



Intergovernmental Committee on Surveying and Mapping



ePlan Working Group

ePlan Protocol

Document Reference: ePlan Protocol
Version Number: 1.2
Version Date: 10 September 2009

COPYRIGHT

© The Intergovernmental Committee for Surveying and Mapping, Australia 2009.

AMENDMENT HISTORY

Version	Date	Authors	Comments
Draft	21/03/2009	Nevil Cumerford	First release of document
1.1	21/05/2009	Nevil Cumerford	Editorial Changes.
1.2	6/08/2009	Nevil Cumerford	Correction to HeadOfPower element to be consistent with LandXML1.2

DOCUMENT ENDORSEMENT

The signing Review Representatives certify that this document completely satisfy all agreed business requirements.

Review Title : **Document Name**

Date of Endorsement : _____.

Endorsed By:

Signature	Name	Title	Date
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __
_____	_____	_____	__ / __ / __

TABLE OF CONTENTS

1.	INTRODUCTION.....	1
1.1	PURPOSE OF DOCUMENT.....	2
1.2	SCOPE OF DOCUMENT.....	2
1.3	REFERENCES.....	2
1.4	ABBREVIATION.....	2
1.5	STAKEHOLDERS.....	2
1.6	ISSUES AND RISKS.....	ERROR! BOOKMARK NOT DEFINED.
2.	TECHNICAL REQUIREMENTS EPLAN PROTOCOL.....	3
2.1	LANDXML ROOT.....	3
2.2	UNITS.....	4
2.3	COORDINATE SYSTEMS.....	5
2.4	APPLICATION.....	6
2.5	FEATURE DICTIONARY.....	7
2.6	AMENDMENT.....	8
	2.6.1 Amendment.....	8
	2.6.2 AmendmentItem.....	9
2.7	CGPOINTS.....	10
2.8	SURVEY.....	13
2.9	SURVEY HEADER.....	13
	2.9.1 Header of Power.....	18
	2.9.2 Purpose of Survey.....	18
	2.9.3 Administrative Dates.....	18
	2.9.4 Administrative Area.....	20
	2.9.5 Survey Annotation.....	21
	2.9.6 Personnel.....	22
	2.9.7 Surveyor Certificate.....	23
2.10	OBSERVATIONS.....	24
	2.10.1 Instrument Setup.....	26
	2.10.2 Reduced Observation.....	27
	2.10.3 Reduced Arc Observation.....	29
	2.10.4 Horizontal Position.....	31
	2.10.5 Vertical Position.....	33
2.11	PARCEL.....	35
	2.11.1 Parcel.....	36
	2.11.2 Title.....	42
	2.11.3 Exclusion Area.....	42
	2.11.4 Plan Feature.....	43
2.12	GEOMETRY.....	44
	2.12.1 Coordinate Geometries.....	46
	2.12.2 Line.....	46
	2.12.3 Irregular Line.....	48
	2.12.4 Curve.....	49
	2.12.5 Volume.....	50
2.13	ADDRESS.....	51
	2.13.1 Location Address.....	52
	2.13.2 Complex Name.....	55
	2.13.3 Road Name.....	55
	2.13.4 Administrative Area.....	55
	2.13.5 Address Geocode.....	55
2.14	MONUMENTS.....	57

2.14.1 Surface	59
APPENDIX A - GLOSSARY	60

END OF TABLE OF CONTENTS

1. INTRODUCTION

Plans of survey are fundamentally the same throughout Australia. A national working group sponsored by the Intergovernmental Committee for Surveying and Mapping (ICSM) was formed to develop a national model to transfer digital cadastral survey data between the surveying industry and government agencies. The model needed to support all of the functions of the present Cadastral Survey Plan as well as being consistent with the Harmonised Data Framework of Australia to ensure that the Cadastral Transfer protocol also supports a standardised approach to cadastral data management.

Digital Plan Lodgement is a topic of discussion that has been around for some time. New Zealand has developed a system of digital lodgement and automated processing that is now in production. New Zealand invested an enormous sum of money in developing this system and Australia took a watching brief over the New Zealand initiative. The New Zealand System is a fully integrated system and included the development of the Land Online Portal and associated application.

Digital Plan Lodgement in Australia has adopted a different approach to that of New Zealand but has drawn heavily on New Zealand's experiences. The significant difference being that all Australian Jurisdictions have existing systems, be they computerised or manual, that are used to manage and use Cadastral Survey Data.

This initiative could only look at the transfer protocol rather than the systems it supported, hence this model had 3 main elements:

- The model could not dictate the final business processes of a jurisdiction.
- The model must contain all elements currently shown on a Cadastral Survey Plan.
- The model must support the Harmonised Data Framework of Australia to enable a national approach to Cadastral data Management.

The outcome is a data model that has been agreed upon by the working group and recommended to ICSM as the national model for ePlan. This is expected to be adopted as a national standard and as such will give the CAD and engineering package vendors the business incentive to develop interfaces to accommodate ePlan.

It is the ePlan model that has been adopted as the model for the ePlan Protocol. An instance of this protocol is called a Cadastral Information File (CIF) and will contain all of the information that currently appears on the Plans of Survey submitted to the Agencies for registration as well as other administrative information.

The EARL project in Queensland has exercised the ePlan model by capturing the information displayed on paper based plans into digital format and creating a CIF which has then be subjected to an automated validation process based on the current business practices.

There is also a requirement for the CIF be reproduced in hard copy format to display the information captured from the paper copy of the plan.

1.1 Purpose of Document

The Purpose of this document is to describe the ePlan Protocol which is a mapping of the LandXML Schema to the ePlan Model.

1.2 Scope of Document

The scope of this document is to define the relationships of the LandXML to the ePlan Model.

1.3 References

Enterprise Architect UML Class Diagram for ePlan in the SIP Document Repository. (Eplan4.EAP)
The LandXML Schema Version 1.2 sourced from www.LandXML.org
ePlan Model

1.4 Abbreviation

- CIF - Cadastral Infrastructure File is a LandXML Instance equivalent to a survey plan.
- ICSM – Intergovernmental Committee for Surveying and Mapping
- XML – Extensible Mark-up Language
- EDAIS – Electronic Development Assessment Interchange Schema
- NECS – National Electronic Conveyancing

For a More Extensive Glossary See Appendix A.

1.5 Stakeholders

The stakeholders to this document include

- Member Jurisdictions of the ICSM
- The Surveying Industry
- The Software Vendors to the Surveying Industry.

2. TECHNICAL REQUIREMENTS EPLAN PROTOCOL

The ePlan Protocol has been developed using the LandXML Standard and mapping its elements and attributes to the ePlan Model. The latest copy of this model can be found on the ICSM Web Site.

There are several elements in the Protocol that do not map to the ePlan Model. These are usually metadata elements about the LandXML Instance (ie Units) or required by the LandXML to implement the ePlan Model (ie Instrument Setup)

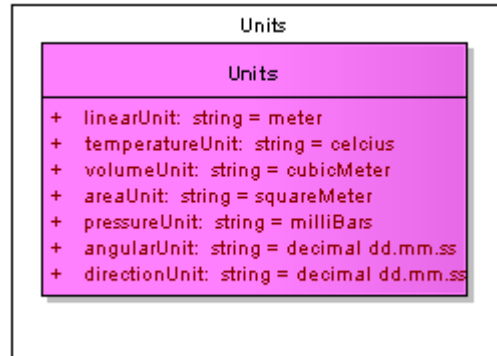
2.1 LandXML Root

These are attributes of the LandXML Root element used for version control of the CIF

Attribute	Type	Req	Note	ePlan Model
date	String	R	Date of this version of the CIF	Survey:Document:versionDate
time	String	R	Time of this version of the CIF	Survey:Document:versionDate
version	String	R	Version of this CIF	Survey:Document:VersionNumber

2.2 Units

This element defines the units used by the CIF. This is a mandatory element in LandXML only one is required.

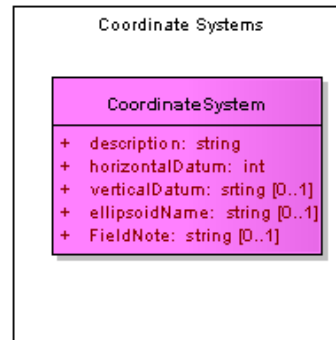


Attribute	Type	Req	Note	ePlan Model
linearUnit	String	R	Set to "meter"	Not Mapped
temperatureUnit	String	R	Set to "celsius"	Not Mapped
volumeUnit	String	R	Set to "cubicMeter"	Not Mapped
areaUnit	String	R	Set to "squareMeter"	Not Mapped
pressureUnit	String	R	Set to "milliBars"	Not Mapped
angularUnit	String	R	Set to "decimal dd.mm.ss"	Not Mapped
directionUnit	String	R	Set to "decimal dd.mm.ss"	Not Mapped

2.3 Coordinate Systems

This element identifies the coordinate system used to define the survey. Only certain values can be used in this element. The Coordinate System Element is to describe the datum in which the survey is being presented. It may be being presented on MGA or a local arbitrary system.

This is a mandatory element, only one of these elements is required.



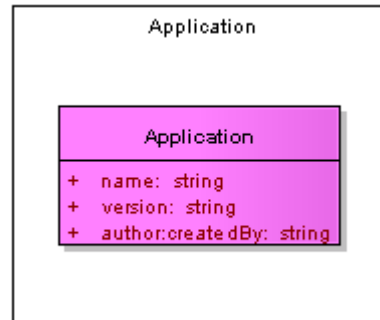
The LandXML can also use the ISO Standard GML definitions of coordinate systems. However the ePlan file need only reference the system being used not define it, hence the simplicity of this element. It should also be noted that a significant number of surveys still use the meridian of adjoining surveys for the bearings and terrain height distances.

