Geospatial
Commission

National Underground Asset Register (NUAR)

NUAR Data Model Publication

MUDDI UK Excavation Profile - Logical 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 UK: Excavation profile of the MUDDI Conceptual Model.

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1.1 MUDDI - UK Excavation Profile - Logical diagram

GML diagram in package 'MUDDI - UK Excavation Profile - Logical'

MUDDI - UK Excavation Profile - Logical
Version 2.1.2
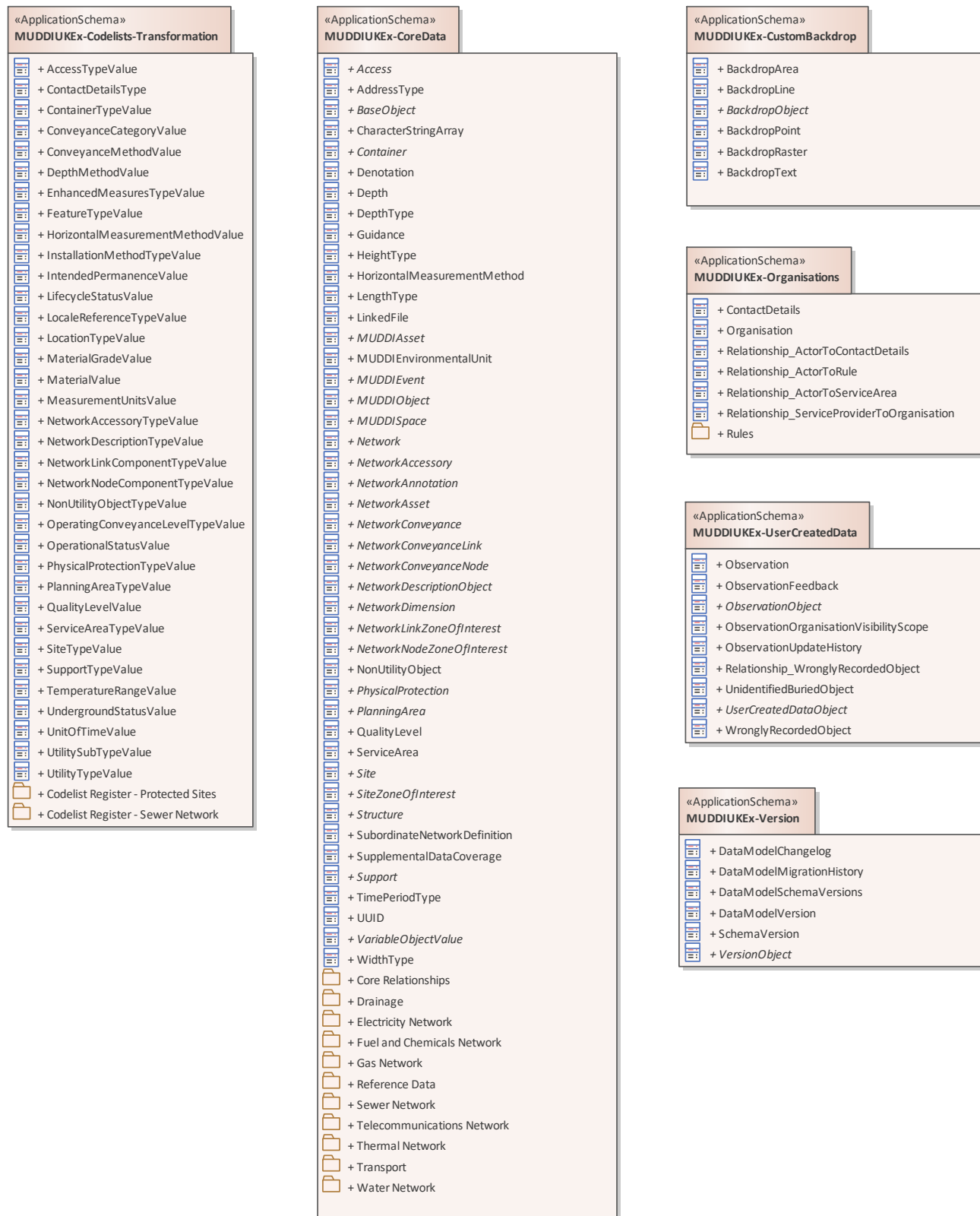Created on 06/10/2023. Last modified 02/08/2024

«ApplicationSchema»
MUDDIUKEx-Codelists-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

«ApplicationSchema»
MUDDIUKEx-CoreData

- + *Access*
- + AddressType
- + *BaseObject*
- + CharacterStringArray
- + *Container*
- + Denotation
- + Depth
- + DepthType
- + Guidance
- + HeightType
- + HorizontalMeasurementMethod
- + LengthType
- + LinkedFile
- + *MUDDIAsset*
- + MUDDIEnvironmentalUnit
- + *MUDDIEvent*
- + *MUDDIObject*
- + *MUDDISpace*
- + *Network*
- + *NetworkAccessory*
- + *NetworkAnnotation*
- + *NetworkAsset*
- + *NetworkConveyance*
- + *NetworkConveyanceLink*
- + *NetworkConveyanceNode*
- + *NetworkDescriptionObject*
- + *NetworkDimension*
- + *NetworkLinkZoneOfInterest*
- + *NetworkNodeZoneOfInterest*
- + NonUtilityObject
- + *PhysicalProtection*
- + *PlanningArea*
- + QualityLevel
- + ServiceArea
- + *Site*
- + *SiteZoneOfInterest*
- + *Structure*
- + SubordinateNetworkDefinition
- + SupplementalDataCoverage
- + *Support*
- + TimePeriodType
- + UUID
- + *VariableObjectValue*
- + WidthType
- + Core Relationships
- + Drainage
- + Electricity Network
- + Fuel and Chemicals Network
- + Gas Network
- + Reference Data
- + Sewer Network
- + Telecommunications Network
- + Thermal Network
- + Transport
- + Water Network

«ApplicationSchema»
MUDDIUKEx-CustomBackdrop

- + BackdropArea
- + BackdropLine
- + *BackdropObject*
- + BackdropPoint
- + BackdropRaster
- + BackdropText

«ApplicationSchema»
MUDDIUKEx-Organisations

- + ContactDetails
- + Organisation
- + Relationship_ActorToContactDetails
- + Relationship_ActorToRule
- + Relationship_ActorToServiceArea
- + Relationship_ServiceProviderToOrganisation
- + Rules

«ApplicationSchema»
MUDDIUKEx-UserCreatedData

- + Observation
- + ObservationFeedback
- + *ObservationObject*
- + ObservationOrganisationVisibilityScope
- + ObservationUpdateHistory
- + Relationship_WronglyRecordedObject
- + UnidentifiedBuriedObject
- + *UserCreatedDataObject*
- + WronglyRecordedObject

«ApplicationSchema»
MUDDIUKEx-Version

- + DataModelChangelog
- + DataModelMigrationHistory
- + DataModelSchemaVersions
- + DataModelVersion
- + SchemaVersion
- + *VersionObject*

Figure 1: MUDDI - UK Excavation Profile - Logical

1.1.1 MUDDI - UK Excavation Profile - Logical - Codelists-Transformation diagram

GML diagram in package 'MUDDIUKEx-Codelists-Transformation'

MUDDI - UK Excavation Profile - Logical - Codelists-Transformation
Version 2.1.2
Created on 09/06/2023. Last modified 06/08/2024

