National Underground Asset Register (NUAR)

NUAR Data Model Publication

NUAR Harmonised Data Model - Diagrams

Publication History

Date	Version	Description
12/08/2024	0.1	First publication of the NUAR Data Model

Purpose of this document

This document includes diagrams for the logical NUAR Harmonised Data Model.

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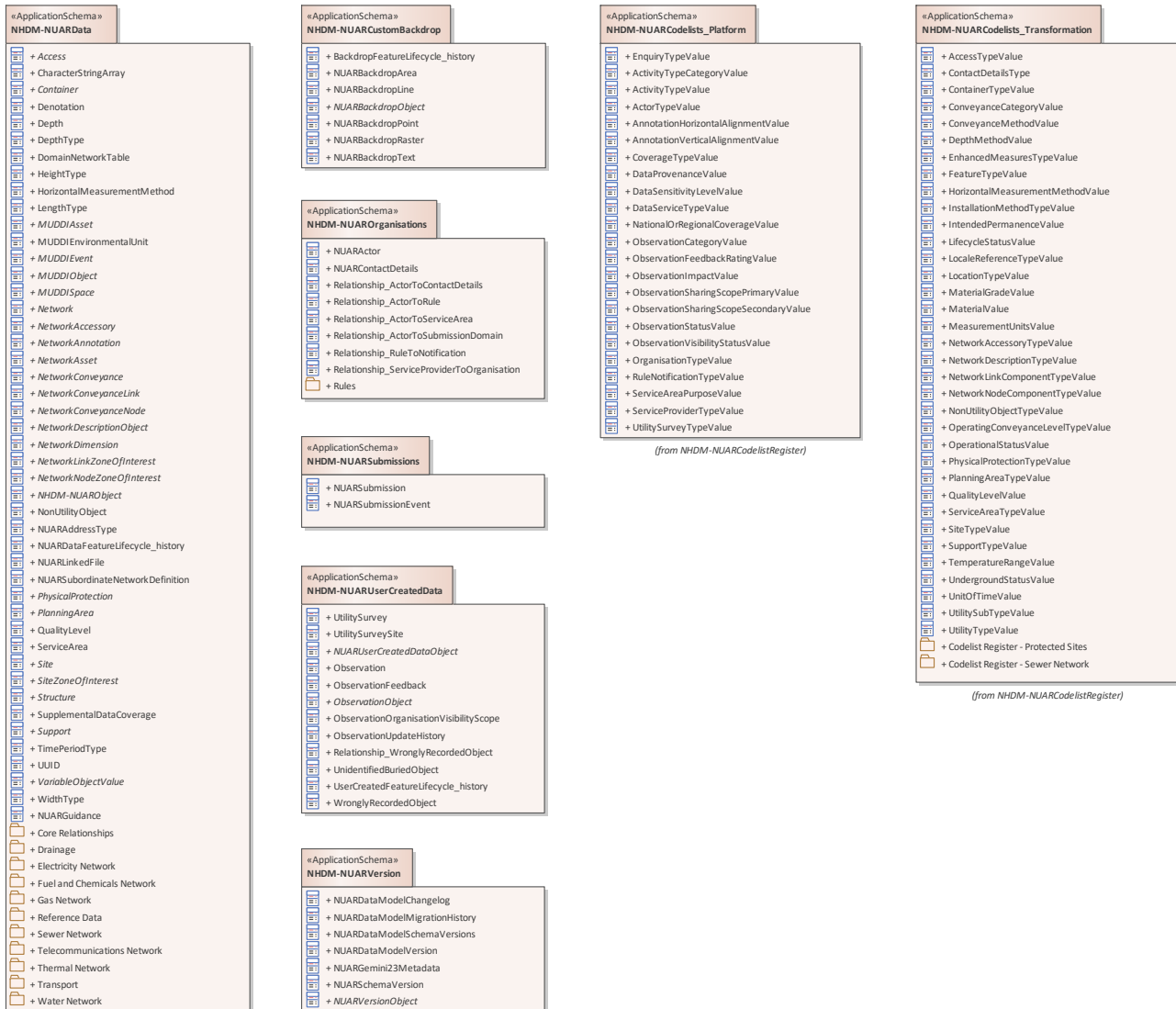Created on 06/10/2023. Last modified 02/08/2024

«ApplicationSchema»
NHDM-NUARData

- + Access
- + CharacterStringArray
- + Container
- + Denotation
- + Depth
- + DepthType
- + DomainNetworkTable
- + HeightType
- + HorizontalMeasurementMethod
- + LengthType
- + MUDDIAsset
- + MUDDIEnvironmentalUnit
- + MUDDIEvent
- + MUDDIObject
- + MUDDISpace
- + Network
- + NetworkAccessory
- + NetworkAnnotation
- + NetworkAsset
- + NetworkConveyance
- + NetworkConveyanceLink
- + NetworkConveyanceNode
- + NetworkDescriptionObject
- + NetworkDimension
- + NetworkLinkZoneOfInterest
- + NetworkNodeZoneOfInterest
- + NHDM-NUARObject
- + NonUtilityObject
- + NUARAddressType
- + NUARDataFeatureLifecycle_history
- + NUARLinkedFile
- + NUARSubordinateNetworkDefinition
- + PhysicalProtection
- + PlanningArea
- + QualityLevel
- + ServiceArea
- + Site
- + SiteZoneOfInterest
- + Structure
- + SupplementalDataCoverage
- + Support
- + TimePeriodType
- + UUID
- + VariableObjectValue
- + WidthType
- + NUARGuidance
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- + Electricity Network
- + Fuel and Chemicals Network
- + Gas Network
- + Reference Data
- + Sewer Network
- + Telecommunications Network
- + Thermal Network
- + Transport
- + Water Network

«ApplicationSchema»
NHDM-NUARCustomBackdrop

- + BackdropFeatureLifecycle_history
- + NUARBackdropArea
- + NUARBackdropLine
- + NUARBackdropObject
- + NUARBackdropPoint
- + NUARBackdropRaster
- + NUARBackdropText

«ApplicationSchema»
NHDM-NUAROrganisations

- + NUARActor
- + NUARContactDetails
- + Relationship_ActorToContactDetails
- + Relationship_ActorToRule
- + Relationship_ActorToServiceArea
- + Relationship_ActorToSubmissionDomain
- + Relationship_RuleToNotification
- + Relationship_ServiceProviderToOrganisation
- + Rules

«ApplicationSchema»
NHDM-NUARSubmissions

- + NUARSubmission
- + NUARSubmissionEvent

«ApplicationSchema»
NHDM-NUARUserCreatedData

- + UtilitySurvey
- + UtilitySurveySite
- + NUARUserCreatedDataObject
- + Observation
- + ObservationFeedback
- + ObservationObject
- + ObservationOrganisationVisibilityScope
- + ObservationUpdateHistory
- + Relationship_WronglyRecordedObject
- + UnidentifiedBuriedObject
- + UserCreatedFeatureLifecycle_history
- + WronglyRecordedObject

«ApplicationSchema»
NHDM-NUARVersion

- + NUARDataModelChangelog
- + NUARDataModelMigrationHistory
- + NUARDataModelSchemaVersions
- + NUARDataModelVersion
- + NUARGemini23Metadata
- + NUARSchemaVersion
- + NUARVersionObject

«ApplicationSchema»
NHDM-NUARCodelists_Platform

- + EnquiryTypeValue
- + ActivityTypeCategoryValue
- + ActivityTypeValue
- + ActorTypeValue
- + AnnotationHorizontalAlignmentValue
- + AnnotationVerticalAlignmentValue
- + CoverageTypeValue
- + DataProvenanceValue
- + DataSensitivityLevelValue
- + DataServiceTypeValue
- + NationalOrRegionalCoverageValue
- + ObservationCategoryValue
- + ObservationFeedbackRatingValue
- + ObservationImpactValue
- + ObservationSharingScopePrimaryValue
- + ObservationSharingScopeSecondaryValue
- + ObservationStatusValue
- + ObservationVisibilityStatusValue
- + OrganisationTypeValue
- + RuleNotificationTypeValue
- + ServiceAreaPurposeValue
- + ServiceProviderTypeValue
- + UtilitySurveyTypeValue

(from NHDM-NUARCodelistRegister)

«ApplicationSchema»
NHDM-NUARCodelists_Transformation

- + AccessTypeValue
- + ContactDetailsType
- + ContainerTypeValue
- + ConveyanceCategoryValue
- + ConveyanceMethodValue
- + DepthMethodValue
- + EnhancedMeasuresTypeValue
- + FeatureTypeValue
- + HorizontalMeasurementMethodValue
- + InstallationMethodTypeValue
- + IntendedPermanenceValue
- + LifecycleStatusValue
- + LocaleReferenceTypeValue
- + LocationTypeValue
- + MaterialGradeValue
- + MaterialValue
- + MeasurementUnitsValue
- + NetworkAccessoryTypeValue
- + NetworkDescriptionTypeValue
- + NetworkLinkComponentTypeValue
- + NetworkNodeComponentTypeValue
- + NonUtilityObjectTypeValue
- + OperatingConveyanceLevelTypeValue
- + OperationalStatusValue
- + PhysicalProtectionTypeValue
- + PlanningAreaTypeValue
- + QualityLevelValue
- + ServiceAreaTypeValue
- + SiteTypeValue
- + SupportTypeValue
- + TemperatureRangeValue
- + UndergroundStatusValue
- + UnitOfTimeValue
- + UtilitySubTypeValue
- + UtilityTypeValue
- + Codelist Register - Protected Sites
- + Codelist Register - Sewer Network

