**Issue:**

We have found additional issues in the RDFS files provided for LTDS. These issues prevent our software from correctly interpreting the LTDS CIM profiles.

Apparently the issues are related to missing descriptions of some CIM classes, which make the affected RDFS files incomplete.

Please see the list below.

I hope Ofgem can correct this for the next LTDS revision.

<http://iec.ch/TC57/CIM100#HydroTurbineKind.francis> refers to enumeration: <http://iec.ch/TC57/CIM100#HydroTurbineKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#HydroTurbineKind.kaplan> refers to enumeration: <http://iec.ch/TC57/CIM100#HydroTurbineKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#HydroTurbineKind.pelton> refers to enumeration: <http://iec.ch/TC57/CIM100#HydroTurbineKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#ControlAreaTypeKind.AGC> refers to enumeration: <http://iec.ch/TC57/CIM100#ControlAreaTypeKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#ControlAreaTypeKind.Interchange> refers to enumeration: <http://iec.ch/TC57/CIM100#ControlAreaTypeKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#ControlAreaTypeKind.Forecast> refers to enumeration: <http://iec.ch/TC57/CIM100#ControlAreaTypeKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#DCPolarityKind.middle> refers to enumeration: <http://iec.ch/TC57/CIM100#DCPolarityKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#DCPolarityKind.positive> refers to enumeration: <http://iec.ch/TC57/CIM100#DCPolarityKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#DCPolarityKind.negative> refers to enumeration: <http://iec.ch/TC57/CIM100#DCPolarityKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#GeneratorControlSource.unavailable> refers to enumeration: <http://iec.ch/TC57/CIM100#GeneratorControlSource> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#GeneratorControlSource.plantControl> refers to enumeration: <http://iec.ch/TC57/CIM100#GeneratorControlSource> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#GeneratorControlSource.offAGC> refers to enumeration: <http://iec.ch/TC57/CIM100#GeneratorControlSource> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#GeneratorControlSource.onAGC> refers to enumeration: <http://iec.ch/TC57/CIM100#GeneratorControlSource> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#DCConverterOperatingModeKind.bipolar> refers to enumeration: <http://iec.ch/TC57/CIM100#DCConverterOperatingModeKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#DCConverterOperatingModeKind.monopolarGroundReturn> refers to enumeration: <http://iec.ch/TC57/CIM100#DCConverterOperatingModeKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#DCConverterOperatingModeKind.monopolarMetallicReturn> refers to enumeration: <http://iec.ch/TC57/CIM100#DCConverterOperatingModeKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#HydroEnergyConversionKind.generator> refers to enumeration: <http://iec.ch/TC57/CIM100#HydroEnergyConversionKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#HydroEnergyConversionKind.pumpAndGenerator> refers to enumeration: <http://iec.ch/TC57/CIM100#HydroEnergyConversionKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#SVCControlMode.voltage> refers to enumeration: <http://iec.ch/TC57/CIM100#SVCControlMode> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#SVCControlMode.reactivePower> refers to enumeration: <http://iec.ch/TC57/CIM100#SVCControlMode> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#WindGenUnitKind.onshore> refers to enumeration: <http://iec.ch/TC57/CIM100#WindGenUnitKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#WindGenUnitKind.offshore> refers to enumeration: <http://iec.ch/TC57/CIM100#WindGenUnitKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/Equipment/1.0>.

<http://iec.ch/TC57/CIM100#PetersenCoilModeKind.automaticPositioning> refers to enumeration: <http://iec.ch/TC57/CIM100#PetersenCoilModeKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/ShortCircuit/1.0>.

<http://iec.ch/TC57/CIM100#PetersenCoilModeKind.fixed> refers to enumeration: <http://iec.ch/TC57/CIM100#PetersenCoilModeKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/ShortCircuit/1.0>.

<http://iec.ch/TC57/CIM100#PetersenCoilModeKind.manual> refers to enumeration: <http://iec.ch/TC57/CIM100#PetersenCoilModeKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/ShortCircuit/1.0>.

<http://iec.ch/TC57/CIM100#ShortCircuitRotorKind.turboSeries2> refers to enumeration: <http://iec.ch/TC57/CIM100#ShortCircuitRotorKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/ShortCircuit/1.0>.

<http://iec.ch/TC57/CIM100#ShortCircuitRotorKind.salientPole1> refers to enumeration: <http://iec.ch/TC57/CIM100#ShortCircuitRotorKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/ShortCircuit/1.0>.

<http://iec.ch/TC57/CIM100#ShortCircuitRotorKind.turboSeries1> refers to enumeration: <http://iec.ch/TC57/CIM100#ShortCircuitRotorKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/ShortCircuit/1.0>.

<http://iec.ch/TC57/CIM100#ShortCircuitRotorKind.salientPole2> refers to enumeration: <http://iec.ch/TC57/CIM100#ShortCircuitRotorKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/ShortCircuit/1.0>.

