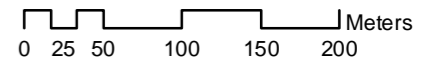
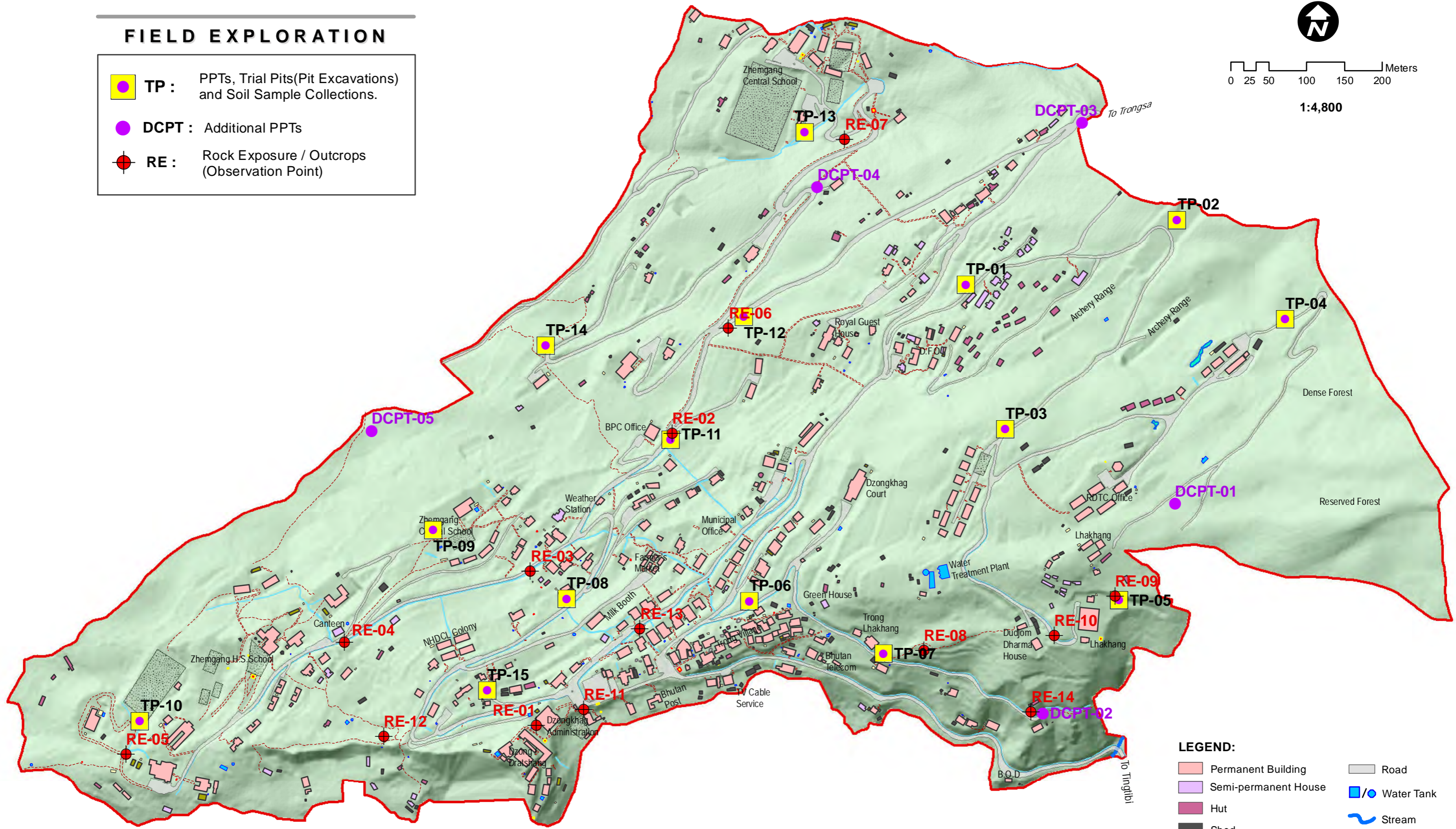


**FIELD EXPLORATION**

- TP :** PPTs, Trial Pits(Pit Excavations) and Soil Sample Collections.
- DCPT :** Additional PPTs
- RE :** Rock Exposure / Outcrops (Observation Point)