«CodeList» UtilityTypeValue
- Beer
- Chemicals
- District Heating
- Drainage
- Electric
- Gas
- HVAC
- Oil
- Other
- Petroleum
- Sewer
- Slurry
- Telecommunication
- Transportation
- Water

«CodeList» UtilitySubTypeValue
- Alarm
- Ammonia
- Combined Sewer
- Cooled Water
- CSO Overflow
- Drainage
- Electric Power
- Foul Sewer
- Glycol
- Heated Water
- Journey Time Apparatus
- Natural Water
- Non-Potable Water
- Other
- Potable Water
- Raw Water
- Steam
- Stored Water
- Street Lighting
- SuDS
- Surface Water Sewer
- Telecommunication
- Trade Effluent
- Treated Effluent
- Treated Water
- Untreated Effluent

«CodeList» NetworkDescriptionTypeValue
- Annotation
- Change of Diameter
- Change of Material
- Cross Section
- Depth
- Dimension
- Flow Direction
- Multimedia Attachment
- Other
- Pressure Marker
- Supplemental Drawing
- Survey Quality Level

«CodeList» ConveyanceMethodValue
- Extra High Voltage
- Gravity
- High Pressure
- High Voltage
- Intermediate Pressure
- Intermediate Voltage
- Low Pressure
- Low Voltage
- Medium Pressure
- Medium Voltage
- National High Pressure
- Other
- Pressure
- Pumped
- Regional High Pressure
- Regional Intermediate Pressure
- Syphon
- Unknown
- Vacuum

«CodeList» ConveyanceCategoryValue
- Auxiliary
- Collection
- Communication
- Discharge
- Distribution
- Dual Flow and Return Line
- Fire
- Flow Line
- Other
- Private
- Return Line
- Service
- Transmission
- Trunk
- Unknown

«CodeList» OperatingConveyanceLevelTypeValue
- Other
- Pressure
- Voltage

«CodeList» TemperatureRangeValue
- < 50 degrees centigrade
- > 80 degrees centigrade
- 50-80 degrees centigrade
- Untreated

«CodeList» MaterialGradeValue
- Other

«CodeList» NetworkLinkComponentTypeValue
- Auxiliary Power Conductor
- Bridge
- Cathodic Protection Conductor
- Culvert
- Drain
- Line
- Open Channel
- Optical Fibre
- Other
- Out of Standard Service
- Permeable Asphalt
- Pipe
- Pipeline
- Power Conductor
- Rain Garden
- Swale
- Telecommunications Link
- Telemetry Link
- Tree Pit
- Tunnel

«CodeList» MaterialValue
- ABS
- Aluminium
- Asbestos Cement
- Asphalt
- Brick
- Carbon Fibre
- Cast Iron
- Ceramic
- Clay
- Coated Steel
- Composite
- Concrete
- Copper
- Ductile Iron
- Earthen
- Fibreglass
- Galvanised Iron
- Galvanised Steel
- Geotextile
- Gravel
- HDPE
- Iron
- LDPE
- Lead
- MDPE
- MOPC
- Optical Fibre
- Other
- PEX
- Pitch Fibre
- Plastic
- PVC
- Spun Iron
- Steel
- Stone
- Tile
- Transite
- Unknown
- uPVC
- Wood

«CodeList» NetworkNodeComponentTypeValue
- Anchor Point
- Anode
- Beacon
- Bollard
- Cabinet
- Capped End
- Cathodic Protection Node
- CCTV
- Chamber
- Cleaning Device
- Culvert
- Discharge Device
- Drain
- Earthing Equipment
- EV Charging Point
- Filter
- Flow Control
- Gas Conditioner
- Gully
- Housing
- Hydrant
- Illuminated Sign
- Injection Point
- Inlet
- Joint
- Junction
- Kiosk
- Link Box
- Measuring Device
- Metering Device
- Offtake
- Other
- Out of Standard Service
- Outlet
- Overflow
- Parking Meter
- Pillar
- Pit
- Pond
- Post
- Pressure Reduction
- Pumping Equipment
- Purge Point
- Rain Garden
- Refuge Beacon
- Regulator
- Riser
- Rodding Eye
- School Crossing Flasher
- Shaft
- Sign Light
- Stand Pipe
- Streetlight
- Swale
- Syphon
- Tank
- Tee
- Telecommunications Node
- Telemetry Node
- Terminator
- Traffic Signal
- Trap
- Tree Pit
- Valve
- Vent
- Zebra Crossing

«CodeList» NetworkAccessoryTypeValue
- Access
- Container
- Other
- Physical Protection
- Support

«CodeList» AccessTypeValue
- Access Chamber
- Access Plate

«CodeList» PhysicalProtectionTypeValue
- Other
- Plate
- Slabbing
- Sleeve
- Tape

«CodeList» ServiceAreaTypeValue
- Administrative Boundary
- Coverage inferred from data
- Coverage of Works
- Data Supply Area
- Franchise Area
- Licence Area Boundary
- National or Regional Coverage
- Operational Patch
- Other
- Right of Access
- Site

«CodeList» SiteTypeValue
- Compressor Station
- General Site
- Independent/Private Network Site
- Multi-purpose Site
- Other
- Pumping Station
- Regulator Site
- Reservoir
- Section 50 Site
- Storage Site
- Substation
- Treatment Works

«CodeList» ContainerTypeValue
- Arcade
- Carrier Pipe
- Conduit
- Duct
- Other
- Pipe
- Pit
- Subduct
- Trench
- Tunnel
- Unknown
- Utilidor
- Vault
- Vent

«CodeList» SupportTypeValue
- Bed
- Bridge
- Footing
- Foundation
- Other
- Pad
- Pole
- Thrust Block
- Thrust Plate
- Tower

«CodeList» PlanningAreaTypeValue
- Archaeological Site
- Conservation Area
- Coordination Zone
- Former Industrial Site
- Historical Site
- Listed Building
- Other
- Permit to Dig Restricted Area
- Scheduled Ancient Monument
- Section 50 Site
- Section 58
- Security Zone
- Site of Special Scientific Interest
- Tree Preservation Order
- Wetland
- Wildlife Corridor

«CodeList» AccessTypeValue (pink, center)
- Access Chamber
- Access Plate
- Other
- Pig Trap

«CodeList» NonUtilityObjectTypeValue (greyed out)

«CodeList» UndergroundStatusValue
- Aboveground
- Mixed
- Overhead
- Submerged
- Surface
- Underground

«CodeList» InstallationMethodTypeValue
- Bursting
- Dead Insertion
- Directional Drilling
- Ducted
- Live Insertion
- Moling
- Open Cut
- Other
- Trenching

«CodeList» IntendedPermanenceValue
- Permanent
- Temporary
- Unknown

«CodeList» LocationTypeValue
- Carriageway
- Field
- Footpath
- Other
- Verge

«CodeList» LocaleReferenceTypeValue
- Other
- Postcode
- UPRN
- USRN

«CodeList» FeatureTypeValue
- Access Object
- Container Object
- Network
- Network Accessory Object
- Network Area
- Network Description Object
- Network Link
- Network Node
- Network Object
- Network Site
- Physical Protection Object
- Planning Area
- Support Object

«CodeList» ContactDetailsType
- Asset Protection
- Business
- Emergency
- Other
- Planning

«CodeList» HorizontalMeasurementMethodValue
- Assumed
- Estimated
- Measured
- Not Applicable
- Sensed
- Surveyed
- Unknown

