

# **Biodiversity Assessments GIS Specification**

## **IP Integrated Management System**

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# 1 General

## 1.1 Context and purpose

This specification details the requirements for Geographic Information System (GIS) Datasets, relating to biodiversity assessments, provided to Transport for New South Wales (TfNSW) by delivery partners, contractors, consultants and suppliers.

The specification has been developed to interface with the TfNSW Digital Engineering (DE) Framework, but can also be used for projects that do not use the DE Framework.

## 1.2 Scope and application

This specification is intended to be read in conjunction with the following TfNSW documents and is intended to assist suppliers to fulfil the geometry and schema requirements in these documents:

- DMS-FT-580 – *GIS Schema*
- IC-QA-G75 – *GIS Specification*
- IP-0048-TL02 – *Template file structure for Biodiversity Assessments GIS*.

This specification outlines the template GIS database schema and provides guidance to users relating to populating the GIS database for delivery.

This specification applies to GIS Datasets to be delivered as part of biodiversity assessment works carried out for projects delivered by Infrastructure and Place (IP) or as required for TfNSW.

## 1.3 Terms and definitions

The terms and abbreviations used in this document have the meaning/definitions provided in DMS-SD-123 – *DE Terms and Definitions*.

The terms and definitions specific to this specification are included in Table 1:

**Table 1 – Terms and Definitions**

Term	Definition
Geographic Information System (GIS) Dataset(s)	Individual, digital and hardcopy, geospatial raw data, layers, models, maps, plans, diagrams and any other data created or intended for use within GIS.
Schema	Refers to GIS Dataset attribute field names, attribute data types, and the application of attribute validation, subtypes, relationship classes, and attachments.

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Term	Definition
Supplier	Refers to any organisation who supplies TfNSW with GIS datasets relating to a biodiversity assessment.

## 1.4 Reference documents

The following documents are referenced in the text:

- DMS-FT-580 – *GIS Schema*
- IC-QA-G75 – *GIS Specification*
- IP-0048-TL02 – *Template file structure for Biodiversity Assessments GIS*.

# 2 Technical requirements

Comply with the requirements in IC-QA-G75 *Geographic Information Systems (GIS)*.

## 2.1 Digital file types

The template GIS database is in ESRI file geodatabase (GDB, version 10.0) for population by suppliers.

Templates can also be provided in shapefile format for suppliers who do not have the software to use a geodatabase.

Site photographs are to be provided in JPEG format and, where the capture equipment has the capability, with location metadata tags, or 'Geotags'.

## 2.2 Coordinate systems

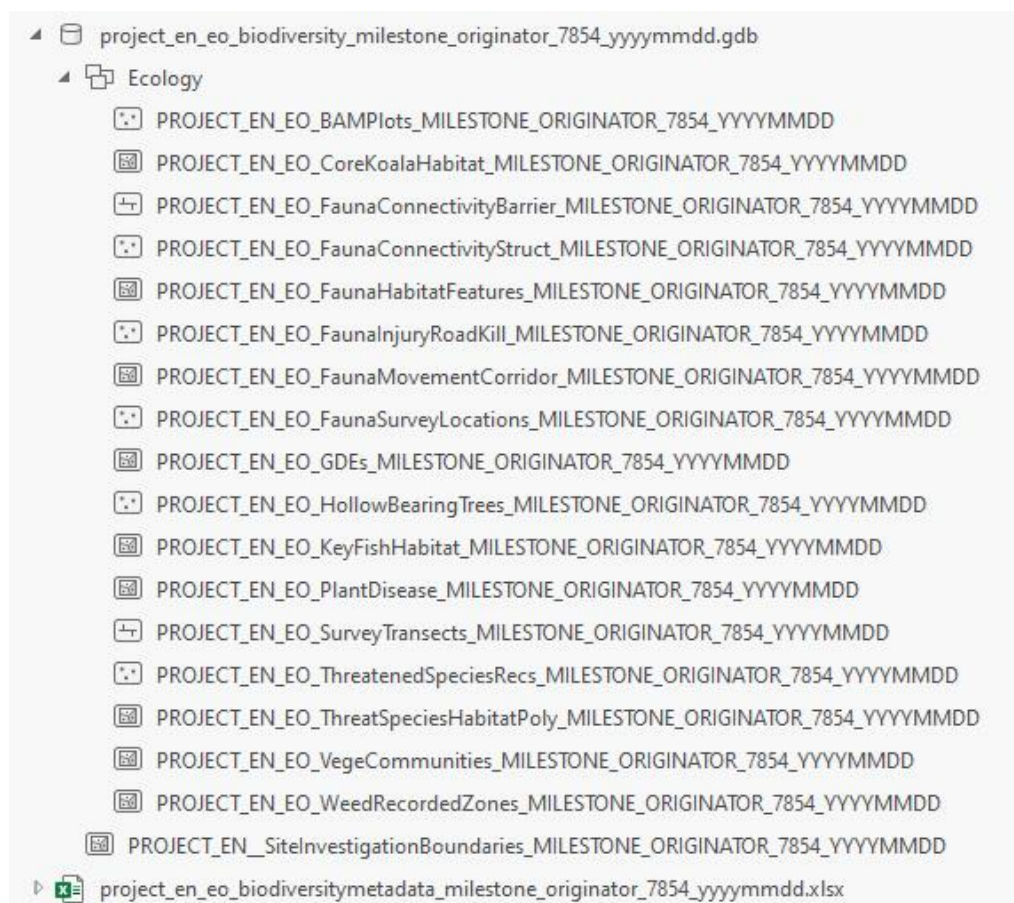
All biodiversity assessment GIS datasets supplied to TfNSW must be supplied relative to the applicable Map Grid of Australia zone (MGA56, MGA55, or MGA54) on the Geocentric Datum of Australia 2020 (GDA2020). Feature datasets within the template GIS database can be supplied in either map grid.