1:4,800



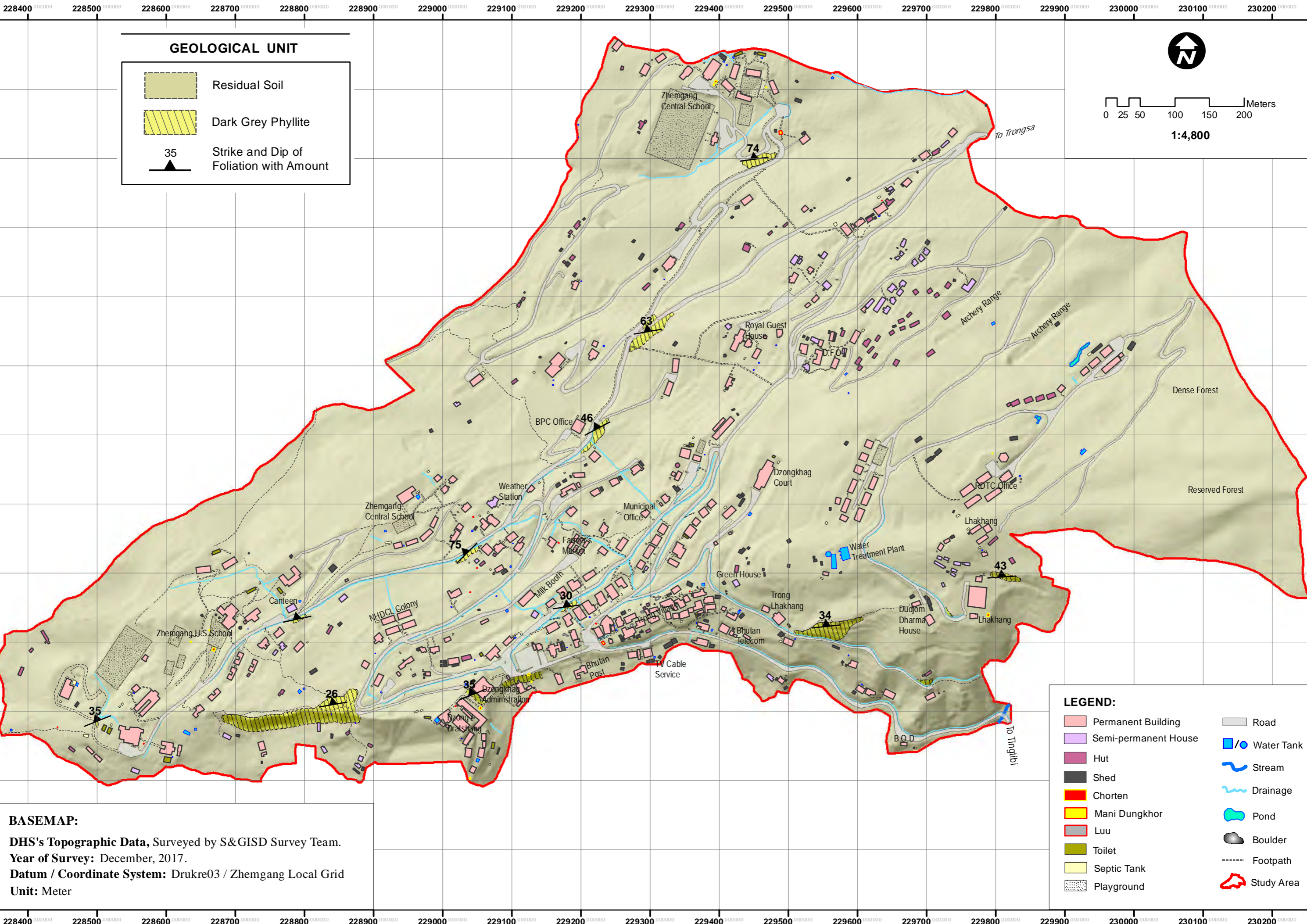
**LEGEND:**

- |   |   |
|---|---|
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #f08080; border: 1px solid black; margin-right: 5px;"></span> Permanent Building   | <span style="display: inline-block; width: 15px; height: 15px; background-color: #d3d3d3; border: 1px solid black; margin-right: 5px;"></span> Road       |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #e6e6fa; border: 1px solid black; margin-right: 5px;"></span> Semi-permanent House | <span style="display: inline-block; width: 15px; height: 15px; background-color: #add8e6; border: 1px solid black; margin-right: 5px;"></span> Water Tank |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #800080; border: 1px solid black; margin-right: 5px;"></span> Hut                  | <span style="display: inline-block; width: 15px; height: 15px; background-color: #00b0f0; border: 1px solid black; margin-right: 5px;"></span> Stream     |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #404040; border: 1px solid black; margin-right: 5px;"></span> Shed                 | <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid #00b0f0; margin-right: 5px;"></span> Drainage                            |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #ff0000; border: 1px solid black; margin-right: 5px;"></span> Chorten              | <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid #ff0000; margin-right: 