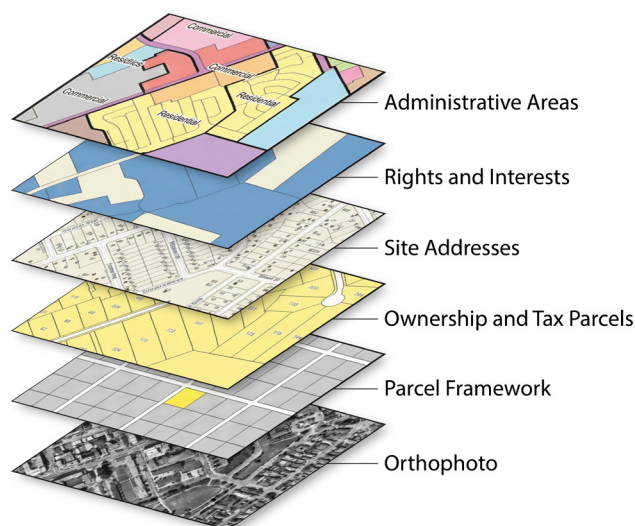


Dodhara Chandani Municipality – Integrated Municipal Geodatabase

Standardizing Municipal Data for Efficient Planning, Disaster Resilience, and Smarter Governance

The Dodhara Chandani Municipality – Integrated Municipal Geodatabase (IMG) represents the municipality's first consolidated, standardized, and authoritative spatial data system. It replaces fragmented, department-wise datasets with a single, shared spatial foundation that supports data-informed planning across sectors, including revenue administration, disaster preparedness, urban development, and public service delivery. At present, the IMG organizes municipal boundaries, land records, infrastructure assets, public services, environmental resources, and multi-hazard risk layers within one integrated spatial framework. Every feature—whether a road, building, school, land parcel, or hazard zone—is uniquely identified, consistently referenced, and spatially aligned across departments, eliminating duplication and data mismatches.



The geodatabase complies with national spatial standards by adopting MUTM 81E and the Nepal National Geospatial Metadata Profile (ISO 19115). As a result, the IMG functions not only as a mapping system but as a long-term municipal data infrastructure supporting evidence-based decisions and future digital services.

Methodology

The development of the Integrated Geodatabase followed a hybrid methodology combining literature review and institutional validation. An initial review covered international municipal geodatabase practices, the National Land Use Project, the National Integrated Urban Development Planning Project, and other relevant technical literature to understand applicable data structures, layer hierarchies, and standards.

Based on the consolidation of these references, a draft geodatabase design template was prepared, defining data categories, layers, and sub-layers suited to Dodhara Chandani Municipality. This draft was shared with municipal management for review and validation to ensure alignment with governance needs and operational workflows. Feedback received during this process was incorporated to refine and finalize the standardized integrated municipal geodatabase.

Benefits

1

Single Source of Truth

Establishes one authoritative and verified spatial database, eliminating data duplication, inconsistencies, and departmental silos.

2

Evidence-Based Planning and Budgeting

Enables data-driven decisions for development planning, infrastructure investment, and budget allocation using reliable spatial evidence.

3

Faster and More Efficient Service Delivery

Supports quick access to verified data at municipal and ward levels, reducing processing time for permits, approvals, and public services.

4

Stronger Inter-Departmental Coordination and Governance

Facilitates standardized data sharing across departments, improving transparency, accountability, and institutional collaboration.

5

Data-Driven Sectoral Planning and Management

Enables informed planning and monitoring across key sectors such as health, education, disaster management, infrastructure, and revenue administration through integrated datasets.

Data layers

Foundation & Baseline

Administrative Boundaries, Settlements & Terrain

Administrative & Settlements



Administrative

Boundary - Municipal Polygon

Municipal boundary polygon (code, name, type, province, district).

Boundary - Ward Polygon

Ward boundary polygons (ward number, ward name).

Boundary - Toles Polygon

Tole / settlement boundary polygons (settlement name, ward).

Settlement Boundary Point

Street address ranges, locality names used for geocoding.



Settlement Datasets

Building Location Point

Building centroid points linked to household ID, address, building use, and survey attributes.

Building Footprints Polygon

Detailed polygons (building ID, floors, use, material, construction year, risk class).

Tole locations Point

Specific spatial locations of Tole centers.

Village Names Point

Settlement locations and village name centroids.

Land & Terrain



Land Parcels & Use

Land Use Polygon

Zones: residential, commercial, industrial, institutional, agricultural, forest, open space, transport.

Cadastral Parcels Polygon

Land parcels with parcel ID, ownership type, land category, and area.

Land Plotting Sites Polygon

Subdivision boundaries, plotted schemes, town planning schemes, neighbourhood layouts.

Right of Way (ROW) Polygon

Declared ROW boundaries for key road corridors and interest corridors.

Land Pooling Polygon

Areas where fragmented parcels are consolidated, redesigned, and redistributed.



Elevatiwon & Imagery

DEM Raster

Digital Elevation Model raster data.

Contour Line

Contour lines with precise elevation attributes.

Orthophoto (Satellite) Raster

Orthorectified satellite imagery.

Orthophoto (UAV) Raster

Orthorectified UAV/drone mosaics.

UAV Raw Imagery Data

Raw drone imagery footprints, flight lines, and acquisition metadata.

Satellite Raw Data

Satellite scene footprints and metadata (sensor, date, resolution).