(from NHDM-NUARCodelistRegister)

Figure 1: NUAR Harmonised Data Model - Logical

1.1.1.1 NUAR Harmonised Data Model - Logical - NUARCodelists-Platform diagram

GML diagram in package 'NHDM-NUARCodelists_Platform'

NUAR Harmonised Data Model - Logical - NUARCodelists-Platform
Version 2.1.2
Created on 24/11/2023. Last modified 06/08/2024

«CodeList»
ActorTypeValue
+ Data Owner
+ Data Provider
+ Object Operator
+ Object Owner
+ Service Provider
+ Utility Survey Commissioner
+ Utility Surveyor

«CodeList»
OrganisationTypeValue

«CodeList»
ServiceProviderTypeValue

«CodeList»
DataSensitivityLevelValue

«CodeList»
AnnotationHorizontalAlignmentValue
+ Centre
+ Full
+ Left
+ Right

«CodeList»
AnnotationVerticalAlignmentValue
+ Baseline
+ Bottom
+ Centre
+ Top

«CodeList»
ActivityTypeValue   A

«CodeList»
EnquiryTypeValue
+ Emergency Works
+ Initial Enquiry
+ Planned Works
+ Planning and Site Investigation

«CodeList»
DataServiceTypeValue
+ Custom
+ OGC API Features
+ OGC API Tiles
+ Other
+ VTS
+ WFS
+ WMS
+ WMTS

«CodeList»
UtilitySurveyTypeValue
+ Non-PAS128 Survey
+ Other
+ PAS128:2022 – Type A (verification)
+ PAS128:2022 – Type B (detection)
+ PAS128:2022 – Type C (site reconnaissance)
+ PAS128:2022 – Type D (desktop utility records search)

«CodeList»
DataProvenanceValue
+ Asset Owner Records
+ Contractor As-laid Drawings
+ Field Observation
+ Non-PAS128 Survey
+ Other
+ PAS128 Utility Survey
+ Sensor Record
+ Unknown

«CodeList»
ActivityTypeCategoryValue

«CodeList»
CoverageTypeValue
+ Area Submission Replacement Scope
+ Custom Backdrop
+ GeoReferenced Layer
+ Other
+ Supplemental Data Area

«CodeList»
ServiceAreaPurposeValue
+ Asset Network Coverage
+ Operations Coverage
+ Other
+ Regulatory Area

«CodeList»
NationalOrRegionalCoverageValue
+ East Midlands (England)
+ East of England
+ England
+ England and Wales
+ England Wales and Northern Ireland
+ Great Britain
+ London
+ N/A
+ North East (England)
+ North West (England)
+ Northern Ireland
+ Scotland
+ South East (England)
+ South West (England)
+ UK
+ Wales
+ West Midlands (England)
+ Yorkshire and the Humber

«CodeList»
RuleNotificationTypeValue
+ API
+ Email
+ NUAR Notification
+ Others
+ SMS

«CodeList»
ObservationCategoryValue
+ Contaminated Land
+ Hazardous Materials
+ Other
+ Overhead Obstruction
+ Security Report
+ Subsurface Conditions
+ Subsurface Structures
+ Surface or Ground Conditions
+ Surface Structures
+ Unknown or Unidentified Object
+ Voids, Cellars, Basements

«CodeList»
ObservationImpactValue
+ Minimal
+ Moderate
+ No Impact
+ Other
+ Significant
+ Works Suspended

«CodeList»
ObservationStatusValue
+ Accepted
+ Acknowledged
+ Actioned
+ Rejected
+ Removed
+ Submitted
+ Withdrawn

«CodeList»
ObservationVisibilityStatusValue
+ Deleted
+ Hidden
+ Visible

«CodeList»
ObservationSharingScopePrimaryValue
+ Named Organisations
+ Organisation Extended
+ Organisation Only
+ Private
+ Public
+ Supply Chain

«CodeList»
ObservationSharingScopeSecondaryValue
+ Organisation Only
+ Private
+ Supply Chain

«CodeList»
ObservationFeedbackRatingValue
+ Negative
+ Neutral
+ Positive

Figure 2: NUAR Harmonised Data Model - Logical - NUARCodelists-Platform

1.1.1.2   NUAR Harmonised Data Model - Logical - NUARCodelists-Transformation diagram

GML diagram in package 'NHDM-NUARCodelists_Transformation'

Figure 3: NUAR Harmonised Data Model - Logical - NUARCodelists-Transformation

1.1.1.2.1   Codelist Register - Protected Sites diagram

GML diagram in package 'Codelist Register - Protected Sites'

<div align="right">
Codelist Register - Protected Sites
Version 2.1.1
Created on 21/08/2021. Last modified 06/02/2024
</div>

```
┌─────────────────────────────────────────────────────────┐
│                        «CodeList»                        │
│                 DesignationPurposeValue                  │
├─────────────────────────────────────────────────────────┤
│  +   Conservation Area                                   │
│  +   Mossland                                            │
│  +   Protecting And Enhancing Biodiversity And Habitats  │
│  +   Wildlife Enhancement Corridors                      │
└─────────────────────────────────────────────────────────┘
```

Figure 4: Codelist Register - Protected Sites

1.1.1.2.2 Codelist Register - Sewer Network diagram

GML diagram in package 'Codelist Register - Sewer Network'

<div align="right">

Codelist Register - Sewer Network
Version 2.1.1
Created on 21/08/2021. Last modified 06/02/2024

</div>

«CodeList» **SewerDepthTypeValue**
+ Downstream Invert Depth
+ Unknown
+ Upstream Invert Depth
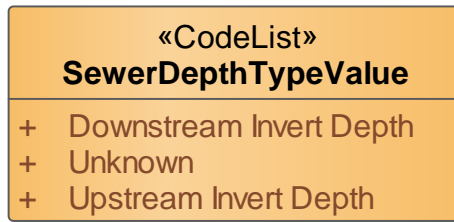
Figure 5: Codelist Register - Sewer Network

1.1.2 NHDM-NUARCustomBackdrop diagram

Class diagram in package 'NHDM-NUARCustomBackdrop'

NHDM-NUARCustomBackdrop
Version 2.1.2
Created on 11/07/2022. Last modified 28/07/2024
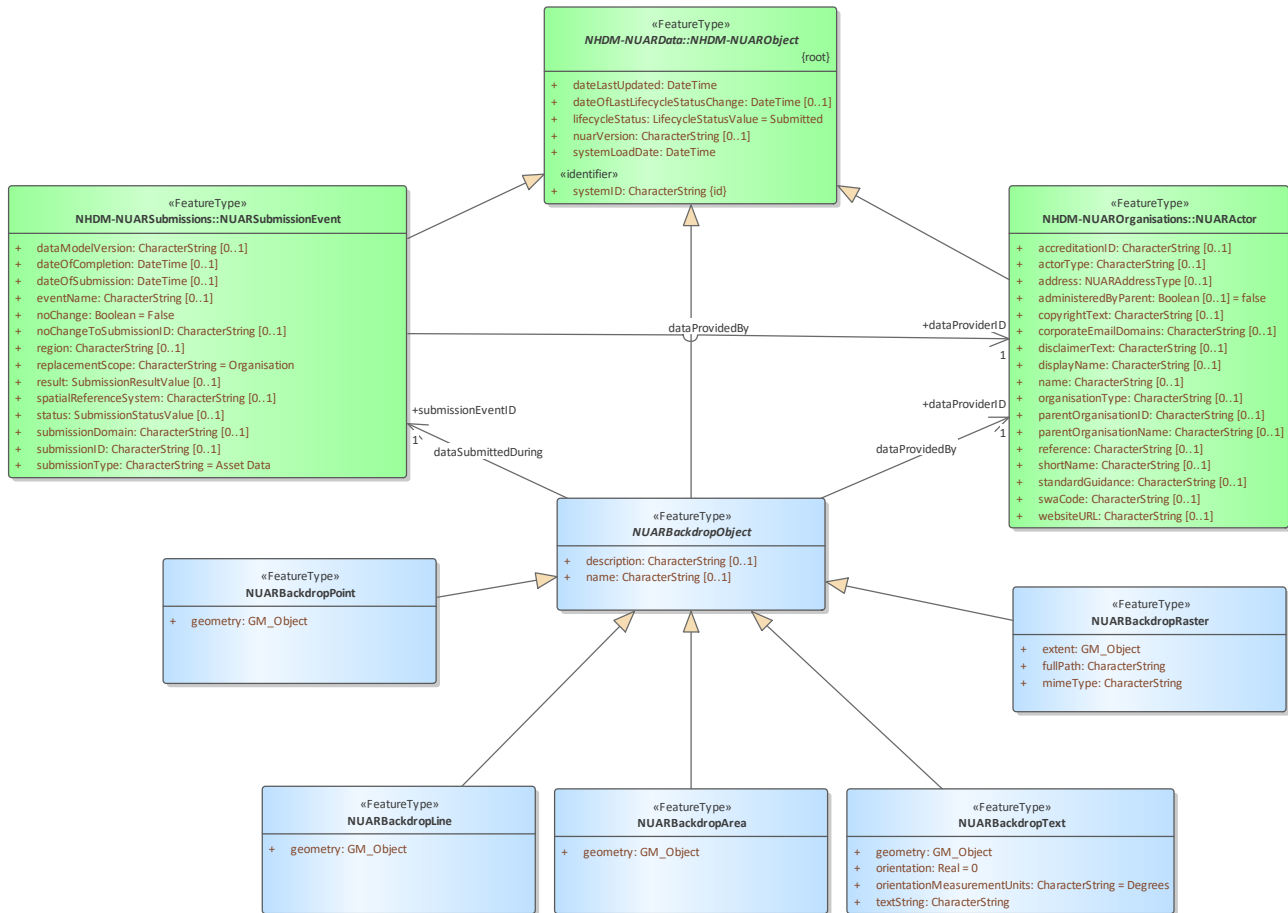
Figure 6: NHDM-NUARCustomBackdrop