## 2.3 Directory structure and file naming

GIS file names must comply with the DMS-FT-580 – *GIS Schema*.

The template directory structure and the structure of the GIS database are presented in Figure 1, refer to IP-0048-TL02 – *Template file structure for Biodiversity Assessments GIS*, which includes a template file geodatabase and file structure compliant with Figure 1. IP-0048-TL02 includes three directory structures, one of each MGA zone, the example in Figure 1 represents the MGA54 directory structure. Populate only one of these.

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**Figure 1 – Example directory structure for a project on GDA2020/MGA54**

### 2.3.1 Feature class and file naming

Each feature class name is composed of eight components, separated by an underscore as per. For further information and codification please refer to DMS-FT-580 or to the Project Data Building Blocks (PDBB).

**Table 2 – Feature class name components**

Component	Data type
1	<b>Program Project Alias Code (shortened to Project for this purpose)</b> – the project abbreviation from the PDBB.
2	<b>Discipline</b> – as per DMS-FT-580, for the purpose of biodiversity studies this will be “en” (Environment and Planning).
3	<b>Sub-discipline</b> – as per DMS-FT-580, for the purpose of biodiversity studies this will be “he” (Heritage).
4	<b>Title</b> – title of the data set, no spaces.
5	<b>Project Milestone Code (shortened to Milestone for this purpose)</b> – as per DMS-FT-580.

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Component	Data type
6	<b>Originator</b> – the company who have produced the data (from the GIS Schema). If you have downloaded the data from an alternate source for example DPE land zoning and not changed the data (excluding coordinate system translation), the originator should be DOP as per DMS-FT-580.
7	<b>Coordinate EPSG Code (shortened to Coordinate for this purpose)</b> – as per DMS-FT-580.
8	<b>Effective date</b> – in the format yyyyymmdd.

ProgramProjectCode\_Discipline\_SubDiscipline\_Title\_ProjectMilestone\_Originator\_  
CoordinateEPSG\_EffectiveDate

For example, data produced on the Moruya Bypass project for a BAM plot by NGH for 20% concept design in GDA2020 MGA56 on the 20/10/2021 would be named as follows.

phupmb\_en\_eo\_bamplots\_ngh\_m220\_7856\_20211020

File names must be within a 63-character limit to comply with Transport's GIS database specifications.

## 2.4 Cartographic products

Comply with the requirements in G75 and refer to the relevant tab on DMS-FT-580 – *GIS Schema* for the provision of a cartographic products register to be included with data submissions where cartographic products have been created.

**Note:** This includes digital products, for example web maps and portals.

## 2.5 GIS database schema

The template GIS database contains 18 feature classes. These feature classes have the fields that Transport would like to see consistently recorded for aboriginal heritage.

The fields provided in the templates are a minimum, where additional relevant data is captured by a supplier, please add this data to the table structure.

If the supplier records a field survey path (generated by GPS unit during field work) this must also be supplied to TfNSW as it can assist us in future studies.

## 2.6 Dataset metadata

Comply with the requirements in G75 and refer to the relevant tab on DMS-FT-580 – *GIS Schema* for the dataset metadata requirements for all GIS data submitted to TfNSW. A dataset metadata form prepopulated with each template directory structure is included in IP-0048-TL02.

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## 2.7 Feature level metadata

Feature level metadata must be populated by suppliers. Each feature class contains standard fields used to maintain information about the source and purpose of each feature in the feature class. Table 3 outlines the feature level metadata fields, which exists in each feature class.