Attribute	Type	Req	Note	ePlan Model
description	String	CR	If the horizontalDatumName is Arbitrary or Local then the description is used to define the orientation. For Example Oriented to SP12345.	CoordinateSystem:Description
horizontalDatum	String	R	The name of the Coordinate System. They should be from a defined list.	CoordinateSystem:HorizontalDatumName
verticalDatum	String	CR	This is the datum for the published heights in the file. It will be picked from a list of known value	CoordinateSystem:VerticalDatumName
elipsoidName	String	CR	The Name of the Ellipsoid for computational purposes	CoordinateSystem:ElipsoidName
FieldNote	String	O		CoordinateSystem:Note

2.4 Application

This element records the metadata about the application used to create the CIF for example SIP 1.5.63

This is a mandatory element. Only one of these elements is required.

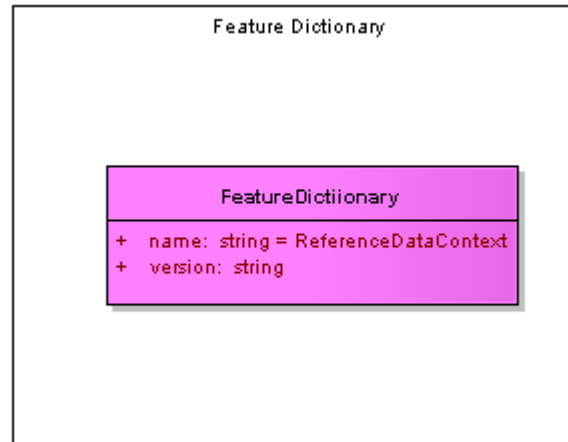


Attribute	Type	Req	Note	ePlan Model
name	String	R	The name of the application that created this instance of the CIF	Not Mapped
version	String	R	The version of the application that created this instance of the CIF	Not Mapped
Author:createdBy	String	O	This is the name of the operator that created this instance of a CIF	Not Mapped

2.5 Feature Dictionary

The Feature Dictionary Element is used to specify the enumeration set used for this CIF.

Only One of these elements is required.

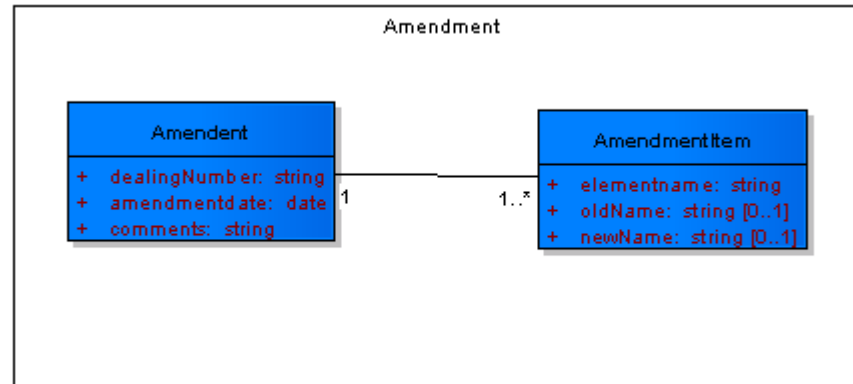


Attribute	Type	Req	Note	ePlan Model
name	String	R	Default Value is "ReferenceDataContext"	Not Mapped
version	String	R	The version of the Reference Data Files	Not Mapped

2.6 Amendment

This is a requirement to enable the internal tracking of amendments to the file. The Amendment package is included so that any changes to the file, specifically after registration can be audited and easily identified. This is a legislative requirement.

If there is any amendment record then there must be at least one amendmentItem record.



2.6.1 Amendment

This element is to record the Dealing information to allow an audit trail between the survey document and the titling system.

In Queensland if a plan is amended post registration we need to be able to show directly the changes made as well as record a dealing in ATS to identify the changes.

Attribute	Type	Req	Note	ePlan Model
dealingNumber	String	CR	When an amendment is made, specifically after registration then a dealing describing the action must be lodged to provide an audit trail.	Amendment: dealingNumber
amendmentDate	Date	R	The date that the amendment took affect.	Amendment: ammdendmentDate
comments	String	R	A short note as to the reason for the change and what it entails.	Amendment: comments

2.6.2 AmendmentItem

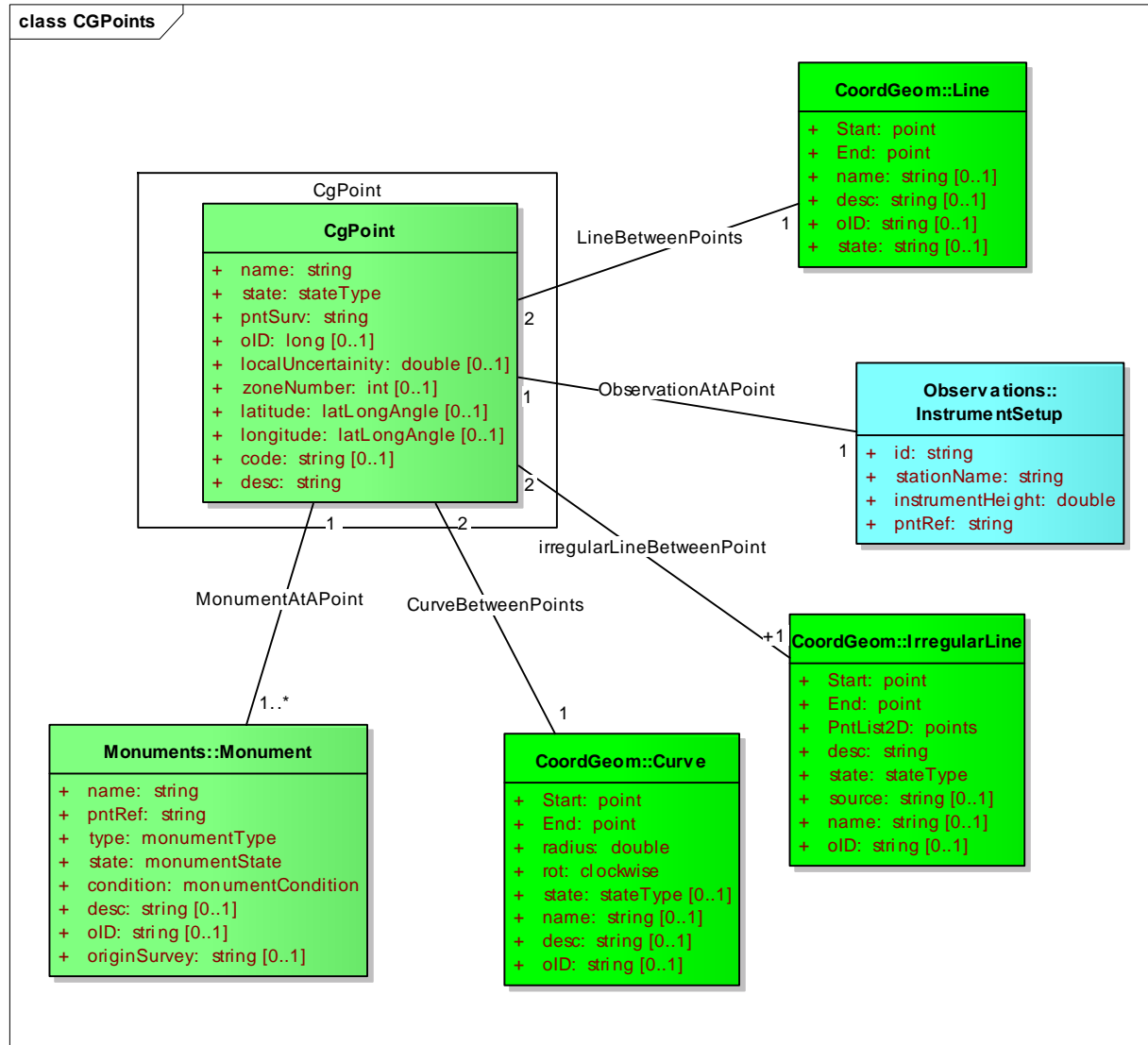
This element identifies the individual amendments identified by the amendment element.

Attribute	Type	Req	Note	ePlan Model
elementName	String	R	The elementName is the name of the element to which the named object belongs for example if we are replacing an observation then the elementname is Observation	AmendmentItem: elementName
oldName	String	CR	If no oldName is supplied it means that a new element is being added to the file	AmendmentItem:oldname
newName	String	CR	If no newName is supplied it means that an element is deleted from the file. To remove an element its state is changed to deleted.	AmendmentItem: newName

2.7 CgPoints

This is a list of all CgPoints within the file. A CgPoint may relate to Boundary Points, Traverse Point or Reference Mark. A Permanent Survey Mark is also a CgPoint. Survey points define the nodes that are used on the survey plan. This element maps to the ePlan Model Survey Point Class.

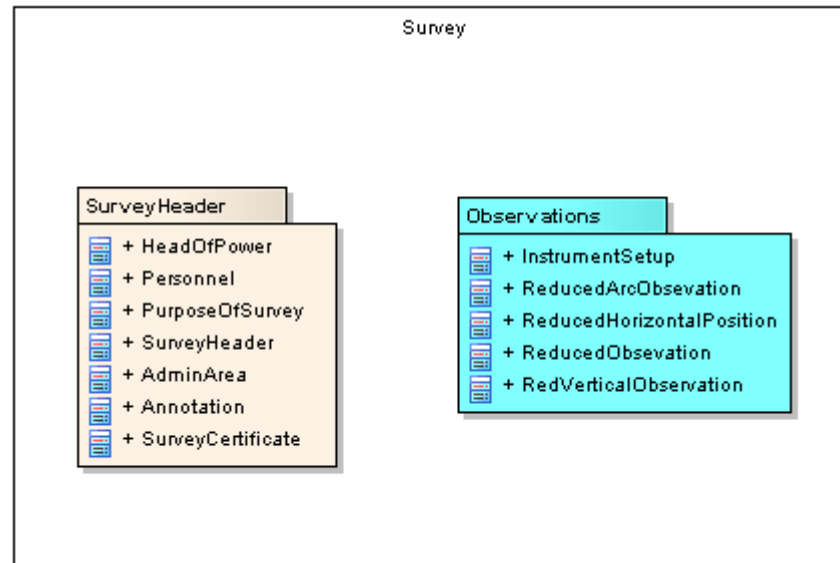
Only one CgPoint Collection is used per instance hence all points in the survey must be contained in the CgPoint List.



