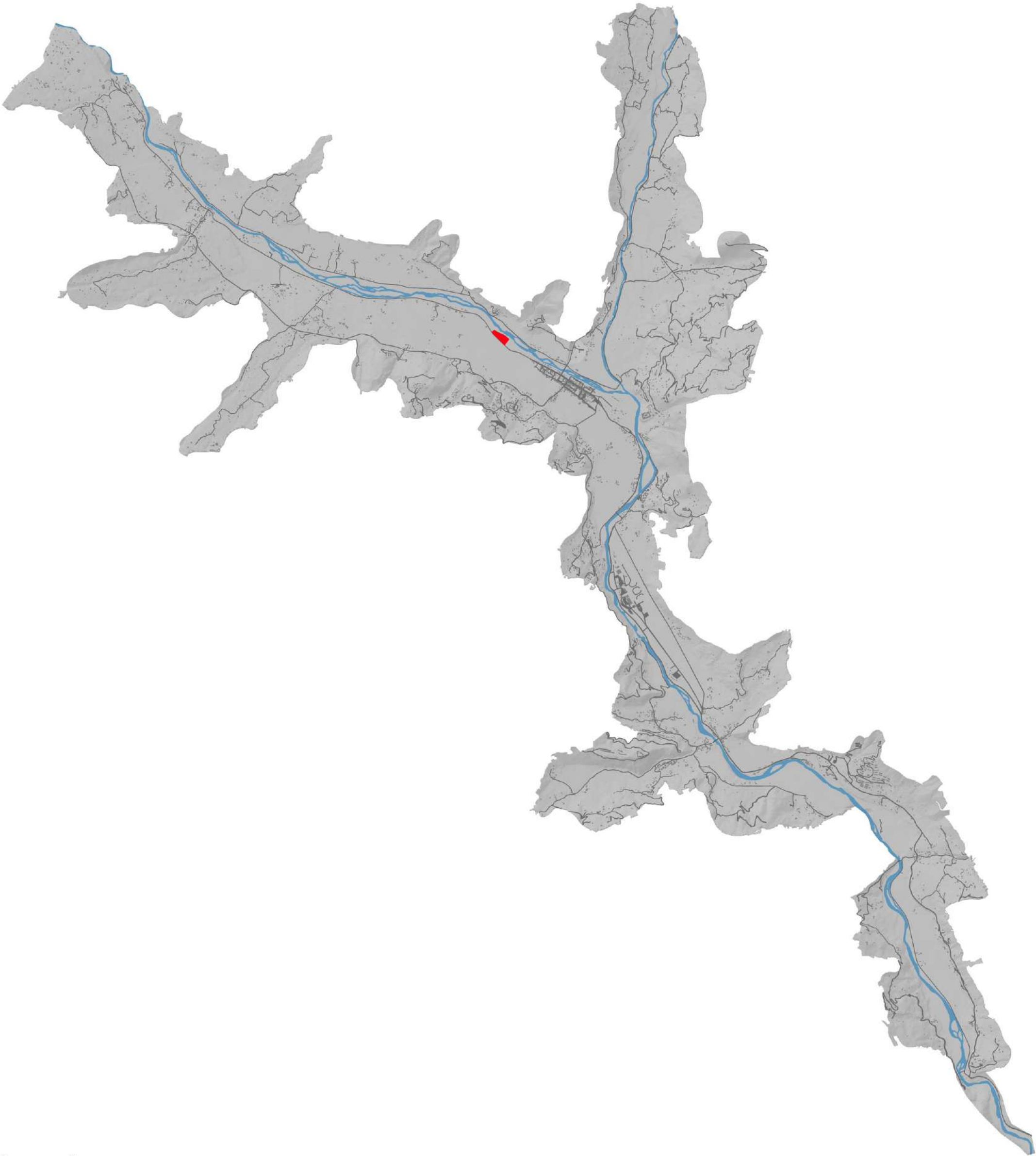
- Lamgong bus route
- lamgong loopline bus stop radius
- Dop Shari bus route
- Dop Shari loopline bus stop radius
- Isuna to Drugyel bus route
- Isuna to Drugyel bus stop radius
- River
- Building
- Road
- Planning boundary
- Contour 5 m

