Bedrock geology

Norwegian Mapping Authority

gerd.mardal@statkart.no

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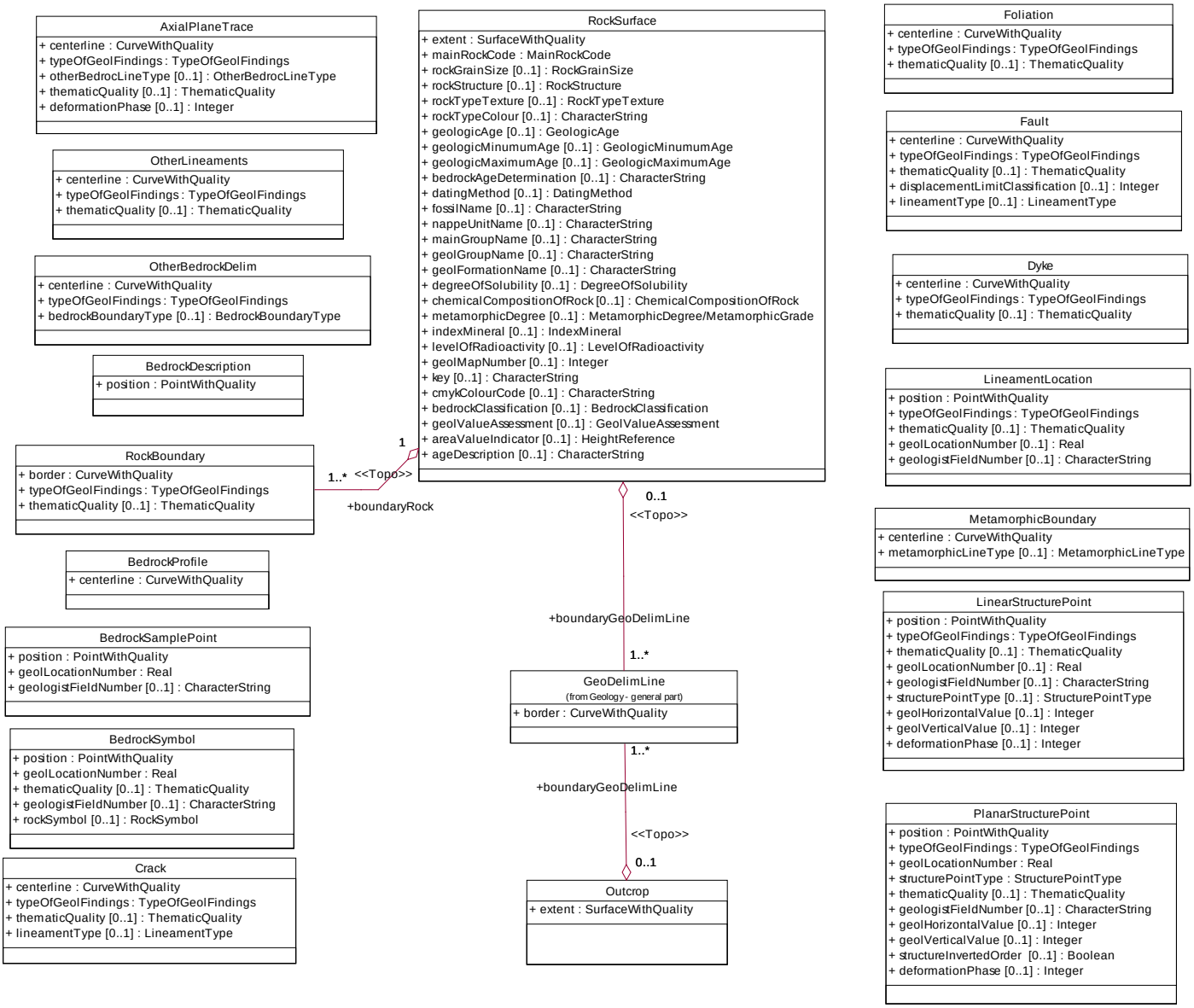
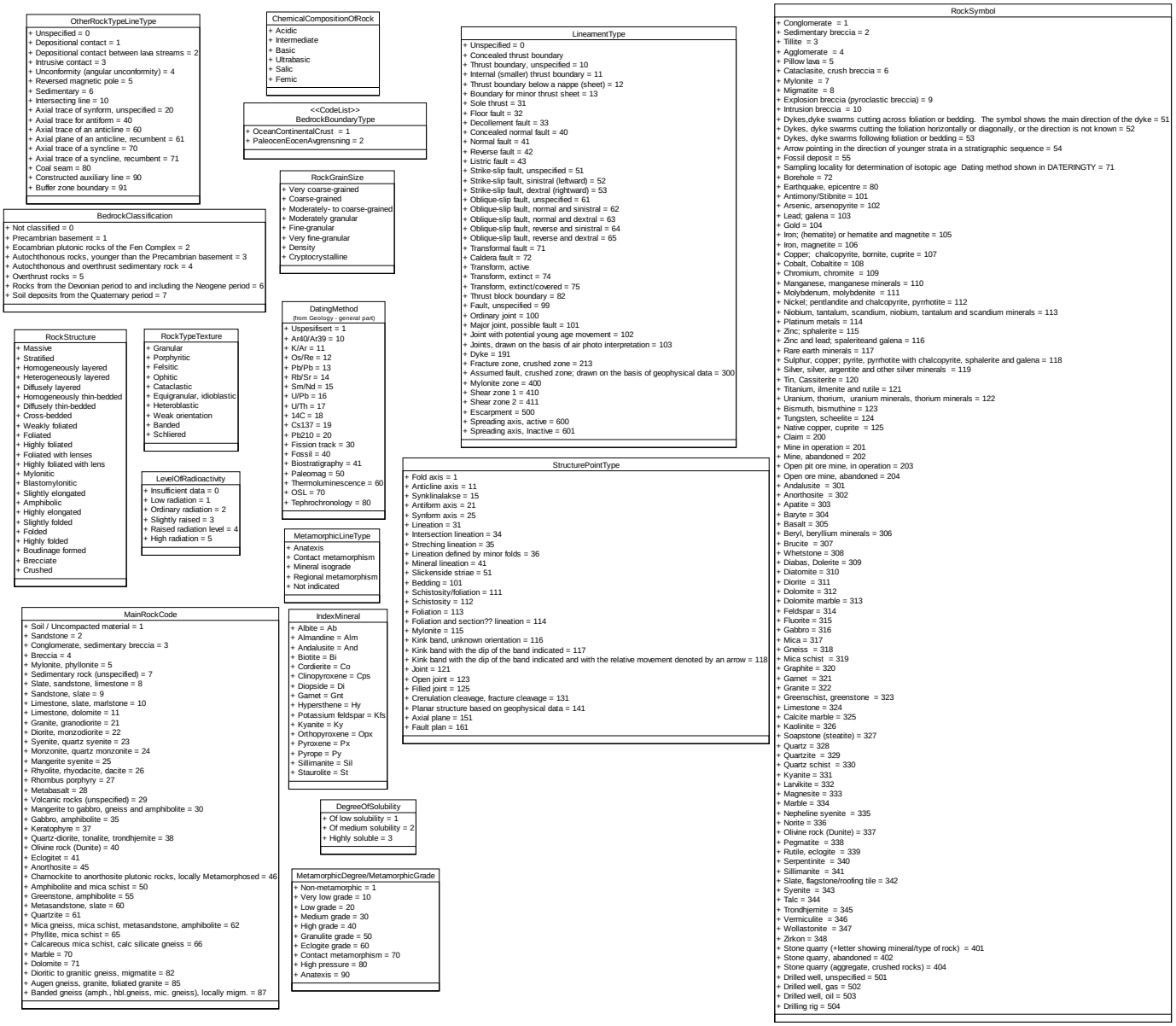
1.1 Application schema