Attribute	Type	Req	Note	ePlan Model
name	String	R	Name of point in the survey. The name must be unique on the plan. Some jurisdictions may use a local convention to name these points. Traditionally the station Number has been a number or letter. The convention used for station names is if the point is used in the survey it is given a numeric or numeric-alpha identifier. If it is adjoining information the point is given an alpha identifier.	SurveyPoint:name
state	String	R	Standard lists of states	SurveyPoint: state
pntSurv	String	R	Indicates the type of survey point, i.e. Boundary, traverse, Reference mark.	SurveyPoint:pntSurv
oID	String	O	Official identifier of node. If the Node is an existing point this is the persistent Identifier of the Node. NOTE points created by the subject survey will not have an oID.	SurveyPoint:oID
localUncertainty	Double	O	The Local Uncertainty of the Survey Point in Meters	SurveyPoint:localUncertainty
zonenumber	Integer	CR	Refers to the Map grid zone in which the point lies. This depends on the Coordinate Framework of the survey.	SurveyPoint:zoneNumber
Latitude	Angle	O	The Latitude of the Point	SurveyPoint:latitude
Longitude	Angle	O	The Longitude of the Point	SurveyPoint:longitude
code	String	O	The Code of the Station, Link to other Survey systems such as the geodetic framework.	SurveyPoint:code
desc	String	O	Optional description of the element	SurveyPoint: desc

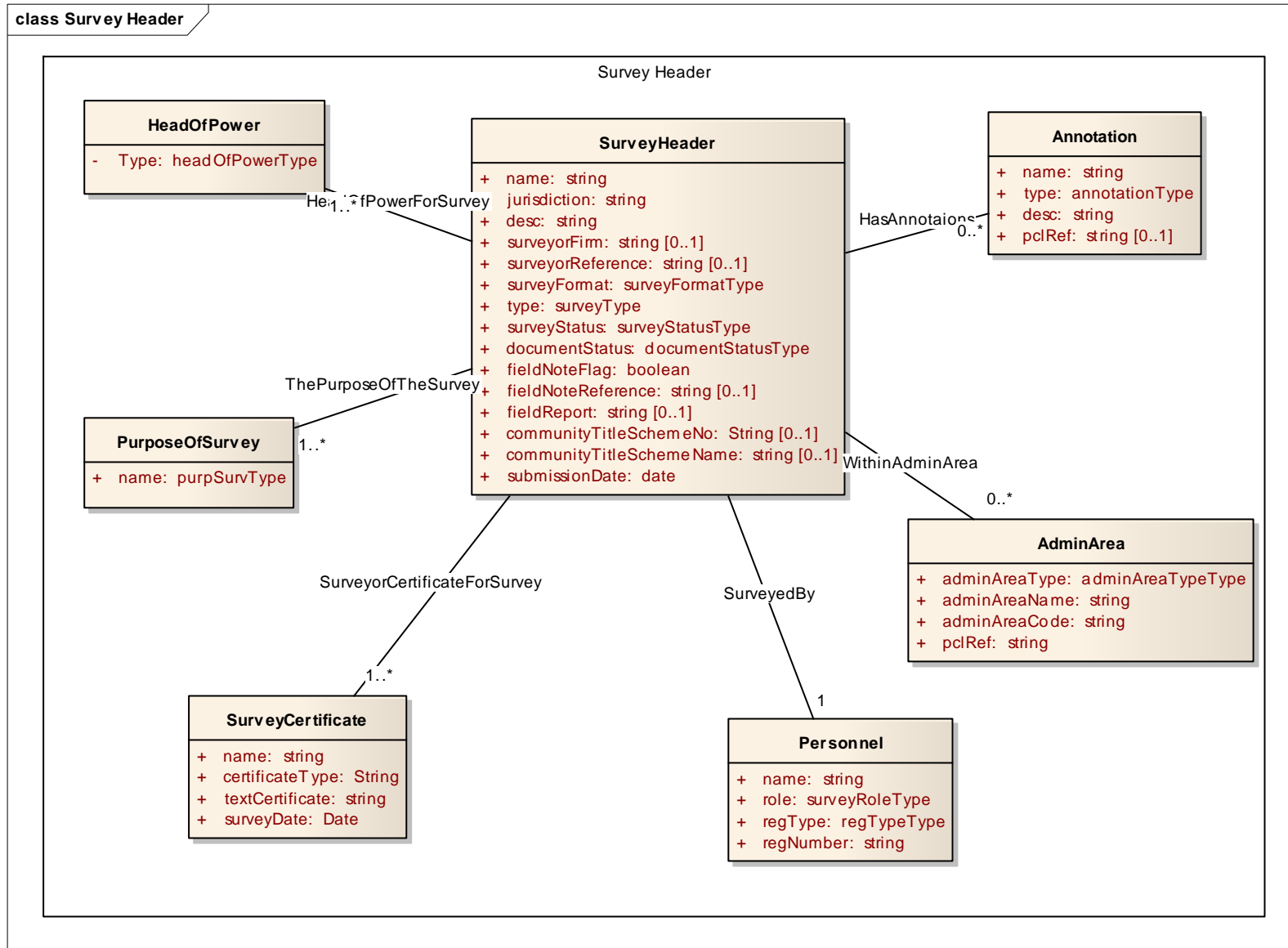
2.8 Survey

This element contains attributes which contain metadata about the survey and its observations. Only one survey element is required.



2.9 Survey Header

The survey Header element has several sub-elements and relates to the Survey Element in the ePlanModel.



Attribute	Type	Req	Note	ePlan Model
name	String	R	This is the unique number for the survey. This is analogous to the existing plan number	Survey:Document:name
jurisdiction	String	R	This is the jurisdiction in which the plan is to be dealt with (i.e Queensland). This field will define the set of jurisdictional business rules that the plan audit will follow.	Survey:Document:jurisdiction
desc	String	R	This attribute is used to define the parcels and interests being created by this survey. i.e. Lots 1-3 and Easement A	Survey:Survey:SurveyDesc
surveyorFirm	String	O	The Surveying Firm undertaking the survey. They may not be a registered entity.	Survey:SurveyDocument:Surveyor Firm
surveyorReference	String	O	The Surveyors File reference for the survey	Survey:SurveyDocument::Survey Reference
surveyFormat	String	R	This is the type of survey (ie Volumetric). Some of these terms may be jurisdictionally specific . Each Jurisdiction can provide a list as required.	Survey:SurveyDocument: surveyFormat
type	SurveyType	R	This element identifies if a plan has been surveyed or compiled. It should be noted that a survey plan could be an “about” dimensional plan but is still a survey. Compiled denotes that the record was compiled completely from other sources.	Survey:Survey:surveyType
surveyStatus	String	O	The Status gives an indication of the reason for lodgement of this file. For example it may be being lodged as a record of survey only or for pre-examination and is not yet suitable for lodgement	SurveyHeader:surveyStatus
documentStatus	Char	O	This element indicates if a document has been lodged digitally (i.e. is the legal record), has been data captured for digital processing or is an historical capture. It is defined by a jurisdictional enumeration.	Surveyheader: documentStatus

FieldNoteFlag	Boolean	O	<p>This is a field to indicate if sets of field notes have been lodged separately. For example in Queensland if a tidal boundary is being redetermined then an extensive report is required to substantiate to reinstatement.</p> <p>In this case the field report is stored under separate cover under the reference o the plan number.</p>	SurveyHeader: fieldNoteFlag
fieldNoteReference	String	O	<p>In some jurisdictions field notes are stored under a separate numbering system, in some jurisdictions these are pre issued numbers</p>	SurveyHeader: fieldNoteReference
field Report	String	O	<p>This is a note field to enable a surveyor to give a brief description of the field survey. If this report is extensive i.e. a report on the complex determination of an ambulatory boundary then a separate report should be filed. In that case reference should be made here to that report and its content.</p>	FieldNote
SchemeNo	String	CR	<p>All scheme land has a community title scheme number assigned to it. This field must have an entry for any scheme land (i.e. where there is reference to common property.</p> <p>This field is a system generated field and may not be known by the consultant at submission so it may be left blank.</p>	SurveyHeader:communityTitlesSc hemaNo

SchemeName	String	CR	<p>Community Titles Schemes require the name to be attached. A survey may deal with many schemes so multiplicity must be for many.</p> <p>This is a mandatory field for all scheme land, i.e. a consultant should always know the scheme name, even a new scheme.</p> <p>: is Known - If a communityTitleSchemeNo is given then the scheme is an existing scheme and therefore must have a name. In which case the name must be given.</p> <p>: is required - If the Survey Format is Building Format or at least one of the new parcels is a parcel type of common property then a scheme name must be given here.</p>	SurveyHeader: communityTitleSchemeName
submissionDate	Date	O	This is the date that the first instance of the file was submitted or created by data capture	Survey:Document: submissionDate
headOfPower	String	O	This is the legislative regime under which the plan was prepared (ie the Land Title Act 1994). These acts will be specific to a jurisdiction but can be enumerated. A survey may be conducted under more than one Head of Power. See Jurisdictional Lists for data elements	SurveyHeader: headOfPower

2.9.1 Header of Power

This defines the Heads of Power under which the survey was conducted. A survey could have several Heads of Power.

