Landslide

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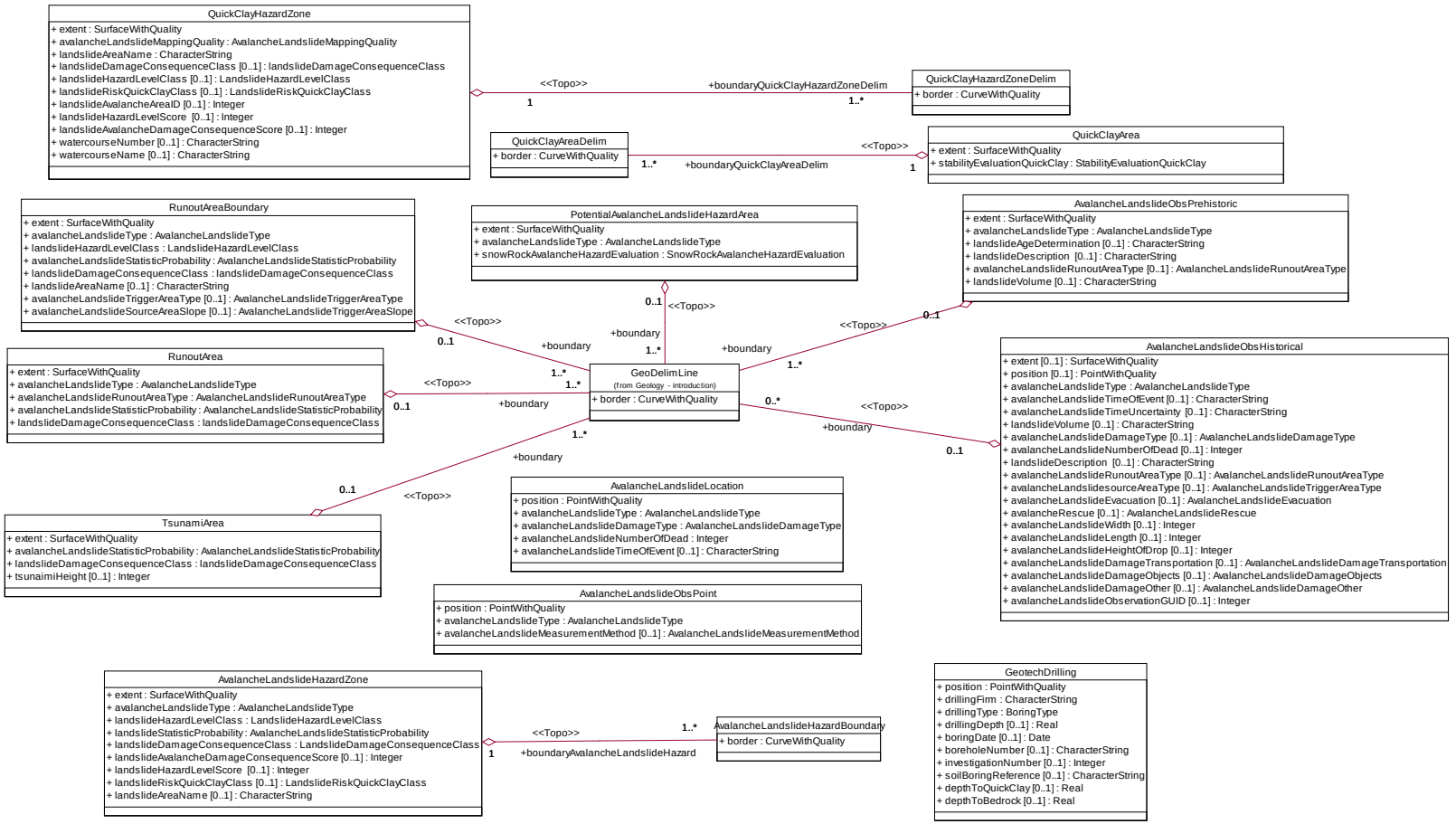