**Table 3 – Feature level metadata**

Field name (alias)	Data type	Acceptable values	Description
comments (Comments)	TEXT	For example, Random meander survey	Further information relating to the feature/survey.
fsource (Feature source)	TEXT	For example, Garmin GPSMap 64 Apple iPad Desktop data capture from aerial photography dated....	Data source from which the feature <i>geometry</i> was derived. If this is a GPS receiver, include the make and model of the device used to determine the location.
sourcedate (Source date)	DATE	dd/mm/yyyy For example, 7/11/2016	Effective date of the source from which the feature <i>geometry</i> was derived. For features captured in the field this should be the date that the survey was undertaken. For features captured from another source, the effective date of the source is to be used.  Also referred to as FeatureReliability in DMS-FT-580 prior to v2.1 of that document.
planaccur (Planimetric accuracy)	DOUBLE	0.01 0.1 0.25 0.5 1 2 5 10 25 100 250	This is the standard deviation in metres of the position of the feature's horizontal coordinates (68% of the data points should be less than this distance from their actual position).  If an indication of location error is provided by the GNSS device then this is to be recorded in this field. Otherwise, an expected level of error based on the manufacturer's documentation is to be recorded.  For features which are captured from another spatial dataset use the

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Field name (alias)	Data type	Acceptable values	Description
			planimetric accuracy as specified in the metadata.
ecmlink (ECM Objective link)	TEXT	-	To be populated with the ECM reference/Objective file number, if supplied by the project team.
Supplier (Supplier)	TEXT	-	Name of company supplying data, where different from the originator (author).

## 2.8 Biodiversity metadata

The following defines the minimum attributes that must be populated for each feature class in the template geodatabase (refer to IP-0048-TL02 for the file structure template). Where additional relevant data is captured by a supplier, add this data to the table structure.

### 2.8.1 Site investigation boundaries

This feature class is for the purpose of recording the extent of the different biodiversity survey boundaries relevant to the project. This may include boundaries such as study area, direct impact footprint, indirect impact buffer and 1500m landscape buffer.

#### Template Geodatabase Feature Class Name:

project\_en\_\_siteinvestigationboundaries\_milestone\_originator\_coordinate\_yyyymmdd

**Table 4 – Site investigation boundaries attribute table schema (polygon features)**

Field name (alias)	Data type	Acceptable values	Description
Type (Type)	TEXT(50)	For example, Survey Boundary	Type of boundary.
name (Survey Name)	TEXT(200)	-	Study area name, if exists. This field is optional.

### 2.8.2 Biodiversity Assessment Method (BAM) vegetation integrity plots

#### Template geodatabase feature class name:

project\_en\_eo\_bamplots\_milestone\_originator\_coordinate\_yyyymmdd

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**Table 5 – BAM plots attribute table schema (point features)**

Field Name (alias)	Data type	Acceptable values	Description
name (Survey Name)	TEXT(200)	-	Survey name, if applicable, not mandatory.
plot_id (Plot ID)	TEXT(200)	For example, P_21007_210326_RMJC_002	Plot name/ID.
datesurvey (Survey Date)	DATE	yyyy/mm/dd	Date of survey.
timesurvey (Survey Time)	TEXT(10)	For example, 13:00	Time of the survey recorded in 24-hour format.
region (Region)	TEXT(200)	For example, Sydney Basin	Region.
site_desc (Site Description)	TEXT(200)	For example, Remnant vegetation along creek line	Description of the site.
bearing (Bearing)	DOUBLE	For example, 190	Bearing in degrees.
pct_id (PCT ID)	DOUBLE	For example, 1206	The unique identifier for the Plant Community Type as supplied by Environment NSW.
pctname (PCT Scientific Name)	TEXT(200)	For example, Forest Red Gum - Rough-barked Apple - White Stringybark grassy woodlands on hills in dry valleys, southern Southeast Corner Bioregion	Scientific name for the Plant Community Type as per BioNet.
photo_id (Photo ID)	TEXT(200)	For example, P20220318-01.jpg	ID or name of the relevant photo. Multiple photo names need to be separated by a comma.
east_head (Easting plot head)	LONG	-	Easting of the plot head.
north_head (Northings plot head)	LONG	-	Northings of the plot head.

### 2.8.3 Vegetation communities

**Template geodatabase feature class name:**

project\_en\_eo\_vegecommunities\_milestone\_originator\_coordinate\_yyyymmdd

**Table 6 – Vegetation communities attribute table schema (polygon features)**

Field name (alias)	Data type	Acceptable values	Description
comm_type (Community Type)	TEXT(100)	PCT TEC Vegetation Zones	Type of community represented by the polygon feature.