5px;"></span> Study Area                          |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #ffff00; border: 1px solid black; margin-right: 5px;"></span> Mani Dungkhor        | <span style="display: inline-block; width: 15px; height: 15px; background-color: #00b0f0; border: 1px solid black; margin-right: 5px;"></span> Pond       |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #808080; border: 1px solid black; margin-right: 5px;"></span> Luu                  | <span style="display: inline-block; width: 15px; height: 15px; background-color: #404040; border: 1px solid black; margin-right: 5px;"></span> Boulder    |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #808000; border: 1px solid black; margin-right: 5px;"></span> Toilet               | <span style="display: inline-block; width: 15px; height: 15px; border: 1px dashed #ff0000; margin-right: 5px;"></span> Footpath                           |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #ffff00; border: 1px solid black; margin-right: 5px;"></span> Septic Tank          |   |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #d3d3d3; border: 1px solid black; margin-right: 5px;"></span> Playground           |   |

**BASEMAP:**  
 DHS's Topographic Data, Surveyed by S&GISD Survey Team.  
 Year of Survey: December, 2017.  
 Datum / Coordinate System: Drukre03 / Zhemgang Local Grid  
 Unit: Meter

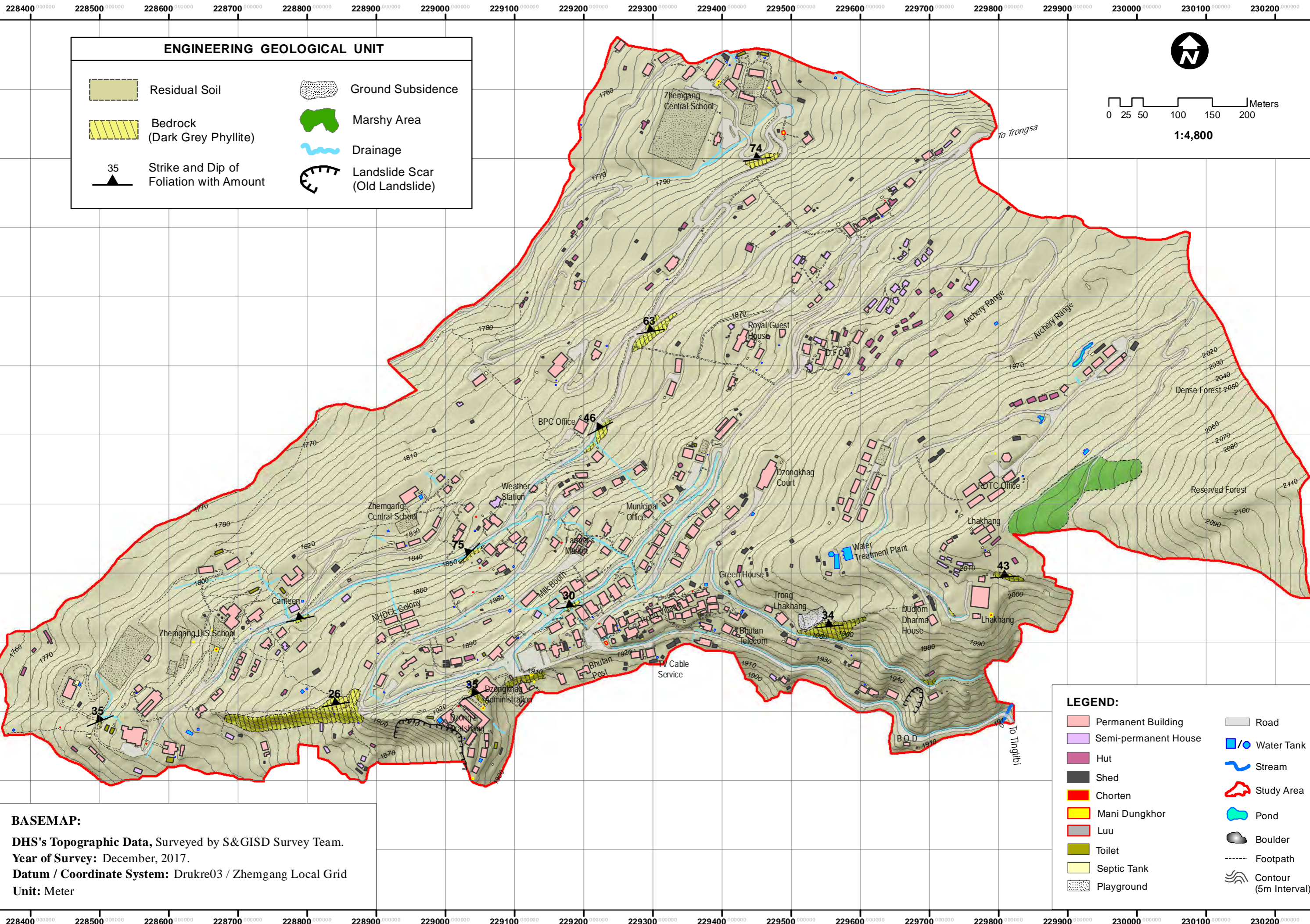
# GEOLOGICAL MAP:

# GEOTECHNICAL REPORT FOR ZHEMGANG EXISTING TOWN



# ENGINEERING GEOLOGICAL MAP:

# GEOTECHNICAL REPORT FOR ZHEMGANG EXISTING TOWN



**ENGINEERING GEOLOGICAL UNIT**

	Residual Soil		Ground Subsidence
	Bedrock (Dark Grey Phyllite)		Marshy Area
	Strike and Dip of Foliation with Amount		Drainage
			Landslide Scar (Old Landslide)

0 25 50 100 150 200 Meters

**1:4,800**

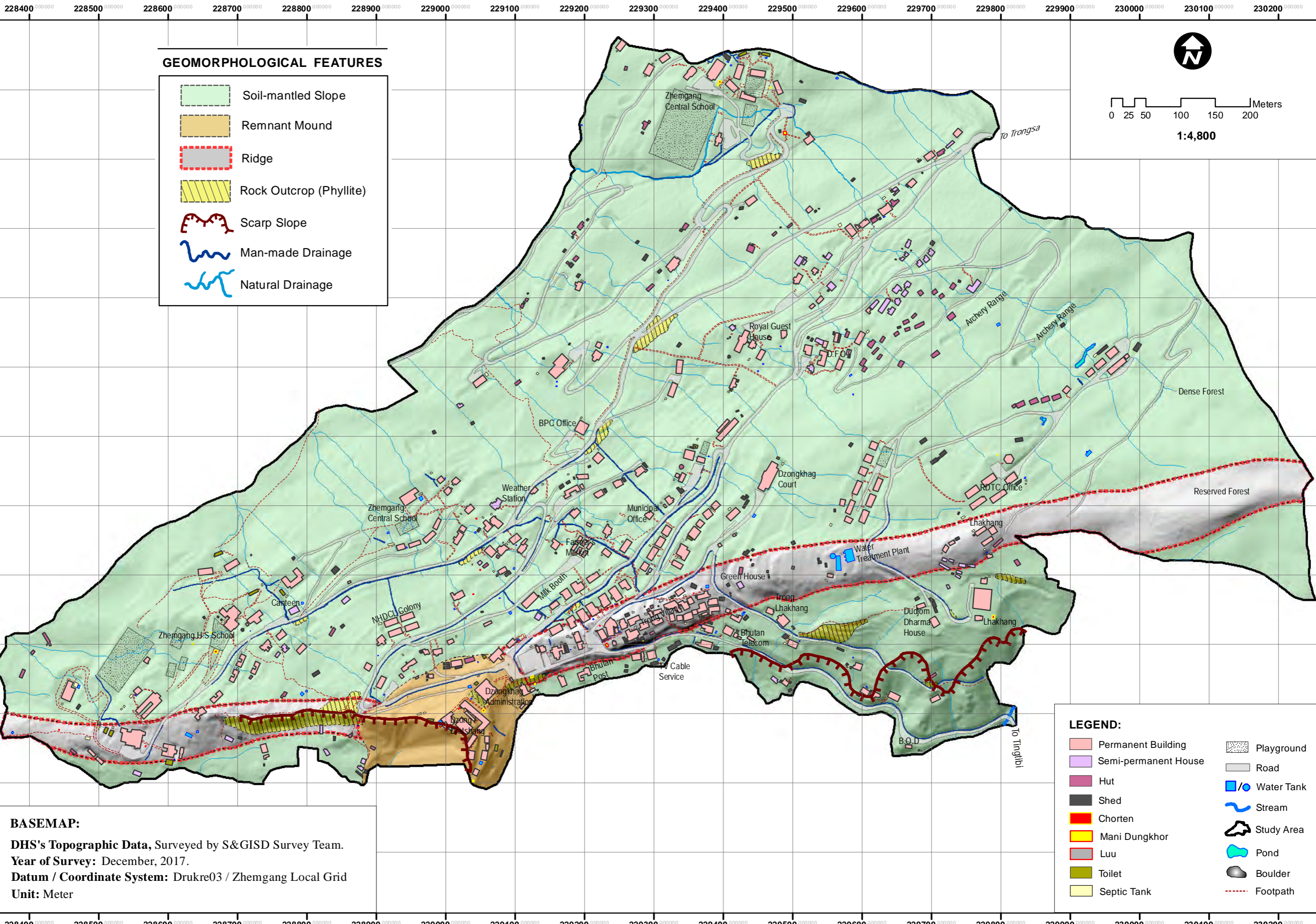
**BASEMAP:**  
 DHS's Topographic Data, Surveyed by S&GISD Survey Team.  
 Year of Survey: December, 2017.  
 Datum / Coordinate System: Drukre03 / Zhemgang Local Grid  
 Unit: Meter