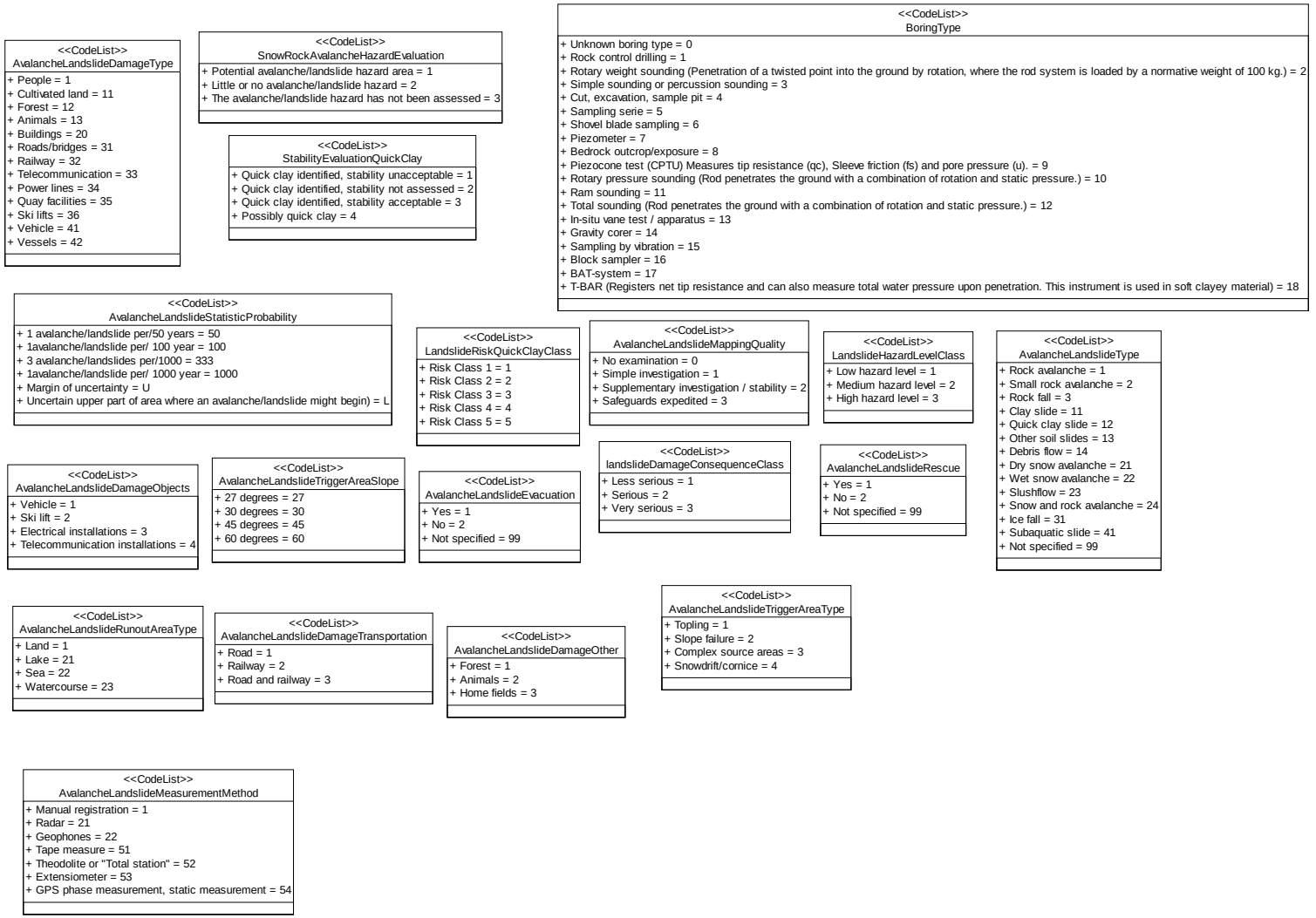
1.1 Application schema