OtherRockTypeLineType
+ Unspecified = 0
+ Depositional contact = 1
+ Depositional contact between lava streams = 2
+ Intrusive contact = 3
+ Unconformity (angular unconformity) = 4
+ Reversed magnetic pole = 5
+ Sedimentary = 6
+ Intersecting line = 10
+ Axial trace of synform, unspecified = 20
+ Axial trace for antiform = 40
+ Axial trace of an anticline = 60
+ Axial plane of an anticline, recumbent = 61
+ Axial trace of a syncline = 70
+ Axial trace of a syncline, recumbent = 71
+ Coal seam = 80
+ Constructed auxiliary line = 90
+ Buffer zone boundary = 91
ChemicalCompositionOfRock
+ Acidic
+ Intermediate
+ Basic
+ Ultrabasic
+ Salic
+ Femic
<<CodeList>>
BedrockBoundaryType
+ OceanContinentalCrust = 1
+ PaleocenEocenAvgrensning = 2
LineamentType
+ Unspecified = 0
+ Concealed thrust boundary
+ Thrust boundary, unspecified = 10
+ Internal (smaller) thrust boundary = 11
+ Thrust boundary below a nappe (sheet) = 12
+ Boundary for minor thrust sheet = 13
+ Sole thrust = 31
+ Floor fault = 32
+ Decollement fault = 33
+ Concealed normal fault = 40
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+ Reverse fault = 42
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+ Strike-slip fault, unspecified = 51
+ Strike-slip fault, sinistral (leftward) = 52
+ Strike-slip fault, dextral (rightward) = 53
+ Oblique-slip fault, unspecified = 61
+ Oblique-slip fault, normal and sinistral = 62
+ Oblique-slip fault, normal and dextral = 63
+ Oblique-slip fault, reverse and sinistral = 64
+ Oblique-slip fault, reverse and dextral = 65
+ Transformal fault = 71
+ Caldera fault = 72
+ Transform, active
+ Transform, extinct = 74
+ Transform, extinct/covered = 75
+ Thrust block boundary = 82
+ Fault, unspecified = 99
+ Ordinary joint = 100
+ Major joint, possible fault = 101
+ Joint with potential young age movement = 102
+ Joints, drawn on the basis of air photo interpretation = 103
+ Dyke = 191
+ Fracture zone, crushed zone = 213
+ Assumed fault, crushed zone; drawn on the basis of geophysical data = 300
+ Mylonite zone = 400
+ Shear zone 1 = 410
+ Shear zone 2 = 411
+ Escarpment = 500
+ Spreading axis, active = 600
+ Spreading axis, Inactive = 601
RockSymbol
+ Conglomerate = 1
+ Sedimentary breccia = 2
+ Tillite = 3
+ Agglomerate = 4
+ Pillow lava = 5
+ Cataclasite, crush breccia = 6
+ Mylonite = 7
+ Migmatite = 8
+ Explosion breccia (pyroclastic breccia) = 9
+ Intrusion breccia = 10
+ Dykes,dyke swarms cutting across foliation or bedding. The symbol shows the main direction of the dyke = 51
+ Dykes, dyke swarms cutting the foliation horizontally or diagonally, or the direction is not known = 52
+ Dykes, dyke swarms following foliation or bedding = 53
+ Arrow pointing in the direction of younger strata in a stratigraphic sequence = 54
+ Fossil deposit = 55
+ Sampling locality for determination of isotopic age Dating method shown in DATERINGTY = 71
+ Borehole = 72
+ Earthquake, epicentre = 80
+ Antimony/Stibnite = 101
+ Arsenic, arsenopyrite = 102
+ Lead; galena = 103
+ Gold = 104
+ Iron; (hematite) or hematite and magnetite = 105
+ Iron, magnetite = 106
+ Copper, chalcopyrite, bornite, cuprite = 107
+ Cobalt, Cobaltite = 108
+ Chromium, chromite = 109
+ Manganese, manganese minerals = 110
+ Molybdenum, molybdenite = 111
+ Nickel; pentlandite and chalcopyrite, pyrrhotite = 112
+ Niobium, tantalum, scandium, niobium, tantalum and scandium minerals = 113
+ Platinum metals = 114
+ Zinc; sphalerite = 115
+ Zinc and lead; spaleriteand galena = 116
+ Rare earth minerals = 117
+ Sulphur, copper, pyrite, pyrrhotite with chalcopyrite, sphalerite and galena = 118
+ Silver, silver, argentite and other silver minerals = 119
+ Tin, Cassiterite = 120
+ Titanium, ilmenite and rutile = 121
+ Uranium, thorium, uranium minerals, thorium minerals = 122
+ Bismuth, bismuthine = 123
+ Tungsten, scheelite = 124
+ Native copper, cuprite = 125
+ Claim = 200
+ Mine in operation = 201
+ Mine, abandoned = 202
+ Open pit ore mine, in operation = 203
+ Open ore mine, abandoned = 204
+ Andalusite = 301
+ Anorthosite = 302
+ Apatite = 303
+ Baryte = 304
+ Basalt = 305
+ Beryl, beryllium minerals = 306
+ Bnucite = 307
+ Whetstone = 308
+ Diabas, Dolerite = 309
+ Diatomite = 310
+ Diorite = 311
+ Dolomite = 312
+ Dolomite marble = 313
+ Feldspar = 314
+ Fluorite = 315
+ Gabbro = 316
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+ Gneiss = 318
+ Mica schist = 319
+ Graphite = 320
+ Garnet = 321
+ Granite = 322
+ Greenschist, greenstone = 323
+ Limestone = 324
+ Calcite marble = 325
+ Kaolinite = 326
+ Soapstone (steatite) = 327
+ Quartz = 328
+ Quartzite = 329
+ Quartz schist = 330
+ Kyanite = 331
+ Larvikite = 332
+ Magnesite = 333
+ Marble = 334
+ Nepheline syenite = 335
+ Norite = 336
+ Olivine rock (Dunite) = 337
+ Pegmatite = 338
+ Rutile, eclogite = 339
+ Serpentinite = 340
+ Sillimanite = 341
+ Slate, flagstone/roofing tile = 342