«CodeList» DepthMethodValue
- Assumed
- Estimated
- Not Applicable
- Other
- Sensed
- Standard
- Surveyed
- Unknown

«CodeList» MeasurementUnitsValue
- Bar
- Centimetres
- Degrees
- Degrees Centigrade
- Degrees Fahrenheit
- Feet
- Inches
- Kilometres
- kV
- mBar
- Megahertz
- Metres
- Miles
- Millimetres
- Radians
- Revolutions
- Square Centimetres
- Square Feet
- Square Inches
- Square Kilometres
- Square Metres
- Square Miles
- Square Millimetres
- Square Yards
- Unknown
- V
- Yards

«CodeList» UnitOfTimeValue
- Day
- Month
- Week
- Year

«CodeList» OperationalStatusValue
- Abandoned
- Commissioned
- Decommissioned
- Delete Before Installation
- In Service
- Installed
- Other
- Out Of Commission
- Pending Abandonment
- Pending Removal
- Proposed
- Removed
- Under Construction
- Unfit For Service
- Unknown

«CodeList» LifecycleStatusValue
- Archived
- Deleted
- Publishable
- Ready for Archive
- Retired
- Submitted

«CodeList» EnhancedMeasuresTypeValue
- Active monitoring of searches
- Further consultation required
- Permission required
- Proceed with caution
- Special guidance required

«CodeList» QualityLevelValue
- QL-A
- QL-B1
- QL-B1P
- QL-B2
- QL-B2P
- QL-B3
- QL-B3P
- QL-B4
- QL-B4P
- QL-C
- QL-D

Figure 2: MUDDI - UK Excavation Profile - Logical - Codelists-Transformation

1.1.1.1   Codelist Register - Protected Sites diagram

GML diagram in package 'Codelist Register - Protected Sites'

Codelist Register - Protected Sites
Version 2.1.2
Created on 21/08/2021. Last modified 21/05/2024

«CodeList»
DesignationPurposeValue

+   Conservation Area
+   Mossland
+   Protecting And Enhancing Biodiversity And Habitats
+   Wildlife Enhancement Corridors

Figure 3: Codelist Register - Protected Sites

1.1.1.2   Codelist Register - Sewer Network diagram

GML diagram in package 'Codelist Register - Sewer Network'

Codelist Register - Sewer Network
Version 2.1.2
Created on 21/08/2021. Last modified 21/05/2024

«CodeList»
SewerDepthTypeValue
+ Downstream Invert Depth
+ Unknown
+ Upstream Invert Depth
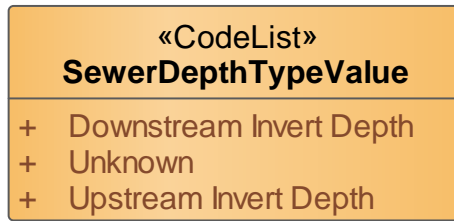
Figure 4: Codelist Register - Sewer Network

1.1.2 MUDDI - UK Excavation Profile - Logical - Core Data diagram

GML diagram in package 'MUDDIUKEx-CoreData'

Figure 5: MUDDI - UK Excavation Profile - Logical - Core Data

1.1.2.1   Core Relationships diagram
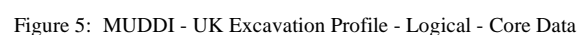
Class diagram in package 'Core Relationships'

Core Relationships
Version 2.1.2
Created on 16/11/2021. Last modified 28/07/2024
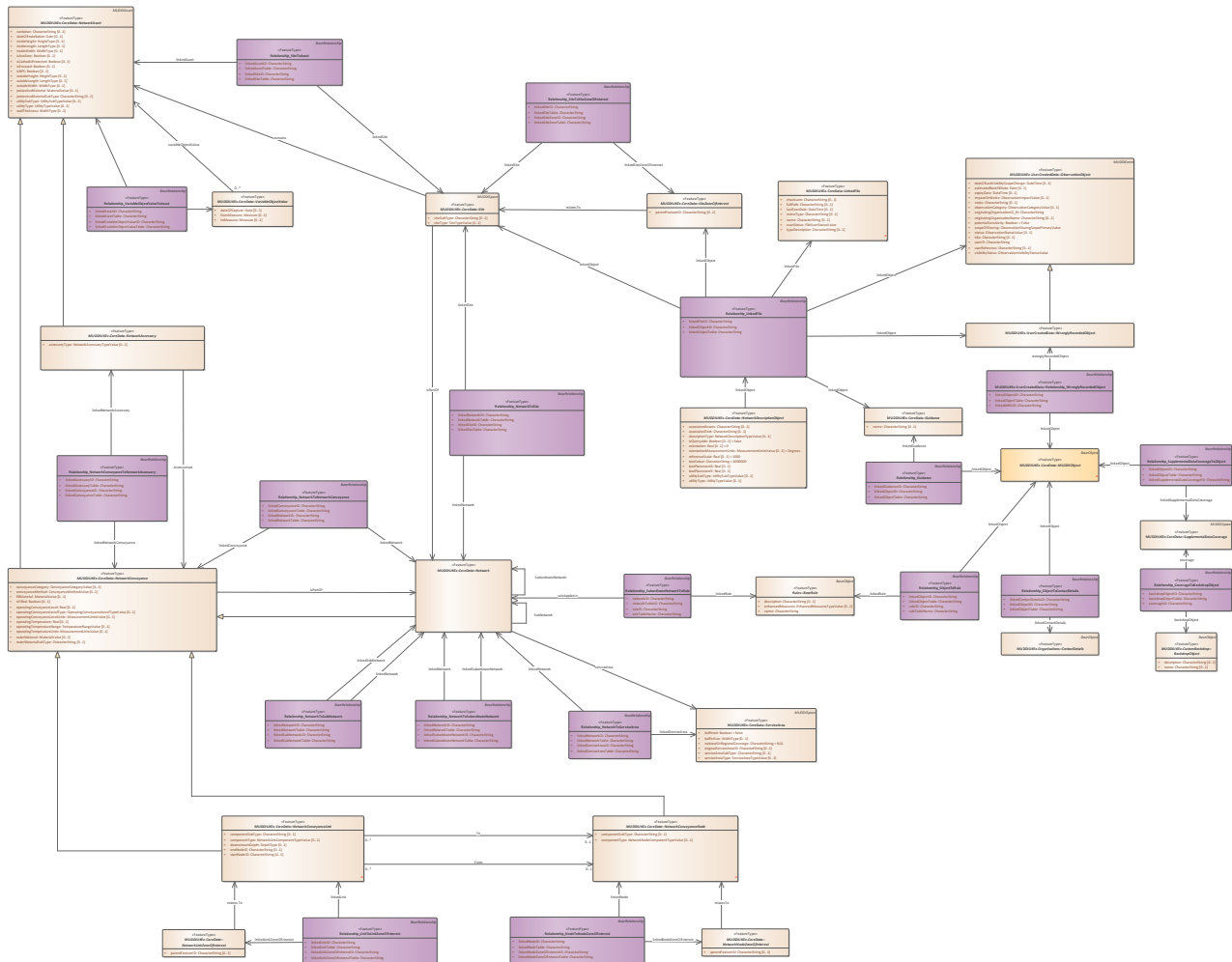
Figure 6: Core Relationships

1.1.2.2   Drainage diagram

Class diagram in package 'Drainage'