Attribute	Type	Req	Note	ePlan Model
Name	String	O	This is the legislative regime under which the plan was prepared (ie the Land Title Act 1994). These acts will be specific to a jurisdiction but can be enumerated. A survey may be conducted under more than one Head of Power. See Jurisdictional Lists for data elements	Survey:SurveyDocument:headOfPower

2.9.2 Purpose of Survey

A survey could have many purposes such as Subdivision, Easement, Lease etc

Attribute	Type	Req	Note	ePlan Model
Name	String	R	This attribute details the purpose of survey (ie Subdivision) and is a enumerated list which is jurisdictional specific. A survey can have more than one purpose and the business rules which associate purposes can be defined within the Jurisdiction.	Survey:Survey:purposeOfSurvey

2.9.3 Administrative Dates

This element allows the jurisdiction to define a set of dates required on a survey. The Types of dates can be defined in the jurisdictional schemas

Attribute	Type	Req	Note	ePlan Model
-----------	------	-----	------	-------------

adminDateType	String	R	A defined list of date types for a jurisdiction, ie valuation date.	Survey:Survey:AdministrativeDate
adminDate	Date	R	The date for the Date Type	Survey:Survey:AdministrativeDate

2.9.4 Administrative Area

A Survey Plan needs to reference many different administrative areas, which may affect the processing of a plan, or are used as a geo-code. For example we may need to know what parts of the plan lie in a particular parish but we do not want to define the whole parish. Another example is that the parcel may lie within a beach protection area, which may require additional consents. This object will handle Locality, Parish, County, Local Authority, and other more specific ones such as Beach protection zones etc. All Files must have at least 1 Local Government and then depending on Jurisdiction at least 1 Locality, Parish, and County etc

Attribute	Type	Req	Note	ePlan Model
adminAreaType	String	R	<p>This element stores the Text of Administrative boundaries for a survey. If the boundary needs to be graphically defined then a parcel record for the area is required</p> <p>These are jurisdictionally specific. Examples would be Local Government.</p>	Survey:AdministrativeArea: adminAreaType
adminAreaName	String	R	<p>This is the full text name of the admin Area ie Brisbane City. The will be jurisdictionally specific within admin area types.</p> <p>The enumerations are not specified in LandXML and will need to be specified at the jurisdictional level.</p>	Survey:AdministrativeArea: adminAreaName
adminAreaCode	String	O	<p>This is the standard code used for a particular boundary for example the Local Authority Code. These may be local codes or ANZLIC codes depending on the nature of the boundary.</p>	Survey:AdministrativeArea: adminAreaCode
pclRef	String	O	<p>This is a reference to a parcel if the admin areas needs to be described spatially in the survey for example to allocate the parcel.</p>	Survey:AdministrativeArea: pclRef

2.9.5 Survey Annotation

The Survey Annotation element is to enable the surveyor to annotate the plan with statements required under specific legislation. These annotations are not managed by either the LandXML Schema or the HDM. They are required to clarify the land management process, specifically from a clients perspective for example Road to be Opened, Area to be excised etc. Often these annotations are required by specific legislation and business processes.

Attribute	Type	Req	Note	ePlan Model
Type	String	R	<p>This is a category of annotation and would be a defined list per jurisdiction. An Annotation could be based on the plan as a general statement or specific to a parcel or number of parcels. An Example would be a Compilation Certificate or Area of New Road etc</p> <p>The full text of an annotation is usually defined by jurisdictional regulations and guidelines.</p> <p>The Type field will be used to manage the validation process for that annotation.</p>	Survey:Annotation: type
Name	String	R	This is the unique name of the Annotation and is used for tracking the reference and amendments. It is unique within the file.	Survey:Annotation:name
Desc	String	R	The actual text of the statement i.e. Road to be closed etc. This description may be required in a specific format as set out in regulations.	Survey:Annotation: desc
pclRef	String	CR	<p>If the annotation refers to a parcel then that parcel will be defined and have a name assigned to that parcel. This is to enable referencing action statements to parcels.</p> <p>This is a conditional field as some annotations do not refer to parcels i.e. marks set at all corners. An example of this is an annotation describing a Non-Statutory Easement.</p> <p>Also a statement may be referred to several parcels.</p>	Survey:Annotation: pclRef

2.9.6 Personnel

This package contains the details and certifications by the surveyor..

Attribute	Type	Req	Note	ePlan Model
Name	String	R	The full name of the surveyor as registered.	Surveyor:Surveyor:surveyorsname
RegType	String	R	This shows the level of registration i.e. cadastral surveyor, associate etc. These enumerations are jurisdictionally specific and are not stated in LandXML	Surveyor:Surveyor:registrationType
RegiNumber	Date	R	The surveyors board registration number for tracking purposes.	Surveyor:Surveyor:registrationNumber
Role	String	R	The role the surveyor played, i.e. field surveyor, technician etc. Can be a jurisdictionally specific list if required.	Surveyor:Surveyor:surveyorRole

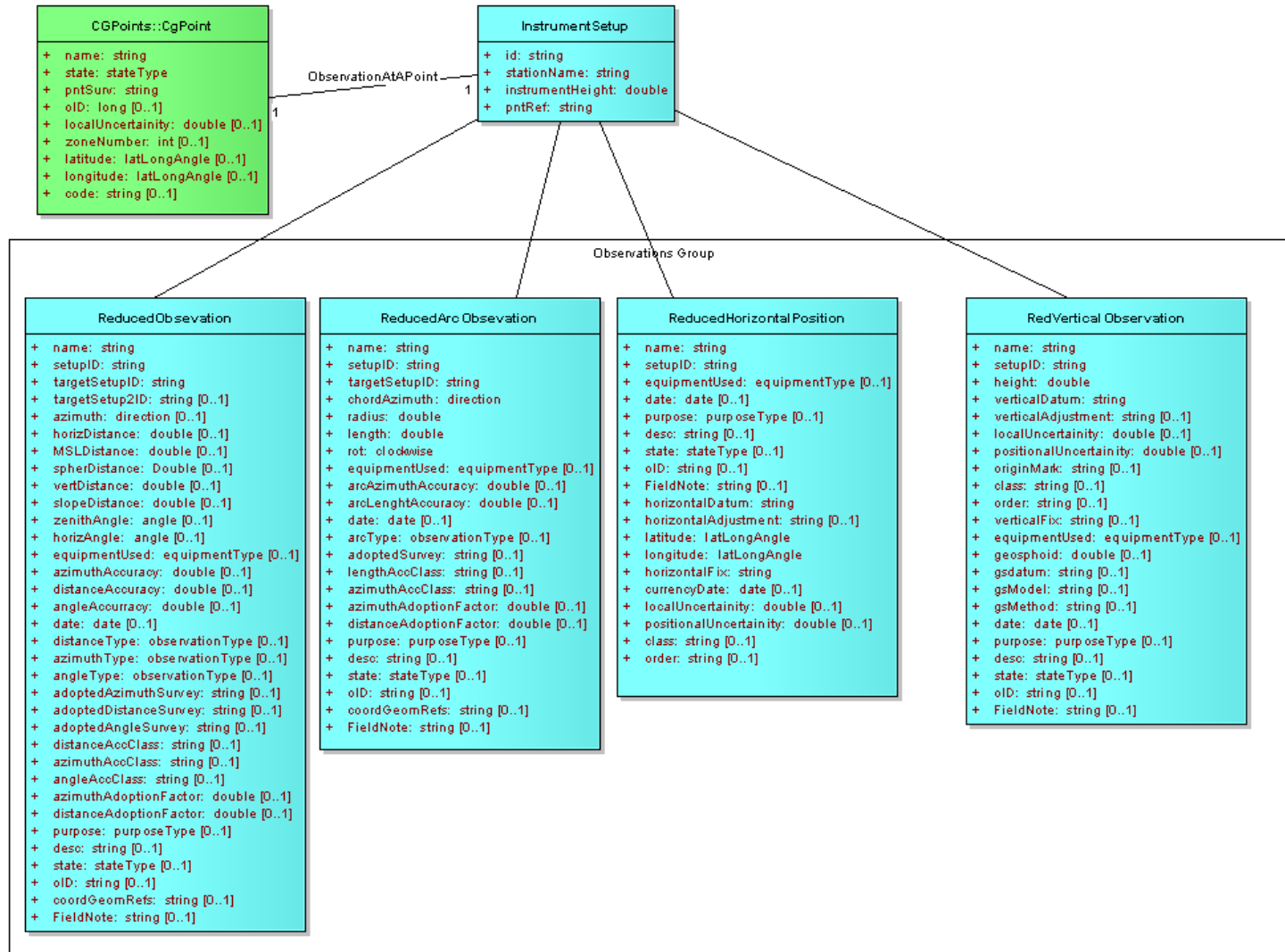
2.9.7 Surveyor Certificate

This is the Surveyors Certificate and contains the wording of the certificate and the dates etc.

Attribute	Type	Req	Note	ePlan Model
Name	String	R	Unique Name of the Certificate in the file for amendment tracking purposes.	Surveyor:SurveyorCertificate:name
certificateType	String	R	This tells us the general format of the certificate for example a form 13 etc.	Surveyor:SurveyorCertificate:certificateType
textCertificate	String	R	This is the full wording of the certificate, which must conform to regulated standards. The text should conform to the certificate type	Surveyor:SurveyorCertificate:textCertificate
surveyDate	Date	CR	The date that the survey was completed for the purposes of the certificate. Please not that for compiled plans no survey date exists hence conditionally required.	Surveyor:SurveyorCertificate:surveyDate

2.10 Observations

The Observations element deals with the reduced observations of the survey. This element contains the observations between Instrument Setups which are at CgPoints.



2.10.1 Instrument Setup

This element is not mapped to the ePlan Model but is required to link observations to the CgPoints.