Drawing 8-26: Proposed Bus Route











# Proposed Bus Terminal

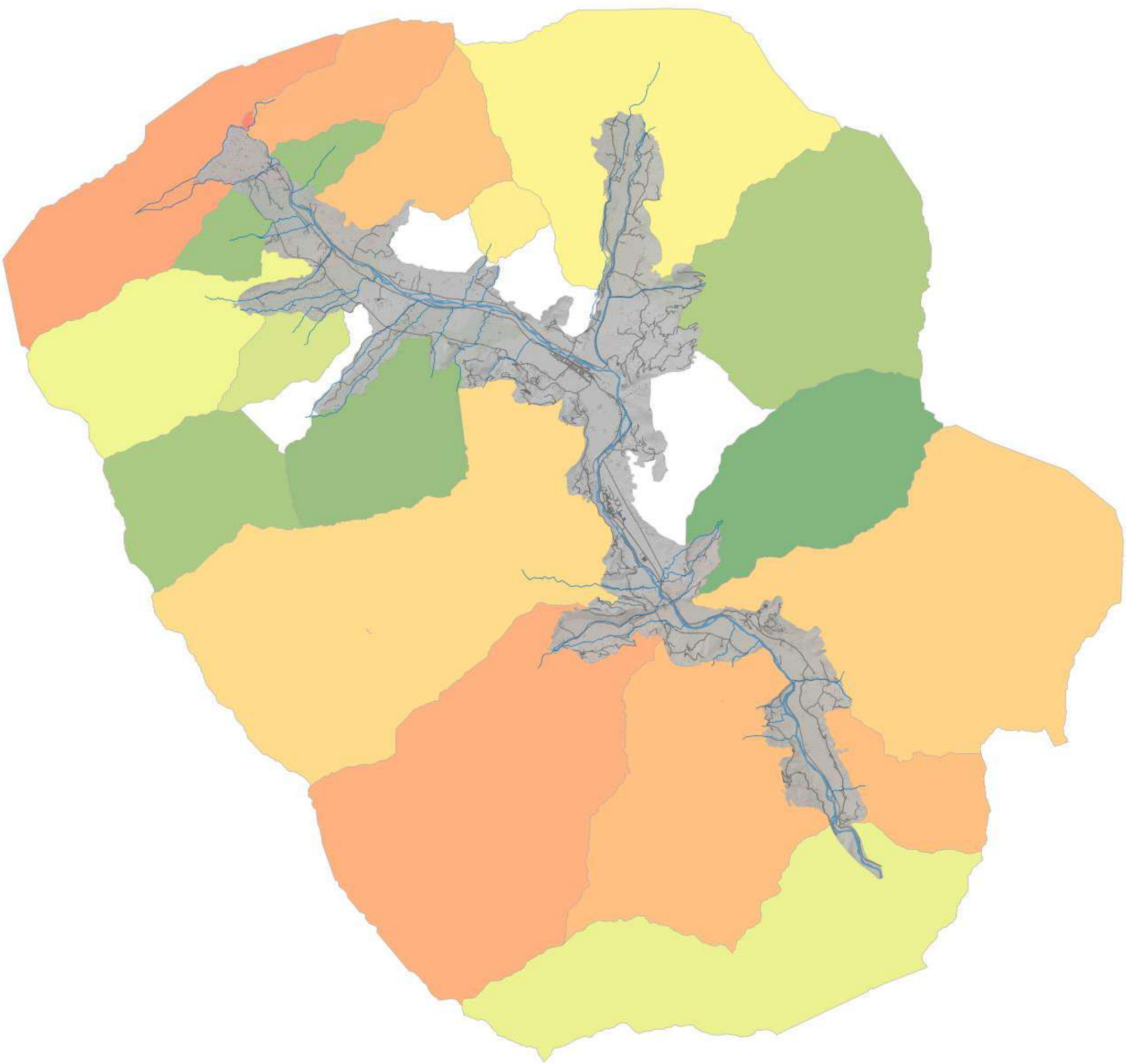


## Legend

-  Bus terminal
-  River
-  Building
-  Road
-  Planning boundary
-  Contour 5 m

Drawing 8-27: Proposed Bus Terminal





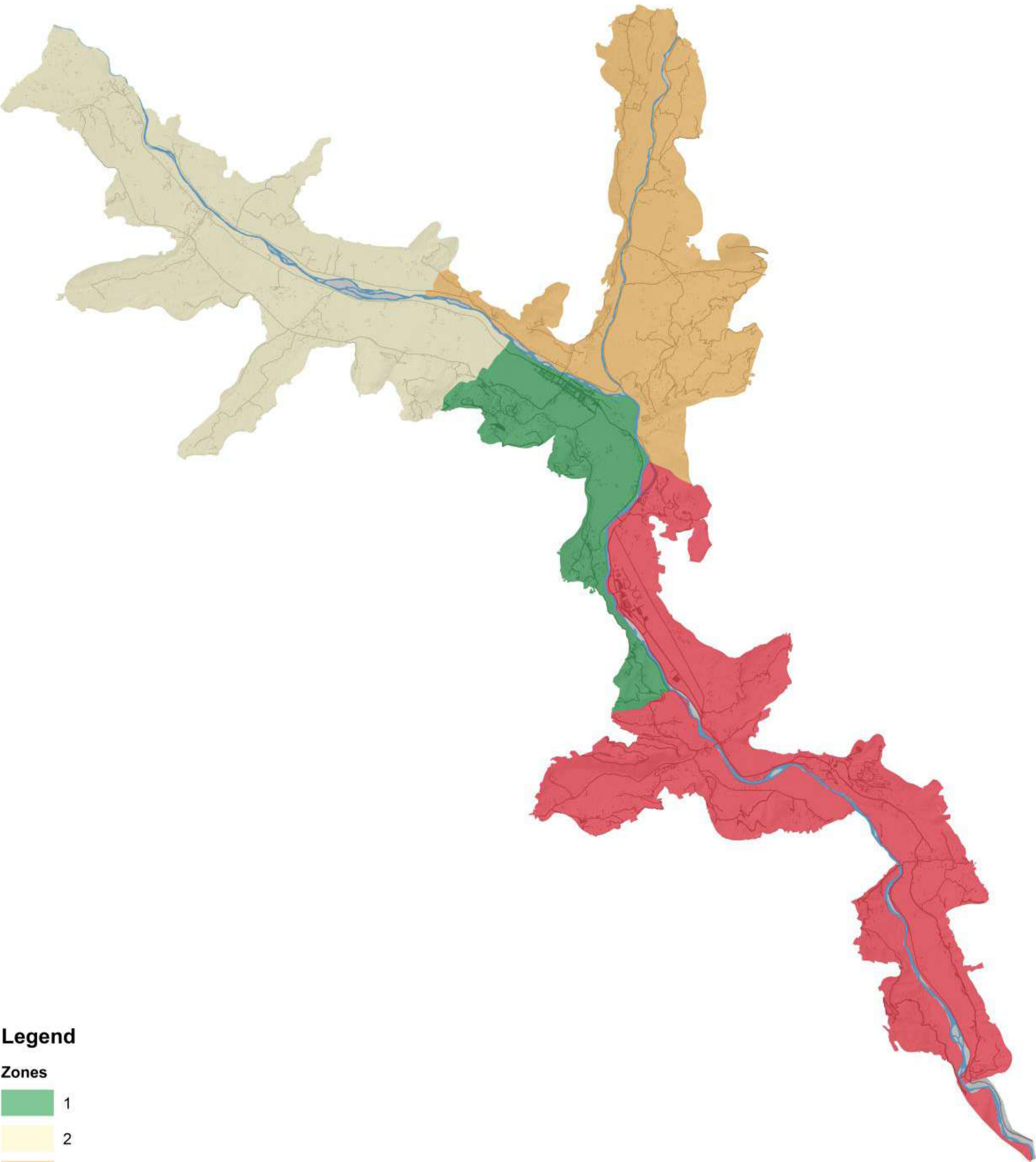