+ Syenite = 343
+ Talc = 344
+ Trondhjemite = 345
+ Vermiculite = 346
+ Wollastonite = 347
+ Zirkon = 348
+ Stone quarry (+letter showing mineral/type of rock) = 401
+ Stone quarry, abandoned = 402
+ Stone quarry (aggregate, crushed rocks) = 404
+ Drilled well, unspecified = 501
+ Drilled well, gas = 502
+ Drilled well, oil = 503
+ Drilling rig = 504
BedrockClassification
+ Not classified = 0
+ Precambrian basement = 1
+ Eocambrian plutonic rocks of the Fen Complex = 2
+ Autochthonous rocks, younger than the Precambrian basement = 3
+ Autochthonous and overthrust sedimentary rock = 4
+ Overthrust rocks = 5
+ Rocks from the Devonian period to and including the Neogene period = 6
+ Soil deposits from the Quaternary period = 7
RockGrainSize
+ Very coarse-grained
+ Coarse-grained
+ Moderately- to coarse-grained
+ Moderately granular
+ Fine-granular
+ Very fine-granular
+ Density
+ Cryptocrystalline
DatingMethod
(from Geology - general part)
+ Uspesifisert = 1
+ Ar40/Ar39 = 10
+ K/Ar = 11
+ Os/Re = 12
+ Pb/Pb = 13
+ Rb/Sr = 14
+ Sm/Nd = 15
+ U/Pb = 16
+ U/Th = 17
+ 14C = 18
+ Cs137 = 19
+ Pb210 = 20
+ Fission track = 30
+ Fossil = 40
+ Biostratigraphy = 41
+ Paleomag = 50
+ Thermoluminescence = 60
+ OSL = 70
+ Tephrochronology = 80
StructurePointType
+ Fold axis = 1
+ Anticline axis = 11
+ Synklinalakse = 15
+ Antiform axis = 21
+ Synform axis = 25
+ Lineation = 31
+ Intersection lineation = 34
+ Streching lineation = 35
+ Lineation defined by minor folds = 36
+ Mineral lineation = 41
+ Slickenside striae = 51
+ Bedding = 101
+ Schistosity/foliation = 111
+ Schistosity = 112
+ Foliation = 113
+ Foliation and section?? lineation = 114
+ Mylonite = 115
+ Kink band, unknown orientation = 116
+ Kink band with the dip of the band indicated = 117
+ Kink band with the dip of the band indicated and with the relative movement denoted by an arrow = 118
+ Joint = 121
+ Open joint = 123
+ Filled joint = 125
+ Crenulation cleavage, fracture cleavage = 131
+ Planar structure based on geophysical data = 141
+ Axial plane = 151
+ Fault plan = 161
RockStructure
+ Massive
+ Stratified
+ Homogeneously layered
+ Heterogeneously layered
+ Diffusely layered
+ Homogeneously thin-bedded
+ Diffusely thin-bedded
+ Cross-bedded
+ Weakly foliated
+ Foliated
+ Highly foliated
+ Foliated with lenses
+ Highly foliated with lens
+ Mylonitic
+ Blastomylonitic
+ Slightly elongated
+ Amphibolic
+ Highly elongated
+ Slightly folded
+ Folded
+ Highly folded
+ Boudinage formed
+ Brecciate
+ Crushed
RockTypeTexture
+ Granular
+ Porphyritic
+ Felsitic
+ Ophitic
+ Cataclastic
+ Equigranular, idioblastic
+ Heteroblastic
+ Weak orientation
+ Banded
+ Schliered
LevelOfRadioactivity
+ Insufficient data = 0
+ Low radiation = 1
+ Ordinary radiation = 2
+ Slightly raised = 3
+ Raised radiation level = 4
+ High radiation = 5
MetamorphicLineType
+ Anatexis
+ Contact metamorphism
+ Mineral isograde
+ Regional metamorphism
+ Not indicated
MainRockCode
+ Soil / Uncompacted material = 1
+ Sandstone = 2
+ Conglomerate, sedimentary breccia = 3
+ Breccia = 4
+ Mylonite, phyllonite = 5
+ Sedimentary rock (unspecified) = 7
+ Slate, sandstone, limestone = 8
+ Sandstone, slate = 9
+ Limestone, slate, marlstone = 10
+ Limestone, dolomite = 11
+ Granite, granodiorite = 21
+ Diorite, monzodiorite = 22
+ Syenite, quartz syenite = 23
+ Monzonite, quartz monzonite = 24
+ Mangerite syenite = 25
+ Rhyolite, rhyodacite, dacite = 26
+ Rhombus porphyry = 27
+ Metabasalt = 28
+ Volcanic rocks (unspecified) = 29
+ Mangerite to gabbro, gneiss and amphibolite = 30
+ Gabbro, amphibolite = 35
+ Keratophyre = 37
+ Quartz-diorite, tonalite, trondhjemite = 38
+ Olivine rock (Dunite) = 40
+ Eclogitet = 41
+ Anorthosite = 45
+ Charnockite to anorthosite plutonic rocks, locally Metamorphosed = 46
+ Amphibolite and mica schist = 50
+ Greenstone, amphibolite = 55
+ Metasandstone, slate = 60
+ Quartzite = 61
+ Mica gneiss, mica schist, metasandstone, amphibolite = 62
+ Phyllite, mica schist = 65
+ Calcareous mica schist, calc silicate gneiss = 66
+ Marble = 70
+ Dolomite = 71
+ Dioritic to granitic gneiss, migmatite = 82
+ Augen gneiss, granite, foliated granite = 85
+ Banded gneiss (amph., hbl.gneiss, mic. gneiss), locally migm. = 87
IndexMineral
+ Albite = Ab
+ Almandine = Alm
+ Andalusite = And
+ Biotite = Bi
+ Cordierite = Co
+ Clinopyroxene = Cps
+ Diopside = Di
+ Garnet = Grt
+ Hypersthene = Hy
+ Potassium feldspar = Kfs
+ Kyanite = Ky
+ Orthopyroxene = Opx
+ Pyroxene = Px
+ Pyrope = Py
+ Sillimanite = Sil
+ Staurolite = St
DegreeOfSolubility
+ Of low solubility = 1
+ Of medium solubility = 2
+ Highly soluble = 3
MetamorphicDegree/MetamorphicGrade
+ Non-metamorphic = 1
+ Very low grade = 10
+ Low grade = 20
+ Medium grade = 30
+ High grade = 40
+ Granulite grade = 50
+ Eclogite grade = 60
+ Contact metamorphism = 70
+ High pressure = 80
+ Anatexis = 90