1.1.3 NUAR Harmonised Data Model - Logical - NUARData diagram

GML diagram in package 'NHDM-NUARData'

NUAR Harmonised Data Model - Logical - NUARData
Version 2.1.2
Created on 17/08/2021. Last modified 13/08/2024
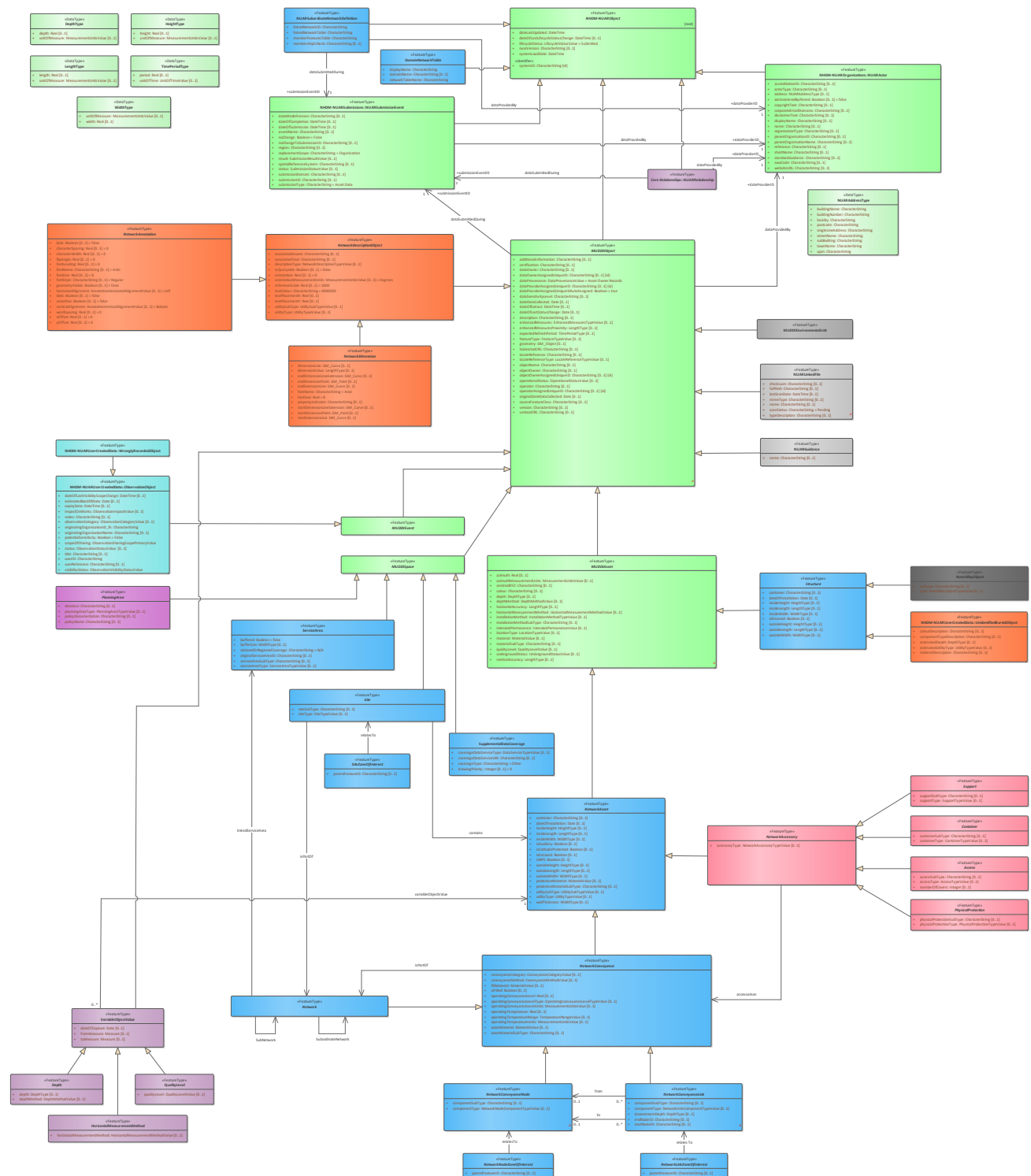
Figure 7: NUAR Harmonised Data Model - Logical - NUARData

1.1.3.1   Core Relationships diagram

Class diagram in package 'Core Relationships'

Core Relationships
Version 2.1.2
Created on 16/11/2021. Last modified 13/08/2024
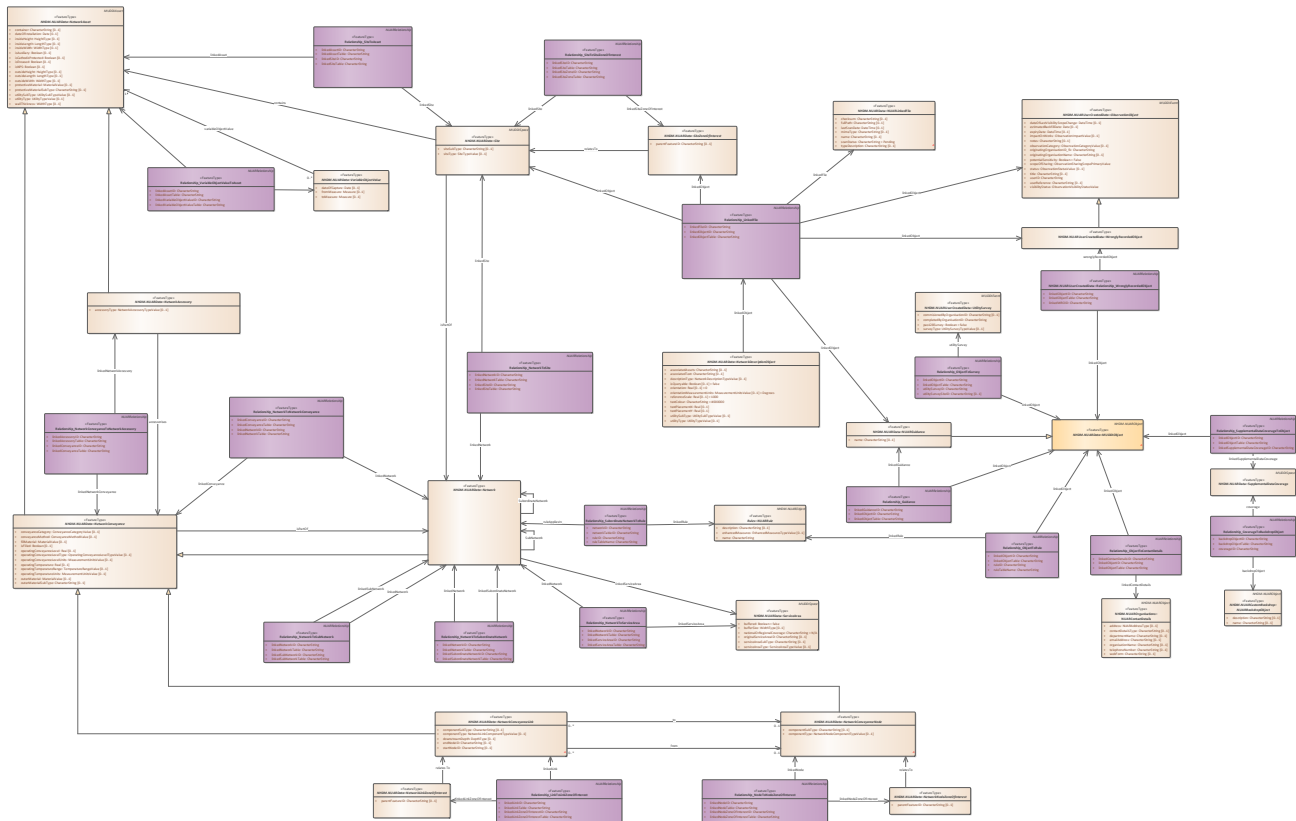
Figure 8: Core Relationships