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Field name (alias)	Data type	Acceptable values	Description
pct_id (PCT ID)	DOUBLE	For example, 1206	The unique identifier for the Vegetation Community as supplied by Environment NSW.
pctname (PCT Scientific Name)	TEXT(200)	For example, Forest Red Gum - Rough-barked Apple - White Stringybark grassy woodlands on hills in dry valleys, southern South East Corner Bioregion	Scientific name for the Vegetation Community as per BioNet.
tec_cwlth (TEC Cwlth)	TEXT(200)	For example, Illawarra and south coast lowland forest and woodland ecological community CEEC	The name and listing status of the Threatened Ecological Community listed under the EPBC Act that the Community has been assigned to.
tec_nsw (TEC NSW)	TEXT(200)	For example, Lowland Grassy Woodland in the South East Corner Bioregion EEC	The name and listing status of the Threatened Ecological Community listed under the BC Act that the PCT has been assigned to.
pctid_cond (PCTID_Condition)	TEXT(200)	For example, 834_Good	Combined PCT ID and condition assessment. Same name as used in the BAM-C.
vegzoneid (Vegetation Zone ID)	DOUBLE	For example, 1	Same ID as used in the BAM-C.
area_ha (Area ha)	DOUBLE	For example, 1.87	Estimated area in hectares.
condition (Condition)	TEXT(200)	For example, High Degraded grassland	Condition of the vegetation zone.
observe (Observations)	TEXT(500)	-	Summary of field notes, any relevant observations or photo names/IDs if applicable.

## 2.8.4 Groundwater Dependent Ecosystems (GDEs)

### Template geodatabase feature class name:

project\_en\_eo\_gdes\_milestone\_originator\_coordinate\_yyyymmdd

**Table 7 – Groundwater Dependent Ecosystems attribute table schema (polygon features)**

Field name (alias)	Data type	Acceptable values	Description
Gde_nam (GDE Name)	TEXT(200)	For example, Currumbene-Batemans Lowlands Forest	GDE name.
gde_type (GDE Type)	TEXT(200)	For example, Terrestrial GDE	Description of the type of GDE.
eco_type (Ecosystem Type)	TEXT(200)	For example, Vegetation	Ecosystem type.

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Field name (alias)	Data type	Acceptable values	Description
river (River System)	TEXT(200)	For example, Shoalhaven river	Associated river system.
gmorphdesc (Geomorphology Description)	TEXT(200)	For example, Deeply dissected sandstone plateaus.	Description of the geomorphology.
rainfall (Rainfall)	TEXT(200)	For example, Uniform rainfall	Rainfall description.
landuse (Land Use)	TEXT(200)	For example, Other protected areas including indigenous uses	-
degree (Degree)	TEXT(200)	Obligate/Entirely Facultative – High Facultative – Proportional Facultative – Opportunistic Non-dependent	Degree of groundwater dependence.
gma (Groundwater Mgmt Area)	TEXT(200)	For example, Clyde River Unregulated and Alluvial Water Sources plus 1 other overlapping GMAs	Any GMAs which apply.

## 2.8.5 Weed recorded zones

### Template geodatabase feature class name:

project\_en\_eo\_weedrecordedzones\_milestone\_originator\_coordinate\_yyyymmdd

**Table 8 – Weed recorded zones attribute table schema (polygon features)**

Field name (alias)	Data type	Acceptable values	Description
site_name (Site Name)	TEXT(200)	-	Site name if applicable. This field is optional.
sciname (Scientific Name)	TEXT(200)	For example, Rubus anglocandicans	Scientific name of the species that this polygon represents.
commonname (Common Name)	TEXT(200)	For example, Blackberry	Common name of the species that this polygon represents.
nat_stat (National Status)	TEXT(200)	WONS Nil	Denotes whether it has been identified as a Weed of National Environmental Significance.
nsw_stat (NSW Biosecurity Act)	TEXT(200)	General biosecurity duty Prohibition of certain dealings Control order Duty to notify	NSW Biosecurity Act 2015 Status.
datesurvey (Date of Survey)	DATE	yyyy/mm/dd	Date of weed survey.
area_m2 (area in m <sup>2</sup> )	DOUBLE	For example, 1.87	Estimated area in m <sup>2</sup> .

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Field name (alias)	Data type	Acceptable values	Description
observe (Observations)	TEXT(500)	-	Summary of field notes, any relevant observations or photo names/IDs if applicable.