<div align="right">
Drainage
Version 2.1.2
Created on 15/10/2020. Last modified 28/07/2024
</div>
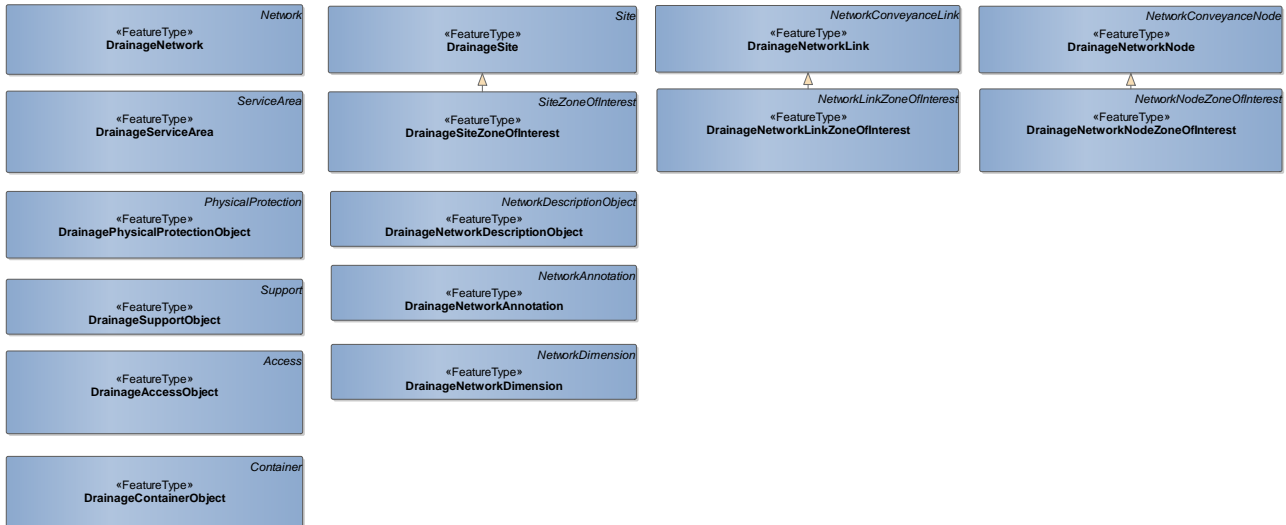
Figure 7: Drainage

1.1.2.3   Electricity Network diagram

Class diagram in package 'Electricity Network'

Electricity Network
Version 2.1.2
Created on 06/08/2019. Last modified 21/05/2024
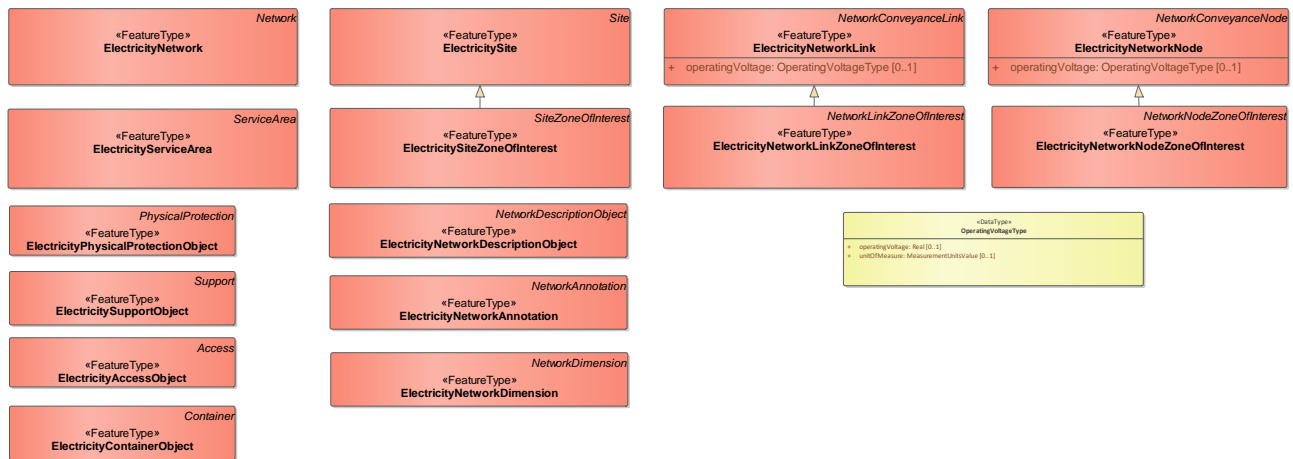
Figure 8: Electricity Network

1.1.2.4   Fuel and Chemicals Network diagram

Class diagram in package 'Fuel and Chemicals Network'

Fuel and Chemicals Network
Version 2.1.2
Created on 06/08/2019. Last modified 21/05/2024

Network «FeatureType» **FuelAndChemicalsNetwork**	
ServiceArea «FeatureType» **FuelAndChemicalsServiceArea**	
PhysicalProtection «FeatureType» **FuelAndChemicalsPhysicalProtectionObject**	
Support «FeatureType» **FuelAndChemicalsSupportObject**	
Access «FeatureType» **FuelAndChemicalsAccessObject**	
Container «FeatureType» **FuelAndChemicalsContainerObject**	

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 9: Fuel and Chemicals Network

1.1.2.5 Gas Network diagram

Class diagram in package 'Gas Network'

Gas Network
Version 2.1.2
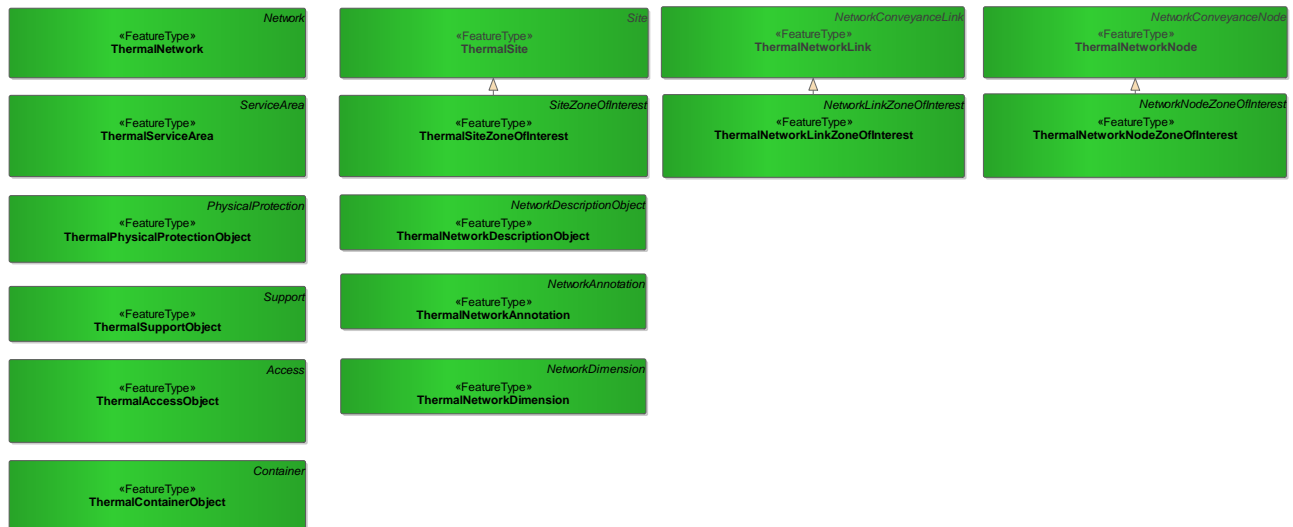Created on 06/08/2019. Last modified 21/05/2024
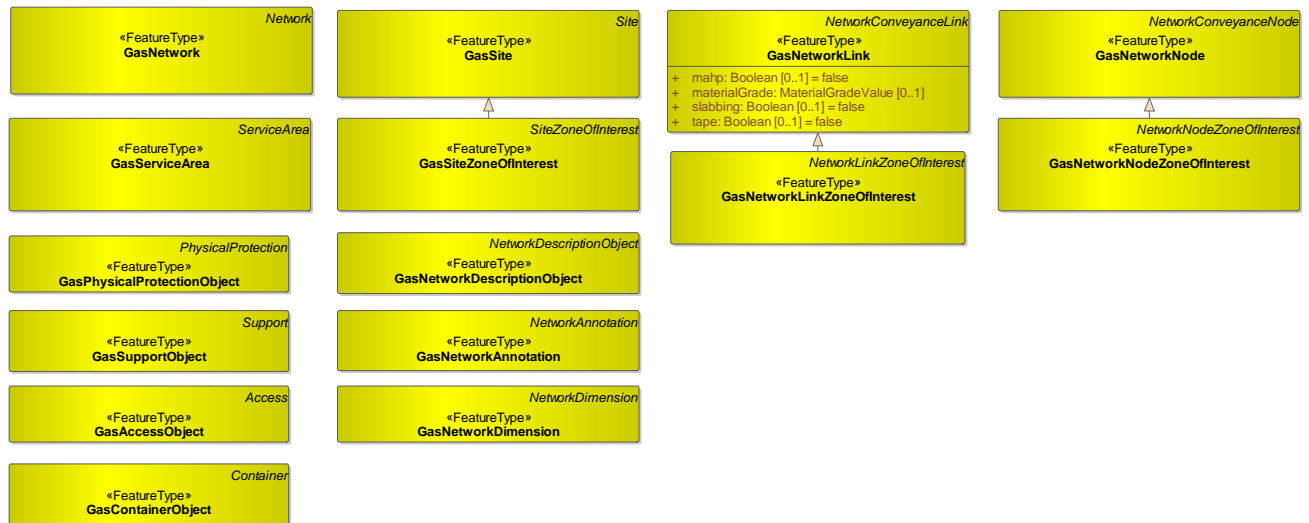
Figure 10: Gas Network