1.1.3.2   Drainage diagram

Class diagram in package 'Drainage'

Drainage
Version 2.1.1
Created on 15/10/2020. Last modified 13/08/2024
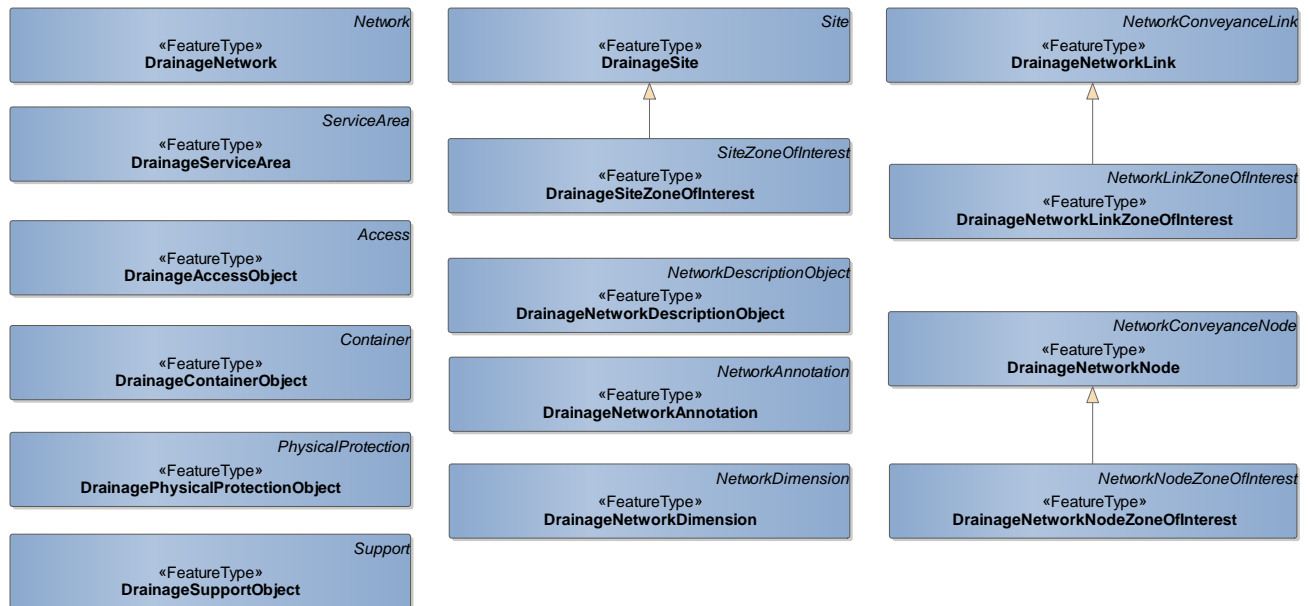
Figure 9: Drainage

1.1.3.3   Electricity Network diagram

Class diagram in package 'Electricity Network'

Electricity Network
Version 2.1.1
Created on 06/08/2019. Last modified 13/08/2024
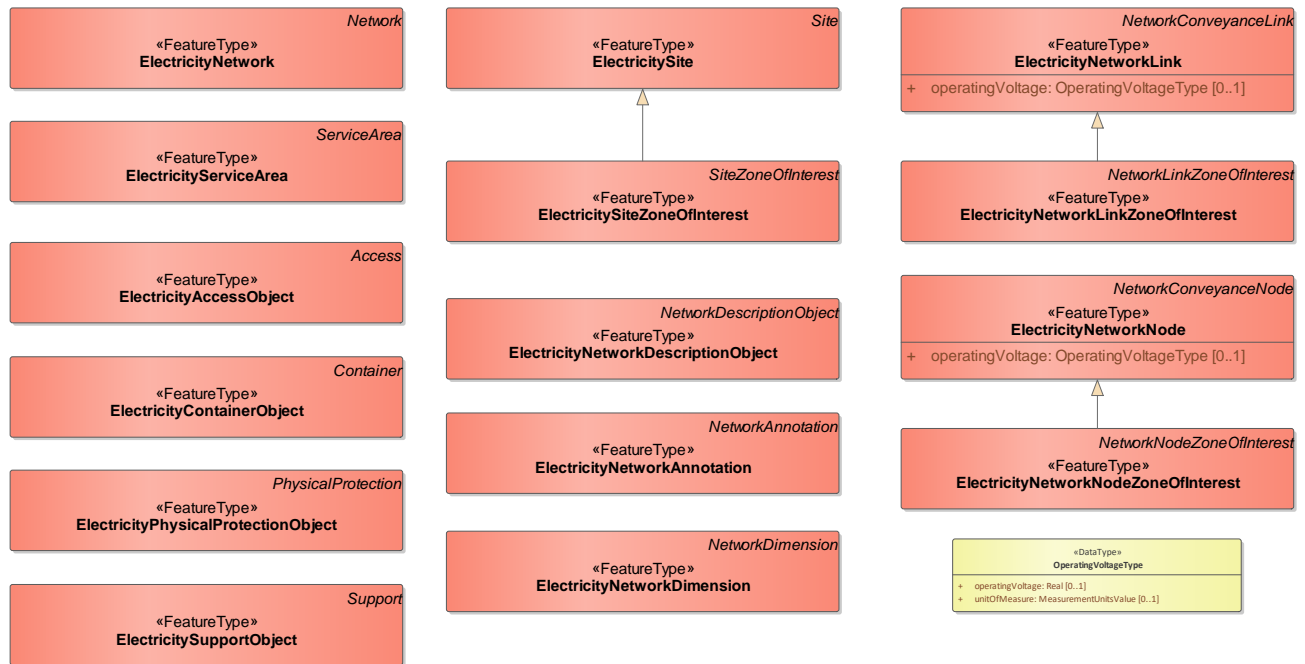
Figure 10: Electricity Network

1.1.3.4   Fuel and Chemicals Network diagram

Class diagram in package 'Fuel and Chemicals Network'

Fuel and Chemicals Network
Version 2.1.1
Created on 06/08/2019. Last modified 13/08/2024

Network
«FeatureType»
FuelAndChemicalsNetwork

ServiceArea
«FeatureType»
FuelAndChemicalsServiceArea

Access
«FeatureType»
FuelAndChemicalsAccessObject

Container
«FeatureType»
FuelAndChemicalsContainerObject

PhysicalProtection
«FeatureType»
FuelAndChemicalsPhysicalProtectionObject

Support
«FeatureType»
FuelAndChemicalsSupportObject

Site
«FeatureType»
FuelAndChemicalsSite

SiteZoneOfInterest
«FeatureType»
FuelAndChemicalsSiteZoneOfInterest

NetworkDescriptionObject
«FeatureType»
FuelAndChemicalsNetworkDescriptionObject

NetworkAnnotation
«FeatureType»
FuelAndChemicalsNetworkAnnotation

NetworkDimension
«FeatureType»
FuelAndChemicalsNetworkDimension

NetworkConveyanceLink
«FeatureType»
FuelAndChemicalsNetworkLink
+   mahp: Boolean [0..1] = true
+   materialGrade: MaterialGradeValue [0..1]
+   slabbing: Boolean [0..1] = false
+   tape: Boolean [0..1] = false

NetworkLinkZoneOfInterest
«FeatureType»
FuelAndChemicalsNetworkLinkZoneOfInterest

NetworkConveyanceNode
«FeatureType»
FuelAndChemicalsNetworkNode

NetworkNodeZoneOfInterest
«FeatureType»
FuelAndChemicalsNetworkNodeZoneOfInterest

Figure 11: Fuel and Chemicals Network

1.1.3.5 Gas Network diagram

Class diagram in package 'Gas Network'