## 2.8.6 Recorded plant disease locations

### Template geodatabase feature class name:

project\_en\_eo\_plantdisease\_milestone\_originator\_coordinate\_yyyymmdd

**Table 9 – Plant disease recorded zones attribute table schema (polygon features)**

Field name (alias)	Data type	Acceptable values	Description
site_name (Site Name)	TEXT(200)	-	Site name if applicable. This field is optional.
sciname (Scientific Name)	TEXT(200)	For example, Puccinia Psidii	Scientific name of the species that this polygon represents.
commonname (Common Name)	TEXT(200)	For example, myrtle rust	Common name of the species that this polygon represents.
datesurvey (Date of survey)	DATE	yyyy/mm/dd	Date of weed survey.
area_m2 (area in m <sup>2</sup> )	DOUBLE	For example, 1.87	Estimated area in m <sup>2</sup> .
observe (Observations)	TEXT(500)		Summary of field notes or observations

## 2.8.7 Survey transects

### Template geodatabase feature class name:

project\_en\_eo\_surveytransects\_milestone\_originator\_coordinate\_yyyymmdd

**Table 10 – Survey transects attribute table schema (polyline features)**

Field name (alias)	Data type	Acceptable values	Description
site_name (Site Name)	TEXT(200)	For example, 0210701_Owl_092	Site name or ID if applicable. This field is optional.
surveytype (Survey Type)	TEXT(200)	Parallel Transect (flora) Parallel Transect (fauna) Spotlighting (walking) Spotlighting (vehicle) Frog Survey (nocturnal search) General Survey Tracks Other (specify in comments)	Type of survey. If the type is not available in the list, select other and specify in the comments field.

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Field name (alias)	Data type	Acceptable values	Description
target_sps (Target species)	TEXT(200)	For example, Eucalyptus tetrapleura Angophora robur	Target species if the transect relates to a targeted survey (use scientific names for flora and common names for fauna for consistency between data authors). This can be a comma separated list. For general survey tracks, set this field to NULL.
datesurvey (Date of survey)	DATE	yyyy/mm/dd	Date of survey.
east_start (Eastings Start)	LONG	-	Eastings of the start point of the transect.
north_start (Northings Start)	LONG	-	Northings of the start point of the transect.
photo_id (Photo ID)	TEXT(200)	For example, P20220318-01.jpg	ID or name of the relevant photo. Multiple photo names need to be separated by a comma.
observe (Observations)	TEXT(500)		Summary of field notes or observations

## 2.8.8 Fauna survey locations

This feature class is for the purpose of recording the locations of fauna surveys, including but not limited to, camera trapping locations, amphibian playback locations, koala SAT survey locations and spotlight survey locations.

**Note:** Some fields may be specific to Anabat surveys and if they do not apply, please leave blank.

**Template geodatabase feature class name:**

project\_en\_eo\_faunasurveylocations\_milestone\_originator\_coordinate\_yyyymmdd

**Table 11 – Fauna survey locations attribute table schema (point features)**

Field name (alias)	Data type	Acceptable values	Description
site_name (Site Name)	TEXT(200)	For example, CAM52	Site name or ID if applicable. This field is optional.
surveytype (Survey Type)	TEXT(200)	Camera trap – ground Camera trap – tree Camera trap – other (specify in comments) Bat call detector Harp trap Elliot trap – ground Elliot trap – tree Pitfall trap	Type of survey. If the type is not available in the list, select other and specify in the comments field.

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Field name (alias)	Data type	Acceptable values	Description
		Wire cage trap Hair tube Call playback Reptile habitat search Bird survey (area search) Bird survey (point census) Song meter Stag-watch Koala scat search Other (specify in comments)	
unit_id (Unit ID)	TEXT(200)	For example, UMBat05	If available the unit ID of the device.
survey_no (Survey Number)	DOUBLE	1 2 3 ... and so on	Survey number, to define repeat surveys at the same site.
date_set (Setup date)	DATE	yyyy/mm/dd	Date of setup.
time_set (Setup time)	TEXT(10)	For example, 13:00	Time of setup in 24 hours.
date_rmv (Removal date)	DATE	dd/mm/yyyy	If applicable, if not leave blank.
time_rmv (Removal time)	TEXT(10)	For example, 13:00	Time of removal in 24 hours. If applicable, if not leave blank.
season (Season)	TEXT(10)	Spring Summer Autumn Winter	-
target_sps (Target species)	TEXT(200)	-	Target species if the survey relates to a targeted survey (use scientific names for consistency between data authors). This can be a comma separated list.
rec_sps (Recorded species)	TEXT(200)	-	Species recorded (use scientific names for consistency between data authors). This can be a comma separated list.
individual (Number of individuals)	DOUBLE	-	Number of individuals recorded.
mast (Mast)	TEXT(10)	Yes No	For bat call detector surveys – was a mast used?

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Field name (alias)	Data type	Acceptable values	Description
orientatn (Orientation)	TEXT(10)	N S W E NE ... and so on	Direction in which the survey unit was facing.
height_m (Height m)	DOUBLE	-	Height in meters of installation of unit.
formation (Formation)	TEXT(200)	For example, Tree	Description of the formation on which the device was installed.
observe (Observations)	TEXT(500)	-	Summary of field notes, any relevant observations or photo names/IDs if applicable.