1.1.2.5.1   Planning Areas diagram

GML diagram in package 'Planning Areas'

Planning Areas
Version 2.1.2
Created on 30/03/2022. Last modified 21/05/2024

	PlanningArea
«FeatureType» **GeneralPlanningArea**	

	Network
«FeatureType» **PlanningAreaNetwork**	

Figure 11: Planning Areas

1.1.2.5.1.1 Historical Land Use diagram

Class diagram in package 'Historical Land Use'

Historical Land Use
Version 2.1.2
Created on 15/10/2020. Last modified 21/05/2024

PlanningArea
«FeatureType»
SiteOfPreviousIndustrialUse
+ endDate: Date [0..1]
+ previousUse: CharacterString [0..1]
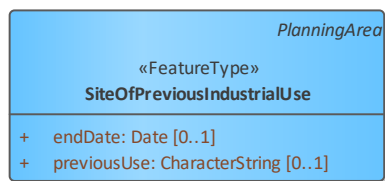
Figure 12: Historical Land Use

1.1.2.5.1.2 Protected Sites diagram

Class diagram in package 'Protected Sites'

Protected Sites
Version 2.1.2
Created on 15/10/2020. Last modified 02/08/2024

Figure 13: Protected Sites

1.1.2.5.1.3   Restricted Sites diagram

GML diagram in package 'Restricted Sites'

<div align="right">Restricted Sites
Version 2.1.2
Created on 30/03/2022. Last modified 21/05/2024</div>
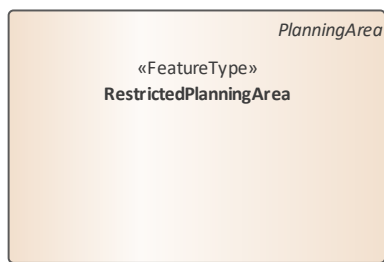
Figure 14: Restricted Sites

1.1.2.6   Sewer Network diagram

GML diagram in package 'Sewer Network'

Sewer Network
Version 2.1.2
Created on 06/08/2019. Last modified 28/07/2024
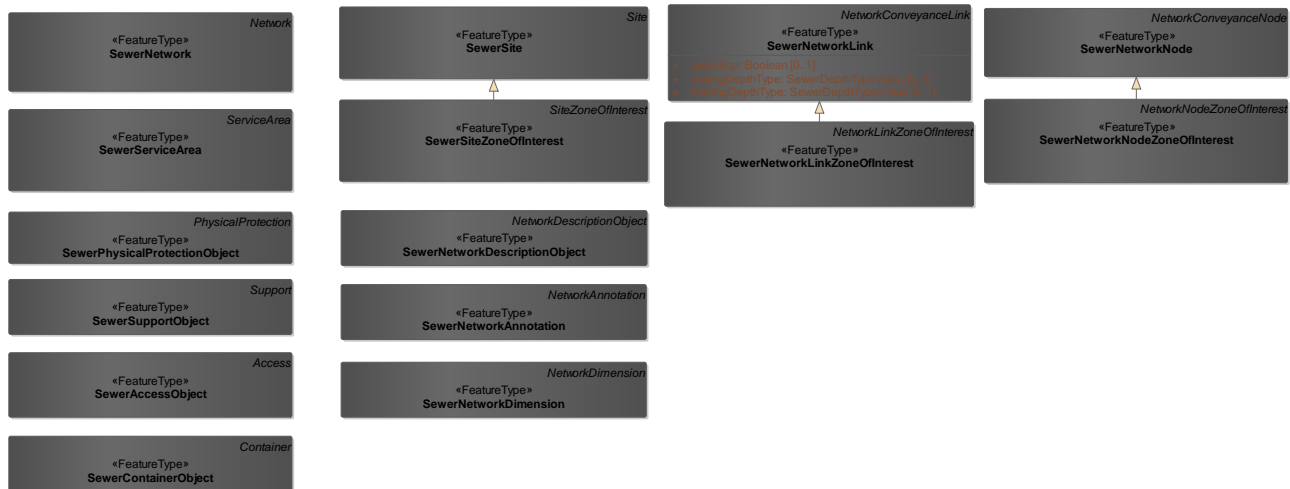
Figure 15: Sewer Network

1.1.2.7 Telecommunications Network diagram

GML diagram in package 'Telecommunications Network'

Telecommunications Network
Version 2.1.2
Created on 06/08/2019. Last modified 28/07/2024