Gas Network
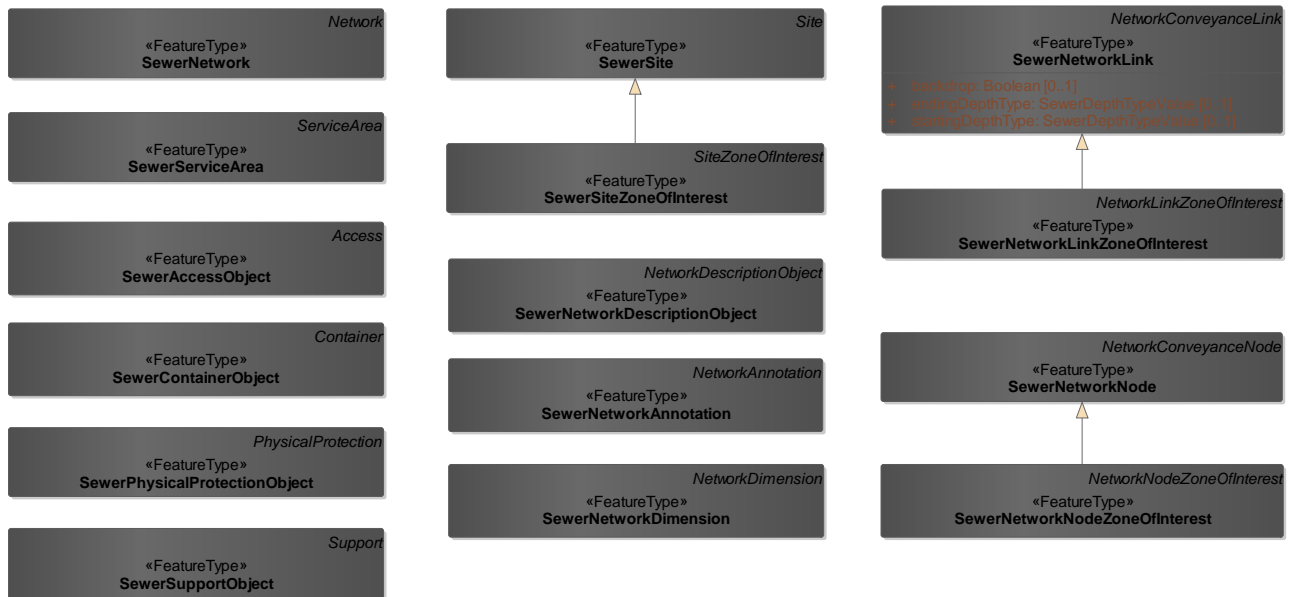Version 2.1.1
Created on 06/08/2019. Last modified 13/08/2024
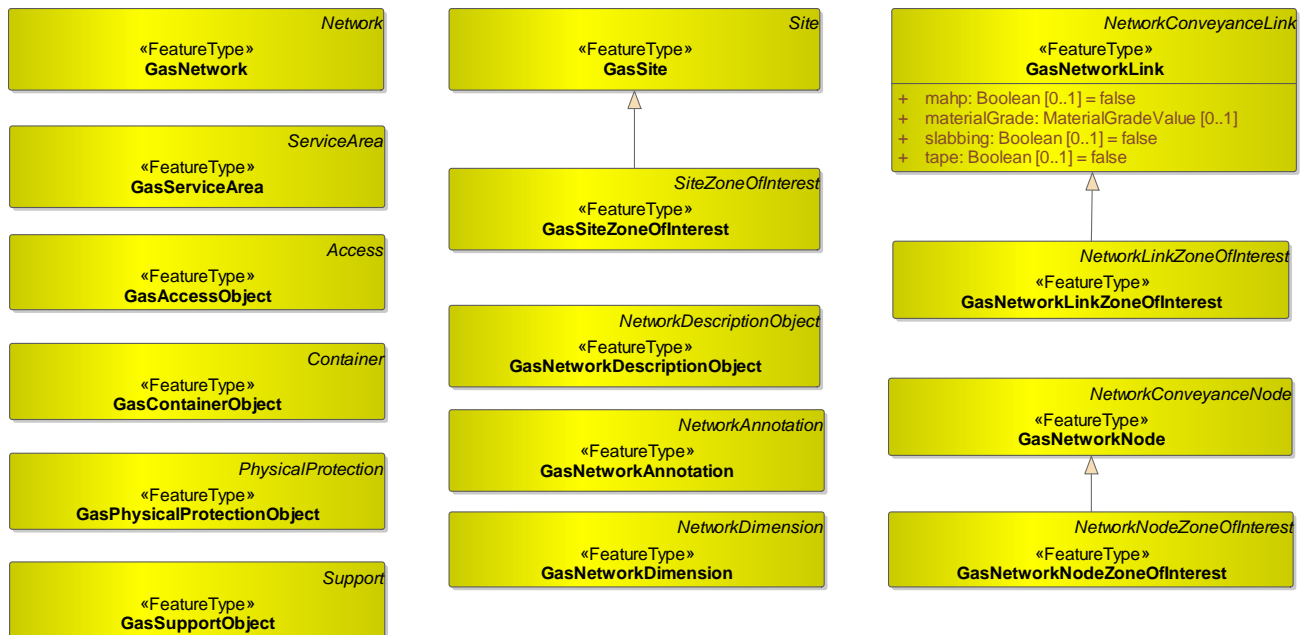
Figure 12: Gas Network

1.1.3.5.1   Planning Areas diagram

GML diagram in package 'Planning Areas'

Planning Areas
Version 2.1.1
Created on 30/03/2022. Last modified 13/08/2024

PlanningArea

«FeatureType»
GeneralPlanningArea

Network

«FeatureType»
PlanningAreaNetwork
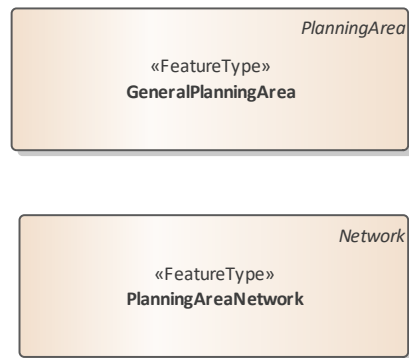
Figure 13: Planning Areas

1.1.3.5.1.1   Historical Land Use diagram

Class diagram in package 'Historical Land Use'

Historical Land Use
Version 2.1.1
Created on 15/10/2020. Last modified 13/08/2024
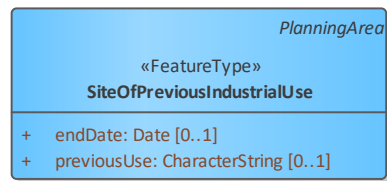
Figure 14: Historical Land Use

1.1.3.5.1.2   Protected Sites diagram

Class diagram in package 'Protected Sites'

Protected Sites
Version 2.1.1
Created on 15/10/2020. Last modified 13/08/2024
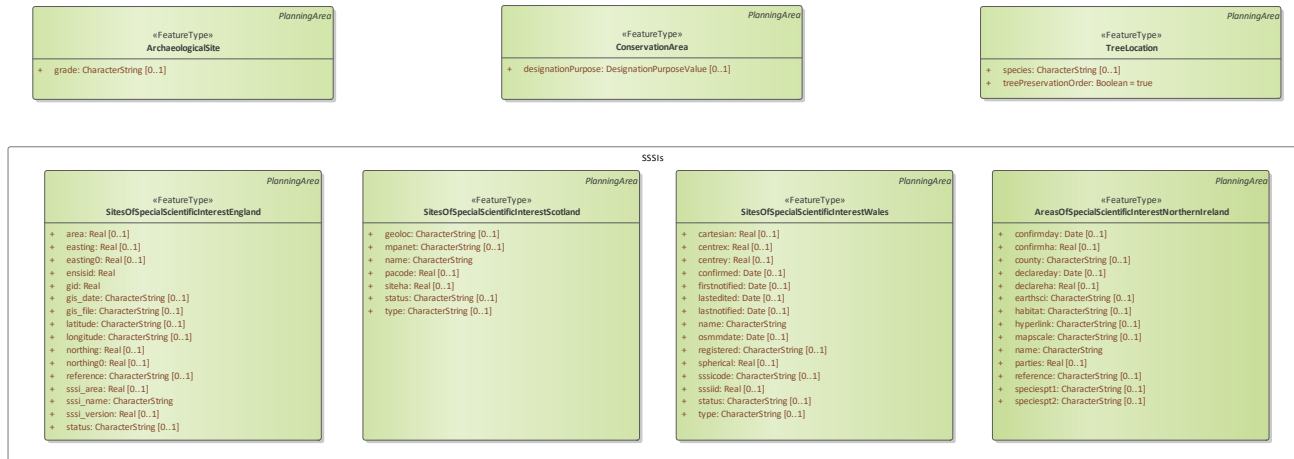
Figure 15: Protected Sites

1.1.3.5.1.3   Restricted Sites diagram

GML diagram in package 'Restricted Sites'

Restricted Sites
Version 2.1.1
Created on 30/03/2022. Last modified 13/08/2024

PlanningArea

«FeatureType»
RestrictedPlanningArea

Figure 16: Restricted Sites

1.1.3.6   Sewer Network diagram

GML diagram in package 'Sewer Network'

Sewer Network
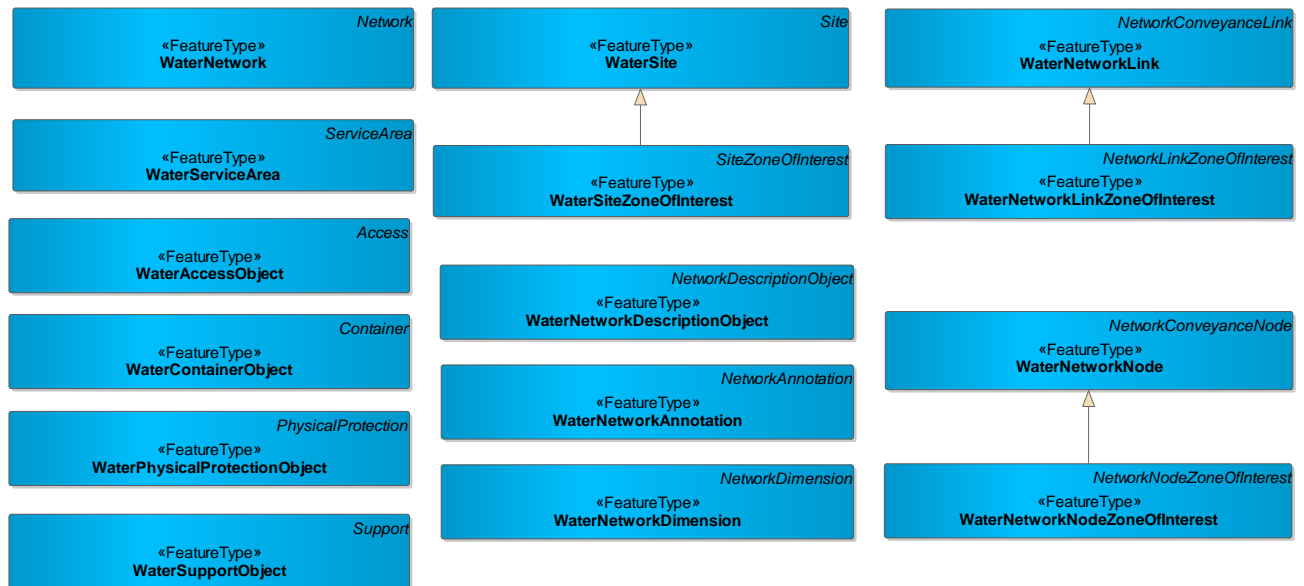Version 2.1.1
Created on 06/08/2019. Last modified 13/08/2024