## 2.8.9 Threatened species records

### Template geodatabase feature class name:

project\_en\_eo\_threatenedspeciesrecs\_milestone\_originator\_coordinate\_yyyymmdd

**Table 12 – Threatened fauna species records attribute table schema (point features)**

Field name (alias)	Data type	Acceptable values	Description
type (Type)	TEXT(10)	Flora Fauna	Type of biodiversity to which the species record applies.
site_name (Site Name)	TEXT(200)	For example, A4	Site name or ID if applicable. This field is optional.
surv_type (Survey Type)	TEXT(200)	Camera trap – ground Camera trap – tree Camera trap – other (specify in comments) Bat call detector Harp trap Elliot trap – ground Elliot trap – tree Pitfall trap Wire cage trap Hair tube Call playback Reptile habitat search Bird survey (area search) Bird survey (point census)	Type of survey conducted.

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Field name (alias)	Data type	Acceptable values	Description
		Song meter Stag-watch Koala scat search Other (specify in comments)	
sciname (Scientific Name)	TEXT(200)	For example, Phascolarctos cinereus	Scientific name of the species that this point represents.
commonname (Common Name)	TEXT(200)	For example, Koala	Common name of the species that this point represents.
individual (Number of Individuals)	DOUBLE	-	Number of individuals observed (if applicable).
ts_cwlth (Threat Status Cwlth)	TEXT(200)	For example, Vulnerable	Threatened status Commonwealth, populated from EPBC threatened fauna listing.
ts_nsw (Threat Status NSW)	TEXT(200)	For example, Endangered	Threatened status NSW, populated from BC Act threatened fauna listing.
loc_desc (Location Description)	TEXT(200)	For example, Sheltered forest	Descriptive notes about the surrounding area where the record was made.
condition (Condition)	TEXT(200)	For example, Healthy	Observed condition of the fauna.
observe (Observations)	TEXT(500)	-	Summary of field notes, any relevant observations or photo names/IDs if applicable.
datesurvey (Date of survey)	TEXT(200)	For example, 06-10/11/2021	Date range of survey.

## 2.8.10 Threatened species habitat polygons

### Template geodatabase feature class name:

project\_en\_eo\_threatspecieshabitatpoly\_milestone\_originator\_coordinate\_yyyymmdd

**Table 13 – Threatened fauna species habitat attribute table schema (polygon features)**

Field name (alias)	Data type	Acceptable values	Description
type (Type)	TEXT(10)	Flora Fauna	Type of biodiversity to which the habitat polygon applies.

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Field name (alias)	Data type	Acceptable values	Description
sciname (Scientific Name)	TEXT(200)	For example, Phascolarctos cinereus	Scientific name of the species that this polygon represents.
commonname (Common Name)	TEXT(200)	For example, Koala	Common name of the species that this polygon represents.
ts_cwlth (Threat Status Cwlth)	TEXT(200)	For example, Vulnerable	Threatened status Commonwealth, populated from EPBC threatened fauna listing.
ts_nsw (Threat Status NSW)	TEXT(200)	For example, Endangered	Threatened status NSW, populated from BC Act threatened fauna listing.
pct_id (PCT ID)	DOUBLE	For example, 1206	The unique identifier for the Plant Community Type as supplied by Environment NSW.
pctid_cond (PCT ID_Condition)	TEXT(200)	For example, 834_Good	Combined PCT ID and condition assessment. Same name as used in the BAM-C.
vegzoneid (Vegetation Zone ID)	DOUBLE	For example, 1	Same ID as used in the BAM-C.
condition (Condition)	TEXT(200)	Excellent Very Good Good Poor Very Poor	-
area_ha (Area ha)	DOUBLE	For example, 1.87	Estimated area in hectares.
observe (Observations)	TEXT(500)	For example, Fledgling sighted on nest	Summary of field notes, any relevant observations or photo names/IDs if applicable.

## 2.8.11 Hollow bearing trees

This feature class is to record the occurrence of hollow bearing trees.

**Template geodatabase feature class name:**

project\_en\_eo\_hollowbearingtrees\_milestone\_originator\_coordinate\_yyyymmdd

**Table 14 – Hollow bearing trees attribute table schema (point features)**

Field name (alias)	Data type	Acceptable values	Description
tree_id (Tree ID)	DOUBLE	For example, 1	Number allocated to the tree.