1.2 Description

1.2.1 AxialPlaneTrace

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
1	Class AxialPlaneTrace	constructed line along a fold in the bedrock. The intersection line between the surface and a plane which divides the fold the most symmetrical way				
1.1	centerline	course followed by the central part of the object	1	1	CurveWithQuality	
1.2	typeOfGeolFindings		1	1	TypeOfGeolFindings	
1.3	otherBedrocLineType	marking lines which appear on bedrock maps and which have not been individually defined	0	1	OtherBedrocLineType	
1.4	thematicQuality	the quality of the registration/survey of an object viewed in relation to the actual conditions in nature. Different thematic resolution / degree of generalisation may be governed by the objects importance for the society, the areal significance or the economy of the project	0	1	ThematicQuality	
1.5	deformationPhase		0	1	Integer	

1.2.2 OtherLineaments

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
2	Class OtherLineaments	major and minor structures that have not been specified in detail or which not necessarily depend upon geology				
2.1	centerline	course followed by the central part of the object	1	1	CurveWithQuality	
2.2	typeOfGeolFindings		1	1	TypeOfGeolFindings	
2.3	thematicQuality	the quality of the registration/survey of an object viewed in relation to the actual conditions in nature. Different thematic	0	1	ThematicQuality	

		resolution / degree of generalisation may be governed by the objects importance for the society, the areal significance or the economy of the project				

1.2.3 RockSurface

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
3	Class RockSurface	polygon representing a delimitation of one (or more) rocktypes or a tectonic unit (nappes)				
3.1	extent	area over which an object extends	1	1	SurfaceWithQuality	
3.2	mainRockCode	rough classification of the bedrock in Norway	1	1	MainRockCode	
3.3	rockGrainSize		0	1	RockGrainSize	
3.4	rockStructure	primary characteristics of the appearance of the rock, which helps to describe how it was formed	0	1	RockStructure	
3.5	rockTypeTexture	term used about the structure of a rock (grain size, grain shape and arrangement) as seen under a microscope	0	1	RockTypeTexture	
3.6	rockTypeColour	predominant colour of the rock in nature	0	1	CharacterString	
3.7	geologicAge	the age of a rock indicate how long ago since it was formed. Name of geological period/epoch when a stratigraphic sequence was formed	0	1	GeologicAge	
3.8	geologicMinumumAge	name of geological period/epoch for the period of time when the youngest rock type/stratigraphic sequence was formed	0	1	GeologicMinumumAge	
3.9	geologicMaximumAge	name of geological period/epoch for the period of time when the oldest geological rock type/stratigraphic sequence was formed	0	1	GeologicMaximumAge	
3.10	bedrockAgeDetermination	age of the bedrock in millions of years, (age determination) Note: Stated as a figure with a +/- tolerance, in millions of	0	1	CharacterString	

		years				
3.11	datingMethod	method used to determine the age of rocks, minerals and organic material	0	1	DatingMethod	
3.12	fossilName	name of remains, imprints or traces of prehistoric life forms, preserved in soil or rock strata	0	1	CharacterString	
3.13	nappeUnitName	term used in structual geology for rock masses which have moved as uniform sheets of rock or slid in large folds to where they are now	0	1	CharacterString	
3.14	mainGroupName	subdivision of two or more groups of sedimentary or volcanic sequences	0	1	CharacterString	
3.15	geolGroupName	categorisation of two or more formations of sedimentary or volcanic layers	0	1	CharacterString	
3.16	geolFormationName	characterisation of sedimentary or volcanic layers forming a special defined unit in a stratigraphic sequence	0	1	CharacterString	
3.17	degreeOfSolubility	the ability of the rock to dissolve chemically	0	1	DegreeOfSolubility	
3.18	chemicalCompositionOfRock	rough classification of rock types based on the rock's chemical composition, closely connected to the content of Si02 in the rock	0	1	ChemicalCompositionOfRock	
3.19	metamorphicDegree	the rock's degree of transformation (metamorphic grade)	0	1	MetamorphicDegree/MetamorphicGrade	
3.20	indexMineral	mineral used to characterize zones with a different degree of rock transformation (metamorphism) Note: Rendered as the initials of the mineral(s); several initials together, comma-separated, for example Ky,Sil.	0	1	IndexMineral	
3.21	levelOfRadioactivity	natural level of radioactive radiation from the rock type/bedrock	0	1	LevelOfRadioactivity	
3.22	geolMapNumber	numbering of various rock types on a map	0	1	Integer	
3.23	key	free text description of the bedrock/rock types	0	1	CharacterString	
3.24	cmykColourCode	colour code definition in CMYK showing the	0	1	CharacterString	

		percentual content of Cyan, Magenta, Yellow and Black				
3.25	bedrockClassification	rough classification based on the mutual age and position of the bedrock (if it has formed where it is located or has been moved (overthrust))	0	1	BedrockClassification	
3.26	geolValueAssessment	how important a geological resource or registration is in relation to potential economic utilisation now or in the future	0	1	GeolValueAssessment	
3.27	areaValueIndicator	indication which shows to what extent one may expect objections if changes are made in the land-use plan	0	1	HeightReference	
3.28	ageDescription	free text description of the age relations of the rocks	0	1	CharacterString	
3.29	Role boundaryRock		1	N	RockBoundary	Aggregration
3.30	Role boundaryGeoDelimLine		1	N	GeoDelimLine	Aggregration

1.2.4 RockBoundary

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
4	Class RockBoundary	the boundary between two different types of rock or rock assemblages				
4.1	border	course following the transition between different real world phenomena	1	1	CurveWithQuality	
4.2	typeOfGeolFindings		1	1	TypeOfGeolFindings	
4.3	thematicQuality	the quality of the registration/survey of a theme viewed in relation to the actual conditions in nature. Different thematic resolution / degree of generalisation may be governed by the objects importance for the society, the areal significance or the economy of the project	0	1	ThematicQuality	
4.4	Role (unnamed) RockSurface		1	1	RockSurface	

1.2.5 BedrockDescription

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
5	Class BedrockDescription	observation point in the field where a free text description of the bedrock geology has been given				
5.1	position	location where the object exists	1	1	PointWithQuality	

1.2.6 BedrockProfile

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
6	Class BedrockProfile	line on bedrock map where a cross-section of the bedrock is shown				
6.1	centerline	course followed by the central part of the object	1	1	CurveWithQuality	

1.2.7 BedrockSamplePoint

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
7	Class BedrockSamplePoint	observation point in the field where one or more samples of the bedrock have been taken				
7.1	position	location where the object exists	1	1	PointWithQuality	
7.2	geolLocationNumber	unique number series for specification of geological locality	1	1	Real	
7.3	geologistFieldNumber	the geologist's own number series used to identify and locate where geological observations, measurements or sampling has been carried out. Not necessarily unique	0	1	CharacterString	

1.2.8 BedrockSymbol

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
8	Class BedrockSymbol	point on a map which shows the location of various types of observations in the bedrock through the use of symbols				

8.1	position	location where the object exists	1	1	PointWithQuality	
8.2	geolLocationNumber	unique number series for specification of geological locality	1	1	Real	
8.3	thematicQuality	the quality of the registration/survey of a theme viewed in relation to the actual conditions in nature. Different thematic resolution / degree of generalisation may be governed by the objects importance for the society, the areal significance or the economy of the project	0	1	ThematicQuality	
8.4	geologistFieldNumber	the geologist's own number series used to identify and localise where geological observations, measurements or sampling has been carried out. Not necessarily unique	0	1	CharacterString	
8.5	rockSymbol	symbols used on bedrock maps	0	1	RockSymbol	

1.2.9 Outcrop

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
9	Class Outcrop	visible rock surface (unspecified) inan otherwise soil-covered area or on the seafloor				
9.1	extent	area over which an object extends	1	1	SurfaceWithQuality	
9.2	Role boundaryGeoDelimLine		1	N	GeoDelimLine	Aggregration

1.2.10 Foliation

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
10	Class Foliation	planar structure in bedrocks formed as a result of deformation				
10.1	centerline	course followed by the central part of the object	1	1	CurveWithQuality	
10.2	typeOfGeolFindings		1	1	TypeOfGeolFindings	
10.3	thematicQuality	the quality of the registration/survey of a	0	1	ThematicQuality	

		theme viewed in relation to the actual conditions in nature. Different thematic resolution / degree of generalisation may be governed by the societal importance of the theme, the importance of the area to the region?? or the project economy.				