<http://iec.ch/TC57/CIM100#BatteryStateKind.full> refers to enumeration: <http://iec.ch/TC57/CIM100#BatteryStateKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#BatteryStateKind.charging> refers to enumeration: <http://iec.ch/TC57/CIM100#BatteryStateKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#BatteryStateKind.empty> refers to enumeration: <http://iec.ch/TC57/CIM100#BatteryStateKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#BatteryStateKind.discharging> refers to enumeration: <http://iec.ch/TC57/CIM100#BatteryStateKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#BatteryStateKind.waiting> refers to enumeration: <http://iec.ch/TC57/CIM100#BatteryStateKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#CsOperatingModeKind.rectifier> refers to enumeration: <http://iec.ch/TC57/CIM100#CsOperatingModeKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#CsOperatingModeKind.inverter> refers to enumeration: <http://iec.ch/TC57/CIM100#CsOperatingModeKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#CsPpccControlKind.dcCurrent> refers to enumeration: <http://iec.ch/TC57/CIM100#CsPpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#CsPpccControlKind.activePower> refers to enumeration: <http://iec.ch/TC57/CIM100#CsPpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#CsPpccControlKind.dcVoltage> refers to enumeration: <http://iec.ch/TC57/CIM100#CsPpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#VsPpccControlKind.pPccAndUdcDroop> refers to enumeration: <http://iec.ch/TC57/CIM100#VsPpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#VsPpccControlKind.pPcc> refers to enumeration: <http://iec.ch/TC57/CIM100#VsPpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#VsPpccControlKind.phasePcc> refers to enumeration: <http://iec.ch/TC57/CIM100#VsPpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#VsPpccControlKind.pPccAndUdcDroopPilot> refers to enumeration: <http://iec.ch/TC57/CIM100#VsPpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#VsPpccControlKind.pPccAndUdcDroopWithCompensation> refers to enumeration: <http://iec.ch/TC57/CIM100#VsPpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#VsPpccControlKind.udc> refers to enumeration: <http://iec.ch/TC57/CIM100#VsPpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#VsQpccControlKind.voltagePcc> refers to enumeration: <http://iec.ch/TC57/CIM100#VsQpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#VsQpccControlKind.powerFactorPcc> refers to enumeration: <http://iec.ch/TC57/CIM100#VsQpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#VsQpccControlKind.reactivePcc> refers to enumeration: <http://iec.ch/TC57/CIM100#VsQpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

<http://iec.ch/TC57/CIM100#VsQpccControlKind.pulseWidthModulation> refers to enumeration: <http://iec.ch/TC57/CIM100#VsQpccControlKind> which is not defined. Error found in profile: <http://ofgem.gov.uk/ns/CIM/LTDS/SteadyStateHypothesis/1.0>.

**Analysis:**

These all appear to be enumeration value definitions for enumeration classes that are ‘LTDS not defined’. It appears that in each case we realized (correctly) that an enumeration class was not needed and made the enumeration class ‘LTDS not defined’ (by including it in the LTDSnotDefined profile package in UML). The class appears properly in the deviation RDFS profile (it has <cims:belongsToCategory rdf:resource="http://ofgem.gov.uk/ns/CIM/LTDS/DeviationEQ#Package\_LTDSnotDefined"/>). The merging software is removing the enumeration class resource, but not the enumeration value definition resource when it creates the merged RDFS profile. An overview of what appears where is given in the **4 – DIgSILENT LTDSnotdefined enumeration vaue attributes in RDFS analysis** spreadsheet.

A couple notes:

* The LTDSnotDefined package was checked in the UML for each LTDS deviation profile. The enumeration classes appearing in the LTDSnotDefined package were compared against the above problem report and they matched exactly. So, all the instances of this issue were identified in DIgSILENT’s problem report.
* Compounds do not appear to have the same issue. The Location.mainAddress (which is <<LTDSnotDefined>>) has StreetAddress <<Compound>> as its datatype. StreetAddress <<Compound>> has attributes which have datatypes of Status <<Compound>>, StreetDetail <<Compound>>, and TownDetail <<Compound>>. In all cases, the <<Compound>> class, which is in the LTDSnotDefined package in the UML is showing up in the RDFS LTDS\_Deviation\_GL profile (with no mention of its attributes) and neither the class nor its attributes appear in the RDFS LTDS\_Merged\_GL.

**Corrective Action:**

* Update merging software to remove not just the enumeration class resource for enumeration classes specified as ‘LTDS not defined’ in the deviation RDFS profile, but also their associated enumeration value definition resources, in creating the merged RDFS profile.
* Regenerate EQ, SC and SSH LTDS merged RDFS profiles
* Regenerate EQ, SC and SSH SHACL files.