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Field name (alias)	Data type	Acceptable values	Description
sciname (Scientific Name)	TEXT(200)	-	Scientific name of the species that this point represents.
commonname (Common Name)	TEXT(200)	-	Common name of the species that this point represents.
condition (Condition)	TEXT(20)	Very poor Poor Good Very good Excellent	Condition.
dbh_cm (DBH cm)	DOUBLE	-	Diameter at breast height in centimetres.
height_m (Height m)	DOUBLE	-	Height of tree in meters.
htrunk40 (Hollows in trunk <40mm)	LONG	For example, 3	Number of hollows in trunk <40mm diameter.
htrunk100 (Hollows in trunk 40-100mm)	LONG	For example, 2	Number of hollows in trunk 40-100mm diameter.
htrunk150 (Hollows in trunk 100-150mm)	LONG	For example, 1	Number of hollows in trunk 100-150mm diameter.
htrunk300 (Hollows in trunk 150mm-300mm)	LONG	For example, 2	Number of hollows in trunk 150-300mm diameter.
htrunkbig (Hollows in trunk >300mm)	LONG	For example, 0	Number of hollows in trunk >300mm diameter.
hlimb40 (Hollows in limb <40mm)	LONG	For example, 0	Number of hollows in limb <40mm diameter.
hlimb100 (Hollows in limb 40-100mm)	LONG	For example, 0	Number of hollows in limb 40-100mm diameter.
hlimb150 (Hollows in limb 100-150mm)	LONG	For example, 2	Number of hollows in limb 100-150mm diameter.
hlimb300 (Hollows in limb 150mm-300mm)	LONG	For example, 0	Number of hollows in limb 150-300mm diameter.
hlimbbig (Hollows in limb >300mm)	LONG	For example, 0	Number of hollows in limb >300mm diameter.
hfiss40 (Fissures <40mm)	LONG	For example, 0	Number of hollows in fissure <40mm diameter.
hfiss100 (Fissures 40-100mm)	LONG	For example, 1	Number of hollows in fissure 40-100mm diameter.
hfiss150 (Fissures 100-150mm)	LONG	For example, 0	Number of hollows in fissure 100-150mm diameter.
hfiss300 (Fissures 150mm-300mm)	LONG	For example, 0	Number of hollows in fissure 150-300mm diameter.
hfissbig (Fissures >300mm)	LONG	For example, 1	Number of hollows in fissure >300mm diameter.
datesurvey (Date of survey)	DATE	yyyy/mm/dd	Date of survey.

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Field name (alias)	Data type	Acceptable values	Description
observe (Observations)	TEXT(500)	-	Summary of field notes, any relevant observations or photo names/IDs if applicable.

## 2.8.12 Fauna habitat features

### Template geodatabase feature class name:

project\_en\_eo\_faunahabitatfeatures\_milestone\_originator\_coordinate\_yyyymmdd

**Table 15 – Fauna habitat features attribute table schema (polygon features)**

Field name (alias)	Data type	Acceptable values	Description
desc (Description)	TEXT(200)	For example, rock outcrop farm dam	Description of fauna habitat feature.

## 2.8.13 Core koala habitat

### Template geodatabase feature class name:

project\_en\_eo\_corekoalahabitat\_milestone\_originator\_coordinate\_yyyymmdd

**Table 16 – Core koala habitat attribute table schema (polygon features)**

Field name (alias)	Data type	Acceptable values	Description
site_name (Site Name)	TEXT(200)	For example, Cataract	Site name or ID if applicable. This field is optional.
rank (Rank)	TEXT(10)	Primary Secondary Tertiary	Current rank of the koala habitat.
rankfut (Future Rank)	TEXT(10)	Primary Secondary Tertiary	Future rank of the koala habitat.
p_restore (Priority Restoration)	TEXT(10)	Yes	Flagged for priority restoration.
area_ha (Area ha)	DOUBLE	-	Estimated area in hectares.

## 2.8.14 Fauna movement corridor

### Template geodatabase feature class name:

project\_en\_eo\_faunamovementcorridor\_milestone\_originator\_coordinate\_yyyymmdd

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**Table 17 – Fauna movement corridor attribute table schema (polygon features)**

Field name (alias)	Data type	Acceptable values	Description
sciname (Scientific Name)	TEXT(200)	For example, Phascolarctos cinereus	Scientific name of the species that this polygon represents.
commonname (Common Name)	TEXT(200)	For example, Koala	Common name of the species that this polygon represents.
condition (Condition)	TEXT(20)	Very poor Poor Good Very good Excellent	Condition.
ts_cwlth (Threat Status Cwlth)	TEXT(200)	For example, Vulnerable	Threatened status Commonwealth, populated from EPBC threatened fauna listing.
ts_nsw (Threat Status NSW)	TEXT(200)	For example, Endangered	Threatened status NSW, populated from BC Act threatened fauna listing.
area_ha (Area ha)	DOUBLE	For example, 1.87	Estimated area in hectares.
observe (Observations)	TEXT(500)	-	Summary of field notes, any relevant observations or photo names/IDs if applicable.