Critical Infrastructure

Health, Education, Government & Safety

Essential Services

Health Facilities

Locations Point

Hospitals, PHCs, Health Posts, Clinics, Immunization Sites, Ayurvedic centres, Pharmacies.

Footprints Polygon

Polygon covering area of Hospital and health centers.

Vaccination Centers Point

Swam Sevika and regular immunization points.

Education

Locations Point

ECD/Montessori, Schools (Basic to Higher Secondary), Colleges, Universities, CTVE.

Footprints Polygon

Detailed polygons (building ID, floors, use, material, construction year, risk class).

Libraries Point

Public libraries, community libraries, e-learning centres.

Training Inst Point

Training centers (Painting, Cooking, Dance, Music).

Catchment Areas Polygon

School catchment polygons or service areas.

Government

Offices Point

Municipality office, Ward offices, Provincial/Federal service buildings.

Other Offices Point

Line agencies and government service centres.

Safety & Social

Security

Nepal Police Point

Stations, area police offices, police posts.

Armed Police Force Point

APF bases, border posts, checkpoints, barracks, disaster units.

Traffic Police Polygon

Offices, checkpoints, counting sensors, CCTV, speed sensors.

Emergency Response

Health & Ambulance Point

Stations, Trauma centers, Referral centers, First aid points.

Fire & Rescue Point

Stations, Hydrants, Reservoirs, Response vehicles, High-risk zones.

Disaster Facilities Point

MEOC, DEOC, Ward meeting points, Shelters, Relief distribution centers.

Early Warning Point

Gauge stations (River/Rain), Sirens, Auto weather stations (AWS).

Evacuation Point

Evacuation routes, Safe zones, Helipads (Landing zones).

Social Orgs

NGOs & INGOs Point

Registered NGOs, INGOs, development partner field offices.

Social Care Point

Daycare, Baal Griha, Old age homes, Community care centres.

User Groups Data

Tole orgs, Water/Forest/Irrigation committees, Mothers' groups, Youth clubs.

3 Community & Economy

Amenities, Culture, Finance & Tourism

Public Life



Public Amenities

Parks & Open Spaces Polygon

Public parks, playgrounds and designated open spaces.

Recreation Polygon

Fun parks, recreational fields, sports grounds.



Culture & Heritage

Religious Sites Point

Temples, monasteries (Gumbas), churches, mosques, shrines.

Heritage Sites Point

Archaeological sites, historic buildings, monuments, ghats.

Rest Stops Point

Pati, Pauwa, Dharmasala.

Cultural Inst Point

Museums, community halls, performance spaces, Sanskrit centers.

Economic Activity



Financial Facilities

Banks Point

Commercial and Development banks.

Cooperatives Point

Saving & Credit (SACCOS), Agricultural, Dairy, Women's cooperatives.

Money Services Point

Currency Exchange Centers, ATMs, Insurance Offices.



Production & Trade

Shopping Centers Point

Malls, marts, shopping complexes.

General Stores Point

Retail, hardware, electronics, dairies, tailors, salons.

Markets Point

Local market centers, Hat Bazaar, Mella, Wholesale markets.

Industry Point

Warehouses, large workshops, garages, vehicle showrooms.

Old Trade Cities Point

Historic trade hubs (e.g., Asan, Indrachowk).



Tourism

Accommodation Point

Hotels, Lodges, Homestays, Resorts, Eco-lodges.

Food & Beverage Point

Restaurants, Cafés, Bars, Pubs.

Entertainment Point

Clubs, Dohori restaurants, Live music venues.

Tourism Assets Point

View towers, picnic spots, info centers, travel agencies.

04 Networks & Environment

Transportation, Utilities, Hazards & Nature

Infrastructure



Transportation

Road Network Line

Attributes: name, class (SRN/A/B/C/D), surface, width, ROW, condition.

Public Transport Line/Point

Bus routes, Stops, Terminals, Bus parks.

Pedestrian Polygon

Sidewalks, footpaths, bridges, zebra crossings.

Traffic Assets Point

Lights, signs, speed breakers, parking (on/off street).

Aviation Point/Poly

Airports, Helipads (Location & Footprint).



Utilities

Water Supply Line/Point

Pipelines, Intakes, Reservoirs, Taps (Dhunge Dhara), Treatment plants.

Electricity Line/Point

Transmission/Distribution lines, Poles, Substations, Transformers.

TelecomPoint Point/Line

Towers, Fiber network, Stations (Radio/TV), Coverage zones.

Sanitation Line/Point

Sewer lines, Drainage, Landfills, Collection points, Public toilets.

Energy Point

Hydro, Solar, Wind, Biogas plants, Fuel/EV stations.

Environment & Risk



Natural Resources

Water Resources Line/Poly

Rivers, Springs, Lakes, Wetlands, Irrigation canals.

Climate Raster

Rainfall, Temperature zones, Climate classification.

Protected Areas Polygon

National parks, Community forests, Green corridors.

Monitoring Point

Air quality, Hydromet stations, Tree inventory.



Disaster & Hazards

Hazard Maps Raster

Landslide, Flood, Earthquake (Seismic/Liquefaction), Fire, Heat, Drought.

Risk Data Point

Crime hotspots, Accident zones, Occupational hazards.

Geology Data

Lithology, Rock type, Soil type/texture, Geomorphology.

Exposure Polygon

Settlements and facilities exposed to multi-hazards.

Implementation



Supported By



Implementing Partners