Network «FeatureType» **TelcoNetwork**	*Site* «FeatureType» **TelcoSite**
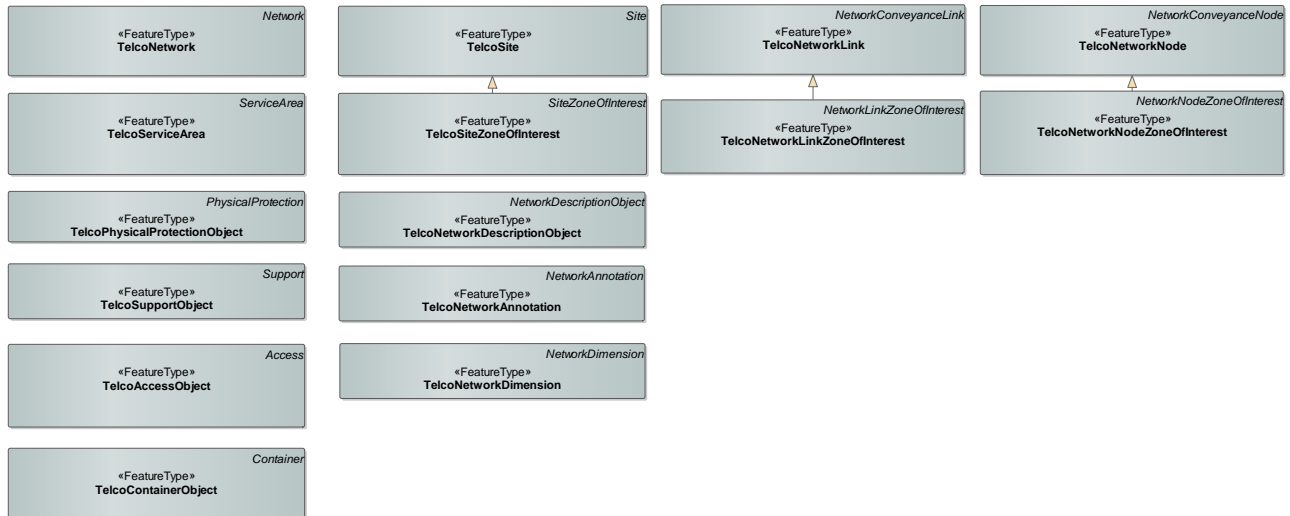
Figure 16: Telecommunications Network

1.1.2.8   Thermal Network diagram

Class diagram in package 'Thermal Network'

Thermal Network
Version 2.1.2
Created on 06/08/2019. Last modified 28/07/2024

Figure 17: Thermal Network

1.1.2.9   Transport diagram

Class diagram in package 'Transport'
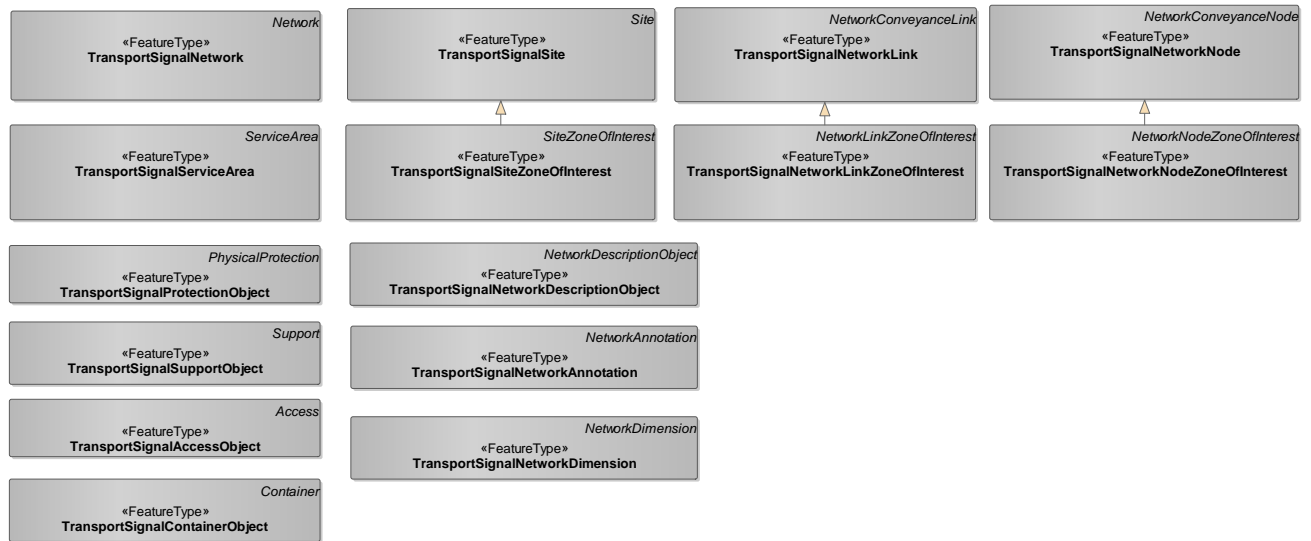
Figure 18: Transport

1.1.2.10   Water Network diagram

Class diagram in package 'Water Network'

Water Network
Version 2.1.2
Created on 06/08/2019. Last modified 21/05/2024

Figure 19: Water Network

1.1.3 MUDDI - UK Excavation Profile - Logical - CustomBackdrop diagram

Class diagram in package 'MUDDIUKEx-CustomBackdrop'

MUDDI - UK Excavation Profile - Logical - CustomBackdrop
Version 2.1.2
Created on 11/07/2022. Last modified 28/07/2024
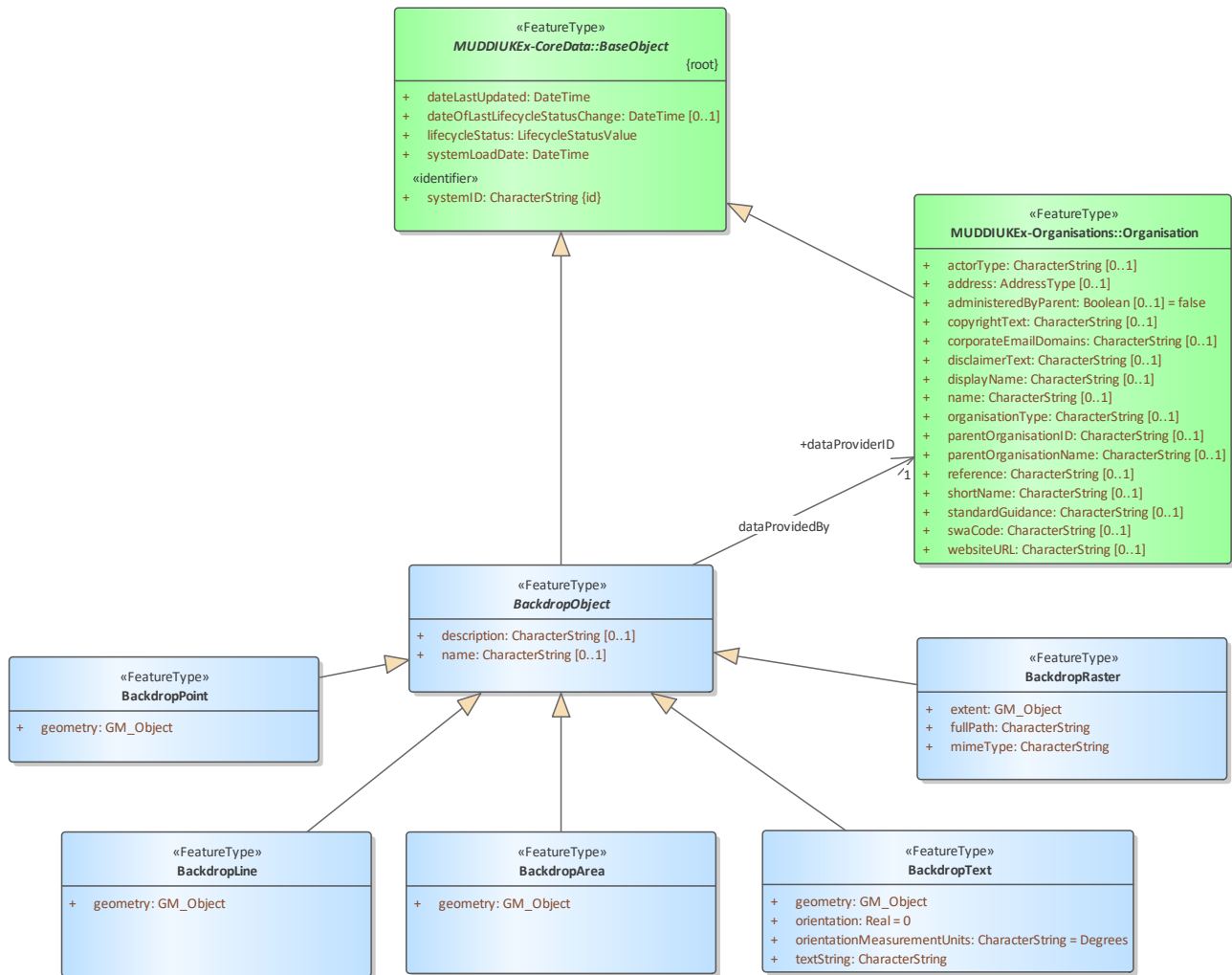
Figure 20: MUDDI - UK Excavation Profile - Logical - CustomBackdrop

