

# Ecological Data Exchange Specification (working title)

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**Status: Draft** - while the document is in draft, sections of the document may contain placeholders such as **TBA** and **TBD**.

## 1. Metadata

<b>IRI</b>	<a href="https://linked.data.gov.au/def/r1p/spec">https://linked.data.gov.au/def/r1p/spec</a> (TBC)
<b>Title</b>	Ecological Data Exchange Specification (working title)
<b>Definition</b>	This document lists the normative requirements for data aiming to conform to the TERN Ecosystem Surveillance Ecological Monitoring Protocols. It is to be used as the authoritative, human-readable list of individual requirements from which profile artefacts such as validators are derived from.
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<b>Creator</b>	<a href="#">TERN</a>
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<b>License</b>	<a href="#">Creative Commons Attribution 4.0 International (CC BY 4.0)</a>

**Further information** This document is part of the Services Agreement for the provision of standardised ecological monitoring protocols and systems for data collection, storage and management.

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Water and the Environment  
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The University of Queensland as represented by TERN  
ABN 63 942 912 684 (**Service Provider**)

**Alternate document formats** [PDF](#)

## 2. Preamble

### 2.1. Abstract

TERN Ecosystem Surveillance have developed 19 modules to standardise ecological monitoring protocols for data collection. The working title for the monitoring protocols is *TERN Ecosystem Surveillance Ecological Monitoring Protocols*.

TERN Data Services and Analytics is developing a standardised data exchange specification to support the exchange of data collected using TERN Ecosystem Surveillance Ecological Monitoring Protocols. The working title for the data exchange specification is *Ecological Data Exchange Specification*.

The Ecological Data Exchange Specification is a profile of the ecological data model known as the [TERN Ontology](#). Data that is conformant to the Ecological Data Exchange Specification is also conformant to the TERN Ontology.

### 2.2. Normative Status

This specification is normative for the exchange of data collected using TERN Ecosystem Surveillance Ecological Monitoring Protocols.

### 2.3. Standard Parts

This specification document is one of many resources that together form the Ecological Data Exchange Specification Profile.

Other parts of this standard include:

**TBA.**

## 2.4. Namespaces

Prefix	Namespace	Name	Description
<b>sosa:</b>	<a href="http://www.w3.org/ns/sosa">http://www.w3.org/ns/sosa</a>	SOSA	Sensor, Observation, Sample, and Actuator (SOSA) is a semantic data model to represent observations and samplings.
<b>tern:</b>	<a href="https://www.3id.org/tern/ontology/tern/">https://www.3id.org/tern/ontology/tern/</a>	TERN Ontology	A profile of SOSA and PROV with minor additions to represent ecological field survey data.
<b>unit:</b>	<a href="http://qudt.org/vocab/unit/">http://qudt.org/vocab/unit/</a>	QUDT Units vocabulary	A vocabulary of <i>units of measure</i> defined using the QUDT semantic data model.

## 3. Requirements

### 3.1. Domain Model Conformance

Requirements define the rules and constraints which data must conform to in order to be valid.

A *status* is assigned to each requirement. The *status* code list used in this document is defined by the [Registry ontology](#) and a subset of the status codes are redefined here:

- **submitted** - A proposed entry which is not yet approved for use for use. Corresponds to ISO 19135:(redraft) 'submitted'.
- **invalid** - An entry which has been invalidated due to serious flaws, distinct from retirement. Corresponds to ISO 19135(redraft) 'invalid'.
- **stable** - An entry that is seen as having a reasonable measure of stability, may be used to mark the full adoption of a previously 'experimental' entry.

#### 3.1.1. Plot Description Module Conformance Class Requirements

Requirements that have been accepted and are **stable** are marked with a green check mark.

For example:

Property	Value
Status	<b>stable</b> ✓

##### 3.1.1.1. Slope Observation

#### 3.1.1.1.1. Feature type

Property	Value
Identifier	<code>urn:shapes:plot-description:slope:feature-type</code>
Label	Feature type
Definition	Instances of <code>tern:Observation</code> with <code>sosa:observedProperty</code> value <i>TBA</i> <i>MUST</i> have a <code>tern:featureType</code> with the value <i>landform</i> .
Comment	TERN's ecologists have determined the feature type is <i>landform</i> , defined by the <a href="#">Australian Soil and Land Survey Field Handbook</a> .
Status	<i>submitted</i>
Conformance Classes	<i>TBA</i>
Source	TERN Ecosystem Surveillance Ecological Monitoring Protocols
Validators	<code>/shapes/plot-description/slope/shapes.ttl</code>
Examples	Valid: <code>/shapes/plot-description/slope/valid.ttl</code>  Invalid: <code>/shapes/plot-description/slope/invalid.ttl</code>

#### 3.1.1.1.2. Simple result

Property	Value
Identifier	<code>urn:shapes:plot-description:slope:simple-result</code>
Label	Simple result
Definition	Instances of <code>tern:Observation</code> with <code>sosa:observedProperty</code> value <i>TBA</i> <i>MUST</i> have a <code>tern:hasSiteVisit</code> relationship.
Comment	Observations following the Plot Description protocol are made in the context of a site visit.
Status	<i>submitted</i>
Conformance Classes	<i>TBA</i>
Source	TERN Ecosystem Surveillance Ecological Monitoring Protocols
Validators	<code>/shapes/plot-description/slope/shapes.ttl</code>
Examples	Valid: <code>/shapes/plot-description/slope/valid.ttl</code>  Invalid: <code>/shapes/plot-description/slope/invalid.ttl</code>