1.2.11 Fault

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
11	Class Fault	racture surface or fracture zone in the bedrock where a relative movement has occured between the blocks on either side				
11.1	centerline	course followed by the central part of the object	1	1	CurveWithQuality	
11.2	typeOfGeolFindings		1	1	TypeOfGeolFindings	
11.3	thematicQuality	the quality of the registration/survey of a theme viewed in relation to the actual conditions in nature. Different thematic resolution / degree of generalisation may be governed by the objects importance for the society, the areal significance or the economy of the project	0	1	ThematicQuality	
11.4	displacementLimitClassification	classification to distinguish between different thrusts	0	1	Integer	
11.5	lineamentType	collective name for lineation in the bedrock thrusts, (faults and fracture zones)	0	1	LineamentType	

1.2.12 Dyke

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
12	Class Dyke	description of a type of rock, ore or mineral mass filling a fissure or cleft in the bedrock				
12.1	centerline	course followed by the central part of the object	1	1	CurveWithQuality	
12.2	typeOfGeolFindings		1	1	TypeOfGeolFindings	

12.3	thematicQuality	the quality of the registration/survey of a theme viewed in relation to the actual conditions in nature. Different thematic resolution / degree of generalisation may be governed by the objects importance for the society, the areal significance or the economy of the project	0	1	ThematicQuality	

1.2.13 LineamentLocation

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
13	Class LineamentLocation	observation point on a linear structure where a detailed description/measurement has been carried out				
13.1	position	location where the object exists	1	1	PointWithQuality	
13.2	typeOfGeolFindings		1	1	TypeOfGeolFindings	
13.3	thematicQuality	the quality of the registration/survey of a theme viewed in relation to the actual conditions in nature. Different thematic resolution / degree of generalisation may be governed by the objects importance for the society, the areal significance or the economy of the project	0	1	ThematicQuality	
13.4	geolLocationNumber	unique number series for specification of a geological locality	0	1	Real	
13.5	geologistFieldNumber	the geologist's own number series used to identify and locate where geological observations, measurements or sampling has been carried out. Not necessarily unique	0	1	CharacterString	

1.2.14 MetamorphicBoundary

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
14	Class MetamorphicBoundary	delimitation of different metamorphic grades (facies) which is not				

		defined by rock boundaries				
14.1	centerline	course followed by the central part of the object	1	1	CurveWithQuality	
14.2	metamorphicLineType	isolines drawn through observations where the rock has the same metamorphic grade	0	1	MetamorphicLineType	

1.2.15 Crack

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
15	Class Crack	fracture surface, fracture zone or other mechanical discontinuity in the bedrock				
15.1	centerline	course followed by the central part of the object	1	1	CurveWithQuality	
15.2	typeOfGeolFindings	hvor sikkert et geologisk objekt er påvist i terrenget, eller hvilken metode som ligger til grunn for å påvisningen/registreringen	1	1	TypeOfGeolFindings	
15.3	thematicQuality	the quality of the registration/survey of a theme viewed in relation to the actual conditions in nature. Different thematic resolution / degree of generalisation may be governed by the societal importance of the theme, the importance of the area to the re	0	1	ThematicQuality	
15.4	lineamentType	collective name for lineation in the bedrock thrusts, faults and fracture zones)	0	1	LineamentType	

1.2.16 OtherBedrockDelim

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
16	Class OtherBedrockDelim	subdivision between larger geological units/provinces				
16.1	centerline	course followed by the central part of the object	1	1	CurveWithQuality	
16.2	typeOfGeolFindings		1	1	TypeOfGeolFindings	
16.3	bedrockBoundaryType		0	1	BedrockBoundaryType	

1.2.17 PlanarStructurePoint

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
17	Class PlanarStructurePoint	observation/measurement of a planar structure in the bedrock				
17.1	position	location where the object exists	1	1	PointWithQuality	
17.2	typeOfGeolFindings		1	1	TypeOfGeolFindings	
17.3	geolLocationNumber	unique number series for specification of geological locality	1	1	Real	
17.4	structurePointType	measurement of the linear and planar structures at an observation point	1	1	StructurePointType	
17.5	thematicQuality	the quality of the registration/survey of a theme viewed in relation to the actual conditions in nature. Different thematic resolution / degree of generalisation may be governed by the societal importance of the theme, the importance of the area to the region?? or the project economy.	0	1	ThematicQuality	
17.6	geologistFieldNumber	the geologist's own field number for locations and samples	0	1	CharacterString	
17.7	geolHorizontalValue	value of measurement in the horizontal plane	0	1	Integer	
17.8	geolVerticalValue	value of the measurement in the vertical plane	0	1	Integer	
17.9	structureInvertedOrder	used about a) a fold where both flanks (sides) of the fold dip the same way, or b) a bedding plane which is inverted in relation to its original position	0	1	Boolean	
17.10	deformationPhase	clearly separate events (incidents) involving deformation of the bedrock Note: The different phases are distinguished with 0 as original, 1 for the first deformation phase, etc	0	1	Integer	

1.2.18 LinearStructurePoint

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint

18	Class LinearStructurePoint	observasjon/måling av en lineær struktur i berggrunnen Eksempel: Foldeakse				
18.1	position	observation/measurement of a linear structure in the bedrock	1	1	PointWithQuality	
18.2	typeOfGeolFindings		1	1	TypeOfGeolFindings	
18.3	thematicQuality	the quality of the registration/survey of a theme viewed in relation to the actual conditions in nature. Different thematic resolution / degree of generalisation may be governed by the objects importance for the society, the areal significance or the economy of the project	0	1	ThematicQuality	
18.4	geolLocationNumber	unique number series for specification of geological locality	0	1	Real	
18.5	geologistFieldNumber	the geologist's own field number for localities and samples	0	1	CharacterString	
18.6	structurePointType	measurement of the line and plan structures at an observation locality	0	1	StructurePointType	
18.7	geolHorizontalValue	value of measurement in the horizontal plane	0	1	Integer	
18.8	geolVerticalValue	value of the measurement in the vertical plane	0	1	Integer	
18.9	deformationPhase	clearly separate events (incidents) involving deformation of the bedrock Note: The different phases are distinguished with 0 as original, 1 for the first deformation phase, etc.	0	1	Integer	