Network
«FeatureType»
SewerNetwork

ServiceArea
«FeatureType»
SewerServiceArea

Access
«FeatureType»
SewerAccessObject

Container
«FeatureType»
SewerContainerObject

PhysicalProtection
«FeatureType»
SewerPhysicalProtectionObject

Support
«FeatureType»
SewerSupportObject

Site
«FeatureType»
SewerSite

SiteZoneOfInterest
«FeatureType»
SewerSiteZoneOfInterest

NetworkDescriptionObject
«FeatureType»
SewerNetworkDescriptionObject

NetworkAnnotation
«FeatureType»
SewerNetworkAnnotation

NetworkDimension
«FeatureType»
SewerNetworkDimension

NetworkConveyanceLink
«FeatureType»
SewerNetworkLink
+ backdrop: Boolean [0..1]
+ endingDepthType: SewerDepthTypeValue[0..1]
+ startingDepthType: SewerDepthTypeValue [0..1]

NetworkLinkZoneOfInterest
«FeatureType»
SewerNetworkLinkZoneOfInterest

NetworkConveyanceNode
«FeatureType»
SewerNetworkNode

NetworkNodeZoneOfInterest
«FeatureType»
SewerNetworkNodeZoneOfInterest

Figure 17: Sewer Network

1.1.3.7   Telecommunications Network diagram

GML diagram in package 'Telecommunications Network'

Telecommunications Network
Version 2.1.1
Created on 06/08/2019. Last modified 13/08/2024
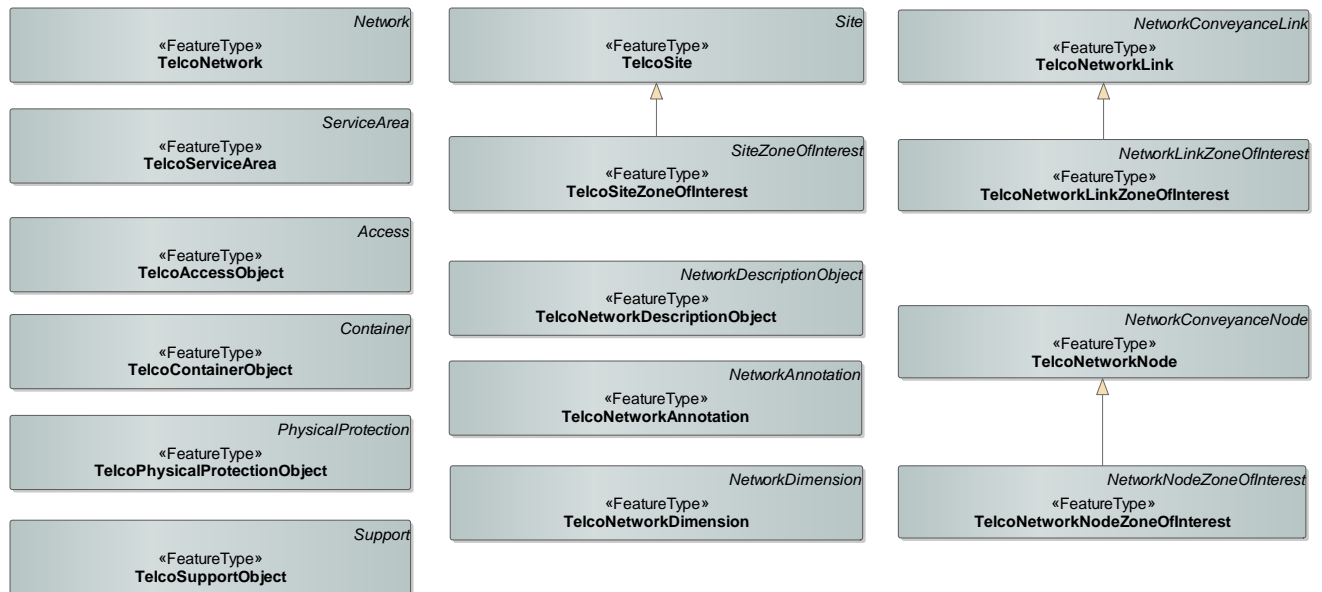
Figure 18: Telecommunications Network

1.1.3.8 Thermal Network diagram

Class diagram in package 'Thermal Network'

Thermal Network
Version 2.1.1
Created on 06/08/2019. Last modified 13/08/2024
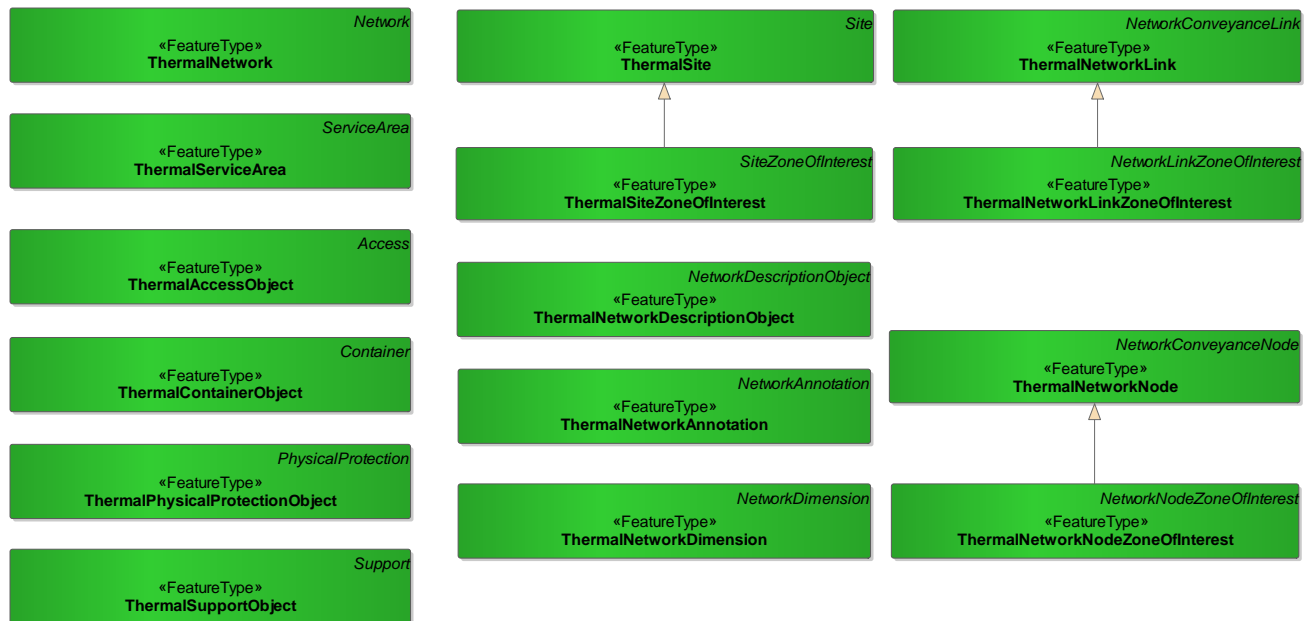
Figure 19: Thermal Network

1.1.3.9   Transport diagram

Class diagram in package 'Transport'