Attribute	Type	Req	Note	ePlan Model
id	String	R	Must be unique in the file.	Not Mapped
stationName	String	R	Logical Name for the Station.	Not Mapped
instrumentHeight	double	R	This is a required element in LandXML set to 0 in the file	Not Mapped
pntRef	String	R	Reference to the CgPoint	Not Mapped

2.10.2 Reduced Observation

This element is used to define the attributes of an observation. These include distances, directions and angles

Attribute	Type	Req	Note	ePlan Model
name	String	R	Must be unique in the file.	
setUpID	String	R	This is the From Station for the Observation, must be an existing Instrument setup	
targetSetUpID	String	R	This is the to Station for the Observation, must be an existing Instrument setup.	
targetSetUp2ID	String	CR	This is the second to Station for an angle Observation, must be an existing Instrument setup	
azimuth	Direction	CR	The Horizontal Bearing of the line in relation to the orientation of the survey as described in the Origin of Bearings field.	
horizDistance	Double	CR	The Horizontal distance is the distance between two points.	
MSLDistance	Double	CR	This is a Mean Sea Level Distance	
spherDistance	Double	CR	This is the Spheriodal Distance	
vertDistance	Double	CR	Vertical Distance is used to measure between the top and bottom surfaces of a volume if the faces are vertical. A vertical distance does not require a bearing.	
slopeDistance	Double	CR	The Slope Distance used specifically for the definition of sloping volumetric parcels	
zenithDistance	Angle	CR	The Zenith Angle for a slope distance.	
equipmentUsed	Equipment Type	O	Broad category of type of survey technology used for example Theodolite and Tape, Total Station, GPS etc.	
azimuthAccuracy	String	O	Accuracy of the bearing in seconds of arc	
distanceAccuracy	String	O	Accuracy of the distance in millimetres	
angleAccuracy	String	O	Accuracy of the angle in seconds of arc	
date	Date	O	Date of the observation	
distanceType	String	CR	Defines how the observations are obtained See Bearing Type of enumerations	
azimuthType	String	CR	See Observation Type enumerations for example Measures, Adopted etc	

angleType	String	CR	See Observation Type enumerations for example Measures, Adopted etc	
adoptedAzimuthSurvey	String	O	Where the bearing has been complied from a previous survey. This is a reference to that survey.	
adoptedDistanceSurvey	String	O	Where the distance is complied from a previous survey. This is a reference to that survey.	
adoptedAngleSurvey	String	O	Where the angle has been complied from a previous survey. This is a reference to that survey.	
azimuthAccClass	Double	O	The Class of the individual observation.	
distanceAccClass	Double	O	Accuracy Class of the distance observation	
angleAccClass	Double	O	The Class of the individual observation.	
azimuthAdoptionFactor	Double	O	The angle that was added to the observation bearing from the original survey (The Swing)	
distanceAdoptionFactor	Double	O	Record of any scale factor supplied for a line from the original.	
purpose	Purpose Type	O	The purpose is a definition of what the observation was taken for. The purpose can come from a defined list.	
desc	String	O	Optional Description of the Observation	
state	String	O	LandXML enumeration	
oID	String	O	The oID is the persistent identifier for the element, if the element is adopted from a previous survey and the oID is known then it can be given here.	
coordGeomRefs	String	O	Where an observation is for a line in a Coord Geometry the list of CoordGeometries are listed here	
fieldNote	string	O	These are observational level field notes that can be attached	

2.10.3 Reduced Arc Observation

A curve is a special case of an observed line. A Curve is a specific type of regular line between two points. It is defined by its start and end its radius and direction of rotation.

Attribute	Type	Req	Note	ePlan Model
name	String	R	Must be unique in the file.	
setUpID	String	R	This is the From Station for the Observation, must be an existing Instrument setup	
targetSetUpID	String	R	This is the to Station for the Observation, must be an existing Instrument setup.	
chordAzimuth	Direction	R	The Horizontal Bearing of the line in relation to the orientation of the survey as described in the Origin of Bearings field.	
Radius	Double	R	The Radius of the Curve	
Length	Double	R	The Length of the Arc.	
Rot	String	R	The direction of rotation either clockwise or counter clockwise.	
equipmentUsed	Equipment Type	O	Broad category of type of survey technology used for example Theodolite and Tape, Total Station, GPS etc.	
arcAzimuthAccuracy	String	O	Accuracy of the bearing in seconds of arc	
arcLengthAccuracy	String	O	Accuracy of the distance in millimetres	
date	Date	O	Date of the observation	
arcType	String	CR	Defines how the observations are obtained See Bearing Type of enumerations	
adoptedSurvey	String	O	Where the curve has been compiled from a previous survey. t this is a reference to that survey.	
azimuthAccClass	Double	O	The Class of the individual observation.	
lengthAccClass	Double	O	Accuracy Class of the distance observation	
azimuthAdoptionFactor	Double	O	The angle that was added to the observation bearing from the original survey (The Swing)	
distanceAdoptionFactor	Double	O	Record of any scale factor supplied for a line from the original.	
purpose	Purpose Type	O	The purpose is a definition of what the observation was taken for. The purpose can come from a defined list.	

desc	String	O	Optional Description of the Observation	
state	String	O	LandXML enumeration	
oID	String	O	The oID is the persistent identifier for the element, if the element is adopted from a previous survey and the oID is known then it can be given here.	
coordGeomRefs	String	O	Where an observation is for a line in a Coord Geometry the list of CoordGeomertries is listed here	
fieldNote	string	O	These are observational level field notes that can be attached	

2.10.4 Horizontal Position

This element is used to define a horizontal Position. The coordinates are given in Geographical Coordinates and may come from a variety of means.

Attribute	Type	Req	Note	ePlan Model
name	String	R	Must be unique in the file.	
setUpID	String	R	This is the From Station for the Observation, must be an existing Instrument setup	
equipmentUsed	Equipment Type	O	Broad category of type of survey technology used for example Theodolite and Tape, Total Station, GPS etc.	
date	Date	O	Date of the observation	
purpose	Purpose Type	O	The purpose is a definition of what the observation was taken for. The purpose can come from a defined list.	
desc	String	O	Optional Description of the Observation	
state	String	O	LandXML enumeration	
oID	String	O	The oID is the persistent identifier for the element, if the element is adopted from a previous survey and the oID is known then it can be given here.	
coordGeomRefs	String	O	Where an observation is for a line in a Coord Geometry the list of CordGeometries are listed here	
fieldNote	string	O	These are observational level field notes that can be attached	
horizontalDatum	String	R	The datum in which the coordinates were determined	
horizontalAdjustment	String	O	The adjustment or method to determine the coordinates. It is a free text field which may contain a recognised adjustment name i.e. Brisbane West Control or similar.	
Latitude	Double	R		
Longitude	Double	R		
HorizontalFix	String	R	The method used to fix the position of the mark. Is an Enumerated list.	

CurrencyDate	Date	R	The date that the coordinates were published. For example if this record was for a mark which was used as a datum mark for a terrestrial traverse the currency date would be the date that the published coordinates were received. If these were new coordinates then the currency date would be the date of the survey.	
positionalUncertainty	Double	O	The 95% uncertainty of the horizontal position.	
localUncertainty	Double	O	The local uncertainty to the other control marks in the survey.	
Class	String	O	The class to which the coordinates were determined.	
Order	Integer	O	The order to which the coordinates were observed.	

2.10.5 Vertical Position

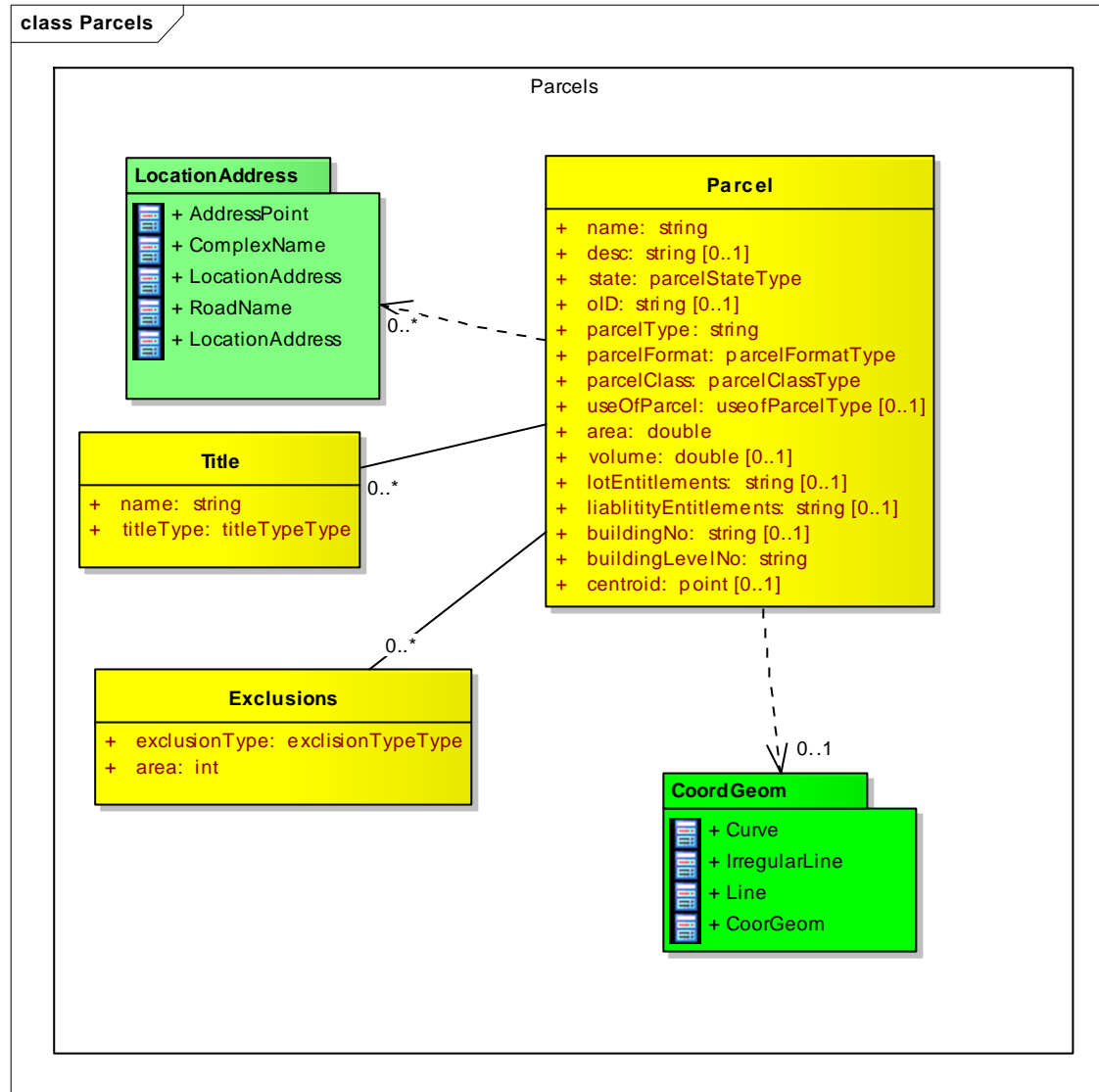
Records the Reduced Level and other details about a station. The object is to record and observation which is direct to the reference.