1.2.18.1 Association <<Topo>> RockSurface-RockBoundary

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
19	Association RockSurface-RockBoundary					
19.1	Role boundaryRock		1	N	RockBoundary	Aggregation
19.2	Role (unnamed) RockSurface		1	1	RockSurface	

1.2.18.2 Association <<Topo>> RockSurface-GeoDelimLine

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
20	Association RockSurface-GeoDelimLine					
20.1	Role boundaryGeoDelimLine		1	N	GeoDelimLine	Aggregation
20.2	Role (unnamed) RockSurface		0	1	RockSurface	

1.2.18.3 Association <<Topo>> Outcrop-GeoDelimLine

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
21	Association Outcrop-GeoDelimLine					
21.1	Role boundaryGeoDelimLine		1	N	GeoDelimLine	Aggregation
21.2	Role (unnamed) Outcrop		0	1	Outcrop	

1.2.19 Codelists

1.2.19.1 <<CodeList>> OtherRockTypeLineType

Nr	Code name	Definition/Description	Code
1	CodeList OtherRockTypeLineType	marking lines which appear on bedrock maps and which have not been individually defined	
1.1	Unspecified		0
1.2	Depositional contact		1
1.3	Depositional contact between lava streams		2
1.4	Intrusive contact		3
1.5	Unconformity (angular unconformity)		4
1.6	Reversed magnetic pole	Line that indicate reversing of the magnetic poles	5
1.7	Sedimentary		6
1.8	Intersecting line	FF-The intersection of the foliation with the surface or plane of a cross-section	10
1.9	Axial trace of synform, unspecified		20
1.10	Axial trace for antiform		40
1.11	Axial trace of an anticline		60
1.12	Axial plane of an anticline, recumbent		61
1.13	Axial trace of a syncline		70
1.14	Axial trace of a syncline, recumbent		71
1.15	Coal seam		80
1.16	Constructed auxiliary line	FF-Constructed lines connecting geological boundaries in the air, sea or outside a cross-section	90
1.17	Buffer zone boundary		91

1.2.19.2 <<CodeList>> ChemicalCompositionOfRock

Nr	Code name	Definition/Description	Code
2	CodeList ChemicalCompositionOfRock	rough classification of rock types based on their chemical composition, mainly connected to the content of Si02 in the rock	
2.1	Acidic	FF-Magmatic rock containing more than 63% SiO2	
2.2	Intermediate	FF-Magmatic rock containing 52-63% SiO2.	
2.3	Basic	FF-Magmatic rock containing 45-52% SiO2	
2.4	Ultrabasic	FF-Magmatic rock containing < 45% SiO2	

2.5	Salic	Said about magmatic rocks where normative silicon and aluminium-rich minerals such as quartz, feldspar, feldspatoids and corundum dominate	
2.6	Femic	said about magmatic rocks where normative iron, magnesium and calcium-rich minerals such as pyroxene, olivine, magnetite, ilmenite and hematite dominate	

1.2.19.3 <<CodeList>> RockGrainSize

Nr	Code name	Definition/Description	Code
3	CodeList RockGrainSize	classification of rock types according to grain size Note: (according to Visser, W.A. (ed.) 1980)	
3.1	Very coarse-grained	Kornstørrelse større enn 30 mm	
3.2	Coarse-grained	Kornstørrelse mellom 5 og 30 mm	
3.3	Moderately- to coarse-grained	Kornstørrelse mellom 1 og 30 mm	
3.4	Moderately granular	Kornstørrelse mellom 1 og 5 mm	
3.5	Fine-granular	Kornstørrelse mellom 0.1 og 1 mm	
3.6	Very fine-granular	Kornstørrelse mellom 0.01 og 0.1 mm	
3.7	Density	Kornstørrelse mellom 0.001 og 0.01 mm	
3.8	Cryptocrystalline	Kornstørrelse finere enn 0.001 mm	

1.2.19.4 <<CodeList>> RockStructure

Nr	Code name	Definition/Description	Code
4	CodeList RockStructure	primary features of the rock's appearance, which help to describe how it has been formed	
4.1	Massive	Deformation type	
4.2	Stratified		
4.3	Homogeneously layered		
4.4	Heterogeneously layered		
4.5	Diffusely layered		
4.6	Homogeneously thin-bedded		
4.7	Diffusely thin-bedded		
4.8	Cross-bedded		
4.9	Weakly foliated		
4.10	Foliated		
4.11	Highly foliated		
4.12	Foliated with lenses	Foliated with lens-shaped augens	
4.13	Highly foliated with lens	Highly foliated with lens-shaped augens	

4.14	Mylonitic		
4.15	Blastomylonitic		
4.16	Slightly elongated		
4.17	Amphibolic		
4.18	Highly elongated		
4.19	Slightly folded		
4.20	Folded		
4.21	Highly folded		
4.22	Boudinage formed		
4.23	Brecciate		
4.24	Crushed		

1.2.19.5 <<CodeList>> RockSymbol

Nr	Code name	Definition/Description	Code
5	CodeList RockSymbol	symbols used on geological bedrock maps	
5.1	Conglomerate		1
5.2	Sedimentary breccia		2
5.3	Tillite		3
5.4	Agglomerate		4
5.5	Pillow lava		5
5.6	Cataclasite, crush breccia		6
5.7	Mylonite		7
5.8	Migmatite		8
5.9	Explosion breccia (pyroclastic breccia)		9
5.10	Intrusion breccia		10
5.11	Dykes,dyke swarms cutting across foliation or bedding. The symbol shows the main direction of the dyke	FF-Note: The symbol shows the main direction of the dyke??	51
5.12	Dykes, dyke swarms cutting the foliation horizontally or diagonally, or the direction is not known		52
5.13	Dykes, dyke swarms following foliation or bedding		53

5.14	Arrow pointing in the direction of younger strata in a stratigraphic sequence		54
5.15	Fossil deposit		55
5.16	Sampling locality for determination of isotopic age Dating method shown in DATERINGTY		71
5.17	Borehole		72
5.18	Earthquake, epicentre		80
5.19	Antimony/Stibnite		101
5.20	Arsenic, arsenopyrite		102
5.21	Lead; galena		103
5.22	Gold		104
5.23	Iron; (hematite) or hematite and magnetite		105
5.24	Iron, magnetite		106
5.25	Copper; chalcopyrite, bornite, cuprite		107
5.26	Cobalt, Cobaltite		108
5.27	Chromium, chromite		109
5.28	Manganese, manganese minerals		110
5.29	Molybdenum, molybdenite		111
5.30	Nickel; pentlandite and chalcopyrite, pyrrhotite		112
5.31	Niobium, tantalum, scandium, niobium, tantalum and scandium minerals		113
5.32	Platinum metals		114
5.33	Zinc; sphalerite		115
5.34	Zinc and lead; spaleriteand galena		116
5.35	Rare earth minerals		117
5.36	Sulphur, copper; pyrite, pyrrhotite with chalcopyrite, sphalerite and galena		118
5.37	Silver, silver, argentite and other silver minerals		119