Transport
Version 2.1.1
Created on 06/08/2019. Last modified 13/08/2024
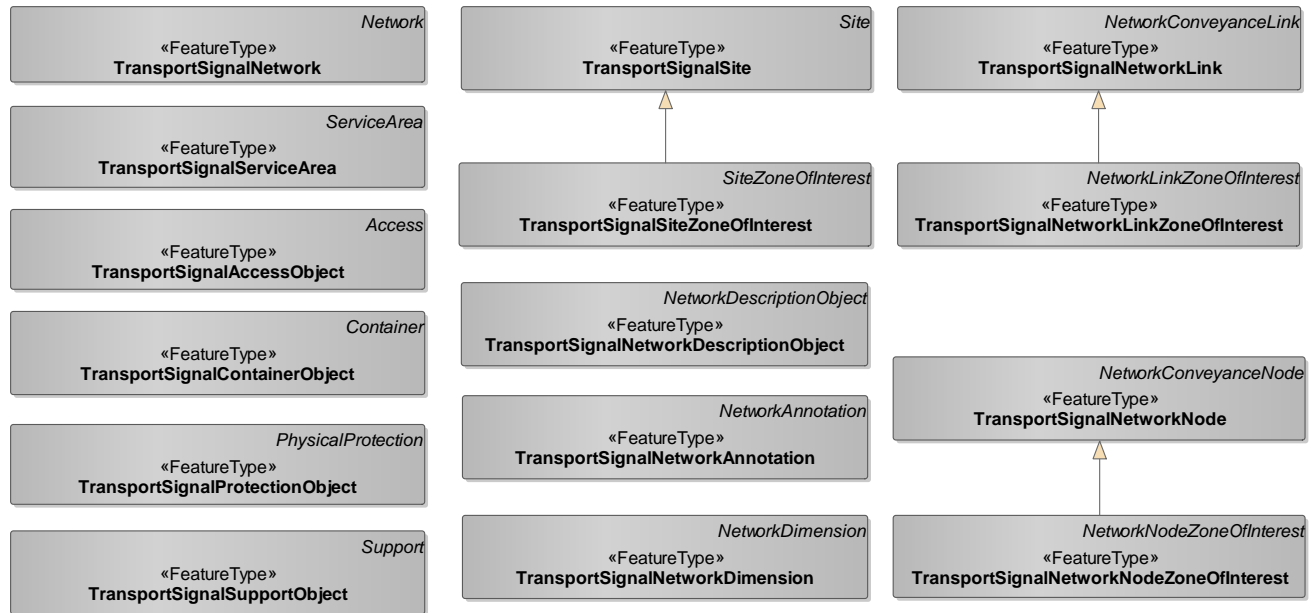
Figure 20: Transport

1.1.3.10   Water Network diagram

Class diagram in package 'Water Network'

Water Network
Version 2.1.1
Created on 06/08/2019. Last modified 13/08/2024

Figure 21: Water Network

1.1.4 NUAR Harmonised Data Model - Logical - NUAROrganisations diagram

GML diagram in package 'NHDM-NUAROrganisations'

NUAR Harmonised Data Model - Logical - NUAROrganisations
Version 2.1.2
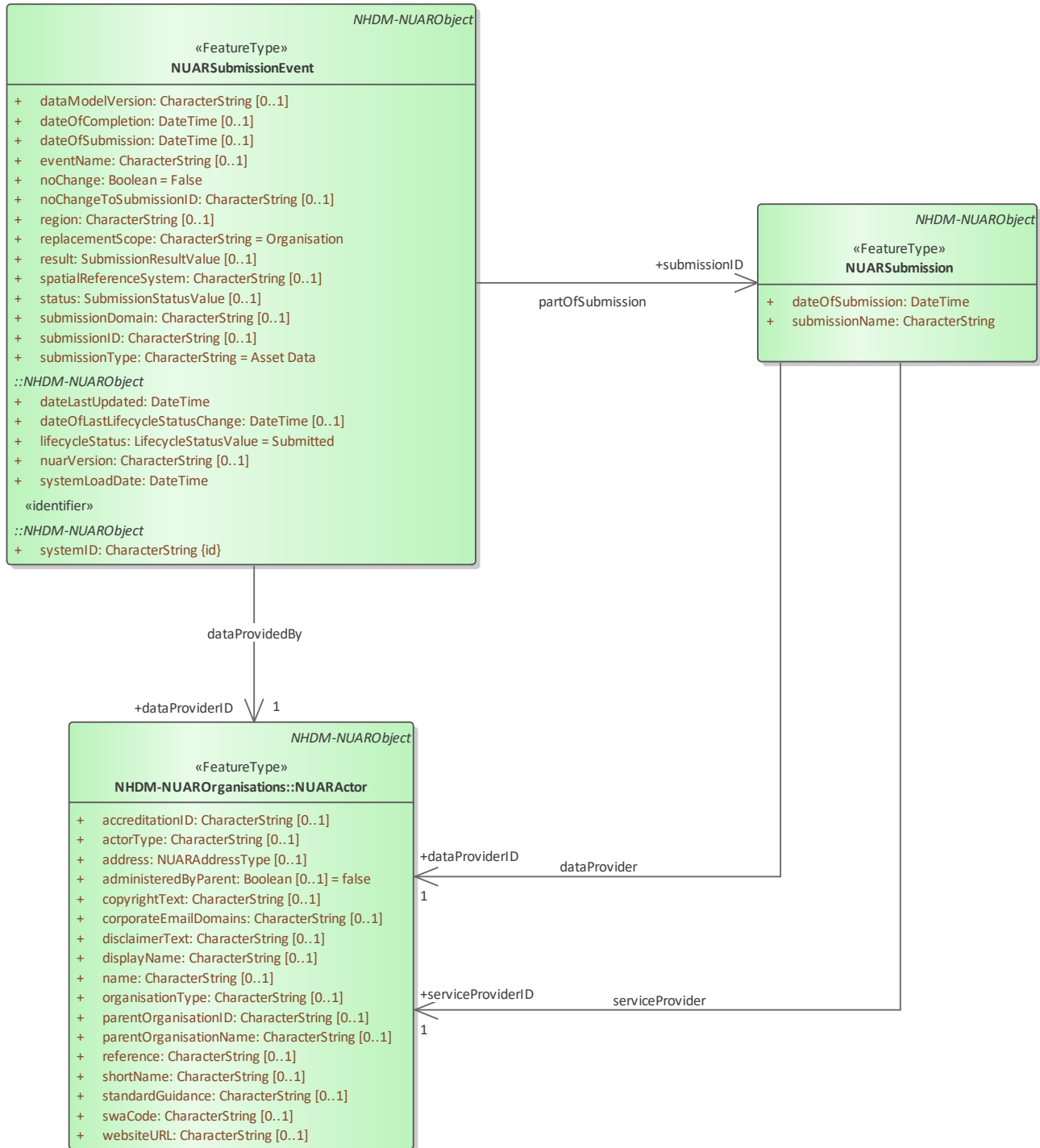Created on 30/01/2023. Last modified 13/08/2024

Figure 22: NUAR Harmonised Data Model - Logical - NUAROrganisations

1.1.4.1   NUAR Harmonised Data Model - Logical - Rules diagram

GML diagram in package 'Rules'

