AFRICA-BB-MAPS DATA STANDARDISATION PACK

Database Structure and Naming Conventions

Component 2 · Volume 1 · Quick Reference Guide

At a glance

What it defines. How broadband information is organised, named, governed and stored inside a national enterprise geospatial database: environments, schemas, feature datasets, feature classes and tables, object and attribute names, core attributes, identifiers, metadata, quality, time, security and coordinate reference systems.

What it does not define. Content. Feature types, attributes and code values come from Component 1 and are reproduced without alteration (Volume 1, clause 5.3).

How to use it. Apply it when designing, building, naming or checking any database object. Names are checked, preferably automatically, before anything enters Production (Chapter 34).

Approved title: Geospatial Database Structure and Naming Convention Guidance (Volume 1, ABBM-GD-VOL1). Reading time for this guide: about 15 minutes.

1 Overall database organisation

Each country runs six separate database instances, one per environment. Data moves through them in a fixed order, and only validated data reaches Production (Chapter 12).

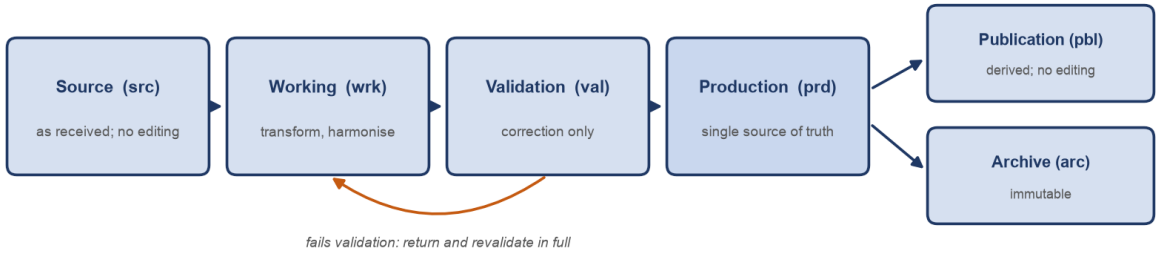

Figure 1 Environments and promotion sequence (Volume 1, clauses 12.1, 12.2 and 22.3).

Every instance is organised in the same hierarchy: database → schema → theme (feature dataset) → feature class or table → subtype, attribute domain, relationship class, topology and metadata (clause 13.3). Every instance holds the same eight schemas, and no other schema is created in Production, Publication or Archive (clauses 24.1 and 24.2).

Schema	Prefix	Type	Holds	Feature datasets (clause 25.1)
reference	ref	Domain	Shared national reference information	admin, settlement, statistical, transport, physical, basemap, locality
infrastructure	infra	Domain	Physical broadband infrastructure	network (node, link, container extent)
services	svc	Domain	Broadband services and coverage	grid (100 m and 1 km grids)
demand	dem	Domain	Demand and socioeconomic indicators	population, household, institution, economy, inclusion, indicator
investment	inv	Domain	Planning and investment analysis	gap, priority, planning, project, usf, scenario, analysis
metadata	meta	Supporting	Metadata catalogue, quality records, attribute domain tables	—
administration	adm	Supporting	User registers, audit tables, configuration	—
publication	pub	Supporting	Views and derived layers for dissemination	—

Asset type and technology are attributes, not separate feature classes. The Infrastructure and Services domains therefore have one feature dataset each, and most of their objects are non-spatial tables at schema level (clauses 16.4 and 17.5). Archive exists only as an environment and is never created as a schema within Production (clause 13.2).

2 Naming conventions

2.1 General rules (clause 21.3)

Rule	Requirement
Characters and case	Lowercase a to z, digits 0 to 9 and single underscores only. Start with a letter; no trailing or double underscore; no spaces, hyphens or accents (R3 to R8).
Length	45 characters at most, or the platform limit where lower (R9, clause 21.5).
Meaning and stability	Unique in scope, descriptive of business purpose, never renamed because a project or contractor changes (R1, R2, R10).
Language	English terms; a national term with no English equivalent is transliterated and its meaning recorded in metadata (R11).
Abbreviations	Only those in the register at clause 28.6, for example adm, id, ixp, mbps, noc, pct, pop, qos, rf, usf.
Labels	Map, catalogue and dashboard labels are not names. They may use mixed case, spaces and national language, and are recorded in metadata (clause 21.6).