<<CodeList>>
AvalancheLandslideDamageType
+ People = 1
+ Cultivated land = 11
+ Forest = 12
+ Animals = 13
+ Buildings = 20
+ Roads/bridges = 31
+ Railway = 32
+ Telecommunication = 33
+ Power lines = 34
+ Quay facilities = 35
+ Ski lifts = 36
+ Vehicle = 41
+ Vessels = 42
<<CodeList>>
SnowRockAvalancheHazardEvaluation
+ Potential avalanche/landslide hazard area = 1
+ Little or no avalanche/landslide hazard = 2
+ The avalanche/landslide hazard has not been assessed = 3
<<CodeList>>
StabilityEvaluationQuickClay
+ Quick clay identified, stability unacceptable = 1
+ Quick clay identified, stability not assessed = 2
+ Quick clay identified, stability acceptable = 3
+ Possibly quick clay = 4
<<CodeList>>
BoringType
+ Unknown boring type = 0
+ Rock control drilling = 1
+ Rotary weight sounding (Penetration of a twisted point into the ground by rotation, where the rod system is loaded by a normative weight of 100 kg.) = 2
+ Simple sounding or percussion sounding = 3
+ Cut, excavation, sample pit = 4
+ Sampling serie = 5
+ Shovel blade sampling = 6
+ Piezometer = 7
+ Bedrock outcrop/exposure = 8
+ Piezocone test (CPTU) Measures tip resistance (qc), Sleeve friction (fs) and pore pressure (u). = 9
+ Rotary pressure sounding (Rod penetrates the ground with a combination of rotation and static pressure.) = 10
+ Ram sounding = 11
+ Total sounding (Rod penetrates the ground with a combination of rotation and static pressure.) = 12
+ In-situ vane test / apparatus = 13
+ Gravity corer = 14
+ Sampling by vibration = 15
+ Block sampler = 16
+ BAT-system = 17
+ T-BAR (Registers net tip resistance and can also measure total water pressure upon penetration. This instrument is used in soft clayey material) = 18
<<CodeList>>
AvalancheLandslideStatisticProbability
+ 1 avalanche/landslide per/50 years = 50
+ 1avalanche/landslide per/ 100 year = 100
+ 3 avalanche/landslides per/1000 = 333
+ 1avalanche/landslide per/ 1000 year = 1000
+ Margin of uncertainty = U
+ Uncertain upper part of area where an avalanche/landslide might begin) = L
<<CodeList>>
LandslideRiskQuickClayClass
+ Risk Class 1 = 1
+ Risk Class 2 = 2
+ Risk Class 3 = 3
+ Risk Class 4 = 4
+ Risk Class 5 = 5
<<CodeList>>
AvalancheLandslideMappingQuality
+ No examination = 0
+ Simple investigation = 1
+ Supplementary investigation / stability = 2
+ Safeguards expedited = 3
<<CodeList>>
LandslideHazardLevelClass
+ Low hazard level = 1
+ Medium hazard level = 2
+ High hazard level = 3
<<CodeList>>
AvalancheLandslideType
+ Rock avalanche = 1
+ Small rock avalanche = 2
+ Rock fall = 3
+ Clay slide = 11
+ Quick clay slide = 12
+ Other soil slides = 13
+ Debris flow = 14
+ Dry snow avalanche = 21
+ Wet snow avalanche = 22
+ Slushflow = 23
+ Snow and rock avalanche = 24
+ Ice fall = 31
+ Subaquatic slide = 41
+ Not specified = 99
<<CodeList>>
AvalancheLandslideDamageObjects
+ Vehicle = 1
+ Ski lift = 2
+ Electrical installations = 3
+ Telecommunication installations = 4
<<CodeList>>
AvalancheLandslideTriggerAreaSlope
+ 27 degrees = 27
+ 30 degrees = 30
+ 45 degrees = 45
+ 60 degrees = 60
<<CodeList>>
AvalancheLandslideEvacuation
+ Yes = 1
+ No = 2
+ Not specified = 99
<<CodeList>>
landslideDamageConsequenceClass
+ Less serious = 1
+ Serious = 2
+ Very serious = 3
<<CodeList>>
AvalancheLandslideRescue
+ Yes = 1
+ No = 2
+ Not specified = 99
<<CodeList>>
AvalancheLandslideRunoutAreaType
+ Land = 1
+ Lake = 21
+ Sea = 22
+ Watercourse = 23
<<CodeList>>
AvalancheLandslideDamageTransportation
+ Road = 1
+ Railway = 2
+ Road and railway = 3
<<CodeList>>
AvalancheLandslideDamageOther
+ Forest = 1
+ Animals = 2
+ Home fields = 3
<<CodeList>>
AvalancheLandslideTriggerAreaType
+ Topling = 1
+ Slope failure = 2
+ Complex source areas = 3
+ Snowdrift/cornice = 4
<<CodeList>>
AvalancheLandslideMeasurementMethod
+ Manual registration = 1
+ Radar = 21
+ Geophones = 22
+ Tape measure = 51
+ Theodolite or "Total station" = 52
+ Extensiometer = 53
+ GPS phase measurement, static measurement = 54