NUAR Harmonised Data Model - Logical - Rules
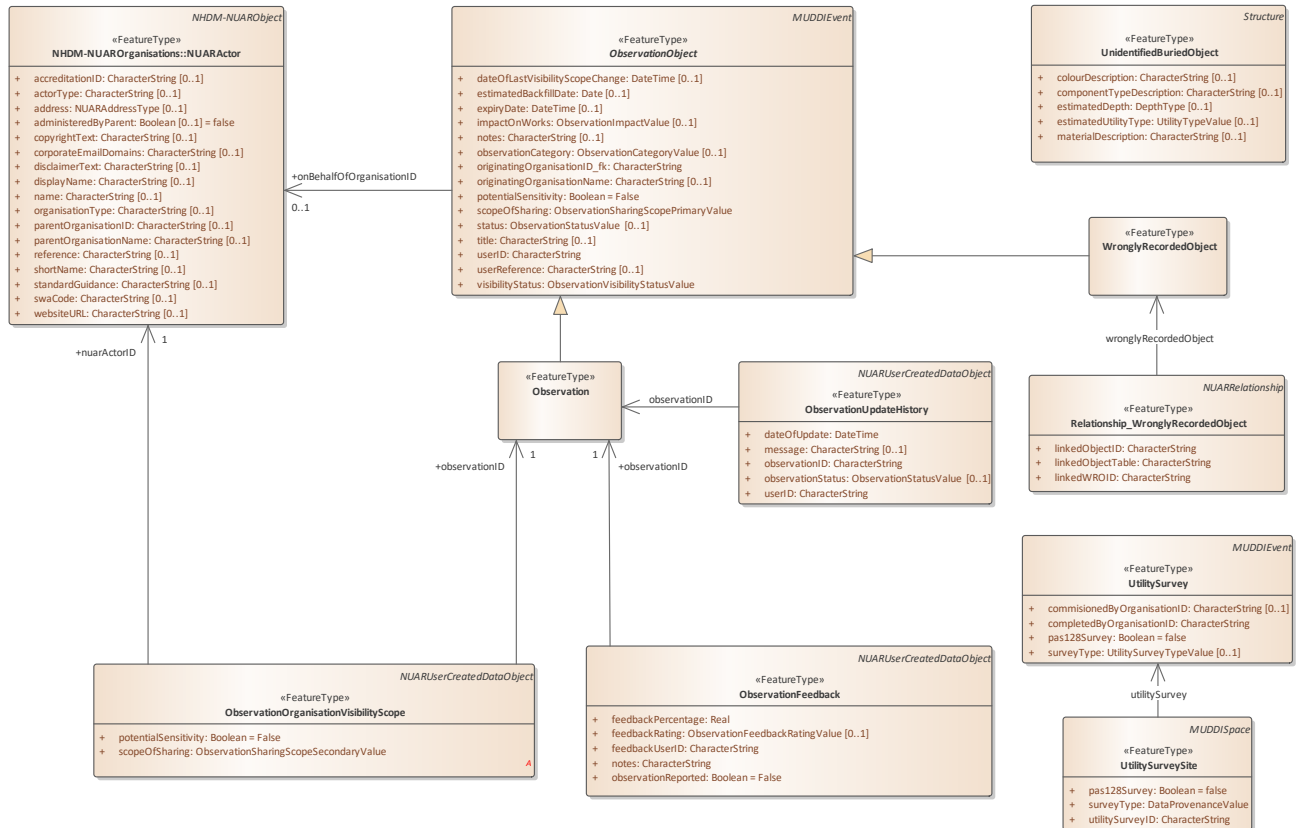Version 2.1.2
Created on 18/08/2021. Last modified 28/07/2024
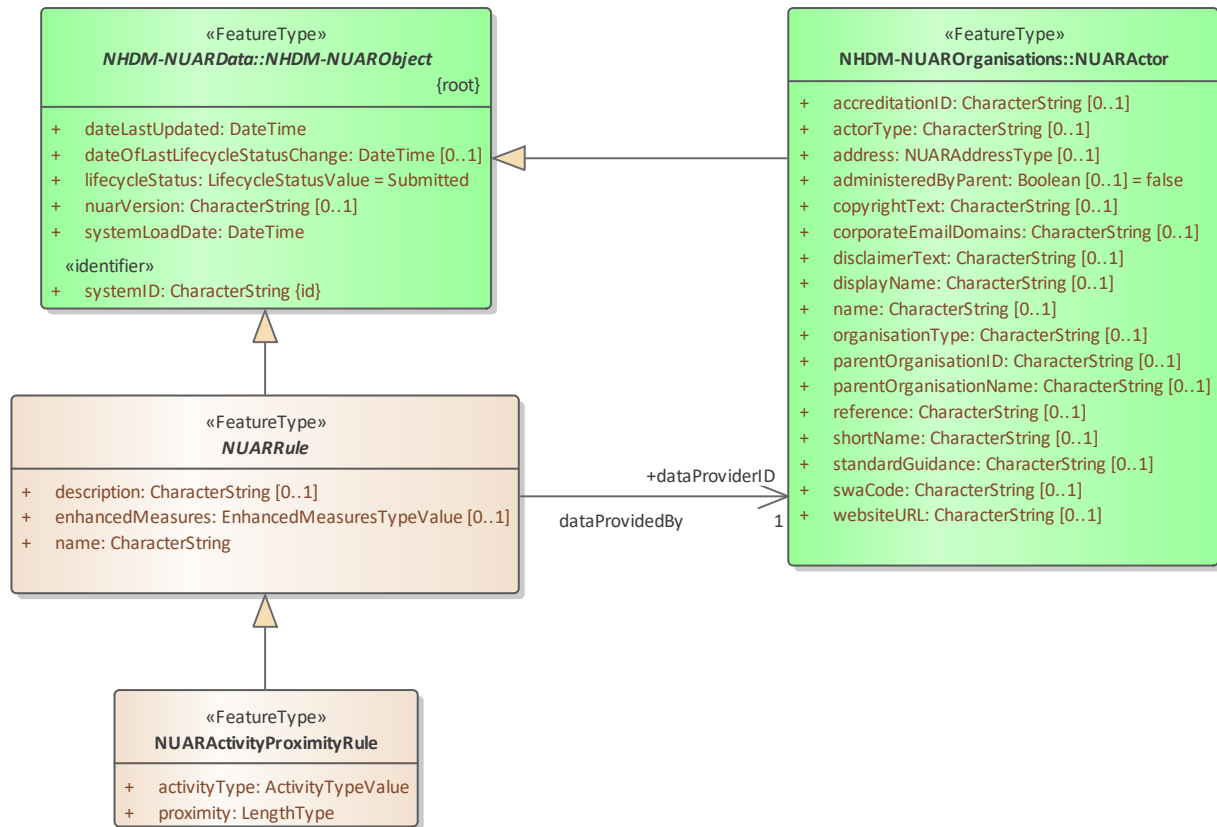
Figure 23: NUAR Harmonised Data Model - Logical - Rules

1.1.5 NUAR Harmonised Data Model - Logical - NUARSubmissions diagram

GML diagram in package 'NHDM-NUARSubmissions'

NUAR Harmonised Data Model - Logical - NUARSubmissions
Version 2.1.2
Created on 26/01/2023. Last modified 13/08/2024

Figure 24: NUAR Harmonised Data Model - Logical - NUARSubmissions

1.1.6 NUAR Harmonised Data Model - Logical - NUARUserCreatedData diagram

GML diagram in package 'NHDM-NUARUserCreatedData'

NUAR Harmonised Data Model - Logical - NUARUserCreatedData
Version 2.1.2
Created on 31/01/2023. Last modified 13/08/2024

Figure 25: NUAR Harmonised Data Model - Logical - NUARUserCreatedData

1.1.7 NUAR Harmonised Data Model - Logical - NUARVersion diagram

GML diagram in package 'NHDM-NUARVersion'

NUAR Harmonised Data Model - Logical - NUARVersion
Version 2.1.2
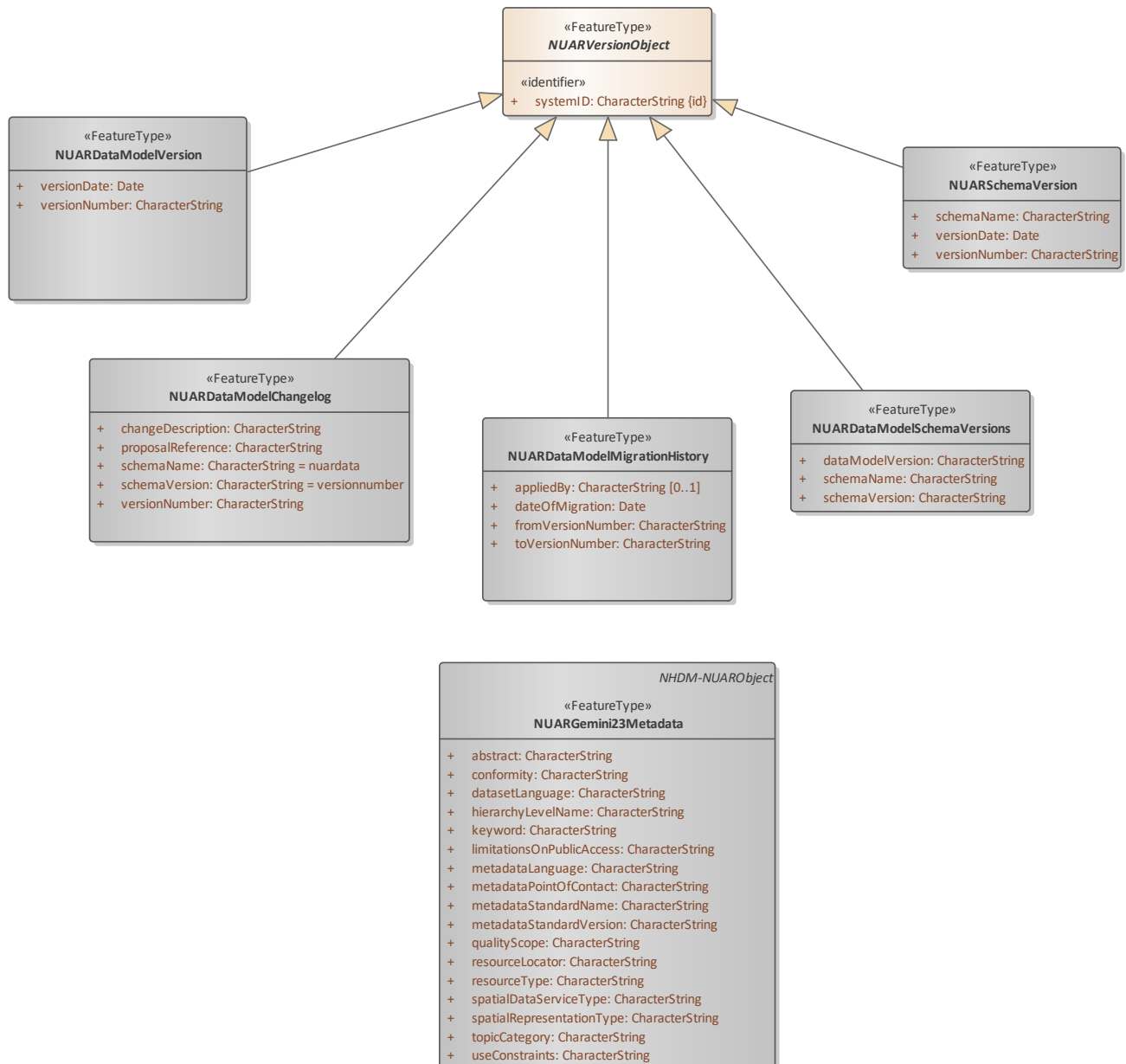Created on 11/03/2022. Last modified 28/07/2024

Figure 26: NUAR Harmonised Data Model - Logical - NUARVersion