2.2 Approved patterns

Object	Pattern	Approved example
Database instance	bbm_<country>_<environment>	bbm_ken_prd, bbm_ken_val
Schema	one of the eight approved names	infrastructure
Feature dataset	<theme> (no prefix or suffix)	network, locality
Feature class	<prefix>_<theme>_<feature>_<geometry>	infra_network_link_ln, ref_admin_level2_poly
Non-spatial table	as feature class, ending _tbl (theme may be omitted for a domain register)	svc_mobile_service_coverage_tbl, ref_operator_tbl
Specialisation table	infra_node_<type>_properties_tbl · infra_link_<technology>_properties_tbl	infra_node_pop_site_properties_tbl
Raster	as feature class, ending _rst; no period in the name	dem_population_density_rst
Relationship class	<prefix>_<origin>_<destination>_rel	infra_node_provider_rel
Attribute domain	domain_<subject>	domain_classification
Published service	bbm_<country>_<content>_<interface>	bbm_nga_mobile_coverage_wms
Temporary object	tmp_<name>, Working environment only	tmp_link_import
Record identifier	<country>-<domain>-<uuid> (a value, not a name)	ken-infra-9f2c1b84-3d0e-4a77-9c11-6b0f52e8a1d3
Reporting period	<country>-<year>-<sequence> (a value)	ken-2026-q1

<country> is the ISO 3166-1 alpha-3 code in lowercase. Country values held as data take the form Component 1 sets for each attribute: alpha-2 for country_code on the operator register, alpha-3 in uppercase for country_iso, each a closed list of the full ISO 3166-1 set; the two are linked in meta_country_tbl, and a code taken into a name is written in lowercase (clauses 23.2 and 28.4). tmp_link_import is illustrative.

Geometry code	pt	mpt	ln	mln	poly	mpoly	rst	tbl	ann
Meaning	Point	Multipoint	Line	Multiline	Polygon	Multipolygon	Raster	Table	Annotation

Conformant	Not conformant	Why
operator_name	opname	Unapproved abbreviation; no separator
installation_date	inst_dt	Unapproved abbreviations
download_speed_mbps	dlspeed	No unit; unapproved abbreviation
feature_name (on a school class)	school_name	An attribute does not repeat the object name (clause 28.2)

Never use as a complete name: admin, default, esri, object, postgres, shape, sys, system, temp, test, nor any word reserved by the deployed platform (Chapter 33). Within compound names these tokens are allowed: adm_user_tbl conforms.

3 Keys, data types and constraints

3.1 Primary and foreign keys

- **feature_id** is the primary key of every authoritative feature class and table: character, 64 at most, form <country>-<domain>-<uuid>. It is assigned on first entry, never changes and is never reused (clause 28.4).
- **identifier** (Component 1) is kept alongside feature_id. It is the provider's identifier and is the value exchanged. An external register number goes in **external_id** with **external_id_source**; it never replaces feature_id.
- A nationally defined primary key is named after its object followed by _id. A foreign key takes the name of the key it references, optionally preceded by a role: operator_id, reporting_period_id (clause 28.2).
- Component 1 keys keep the physical names set at clause 16.5: start_node, end_node, container_ref, supporting_infrastructure_owner, transmission_medium_owner.
- Referential integrity is enforced by the database, not by an application (clause 14.2).

3.2 Core attributes on every authoritative object (Table 20.1)

Attribute	Type	Applies to	Rule
feature_id	character (64)	all domains	Primary key; persistent
classification	character (20)	all domains	public, internal, restricted or confidential (domain_classification)
record_valid_from / record_valid_to	timestamp with time zone	all domains	Database record validity; record_valid_to is null while current and never earlier than record_valid_from
last_updated / updated_by	timestamp with time zone / character (128)	all domains	Maintained by the database
feature_name, data_source	character (255)	Reference, Demand, Investment	Mandatory
collection_date	date	Reference, Demand, Investment	ISO 8601
validation_status	character (20)	Reference, Demand, Investment	received, in_validation, validated, failed, approved, superseded

In Infrastructure and Services, the Component 1 attributes (identifier, validFrom, validTo and provenance attributes) are used instead of duplicate core attributes. **Time:** a superseded record is closed, not overwritten. The current record keeps its feature_id, and earlier versions are preserved automatically (clause 39.3). Coverage is never overwritten between reporting periods (clause 39.4). Attribute domains are named domain_<subject>; those listed in Appendix D.1 are implemented in every country.