**LEGEND:**

	Permanent Building		Road
	Semi-permanent House		Water Tank
	Hut		Stream
	Shed		Pond
	Chorten		Study Area
	Mani Dungkhor		Pond
	Luu		Boulder
	Toilet		Footpath
	Septic Tank		Contour (5m Interval)
	Playground		

# GEOMORPHOLOGICAL MAP:

# GEOTECHNICAL REPORT FOR ZHEMGANG EXISTING TOWN



**GEOMORPHOLOGICAL FEATURES**

- Soil-mantled Slope
- Remnant Mound
- Ridge
- Rock Outcrop (Phyllite)
- Scarp Slope
- Man-made Drainage
- Natural Drainage

**1:4,800**

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 Unit: Meter

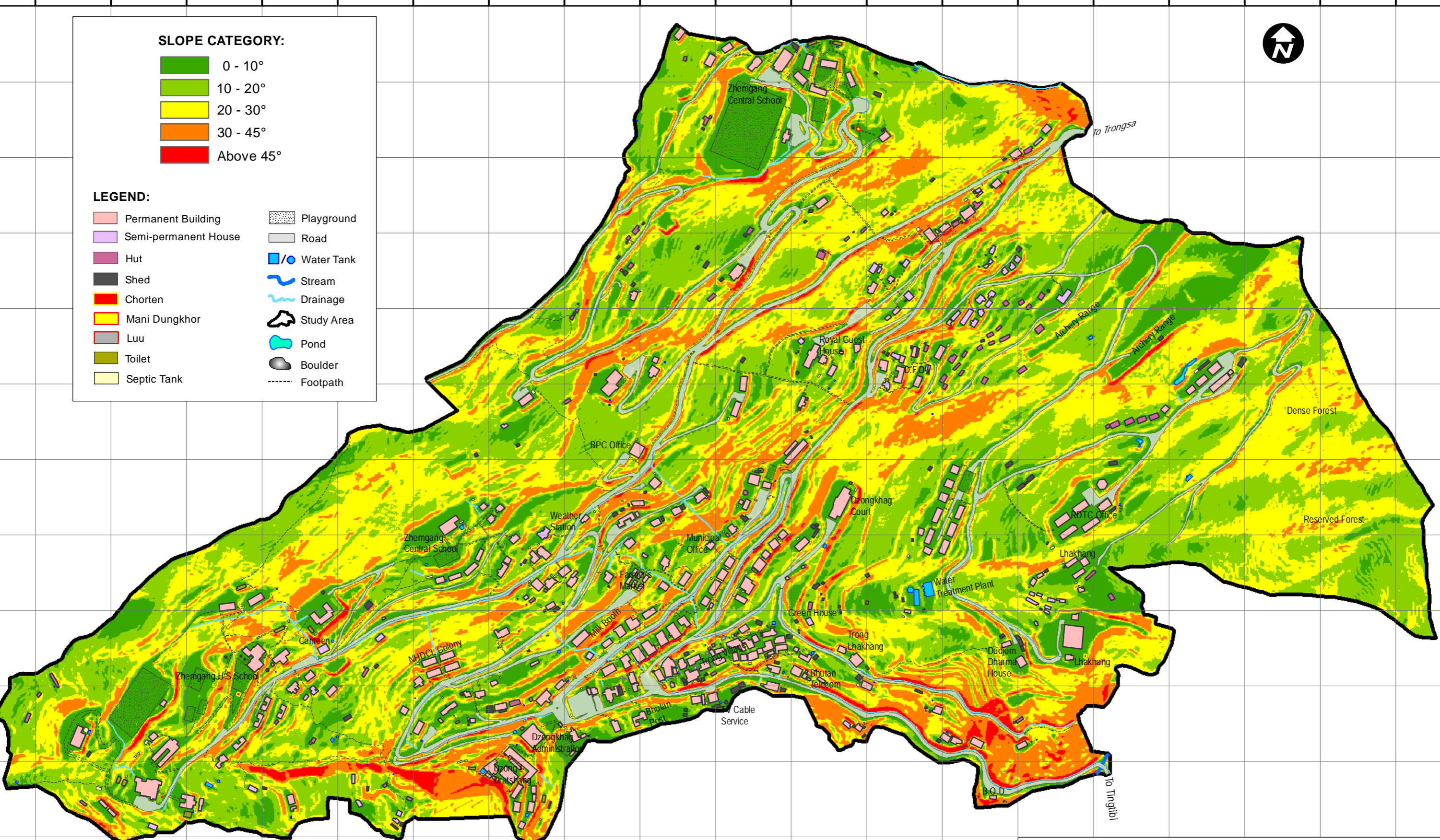
**LEGEND:**

<span style="display: inline-block; width: 15px; height: 10px; background-color: #f4cccc;"></span> Permanent Building	<span style="display: inline-block; width: 15px; height: 10px; background-color: #d9ead3;"></span> Playground
<span style="display: inline-block; width: 15px; height: 10px; background-color: #fce5cd;"></span> Semi-permanent House	<span style="display: inline-block; width: 15px; height: 10px; border: 1px solid gray;"></span> Road
<span style="display: inline-block; width: 15px; height: 10px; background-color: #e1d5fe;"></span> Hut	<span style="display: inline-block; width: 15px; height: 10px; background-color: #add8e6;"></span> Water Tank