Attribute	Type	Req	Note	ePlan Model
name	String	R	Must be unique in the file.	
setUpID	String	R	This is the From Station for the Observation, must be an existing Instrument setup	
height	Double	R	The RL of the Point	
verticalDatum	String	R	The vertical datum to which the survey is referenced i.e. AHD, State Datum etc.	
verticalAdjustment	String	O	Defines the adjustment the values were derived from. For height derived by this survey it would be a local datum	
localUncertainty	String	O		
positionalUncertainty	String	O		
originMark	String	O	The Origin mark used to determine the height value. This is to allow maintenance of the values if the Height datum is redefined	
Class	String	O		
Order	Integer	O		
verticalFix	String	O	The Method used to determine the height value, for example Spirit Level, GPS etc	
Geosphoid	Double	O	This is the Geoid Spheroid Separation value used to determine the orthometric height from the ellipsoid height	
gsDatum	String	O	The geoid Datum used.	
gsModel	String	O	The Geoid Model used to determine the separation.	
gsMethod	String	O	The method used to determine the Geoid Spheroid separation from the model. Is an enumerated list	
date	Date	O	Date of the published height	
purpose	Purpose Type	O	The purpose is a definition of what the observation was taken for. The purpose can come from a defined list.	
desc	String	O	Optional Description of the Observation	

state	String	O	LandXML enumeration	
oID	String	O	The oID is the persistent identifier for the element, if the element is adopted from a previous survey and the oID is known then it can be given here.	
fieldNote	string	O	These are observational level field notes that can be attached	

2.11 Parcel

The Parcel element handles the non-spatial elements of parcel. It relates directly to the HDM: Cadastral: PrivateLawObject and the LandXML: Parcels elements.



2.11.1 Parcel

A parcel is the unit over which a single interest can be created. A parcel may have a specific parcel type for example in Queensland the parcel over which an indefeasible title can be issued is called a lot. A parcel can be made up of a number of sub parcels; each sub parcel must be a closed figure. The total area of a parcel is the sum of the areas of the sub parcels. For example a parcel (lot) on a Building Format Plan (Stratum Plan) may have several parts on different floors in the complex, i.e. a car park, a balcony and the main unit.

The parcel element holds the non-geometric elements relating to a parcel. The term parcel here has a different meaning to the parcel in the Harmonised Data Model. In the HDM a parcel refers to a cadastral lot for which a title can be issued. This model uses a much broader definition of parcel in that it is a polygon (or volumetric figure) for which a right or obligation can be defined. It includes base cadastral lots as well as easements and secondary interests.

This package models the administrative and Metadata information about parcels with the term parcel means a polygon created for some administrative purpose.

The other part of a parcel is that it has an “is related to” association, this relationship assists us in:

- If a parcel is made up of several parts (i.e. stratum lot over several floors).
- Creating historical allocations to bring forward existing title encumbrances, rights and obligations.
- Create historical linkages to link parcels to their ancestors (as in historical survey searching or native title investigations)
- From the HDM an administrative area is linked to cadastral polygons, which represent parcels, we can then use this relationship to allocate new parcels to existing administrative areas i.e. allocation of areas to local governments for rating purposes.

This is accomplished by using an embedded Parcels/Parcel relationship to show the relationship between existing parcels and those parcels being created,

Attribute	Type	Req	Note	ePlan Model
name	String	R	The Unique Parcel Name in the file, it must be unique even for part parcels. For example a lot create on this survey could be simply (lot)1. For an existing lot the full name (lot) 1/RP1 would be used. For a part lots a local convention such as 1.1 or 1a could be used. In Queensland we do not create parcel identifiers for roads, Hydrography or action statement parcels. These parcels need to be uniquely identified in the file so a Alpha/ Numeric identifier is used ie R1 for Roads etc.	Parcel: name

desc	String	CR	A description of the parcel. Where a parcel is not traditionally described via a parcel identifier ie Road or Hydrography then the description is used to describe the parcel. For example a survey may create a road made up of several parcels (ie R1,R2,R3) in this case the description field will hold the name of the road (ie Smith Street). All Road and Hydrography parcels must have a description.	Parcel: desc
state	ParcelStateType	R	The state of the parcel in relation to the survey. This is a standard LandXML Enumeration.	Parcel: state
OID	String	O	Official identifier of parcel.	Parcel:oid
parcelType	String	CR	<p>Parcel Type is used to differentiate if the parcel is a top level parcel or a part parcel. For example a parcel which is bisected by a road is made up of two parts the Areas of the Title parcel is made up of the area of the two parts. For processing purposes and validation we need to be able to identify these parts.</p> <p>There are four valid entries Datafield = 'single' – The parcel is made up of a single coordinate geometry eg a standard house lot. Datafield = 'multipart' - The parcel is made up of more than one part parcel eg a building format lot. These part parcels are referenced in the parcels attribute. Datafield = 'part' – The parcels is a part parcel eg a balcony in a building format lot. Several part parcels make up a multipart parcel. A part parcel cannot be issued with a title and it may not conform to the parcel identifier standards (ie Lot 1a). Datafield = 'adminarea' – The parcel represents an admin area eg a parish which may or may not have a coordinate geometry. These parcels are used to allocate these admin areas to parcels.</p> <p>Note only 'single' and 'multipart' parcels can be Title Parcels and would exist in the Title block of the survey.</p>	Parcel:parcelType

parcelFormat	String	O	This is to define the format of the lot there are business rules which will define the format of parcels allowable for a particular survey format. For example a volumetric plan may have parcel formats of standard and volumetric. This is a jurisdictional specific list.	Parcel: parcelFormat
parcelClass	Parcel Class	R	This is a well-defined list, which is jurisdictionally based. For Example "Lot" or "Easement"	Parcel: class
useOfParcel	String	O	The use of a parcel is a set of values define by regulation to describe the use or purpose of a parcel or sub parcel. This list will be a jurisdictionally specific list and will have a relationship between the Parcel Format, Parcel Class. An example would be the Statutory Purpose of an Easement	Parcel: useOfParcel
legalArea	Double	CR	This is the legal area of the parcel. If the parcel contains exclusions then these need to be noted for calculation purposes. The area of the parcel is conditionally required as a volumetric parcel does not have an area, nor do some part parcels or road parcels.	Parcel:Area
volume	Double	CR	This is the volume of the volumetric format lot. It is mandatory if the lot being created is a volume format lot.	Parcel: volume
lotEntitlements	String	CR	This attribute details the voting entitlement assigned to a lot following survey. This is an attribute of the plan in most Australian Jurisdictions	Parcel:lotEntitlements
liabilityApportionment	String	CR	In some jurisdictions a value per lot is given to apportion liability in certain circumstances	Parcel:liabilityApportionment
buildingNo	String	O	A building format lot needs to define the building no so that the proprietor can identify the building in which the parcel lies.	Parcel: buldingNumber
buldingLevelNo	String	O	This element defines the level of the building on which the part of the lot lies.	Parcel: buildingLevelNo
pclref	String	O	This is the parcel reference name used to refer to a previously defined parcel	Parcel:pclRef
Note	String	O	This note allows for general information relating to the parcel. A parcel may have several notes.	FieldNote

2.11.1.1 Lots in Parts

A single parcel may be made up of several parts. For example a building format lot may have the main part of the lot, a garage and a balcony. Each of these part lots must have an area. The area of the upper level parcel is the sum of the underlying parcel.

The following example shows a multi part parcel

```
<Parcel name="102/A2451" parcelFormat="Standard" class="lot" state="created" area="3238.00">
  <Parcels>
    <Parcel name="102a/A2451" pciRef="102a/A2451"/>
    <Parcel name="102b/A2451" pciRef="102b/A2451"/>
  </Parcels>
  <Title name="14703047" titleType="title"/>
<Parcel name="102a/A2451" parcelFormat="Standard" class="lot" state="created" area="2000" >
  <Center pntRef="AQ"/>
  <CoordGeom>
    ...
  </CoordGeom>
</Parcel>
<Parcel name="102b/A2451" parcelFormat="Standard" class="lot" state="created" area="1238" >
  <Center pntRef="AK"/>
  <CoordGeom>
    ...
  </CoordGeom>
</Parcel>
```

2.11.1.2 Allocations (Linkages)

An allocation is the process by which an existing interest is brought forward onto the parcels being created. The LandXML enables us to provide both a graphical and textual capability to track these allocations. The allocation can be determined by overlaying one graphical element over another or it can be explicitly defined using the Parcel/Parcels elements.

There are 3 types of allocations

- Allocating created primary and secondary interests to an extinguished parcel (ie Subdivision)
- Allocating created secondary interests to an affected parcel
- Allocating created secondary interests to created primary parcel (ie easement during a subdivision)

In all cases the allocation is shown from the affected/extinguished/created primary parcel to the created primary or secondary interest. This means that we will never have an allocation from an existing registered secondary interest forward to any other parcel type.

The following example shows the allocation of a existing parcel to the newly created Parcels and interests.

```
<Parcel name="10/RP843007" state="extinguished" parcelFormat="Standard" class="lot" area="16000">
  <CoordGeom name="...">
  </CoordGeom>
  <Parcels>
    <Parcel name="1/SP110008" pclRef="1/SP110008"/>
    <Parcel name="2/SP110008" pclRef="2/SP110008"/>
    <Parcel name="3/SP110008" pclRef="3/SP110008"/>
    <Parcel name="A/SP110008" pclRef="A/SP110008"/>
  </Parcels>
</Parcel>
```

Where a survey creates a secondary interest that interest needs to be allocated to the parcel that it affects in many. In many cases this requires a special allocation from the newly created secondary interest to its affected parcel which was created during the same survey. For example in the survey of “Lots 1-3 and Easement A in Lot 3” then an explicit allocation between Easement A and Lot 3 needs to be defined.