5.38	Tin, Cassiterite		120
5.39	Titanium, ilmenite and rutile		121
5.40	Uranium, thorium, uranium minerals, thorium minerals		122
5.41	Bismuth, bismuthine		123
5.42	Tungsten, scheelite		124
5.43	Native copper, cuprite		125
5.44	Claim		200
5.45	Mine in operation		201
5.46	Mine, abandoned		202
5.47	Open pit ore mine, in operation		203
5.48	Open ore mine, abandoned		204
5.49	Andalusite		301
5.50	Anorthosite		302
5.51	Apatite		303
5.52	Baryte		304
5.53	Basalt		305
5.54	Beryl, beryllium minerals		306
5.55	Brucite		307
5.56	Whetstone		308
5.57	Diabas, Dolerite		309
5.58	Diatomite		310
5.59	Diorite		311
5.60	Dolomite		312
5.61	Dolomite marble		313
5.62	Feldspar		314
5.63	Fluorite		315
5.64	Gabbro		316
5.65	Mica		317
5.66	Gneiss		318
5.67	Mica schist		319
5.68	Graphite		320
5.69	Garnet		321
5.70	Granite		322
5.71	Greenschist, greenstone		323

5.72	Limestone		324
5.73	Calcite marble		325
5.74	Kaolinite		326
5.75	Soapstone (steatite)		327
5.76	Quartz		328
5.77	Quartzite		329
5.78	Quartz schist		330
5.79	Kyanite		331
5.80	Larvikite		332
5.81	Magnesite		333
5.82	Marble		334
5.83	Nepheline syenite		335
5.84	Norite		336
5.85	Olivine rock (Dunite)		337
5.86	Pegmatite		338
5.87	Rutile, eclogite		339
5.88	Serpentinite		340
5.89	Sillimanite		341
5.90	Slate, flagstone/roofing tile		342
5.91	Syenite		343
5.92	Talc		344
5.93	Trondhjemite		345
5.94	Vermiculite		346
5.95	Wollastonite		347
5.96	Zirkon		348
5.97	Stone quarry (+letter showing mineral/type of rock)		401
5.98	Stone quarry, abandoned		402
5.99	Stone quarry (aggregate, crushed rocks)		404
5.100	Drilled well, unspecified		501
5.101	Drilled well, gas		502
5.102	Drilled well, oil		503
5.103	Drilling rig		504

1.2.19.6 <<CodeList>> RockTypeTexture

Nr	Code name	Definition/Description	Code
6	CodeList RockTypeTexture	phrase used about the structure of a rock type (grain size, grain shape and arrangement) as seen under a microscope	
6.1	Granular		
6.2	Porphyritic		
6.3	Felsitic		
6.4	Ophitic		
6.5	Cataclastic		
6.6	Equigranular, idioblastic		
6.7	Heteroblastic		
6.8	Weak orientation		
6.9	Banded		
6.10	Schliered		

1.2.19.7 <<CodeList>> BedrockClassification

Nr	Code name	Definition/Description	Code
7	CodeList BedrockClassification	rough classification based on the relative age and movement of the bedrock Note: Whether they have been formed at its positionon or have been moved (overthrust)	
7.1	Not classified		0
7.2	Precambrian basement		1
7.3	Eocambrian plutonic rocks of the Fen Complex		2
7.4	Autochthonous rocks, younger than the Precambrian basement		3
7.5	Autochthonous and overthrust sedimentary rock	FF-Autochthonous and overthrust sedimentary rock from the late Neoproterozoic and the Cambro-Silurian periods	4
7.6	Overthrust rocks		5
7.7	Rocks from the Devonian period to and including the Neogene period		6
7.8	Soil deposits from the Quaternary period		7

1.2.19.8 <<CodeList>> MainRockCode

Nr	Code name	Definition/Description	Code
8	CodeList MainRockCode	rough classification of the bedrock in Norway	
8.1	Soil / Uncompacted material		1
8.2	Sandstone		2
8.3	Conglomerate, sedimentary breccia		3
8.4	Breccia		4
8.5	Mylonite, phyllonite		5
8.6	Sedimentary rock (unspecified)		7
8.7	Slate, sandstone, limestone		8
8.8	Sandstone, slate		9
8.9	Limestone, slate, marlstone		10
8.10	Limestone, dolomite		11
8.11	Granite, granodiorite		21
8.12	Diorite, monzodiorite		22
8.13	Syenite, quartz syenite		23
8.14	Monzonite, quartz monzonite		24
8.15	Mangerite syenite		25
8.16	Rhyolite, rhyodacite, dacite		26
8.17	Rhombus porphyry		27
8.18	Metabasalt		28
8.19	Volcanic rocks (unspecified)		29
8.20	Mangerite to gabbro, gneiss and amphibolite		30
8.21	Gabbro, amphibolite		35
8.22	Keratophyre		37
8.23	Quartz-diorite, tonalite, trondhjemite		38
8.24	Olivine rock (Dunite)		40
8.25	Eclogitet		41
8.26	Anorthosite		45
8.27	Charnockite to anorthosite plutonic rocks, locally Metamorphosed		46
8.28	Amphibolite and mica schist		50

8.29	Greenstone, amphibolite		55
8.30	Metasandstone, slate		60
8.31	Quartzite		61
8.32	Mica gneiss, mica schist, metasandstone, amphibolite		62
8.33	Phyllite, mica schist		65
8.34	Calcareous mica schist, calc silicate gneiss		66
8.35	Marble		70
8.36	Dolomite		71
8.37	Dioritic to granitic gneiss, migmatite		82
8.38	Augen gneiss, granite, foliated granite		85
8.39	Banded gneiss (amph., hbl.gneiss, mic. gneiss), locally migm.	Banded gneiss (amphibolite, hornblende gneiss, mica gneiss locally migmatitic)	87

1.2.19.9 <<CodeList>> IndexMineral

Nr	Code name	Definition/Description	Code
9	CodeList IndexMineral	mineral used to characterise zones with a different degree of rock conversion (metamorphism) Note: Rendered as the initials of the mineral(s), several initials together, comma-separated, for example Ky,Sil. Note: Rendered as the initials of the mineral(s), several initials together, comma-separated, for example Ky,Sil.	
9.1	Albite		Ab
9.2	Almandine		Alm
9.3	Andalusite		And
9.4	Biotite		Bi
9.5	Cordierite		Co
9.6	Clinopyroxene		Cps
9.7	Diopside		Di
9.8	Garnet		Gnt
9.9	Hypersthene		Hy
9.10	Potassium feldspar		Kfs
9.11	Kyanite		Ky
9.12	Orthopyroxene		Opx
9.13	Pyroxene		Px
9.14	Pyrope		Py