<span style="display: inline-block; width: 15px; height: 10px; background-color: #cccccc;"></span> Shed	<span style="display: inline-block; width: 15px; height: 10px; border-bottom: 2px solid blue;"></span> Stream
<span style="display: inline-block; width: 15px; height: 10px; background-color: #ff0000;"></span> Chorten	<span style="display: inline-block; width: 15px; height: 10px; border: 1px solid blue;"></span> Pond
<span style="display: inline-block; width: 15px; height: 10px; background-color: #ffff00;"></span> Mani Dungkhor	<span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black;"></span> Study Area
<span style="display: inline-block; width: 15px; height: 10px; background-color: #cccccc;"></span> Luu	<span style="display: inline-block; width: 15px; height: 10px; background-color: #add8e6;"></span> Boulder
<span style="display: inline-block; width: 15px; height: 10px; background-color: #92d050;"></span> Toilet	<span style="display: inline-block; width: 15px; height: 10px; border-bottom: 2px dashed red;"></span> Footpath
<span style="display: inline-block; width: 15px; height: 10px; background-color: #ffffcc;"></span> Septic Tank	

# SLOPE MAP:

# GEOTECHNICAL REPORT FOR ZHEMGANG EXISTING TOWN

228400 228500 228600 228700 228800 228900 229000 229100 229200 229300 229400 229500 229600 229700 229800 229900 230000 230100 230200