4 Spatial reference and indexing

Requirement	Detail
Storage CRS	EPSG:10592 (WGS 84 / GLANCE Africa; Lambert Azimuthal Equal Area, 5° N, 20° E) in every environment and feature class. Where a platform lacks it, it is registered under its own EPSG code (clause 43.5).
Feature datasets	All feature classes in a feature dataset share one CRS (clause 25.2).
Recording	CRS recorded in metadata by EPSG code. Reprojection records the transformation and its EPSG operation code; platform-default transformations are not used on authoritative data.
Exchange	Datasets shall additionally be publishable in WGS 84 (EPSG:4326) where regional or international exchange requires it. GeoPackage and GeoJSON are required exchange formats (clause 43.3).
Indexing	Volume 3, P-03 (recommended): a spatial index on every feature class at creation, and indexes on feature_id, record_valid_from, record_valid_to and reporting_period_id.

5 Esri and open-source implementation

Volume 1 is technology-neutral. Where a platform lacks a component, the national implementation meets the functional criterion by other means and records the substitution in the National Geospatial Database Implementation Plan (clause 14.2).

Component	Enterprise geodatabase (Esri)	PostgreSQL/PostGIS	Criterion to meet
Feature dataset	Native	None	Theme element of the name, with a common CRS

Component	Enterprise geodatabase (Esri)	PostgreSQL/PostGIS	Criterion to meet
Attribute domain	Coded value domain	Lookup table with foreign key or check	Closed lists (Appendix D.1) reject other values; extensible Component 1 lists are checked at validation
Subtype	Native	Coded attribute with a lookup table	Coded attribute bound to an attribute domain
Relationship class	Native	Foreign key; association table for many-to-many	Integrity enforced by the database
Topology	Native	Validity functions and rule queries	Rules enforced at validation (clause 38.3)
Identifier limit	Set by the underlying DBMS	63 bytes, truncated silently	45-character rule keeps a margin

6 Checking names and structure

Automated validation should be used before promotion to Production (clause 34.2). Eight tests are defined: character set, length, abbreviations and reserved and prohibited words apply to every named object; prefix, theme and geometry code apply to feature classes, rasters and tables within a feature dataset; core attributes apply to authoritative objects. A dataset that fails is not promoted. An object already in Production is corrected at the next maintenance window under change control, never renamed in place (clause 34.3). Volume 3 implements these as tests T-01 to T-08.

7 How Volume 1 turns the data model into a database design

Component 1 provides	Volume 1 adds
Conceptual names: Node, Link, nodeType	Physical aliases: infra_network_node_pt, infra_network_link_ln, node_type, published in a name mapping (clause 26.5)
Feature types and specialisations	Placement in schemas and feature datasets; one table per specialisation
identifier, validFrom, validTo	feature_id, record validity and maintenance attributes, classification
Code lists	Attribute domains named domain_<subject>, plus the programme lists of Appendix D.1
No schema for Reference, Demand and Investment	A national structure, identified as such so that it is not mistaken for a normative schema (clause 5.3)

Conceptual names are still used in GML, GeoJSON and JSON submissions, clause citations and validation rule references. Using an alias there causes a submission to fail validation or a reference to resolve incorrectly (clause 26.5).

Where to find the detail

Environments: Chapter 12 · Schemas: 24 · Domain catalogues: 15 to 19 · Core attributes: 20.5 · Naming rules: 21 to 33 · Compliance tests: 34.2.

Metadata profile: 36 and Appendix D · Quality: 38 · Time and supersession: 39 · Classification and access: 41 · Personal and operator data: 42 · CRS: 43.5.

Consolidated naming register: Appendix C · Sample structures: Appendix E · Workbook equivalents: Main Domain Register, sheets 14 Naming reference and 15 Core attributes.