9.15	Sillimanite		Sil
9.16	Staurolite		St

1.2.19.10 <<CodeList>> LineamentType

Nr	Code name	Definition/Description	Code
10	CodeList LineamentType	collective name for lineation in the bedrock (displacement limits??, faults and fracture zones) Note: Definitions given in NGT (Nystuen 1986).	
10.1	Unspecified		0
10.2	Concealed thrust boundary		
10.3	Thrust boundary, unspecified		10
10.4	Internal (smaller) thrust boundary		11
10.5	Thrust boundary below a nappe (sheet)		12
10.6	Boundary for minor thrust sheet		13
10.7	Sole thrust		31
10.8	Floor fault		32
10.9	Decollement fault		33
10.10	Concealed normal fault		40
10.11	Normal fault		41
10.12	Reverse fault		42
10.13	Listric fault		43
10.14	Strike-slip fault, unspecified		51
10.15	Strike-slip fault, sinistral (leftward)		52
10.16	Strike-slip fault, dextral (rightward)		53
10.17	Oblique-slip fault, unspecified		61
10.18	Oblique-slip fault, normal and sinistral		62
10.19	Oblique-slip fault, normal and dextral		63
10.20	Oblique-slip fault, reverse and sinistral		64
10.21	Oblique-slip fault, reverse and dextral		65
10.22	Transformal fault		71
10.23	Caldera fault		72
10.24	Transform, active		
10.25	Transform, extinct		74
10.26	Transform, extinct/covered		75

10.27	Thrust block boundary		82
10.28	Fault, unspecified		99
10.29	Ordinary joint		100
10.30	Major joint, possible fault		101
10.31	Joint with potential young age movement		102
10.32	Joints, drawn on the basis of air photo interpretation		103
10.33	Dyke		191
10.34	Fracture zone, crushed zone		213
10.35	Assumed fault, crushed zone; drawn on the basis of geophysical data		300
10.36	Mylonite zone		400
10.37	Shear zone 1	Stiplet	410
10.38	Shear zone 2	Heltrekt	411
10.39	Escarpment		500
10.40	Spreading axis, active		600
10.41	Spreading axis, Inactive		601

1.2.19.11 <<CodeList>> DegreeOfSolubility

Nr	Code name	Definition/Description	Code
11	CodeList DegreeOfSolubility	the ability of the rock to dissolve chemically Note: Also expresses buffer capacity of the the bedrock	
11.1	Of low solubility		1
11.2	Of medium solubility		2
11.3	Highly soluble		3

1.2.19.12 <<CodeList>> MetamorphicDegree/MetamorphicGrade

Nr	Code name	Definition/Description	Code
12	CodeList MetamorphicDegree/MetamorphicGrade	the rock's conversion degree (metamorphic grade) Note: A list of mineral assemblages which is characteristic for the transformation (metamorphism) has been specified under explanations	
12.1	Non-metamorphic	No alternation of the rock	1
12.2	Very low grade	Content of lawsonite, laumontite, prehnite, pumpellyite??, albite	10
12.3	Low grade	Content of chlorite, zoisite, clinozoisite, actinolite	20

12.4	Medium grade	Content of staurolite, cordierite (chloritoid and ferriferous chlorite are gone)	30
12.5	High grade	Content of potassium feldspar, aluminium silicates, cordierite, almandine	40
12.6	Granulite grade	Content of hypersthene (high degree with very low water pressure)	50
12.7	Eclogite grade	Content of omphacite, pyrope (basic composition)	60
12.8	Contact metamorphism	Transformation as a result of contact metamorphism	70
12.9	High pressure	Metamorphism/Transformation as a result of meteorite impact	80
12.10	Anatexis	Partial melting, migmatite formation	90

1.2.19.13 <<CodeList>> MetamorphicLineType

Nr	Code name	Definition/Description	Code
13	CodeList MetamorphicLineType	isolines drawn through observations where the rock has the same degree of transformation (metamorphism)	
13.1	Anatexis		
13.2	Contact metamorphism	Grense for begynnende anatakse (oppsmeltning, migmatisering)	
13.3	Mineral isograde		
13.4	Regional metamorphism		
13.5	Not indicated		

1.2.19.14 <<CodeList>> LevelOfRadioactivity

Nr	Code name	Definition/Description	Code
14	CodeList LevelOfRadioactivity	natural radioactive radiation from the rock type/bedrock Note: Usually established by measuring gamma radiation from the rock(measured in imp/sec).	
14.1	Insufficient data		0
14.2	Low radiation	Lavere stråling enn det som er vanlig for de fleste bergarter (<50 imp/sek)	1
14.3	Ordinary radiation	Normal stråling for de fleste bergarter (50-100 imp/sek)	2
14.4	Slightly raised	Strålingen er noe høyere enn det som er vanlig for de fleste bergarter (100-200 imp/sek)	3
14.5	Raised radiation level	Den naturlige strålingen fra bergartene er såpass forhøyet at den bør tas i betraktning under arealdisponeringen. Større sannsynlighet for oppkonsentrering av radon enn normalt.	4
14.6	High radiation	Den naturlige strålingen fra bergarten er så høy at man ikke bør oppholde seg i området over lengere tid eller ta med seg steinprøver hjem.	5

1.2.19.15 <<CodeList>> StructurePointType

Nr	Code name	Definition/Description	Code
15	CodeList StructurePointType	measurement of the linear and planar structures at an observation point Note: Further information and definitions of the structures are available in NGU Publication No. 113, p. 52	

		and NGT vol. 66 (Nystuen 1986).	
15.1	Fold axis		1
15.2	Anticline axis		11
15.3	Synklinalakse		15
15.4	Antiform axis		21
15.5	Synform axis		25
15.6	Lineation	Undifferentiated	31
15.7	Intersection lineation	For example formed as a result of intersecting plane structures	34
15.8	Streching lineation	For example formed by elongated conglomerate pebbles	35
15.9	Lineation defined by minor folds		36
15.10	Mineral lineation		41
15.11	Slickenside striae		51
15.12	Bedding	Sedimentary bedding/primary bedding in plutonic rocks	101
15.13	Schistosity/foliation		111
15.14	Schistosity		112
15.15	Foliation		113
15.16	Foliation and section?? lineation		114
15.17	Mylonite		115
15.18	Kink band, unknown orientation		116
15.19	Kink band with the dip of the band indicated		117
15.20	Kink band with the dip of the band indicated and with the relative movement denoted by an arrow		118
15.21	Joint		121
15.22	Open joint		123
15.23	Filled joint		125
15.24	Crenulation cleavage, fracture cleavage		131
15.25	Planar structure based on geophysical data		141
15.26	Axial plane		151
15.27	Fault plan		161

1.2.19.16 <<CodeList>> BedrockBoundaryType

Nr	Code name	Definition/Description	Code
16	CodeList BedrockBoundaryType	special delimitation in the bedrock, not comprising typical bedrock boundaries	
16.1	OceanContinentalCrust	FF-Delimitation between ocean crust and continental crust	1
16.2	PaleocenEocenAvgrensning	Avgrensning mellom paleocen og eocen	2