## 2.8.15 Fauna connectivity structures

### Template geodatabase feature class name:

project\_en\_eo\_faunaconnectivitystruct\_milestone\_originator\_coordinate\_yyyymmdd

**Table 18 – Fauna connectivity structures attribute table schema (point features)**

Field name (alias)	Data type	Acceptable values	Description
site_name (Site Name)	TEXT(200)	-	Site name or ID if applicable. This field is optional.
structtype (Structure Type)	TEXT(200)	Underpass – Culvert (drainage) Underpass – Culvert (combined purpose) Underpass – Culvert (dedicated fauna) Underpass – Bridge/Viaduct Overpass – Land bridge	Type of fauna crossing structure, if the fauna crossing type is not available in the list, please select other and specify the type in the comments field.

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Field name (alias)	Data type	Acceptable values	Description
		Overpass – Glide pole Overpass – Rope crossing Other (specify in comments)	
culverttyp (Culvert Type)	TEXT(200)	Pipe Single Cell Multi-cell	Type of culvert where applicable.
datesurvey (Date of survey)	DATE	yyyy/mm/dd	Date of survey.
length_m (Length m)	DOUBLE	For example, 15	Length of the structure in meters.
height_m (Height m)	DOUBLE	For example, 5	Height of the structure in meters.
substrate (Substrate)	TEXT(200)	For example, mulch natural vegetation	Specific to an underpass or culvert. Describes the floor covering of the underpass/culvert.
water (Water Present)	TEXT(10)	Yes No	Is the crossing structure full of water?
evidence (Evidence of Use)	TEXT(200)	For example, Observed Koala crossing Scat on ground	Evidence of use of the crossing by fauna.
condition (Condition)	TEXT(20)	Very poor Poor Good Very good Excellent	Condition of the current structure.
photo_id (Photo ID)	TEXT(200)	For example, P20220318-01.jpg	ID or name of the relevant photo.
observe (Observations)	TEXT(500)	-	Summary of field notes or any relevant observations.

## 2.8.16 Fauna connectivity barriers

### Template geodatabase feature class name:

project\_en\_eo\_faunaconnectivitybarrier\_milestone\_originator\_coordinate\_yyyymmdd

**Table 19 – Fauna connectivity barrier attribute table schema (line features)**

Field name (alias)	Data type	Acceptable values	Description
type (Barrier Type)	TEXT(100)	Fauna fence Non-fauna fence Other	Type of connectivity barrier, if other please specify the type in the comments field.

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Field name (alias)	Data type	Acceptable values	Description
fftype (Fauna Fence Type)	TEXT(100)	Floppy top Slippery top Other	Fauna fence type, if other please specify the type in the comments field.
condition (Condition)	TEXT(20)	Very poor Poor Good Very good Excellent	Condition of the barrier.
permeable (Permeability)	TEXT(100)	High Moderate Low	Permeability of the barrier.
datesurvey (Date of Survey)	DATE	yyyy/mm/dd	Date of survey.
length_m (Length m)	DOUBLE	For example, 15	Length of the structure in meters.
height_m (Height m)	DOUBLE	For example, 5	Height of the structure in metres.
observe (Observations)	TEXT(500)	-	Summary of field notes, any relevant observations or photo names/IDs if applicable.

## 2.8.17 Fauna injury and roadkill record

### Template geodatabase feature class name:

project\_en\_eo\_faunainjuryroadkill\_milestone\_originator\_coordinate\_yyyymmdd

**Table 20 – Fauna injury record attribute table schema (point features)**

Field name (alias)	Data type	Acceptable values	Description
date (Date Found)	DATE	yyyy/mm/dd	Date of animal found.
sciname (Scientific Name)	TEXT(200)	-	Scientific name of the species that this point represents.
commonname (Common Name)	TEXT(200)	-	Common name of the species that this point represents.
loc_desc (Location Description)	TEXT(200)	For example, East bound shoulder, road surface East bound, roadside clearing, 500m north of roundabout	Location description.
barrier (Barrier)	TEXT(5)	Yes No	Is there a concrete medium barrier present?
observe (Observations)	TEXT(500)	For example, Euthanised	Summary of field notes, any relevant observations or photo names/IDs if applicable.

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## 2.8.18 Key fish habitat

### Template geodatabase feature class name:

project\_en\_eo\_keyfishhabitat\_milestone\_originator\_coordinate\_yyyymmdd

**Table 21 – Key fish habitat attribute table schema (polygon features)**

Field name (alias)	Data type	Acceptable values	Description
site_name (Site Name)	TEXT(200)	For example, Burrill Lake	Site name if applicable. This field is optional.
type (Type)	TEXT(200)	For example, Coastal wetland	Description of the type of fish habitat.

## 3 Document history

Version	Published date	Summary of changes
1.0	December 2022	First release of the document.

## 4 Contact

For all requests regarding non-standard digital GIS file types, submissions of schema and geometry for review, and any other enquiries regarding the provision of GIS Datasets please contact Spatial Project Services via email on [SpatialProjectServices@transport.nsw.gov.au](mailto:SpatialProjectServices@transport.nsw.gov.au).

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