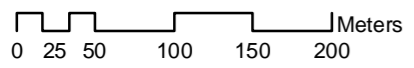


### SLOPE CATEGORY:

- 0 - 10°
- 10 - 20°
- 20 - 30°
- 30 - 45°
- Above 45°

### LEGEND:

- |  |   |
|--|---|
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFC0CB; border: 1px solid black;"></span> Permanent Building   | <span style="display: inline-block; width: 15px; height: 10px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px); border: 1px solid black;"></span> Playground |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #DDA0DD; border: 1px solid black;"></span> Semi-permanent House | <span style="display: inline-block; width: 15px; height: 10px; background-color: #CCCCCC; border: 1px solid black;"></span> Road  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #800080; border: 1px solid black;"></span> Hut                  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; border: 1px solid black;"></span> Water Tank  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #333333; border: 1px solid black;"></span> Shed                 | <span style="display: inline-block; width: 15px; height: 10px; background-color: #0000FF; border: 1px solid black;"></span> Stream  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FF0000; border: 1px solid black;"></span> Chorten              | <span style="display: inline-block; width: 15px; height: 10px; background-color: #0000FF; border: 1px solid black;"></span> Drainage  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFF00; border: 1px solid black;"></span> Mani Dungkhor        | <span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; border-radius: 50%;"></span> Study Area   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #CCCCCC; border: 1px solid black;"></span> Luu                  | <span style="display: inline-block; width: 15px; height: 10px; background-color: #00BFFF; border: 1px solid black;"></span> Pond  |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #808000; border: 1px solid black;"></span> Toilet               | <span style="display: inline-block; width: 15px; height: 10px; background-color: #333333; border: 1px solid black; border-radius: 50%;"></span> Boulder   |
| <span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFF00; border: 1px solid black;"></span> Septic Tank          | <span style="display: inline-block; width: 15px; height: 10px; border-top: 1px dashed black;"></span> Footpath  |



1:4,800

Contour (5m Interval)

### BASEMAP:

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 Unit: Meter

228400 228500 228600 228700 228800 228900 229000 229100 229200 229300 229400 229500 229600 229700 229800 229900 230000 230100 230200

512300  
512200  
512100  
512000  
511900  
511800  
511700  
511600  
511500  
511400  
511300  
511200  
511100

512300  
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511700  
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511300  
511200  
511100

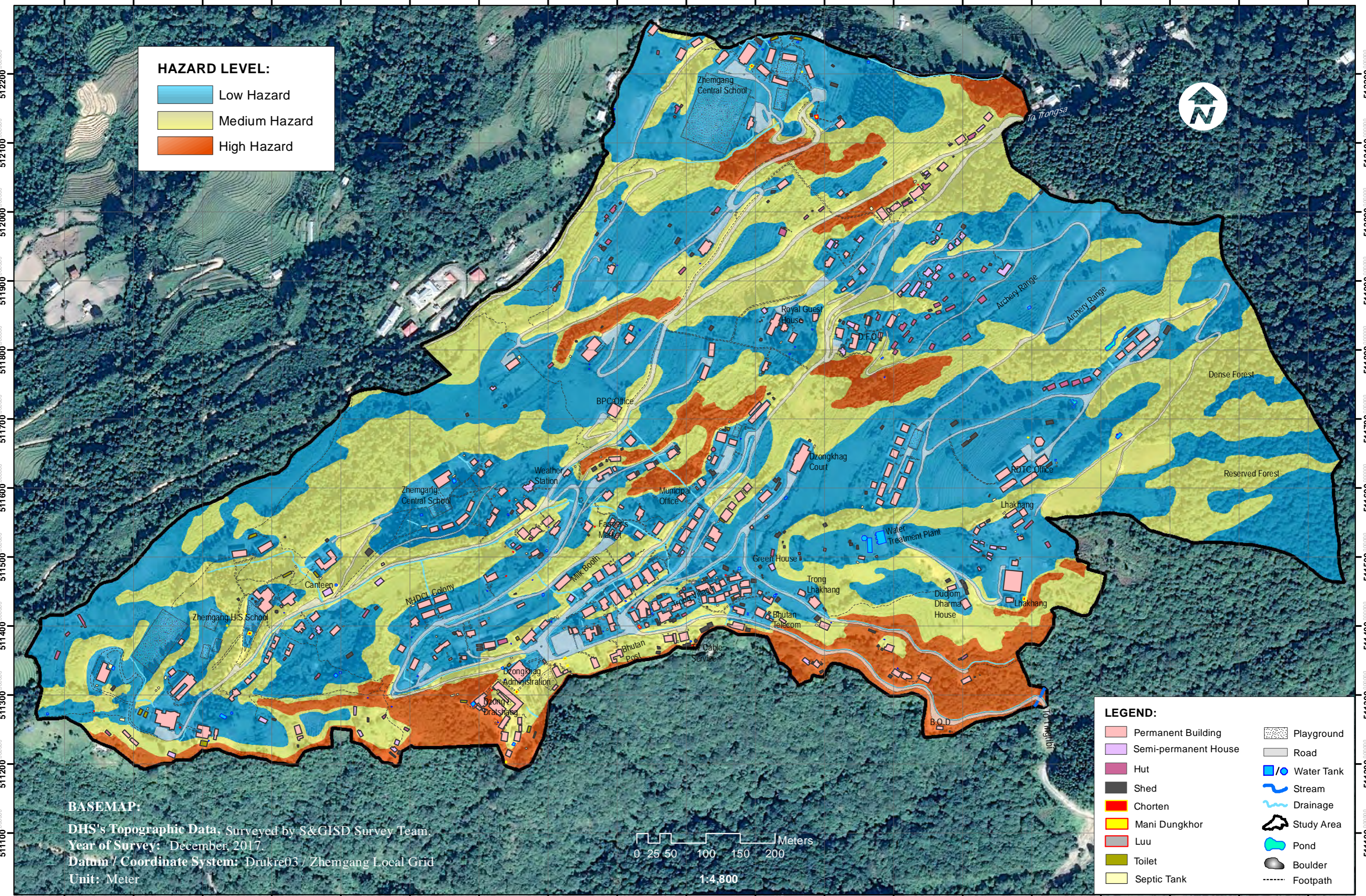
# HAZARD ZONATION MAP:

# GEOTECHNICAL REPORT FOR ZHEMGANG EXISTING TOWN

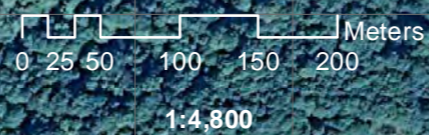
228400 228500 228600 228700 228800 228900 229000 229100 229200 229300 229400 229500 229600 229700 229800 229900 230000 230100 230200

**HAZARD LEVEL:**

- Low Hazard
- Medium Hazard
- High Hazard



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 Unit: Meter



**LEGEND:**

<span style="display: inline-block; width: 15px; height: 10px; background-color: #F08080; border: 1px solid black; margin-right: 5px;"></span> Permanent Building	<span style="display: inline-block; width: 15px; height: 10px; background-image: radial-gradient(circle, black 1px, transparent 0); background-size: 4px 4px; border: 1px solid black; margin-right: 5px;"></span> Playground
<span style="display: inline-block; width: 15px; height: 10px; background-color: #E6E6FA; border: 1px solid black; margin-right: 5px;"></span> Semi-permanent House	<span style="display: inline-block; width: 15px; height: 10px; background-color: #D3D3D3; border: 1px solid black; margin-right: 5px;"></span> Road
<span style="display: inline-block; width: 15px; height: 10px; background-color: #800080; border: 1px solid black; margin-right: 5px;"></span> Hut	<span style="display: inline-block; width: 15px; height: 10px; background-color: #00AEEF; border: 1px solid black; margin-right: 5px;"></span> Water Tank
<span style="display: inline-block; width: 15px; height: 10px; background-color: #333; border: 1px solid black; margin-right: 5px;"></span> Shed	<span style="display: inline-block; width: 15px; height: 10px; border-bottom: 2px solid #00AEEF; margin-right: 5px;"></span> Stream
<span style="display: inline-block; width: 15px; height: 10px; background-color: #FF0000; border: 1px solid black; margin-right: 5px;"></span> Chorten	<span style="display: inline-block; width: 15px; height: 10px; border-bottom: 2px dashed #00AEEF; margin-right: 5px;"></span> Drainage
<span style="display: inline-block; width: 15px; height: 10px; background-color: #FFD700; border: 1px solid black; margin-right: 5px;"></span> Mani Dungkhor	<span style="display: inline-block; width: 15px; height: 10px; border: 1px solid black; margin-right: 5px;"></span> Study Area
<span style="display: inline-block; width: 15px; height: 10px; background-color: #A9A9A9; border: 1px solid black; margin-right: 5px;"></span> Luu	<span style="display: inline-block; width: 15px; height: 10px; background-color: #00AEEF; border-radius: 50%; border: 1px solid black; margin-right: 5px;"></span> Pond
<span style="display: inline-block; width: 15px; height: 10px; background-color: #808000; border: 1px solid black; margin-right: 5px;"></span> Toilet	<span style="display: inline-block; width: 15px; height: 10px; background-color: #333; border-radius: 50%; border: 1px solid black; margin-right: 5px;"></span> Boulder
<span style="display: inline-block; width: 15px; height: 10px; background-color: #FFFF00; border: 1px solid black; margin-right: 5px;"></span> Septic Tank	<span style="display: inline-block; width: 15px; height: 10px; border-bottom: 1px dashed black; margin-right: 5px;"></span> Footpath

228400 228500 228600 228700 228800 228900 229000 229100 229200 229300 229400 229500 229600 229700 229800 229900 230000 230100 230200