1.1.4 MUDDI - UK Excavation Profile - Logical - Organisations diagram

GML diagram in package 'MUDDIUKEx-Organisations'
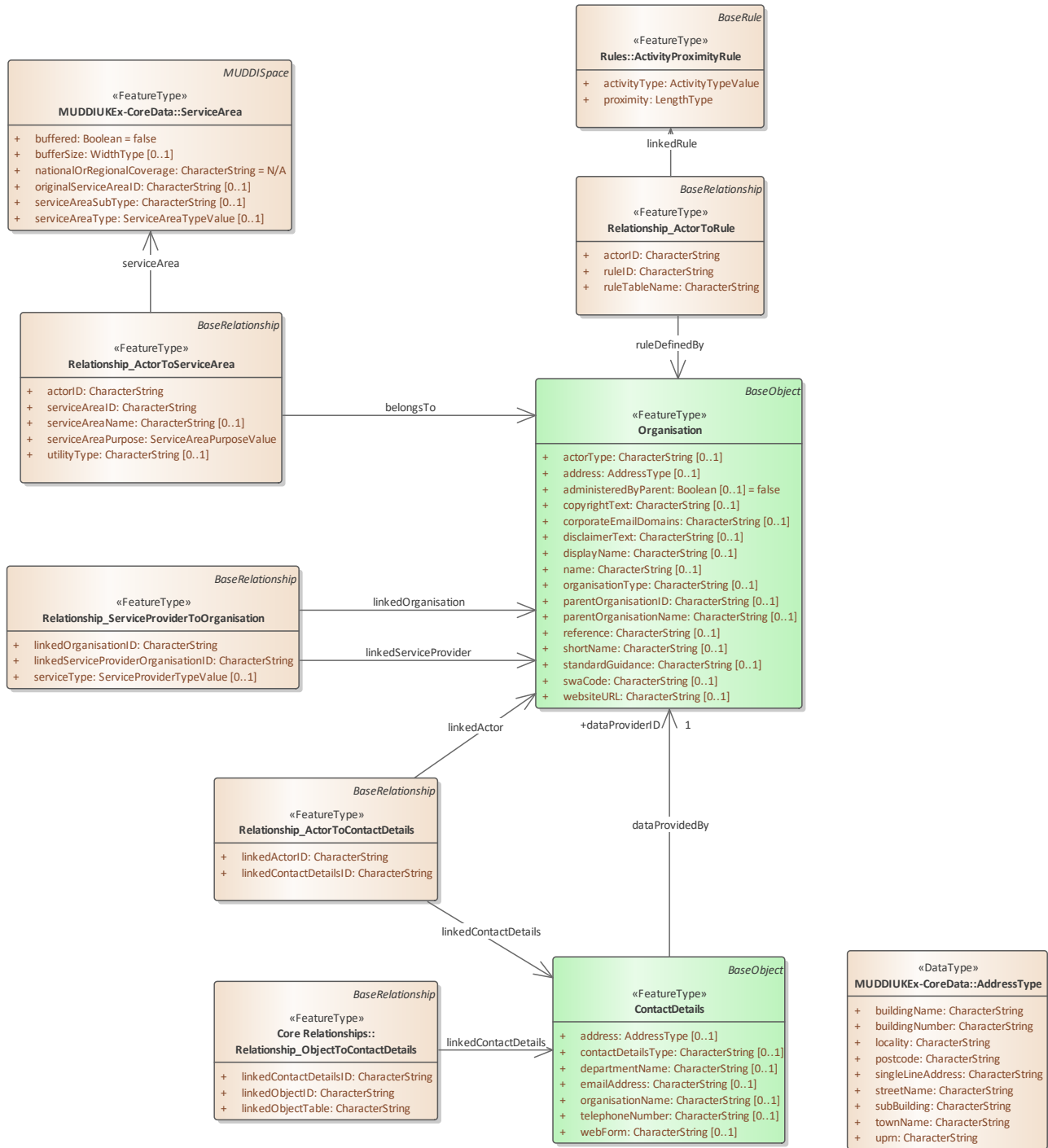
Figure 21: MUDDI - UK Excavation Profile - Logical - Organisations

1.1.4.1   MUDDI - UK Excavation Profile - Logical - Organisations - Rules diagram

GML diagram in package 'Rules'

MUDDI - UK Excavation Profile - Logical - Organisations - Rules
Version 2.1.2
Created on 18/08/2021. Last modified 28/07/2024
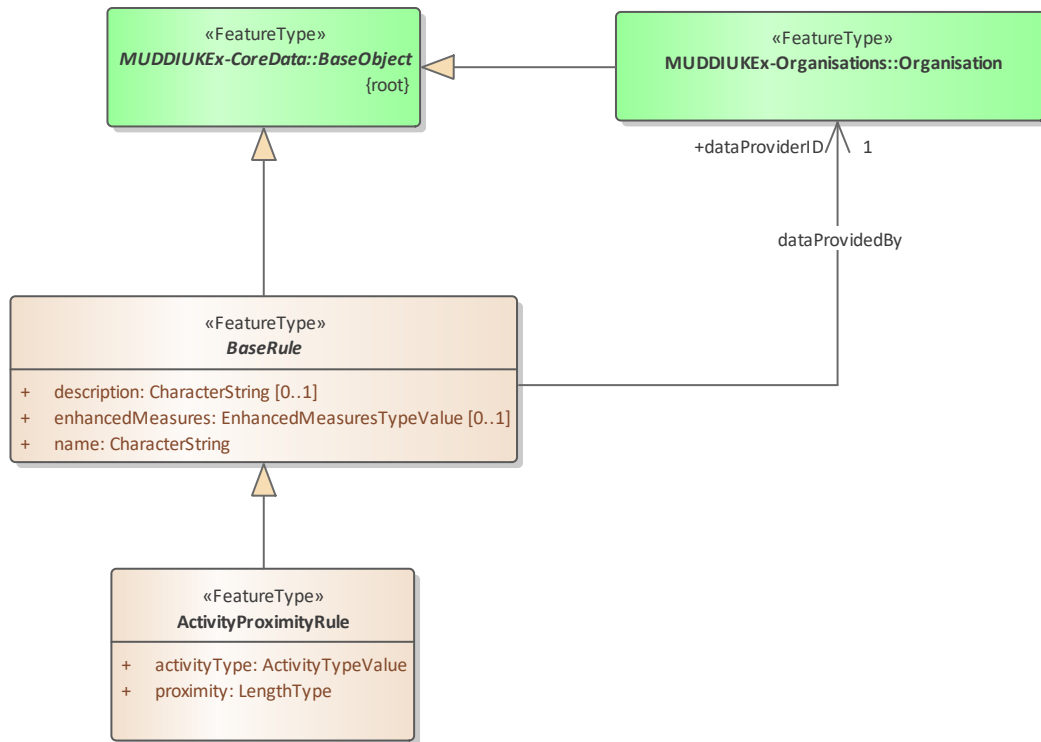
Figure 22: MUDDI - UK Excavation Profile - Logical - Organisations - Rules