#### 3.1.1.1.3. Site visit

Property	Value
Identifier	<code>urn:shapes:plot-description:slope:site-visit</code>

Property	Value
Label	Site visit
Definition	Instances of <code>tern:Observation</code> with <code>sosa:observedProperty</code> value <i>TBA</i> <i>MUST</i> have a <code>tern:hasSiteVisit</code> relationship.
Comment	Observations following the Plot Description protocol are made in the context of a site visit.
Status	<code>submitted</code>
Conformance Classes	<i>TBA</i>
Source	TERN Ecosystem Surveillance Ecological Monitoring Protocols
Validators	<code>/shapes/plot-description/slope/shapes.ttl</code>
Examples	Valid: <code>/shapes/plot-description/slope/valid.ttl</code>  Invalid: <code>/shapes/plot-description/slope/invalid.ttl</code>

#### 3.1.1.1.4. Unit of measure

Property	Value
Identifier	<code>urn:shapes:plot-description:slope:unit-of-measure</code>
Label	Unit of measure
Definition	Instances of <code>tern:Observation</code> with <code>sosa:observedProperty</code> value <i>TBA</i> <i>MUST</i> have a <code>sosa:hasResult</code> where the value node has the property <code>tern:unit</code> with the value <code>unit:DEG</code> .
Comment	Result value's unit of measure must have the value <code>unit:DEG</code> .
Status	<code>submitted</code>
Conformance Classes	<i>TBA</i>
Source	TERN Ecosystem Surveillance Ecological Monitoring Protocols
Validators	<code>/shapes/plot-description/slope/shapes.ttl</code>
Examples	Valid: <code>/shapes/plot-description/slope/valid.ttl</code>  Invalid: <code>/shapes/plot-description/slope/invalid.ttl</code>

#### 3.1.1.1.5. Used procedure

Property	Value
Identifier	<code>urn:shapes:plot-description:slope:used-procedure</code>
Label	Used procedure

Property	Value
Definition	Instances of <code>tern:Observation</code> with <code>sosa:observedProperty</code> value <i>TBA</i> <i>MUST</i> have a <code>sosa:usedProcedure</code> where the value is <a href="https://linked.data.gov.au/def/test/dawe-cv/1ff9e97c-3bdd-44c9-bdd3-401fa31c0b32">https://linked.data.gov.au/def/test/dawe-cv/1ff9e97c-3bdd-44c9-bdd3-401fa31c0b32</a> .
Comment	IRI of procedure must have the value <a href="https://linked.data.gov.au/def/test/dawe-cv/1ff9e97c-3bdd-44c9-bdd3-401fa31c0b32">https://linked.data.gov.au/def/test/dawe-cv/1ff9e97c-3bdd-44c9-bdd3-401fa31c0b32</a> .  <a href="https://linked.data.gov.au/def/test/dawe-cv/1ff9e97c-3bdd-44c9-bdd3-401fa31c0b32">https://linked.data.gov.au/def/test/dawe-cv/1ff9e97c-3bdd-44c9-bdd3-401fa31c0b32</a> is the IRI for "Plot Description".
Status	<i>submitted</i>
Conformance Classes	<i>TBA</i>
Source	TERN Ecosystem Surveillance Ecological Monitoring Protocols
Validators	<i>/shapes/plot-description/slope/shapes.ttl</i>
Examples	Valid: <i>/shapes/plot-description/slope/valid.ttl</i>  Invalid: <i>/shapes/plot-description/slope/invalid.ttl</i>

#### 3.1.1.1.6. Value range

Property	Value
Identifier	<i>urn:shapes:plot-description:slope:value-range</i>
Label	Value range
Definition	Instances of <code>tern:Observation</code> with <code>sosa:observedProperty</code> value <i>TBA</i> <i>MUST</i> have a <code>sosa:hasResult</code> where the value is between 0 and 90 inclusive.
Comment	Value must be between 0 and 90 inclusive.
Status	<i>submitted</i>
Conformance Classes	<i>TBA</i>
Source	TERN Ecosystem Surveillance Ecological Monitoring Protocols
Validators	<i>/shapes/plot-description/slope/shapes.ttl</i>
Examples	Valid: <i>/shapes/plot-description/slope/valid.ttl</i>  Invalid: <i>/shapes/plot-description/slope/invalid.ttl</i>

#### 3.1.1.1.7. Value type

Property	Value
Identifier	<i>urn:shapes:plot-description:slope:value-type</i>
Label	Value type

Property	Value
Definition	Instances of <code>tern:Observation</code> with <code>sosa:observedProperty</code> value <i>TBA</i> <i>MUST</i> have a <code>sosa:hasResult</code> where the value node must be a <code>tern:Float</code> .
Comment	Value must be a <code>tern:Float</code> .
Status	<code>submitted</code>
Conformance Classes	<i>TBA</i>
Source	TERN Ecosystem Surveillance Ecological Monitoring Protocols
Validators	<code>/shapes/plot-description/slope/shapes.ttl</code>
Examples	Valid: <code>/shapes/plot-description/slope/valid.ttl</code>  Invalid: <code>/shapes/plot-description/slope/invalid.ttl</code>

## 3.2. Slope Class Observation

## 3.3. TERN Ontology Conformance

*TBD.*

# 4. Editors Notes

## 4.1. Placeholders

### 4.1.1. Placeholder text

Placeholder values *TBA*, *TBD* and *TBC* must be replaced with actual values.

### 4.1.2. Placeholder IRIs

IRIs of controlled vocabularies are currently placeholders with the namespace <https://linked.data.gov.au/def/test/dawe-cv/>. These IRIs must be replaced once the authoritative IRI is known.