The following example shows the allocation of an affected parcel to the created secondary interest.

```
<Parcel name="10/RP843007" state="affected" parcelFormat="Standard" class="lot" area="16000">
  <CoordGeom name="...">
  </CoordGeom>
  <Parcels>
    <Parcel name="A/SP110008" pclRef="A/SP110008"/>
  </Parcels>
</Parcel>
```

The following example shows the allocation of a created parcel to the created secondary interest.

```
<Parcel name="3/SP110008" state="created" parcelFormat="Standard" class="lot" area="7860">
  <CoordGeom name="...">
  </CoordGeom>
  <Parcels>
    <Parcel name="A/SP110008" pclRef="A/SP110008"/>
  </Parcels>
</Parcel>
```

2.11.2 Title

This element is used to define Title References relevant to a parcel; a parcel may have several interests created by different documents, which will need to be dealt with. For example a lot may have several Certificates of Title and some mortgages which will need to be allocated to new parcels. To define this we need to know the Title or dealing reference and the type of dealing.

Attribute	Type	Req	Note	ePlan Model
name	String	O	This is the Title Number or dealing number which creates the interest	Parcel: name
titleType	String	O	This defines the type of interest defined for example is it a mortgage a title or a lease	Parcel: titleType

2.11.3 Exclusion Area

Some parcels have exclusions from its area either specified such as an internal road or an included lot or as an area excluded from the title but is spatially undescribed (Reserved areas).

Most jurisdictions have a defined list of exclusions. The element has an exclusion type and an area.

This is to enable the description of a multi line area. The Legal Area is the parcel's gross area less the sum of all exclusions.

Attribute	Type	Req	Note	ePlan Model
exclusionType	String	R	This is a jurisdictionally based list of types of exclusions. Datafield = 'reservation in title' - This is an area that has been reserved from the title for future crown activity.	Parcel:exclusions:exclusionType
area	double	R	This is the area value for the exclusions.	Parcel:exclusions:area

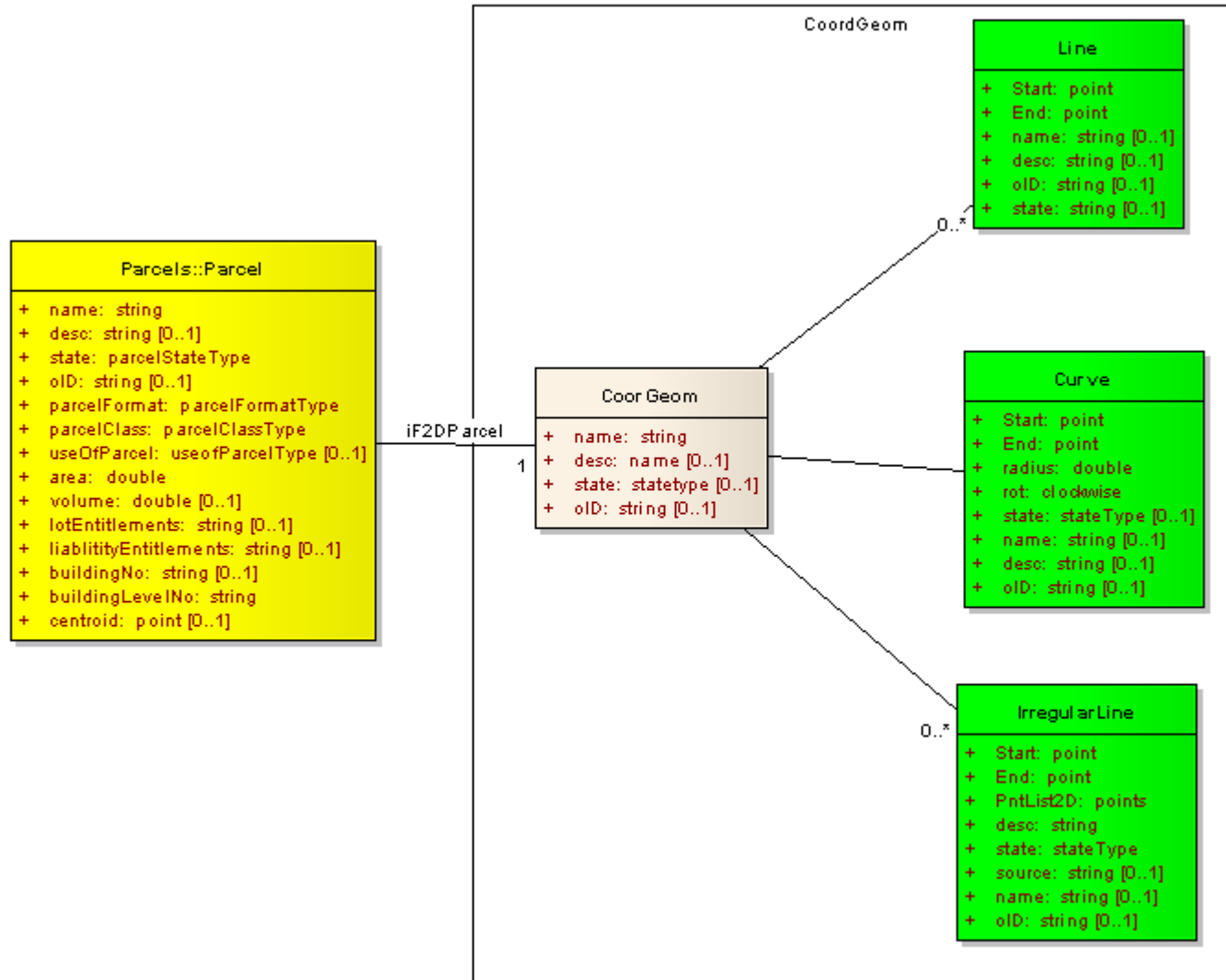
2.11.4 Plan Feature

This element identifies the improvement, which encroaches on its neighbour. It contains a 3dpoint list, which describes the extent of the encroachment. This feature will be depicted in the LandXML as a plan feature.

Attribute	Type	Req	Note	ePlan Model
type	String	O	This is a broad category of the encroachment Datafield = 'Encroachments' Datafield = 'Occupation'	PlanFeatures:Desc
name	String	O	Unique name within the file	PlanFeature: name
description	String	O	This is a short description of the encroachment, for example the eaves of a building etc.	PlanFeature: desc
pointlist	Point list	O	This is a 3dpoint list which defines the encroachment and is defined as a space delimited 3dpoints which are space delimited double values (xxx.xxx yyy.yyy zzz.zzz)	PlanFeature:CoordGeod

2.12 Geometry

This element contains the geometry information about graphical entities and parcel.



2.12.1 Coordinate Geometries

A Polygon is a closed figure that can be made up of two or more lines. These lines may be either Regular Lines, Curves or Irregular lines. A parcel only need to be defined by a Polygon if the parcel needs to be spatial dealt with by the survey (i.e. as a created or cancelled parcel). Some parcels may not require to be spatial defined for the purpose of the survey, specifically where the parcel is defining an administrative area etc. These elements are mapped to the LandXML Coordinate Geometry elements. This maps to the HDM Survey Polygon element.

Attribute	Type	Req	Note	ePlan Model
Name	String	R	Unique name of the polygon in the file	CoordGeom: name
Desc	String	O	A brief description of the polygon	CoordGeom: desc
State	String	O	Standard state values from LandXML	Coordgeom: state
OID	String	O	Official ID for a polygon	Coordgeom:oid
Centroid	2dPoint	O	The Centroid of the parcel is an approximation of the centre of the figure and is used mostly for identifying the point to annotate the visualisation of that parcel.	Parcel: centre

2.12.2 Line

Defines the properties of a Line in a coordinate Geometry collection. The Start and End points define the line. This model does as LandXML make a distinction between a line (which joins two points) and observation. In this model a line could have several observations, (i.e. mean terrain height or spheroidal distance).

Also this model allows for an observation between points, which are not part of a survey polygon, i.e. a connection to a reference mark or to a control station

Attribute	Type	Req	Note	ePlan Model
Start	String	R	A Point Reference to the Start Point of the Line	
End	String	R	A Point Reference for the End Point of the Line	
Name	String	O	The local name of the line in the file usually an integer value	Line: name
Desc	String	O	An Optional Description of the line	Line: desc
OID	String	O	Unique Identifier in the file	Line: oid
State	String	O	The State of a Line if Required (LandXML Enumeration)	Line: state

Note		O	A note field allow annotation to a line, used where a line represents a feature for example in WA and NT the boundary line may be depicting a latitude or longitude.	FieldNote
------	--	---	--	-----------

2.12.3 Irregular Line

IrregularLine inherits elements from the line class. The irregular line must have a survey point as its start and finish point and a point list of at least 2 (the start and end points) points to define the line. An irregular line is not "observed" but is made up of a list of coordinate values (these coordinates may be made by observations but these observations are not part of the polygon).

Attribute	Type	Req	Note	ePlan Model
Start	String	R	A Point Reference to the Start Point of the Line	
End	String	R	A Point Reference for the End Point of the Line	
Point List	String	R	A string of XY pairs defining the irregular boundary	
Desc	String	O	An Optional Description of the line	Line: desc
State	String	O	The State of a Line if Required (LandXML Enumeration)	Line: state
Source	String	O	If the irregular line is defined by a previous survey then the source of the line is given	
Name	String	O	The local name of the line in the file usually an integer value	Line: name
OID	String	O	Unique Identifier in the file	Line: oID
Note		O	A note field allow annotation to a line, used where a line represents a feature for example in WA and NT the boundary line may be depicting a latitude or longitude.	FieldNote

2.12.4 Curve

A Curve is a specific type of regular line between two points. It is defined by its start and end points, its radius and direction of rotation.