1.1.5 MUDDI - UK Excavation Profile - Logical - UserCreatedData diagram

GML diagram in package 'MUDDIUKEx-UserCreatedData'

MUDDI - UK Excavation Profile - Logical - UserCreatedData
Version 2.1.2
Created on 31/01/2023. Last modified 28/07/2024
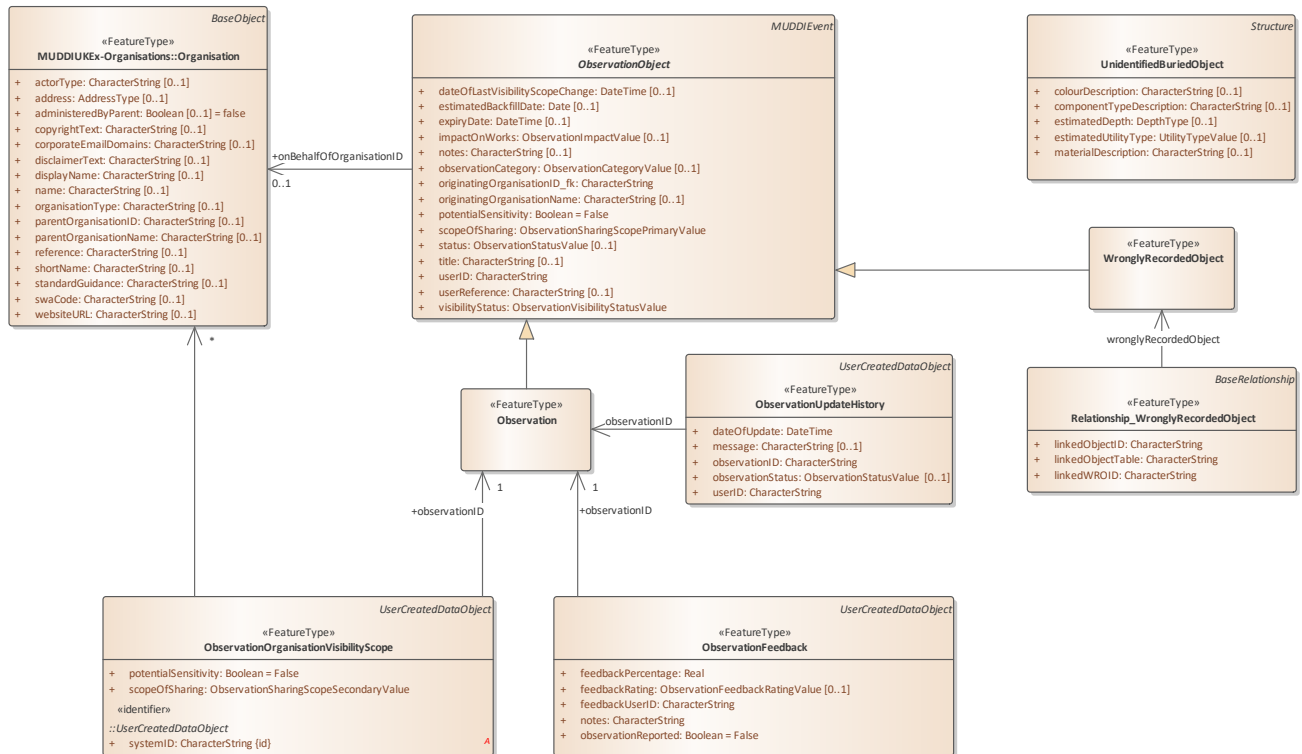
Figure 23: MUDDI - UK Excavation Profile - Logical - UserCreatedData

1.1.6 MUDDI - UK Excavation Profile - Logical - Version diagram

GML diagram in package 'MUDDIUKEx-Version'

MUDDI - UK Excavation Profile - Logical - Version
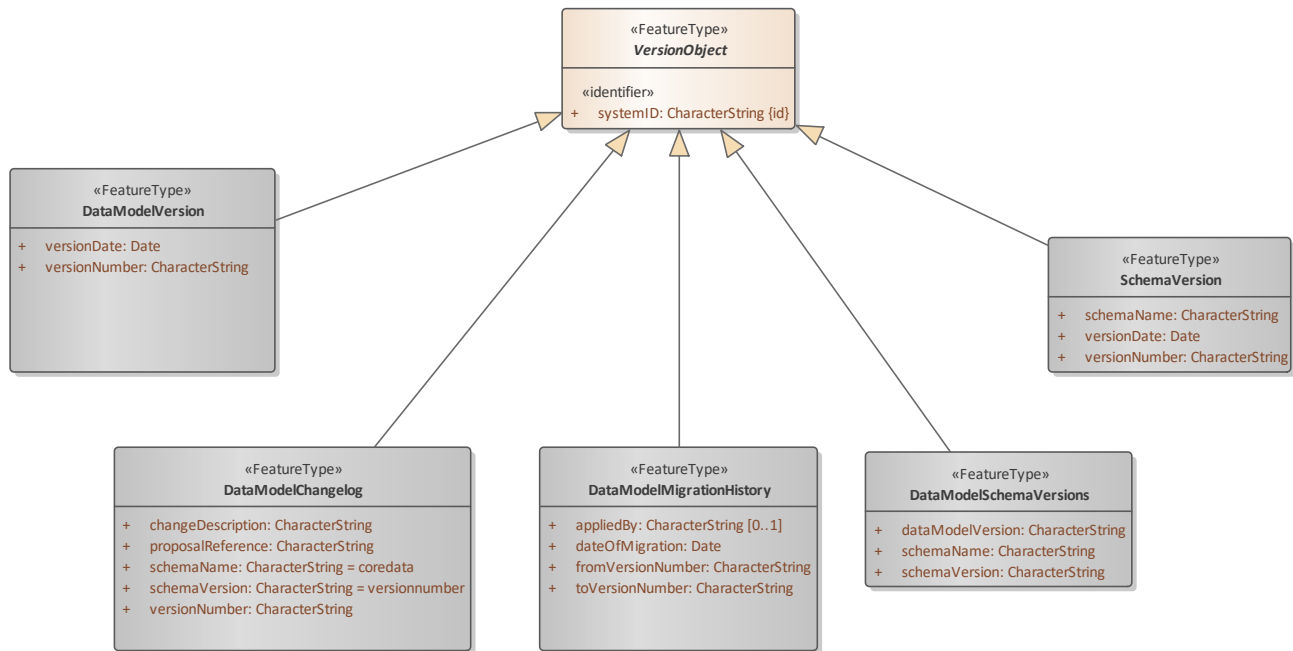Version 2.1.2
Created on 11/03/2022. Last modified 28/07/2024

Figure 24: MUDDI - UK Excavation Profile - Logical - Version