Legend

- Stream
- River
- Building
- Road
- Planning boundary
- Contour 5 m

Drawing 8-28: Streams that could be tapped for Water Supply in Paro





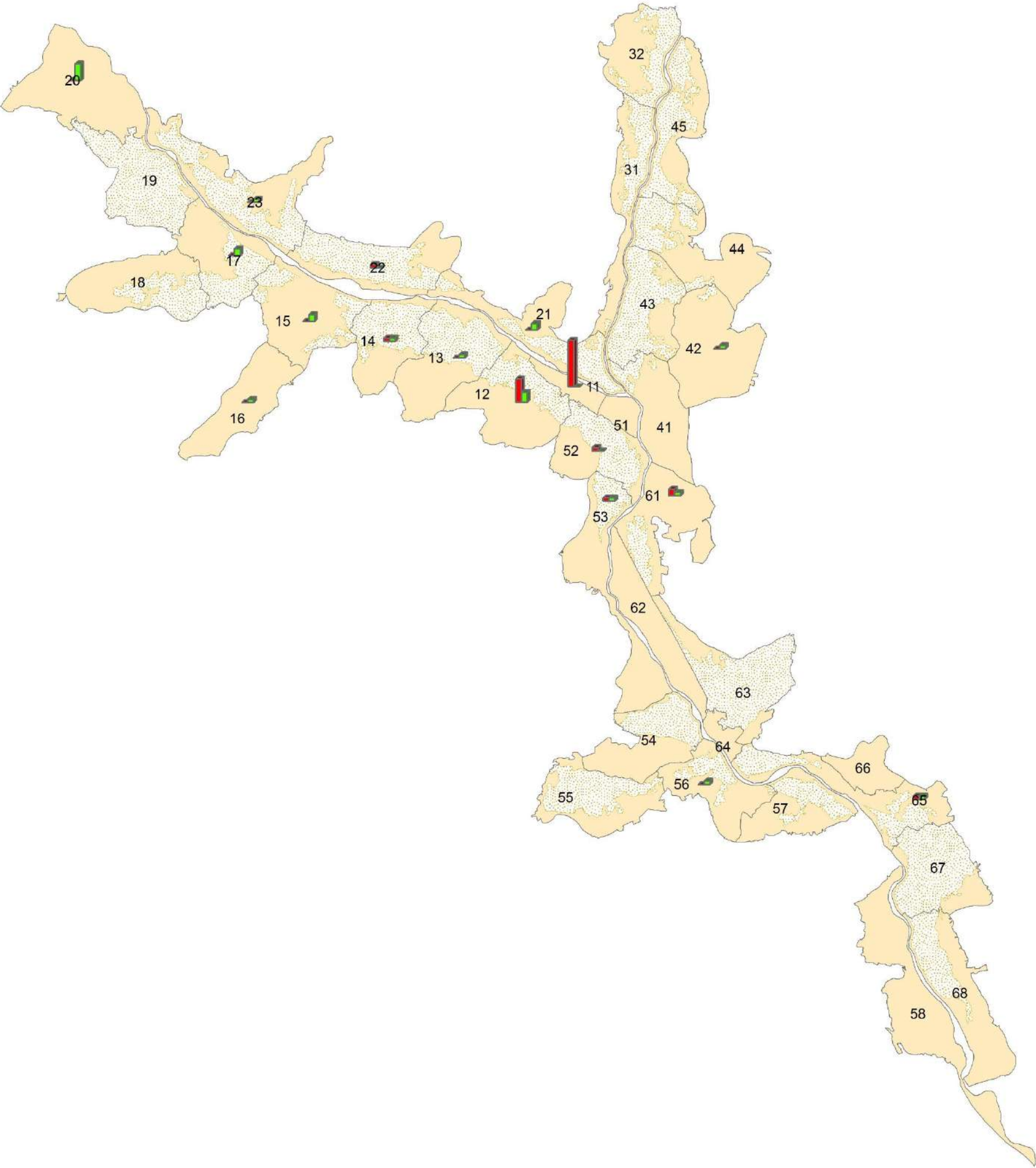


Legend

- Zones**
- 1
  - 2
  - 3
  - 4
- River
- Building
- Road
- Planning boundary
- Contour 5 m



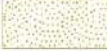

Drawing 8-29: Water Requirement in Different Zones of Paro





Legend

Hotels and Resorts

-  Hotels
-  Resorts
-  Chhuzhing
-  Study Area Zone

Drawing 8-30: Resorts by Planning Units





Proposed Tourism Map