Attribute	Type	Req	Note	ePlan Model
Start	String	R	A Point Reference to the Start Point of the Line	
End	String	R	A Point Reference for the End Point of the Line	
Radius	Double	R	The Radius of the Curve	Curve: radius
Rot	Clockwise	R	The direction of rotation Datafield = 'counterclockwise' Datafield = 'clockwise'	Curve: rot
Name	String	O	The local name of the line in the file usually an integer value	Line: name
Desc	String	O	An Optional Description of the line	Line: desc
State	String	O	The State of a Line if Required (LandXML Enumeration)	Line: state
OID	String	O	Unique Identifier in the file	Line: oID
Note		O	A note field allow annotation to a line, used where a line represents a feature for example in WA and NT the boundary line may be depicting a latitude or longitude.	FieldNote

2.12.5 Volume

A volume is a cubic space made up of polygons, which are its faces. The LandXML can deal with this as a volume or as a series of faces. Where the parcel being defined is a volumetric lot then the volume must be specifically defined by its faces. These faces are regular or irregular polygons by nature

Attribute	Type	Req	Note	ePlan Model
Desc	String	O	A Description of the volume or part volume.	VolumeGeom: desc
Name	String	R	The unique name of the volume within the file	VolumeGeom: name
State	String	R	Standard state values from LandXML	VolumeGeom: state
OID	String	O	The persistent identifier of the volume	VolumeGeom: oid
Centroid	3dpoint	R	The point3D depicting the centre of the volume.	parcel: centroid

2.13 Address

These Elements are to define the location address for a parcel. The elements have also been designed to enable the entry of one or more geocode for the address. This is to enable interfacing with the GNAF Project.



2.13.1 Location Address

This element contains the attributes to assign a location address to a parcel.

We have followed the Australian Standard AS4590 -1999 for the exchange of Client Information and the HDM where appropriate.

This element should support the Urban and Rural Street Address Standard AS/NZS4819-2002.

Attribute	Type	Req	Note	ePlan Model
addressType	String	R	A Parcel could have many addresses as it could have several frontages and be used for different purposes. For example you may have a primary address and several aliases.	Parcel:LocationAddress:addressType
flatType	String	O	Max 7 Characters and is a set of known abbreviations.	Parcel:LocationAddress:flatType
flatNumber	String	O	An AlphaNumeric Unit Number.Max 7 Char	Parcel:LocationAddress:flatNumber
floorLevelType	String	O	The Floor level must be a known abbreviation	Parcel:LocationAddress:floorLevelType
FloorLevelNumber	String	O		Parcel:LocationAddress:floorLevelNumber
numberFirst	String	R	First house number in the series or if only one house number.	Parcel:LocationAddress:numberFirst
numberSuffixFirst	String	O	Alpha Suffix for a house number	Parcel:LocationAddress:numberSuffixFirst
numberLast	String	O	Last Number in the series	Parcel:LocationAddress:numberLast
numberSuffixLast	String	O	Alpha suffix of the last number in a range	Parcel:LocationAddress:numberSuffixLast
privateRoadName	String	O	This is a text string used for private roads within a development. The field must hold the full name of the private road which includes road name, road type, road suffix.	Parcel:LocationAddress:flatType
privateRoadNameType	String	O	Same as Road Type	Parcel:LocationAddress:flatType
privateRoadNameSuffix	String	O	Same as RoadName Suffix	Parcel:LocationAddress:flatType

SiteName	String	O	The Name of the Site	Parcel:LocationAddress:ComplexName
buildingName	String	O	The name of the building can be split over two field of 30 alphanumeric strings. They are part of the one element. for example North Wing, Treasury Building in acceptable but two separate building names are not for example Treasury Building, Town Hall. This equates to AS4819-2003 Utility Name and Address Site Name	Parcel:LocationAddress:ComplexName
roadName	String	R	The name of the road. the HDM uses the name element but it has been changed here for clarity.	Parcel:LocationAddress:RoadName:roadName
roadNameType	String	R	The Road Type ie Street, Lane etc	Parcel:LocationAddress: RoadName:roadNameType
roadNameSuffix	String	O	For example, East, Upper etc.	Parcel:LocationAddress:RoadName:roadNameSuffix
localityName	String	R	Must be a recognised locality from the administrative area for locality.	Parcel:LocationAddress:AdministrativeArea
stateName	String	O	The State or Territory	Parcel:LocationAddress:AdministrativeArea
postcode	String	O	The Post code if required	Parcel:LocationAddress:AdministrativeArea
countryName	String	O	The Country if required	Parcel:LocationAddress:AdministrativeArea

2.13.2 Complex Name

This element is used to define the site or complex name. The standard allows for as priority of complex names such as The Hanlon Building, Royal Brisbane Hospital.

Attribute	Type	Req	Note	ePlan Model
descr	String	O	The Name of the Site or complex	Parcel:LocationAddress:ComplexName
priority	String	O	Where multiple names are given in a complex for example a retirement village then this element defines the order of the desc.	Parcel:LocationAddress:ComplexName

2.13.3 Road Name

This element is used to name the Road for a Location Address

Attribute	Type	Req	Note	ePlan Model
roadName	String	R	The name of the road.	Parcel:LocationAddress:RoadName:roadName
roadNameType	String	R	The Road Type ie Street, Lane etc	Parcel:LocationAddress: RoadName:roadNameType
roadNameSuffix	String	O	For example, East, Upper etc.	Parcel:LocationAddress:RoadName:roadNameSuffix
roadType	String	R	This defines if it is a public or private road.	
pclRef	String	O	If the road is spatially defined on the survey then this is a reference to the Road Parcel for Validation Purposes.	Parcel:LocationAddress:AdministrativeArea

2.13.4 Administrative Area

The address uses the AdinArea element to define objects such as Locaility, Local Authority, Stae, Post Code etc.

2.13.5 Address Geocode

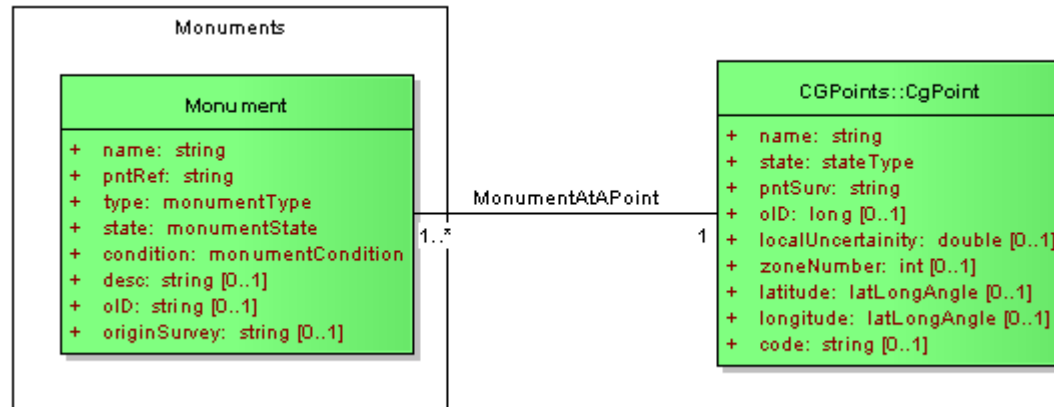
A Geocode for an Address Point. The point will need to be described as a point type but it is not necessary to be a Survey point. The coordinate values for the address point must be in the coordinate system of the file which can be later translated to the best appropriate coordinate system.

An address could have several geocodes for the one address. For example the letter box, the drive way, the front door. This is handled by the geocode type

Attribute	Type	Req	Note	ePlan Model
addressPointType	String	O	The type of geocode, will eventually be an enumerated list. The list will be the responsibility of each jurisdiction.	Parcel:LocationAddress:AddressPoint:AddressPointType
pntRef	String	O	A point Reference to a GcPoint for the geocode	Parcel:LocationAddress:AddressPoint.

2.14 Monuments

The Monuments Element defines the Monument at a point. A Monument is an Object (e.g., Pin, Peg, Permanent Mark) that is placed in the ground for the purpose of being surveyed. A monument must be at a survey point however a survey point could have more than one monument. For example there may be a nail in concrete for the corner and a reference to a brick wall at the same survey point.



Attribute	Type	Req	Note	ePlan Model
name	String	R	Name of monument for plan. The Name must be unique to the survey. A local convention may prevail but is not required.	Points:SurveyMarks: name
pntRef	String	R	Reference to a Station Number in the file (Cgpoint)	Points:SurveyMarks: pntref
desc	String	CR	Description of monument This is an optional field but is required if the monument type is “occupation” or “other”. For Example leaning Round Fence Post, Cnr of Brick Wall, Cen Face Square Fence Post. There is usually a jurisdictional list of permitted abbreviations for this description although the field should be left as free text to allow for different types of occupation.	Points:SurveyMarks: Desc

type	MonumentType	R	The generalised type of the monument. An enumerated list is available and will change between jurisdictions. For Example "Peg"	Points:SurveyMarks: type
state	MonumentState	R	The state of the Monument, ie New etc. A LandXML Enumeration	Points:SurveyMarks: state
condition	MonumentCondition	O	A list of available conditions are given as jurisdictional enumerations.	Points:SurveyMarks: condition
oID	String	O	Official identifier for monument. In Queensland this is made up of a two part key the PID of the Survey Point (ie 1234567) and a sequence number for the monuments at that point (i.e 1). This value will only contain the sequence number of the monument. These values are only available for existing marks and are supplied via the Cadastral Infrastructure Search.	Points:SurveyMarks:oID
originSurvey	OriginSurvey	O	This field will define the survey on which the original survey mark was placed. It is current practice in Queensland to annotate the plan, particularly for reference marks if the origin of the mark is known. This requirement may become redundant	Points:SurveyMarks: originSurvey

2.14.1 Surface

This element is used to describe the surface level for a parcel, specifically when the subject parcels are volumetric parcel and a visualisation of the parcel is required relative to the mean terrain surface. For example in Queensland a Volumetric parcel must also show the footprint at ground level of the parcel and also be able to give the user an understanding of the relationship between the parcel and the ground. For example the parcel is an underground tunnel or is an air space.

Attribute	Type	Req	Note	ePlan Model
surfaceType	Char	CR	Denotes how surface is being specified	Surfaces: Surface:Definition:surfType
surface	String	CR	Data which defines the surface	Surfaces: Surface: Definition: pnts/faces

END OF SECTION

APPENDIX A - Glossary

END OF APPENDIX

END OF DOCUMENT