1.2 Descriptions

1.2.1 QuickClayArea

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
1	Class QuickClayArea	area where it is assumed that there is quick clay in the subsurface				
1.1	extent	area over which an object extends	1	1	SurfaceWithQuality	
1.2	stabilityEvaluationQuickClay	assessment of the stability in an area where a quick clay investigation has been carried out Note: Will be omitted/discontinued when new landslide risk evaluations have been carried out	1	1	StabilityEvaluationQuickClay	
1.3	Role boundaryQuickClayAreaDelim		1	N	QuickClayAreaDelim	Aggregration

1.2.2 QuickClayAreaDelim

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
2	Class QuickClayAreaDelim	line delimiting area where it is assumed that there is quick clay in the ground				
2.1	border	course following the transition between different real world phenomena	1	1	CurveWithQuality	
2.2	Role (unnamed) QuickClayArea		1	1	QuickClayArea	

1.2.3 QuickClayHazardZone

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
3	Class QuickClayHazardZone	area which has been reviewed for quick clay slide hazard based on damage consequences and degree of hazard				
3.1	extent	area over which an object extends	1	1	SurfaceWithQuality	
3.2	avalancheLandslideMappingQualit	indicates the status and degree of detail as regards	1	1	AvalancheLandslideMapping	

	y	the ??survey/mapping of the zone			Quality	
3.3	landslideAreaName	place name which is used in connection with a landslide event	1	1	CharacterString	
3.4	landslideDamageConsequenceClass	what economic and social consequences follow a quick clay slide, and risk of loss of human lives Note: Qualitative classification of consequences of damage in connection with risk of fatalities, personal injuries, financial loss, value reduction as well as the risk that important social functions can be affected	0	1	landslideDamageConsequenceClass	
3.5	landslideHazardLevelClass	the degree of probability that there will be an avalanche/landslide Condition: The attribute landslideHazardLevelClass or avalancheStatisticProbability is mandatory. landslideHazardLevelClass is used in the case of quick clay and avalancheStatisticProbability in the case of steep terrain Note: Reflects the degree of uncertainty regarding the stability of the area (topographical-, geological-, geotechnical and erosional conditions	0	1	LandslideHazardLevelClass	
3.6	landslideRiskQuickClayClass	the risk that a landslide may inflict damage on an area, categorized according to risk classes Note: This attribute cites a classification of risk that the area will be vulnerable to landslide damage. The classification method is based on a review of damage consequences and hazard levels	0	1	LandslideRiskQuickClayClass	
3.7	landslideAvalancheAreaID	unique ID number for landslide/avalanche area or quick clay hazard zone	0	1	Integer	
3.8	landslideHazardLevelScore	numerical value which results from the evaluation of the influence of the	0	1	Integer	

		most important criteria and factors on the degree of risk of a quick clay slide (cf. Table 2 in the chapter on definitions and abbreviations.)				
3.9	landslideAvalancheDamageConsequenceScore	value (in points) based on weighted factors for the consequences of damage Note: See more precise definition in chapter on definitions and abbreviations.	0	1	Integer	
3.10	watercourseNumber	unique identification of WatershedSection/WatershedProvince as a hierarchical system in accordance with the Norwegian Water Resources and Energy Directorate (NVE) watershed register (REGINE)	0	1	CharacterString	
3.11	watercourseName	name of watercourse which is nearby the registered object	0	1	CharacterString	
3.12	Role boundaryQuickClayHazardZoneDelim		1	N	QuickClayHazardZoneDelim	Aggregration

1.2.4 QuickClayHazardZoneDelim

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
4	Class QuickClayHazardZoneDelim	line delimiting area for which quick clay slide hazard has been evaluated based on damage consequences and degree of risk				
4.1	border	course following the transition between different real world phenomena	1	1	CurveWithQuality	
4.2	Role (unnamed) QuickClayHazardZone		1	1	QuickClayHazardZone	

1.2.5 AvalancheLandslideHazardZone

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
5	Class	area where the				

	AvalancheLandslideHazardZone	avalanche/landslide hazard has been evaluated/surveyed in more detail with regard to probability and extent				
5.1	extent	area over which an object extends	1	1	SurfaceWithQuality	
5.2	avalancheLandslideType	what type of avalanche/landslide masses related to the avalanche/landslide hazard or event Note: Various types of avalanche/landslide masses, such as rock, snow, soil an	1	1	AvalancheLandslideType	
5.3	landslideHazardLevelClass	the degree of probability that there will be avalanche landslide Condition: The attribute landslideHazardLevelClass or avalancheStatisticProbability is mandatory. landslideHazardLevelClass is used in the case of quick clay and avalancheStatisticProbability in the case of steep terrain Note: Reflects the degree of uncertainty regarding the stability of the area (topographical-, geological-, geotechnical and erosional conditions	1	1	LandslideHazardLevelClass	
5.4	landslideStatisticProbability	statistical probability that a landslide will take place Condition: The attribute landslideHazardLevelClass or avalancheStatisticProbability is mandatory. landslideHazardLevelClass is used in the case of quick clay and avalancheStatisticProbability in the case of steep terrain Note: Indicated as a yearly probability of avalanches/landslides. In the Planning and Building Act consideration must be given for the yearly probability of 1/1000	1	1	AvalancheLandslideStatisticProbability	

5.5	landslideDamageConsequenceClass	what economic and social consequences follow a quick clay slide, and risk of loss of human lives Note: Qualitative classification of consequences of damage in connection with risk of fatalities, personal injuries, financial loss, value reduction as well as the risk that important social functions can be affected	1	1	LandslideDamageConsequenceClass	
5.6	landslideAvalancheDamageConsequenceScore	value (in points) based on weighted factors for the consequences of damage Note: See more precise definition in chapter on definitions and abbreviations.	0	1	Integer	
5.7	landslideHazardLevelScore	numerical value which results from the evaluation of the influence of the most important criteria and factors on the degree of hazard of a quick clay slide (cf. Table 2 in the chapter on definitions and abbreviations)	0	1	Integer	
5.8	landslideRiskQuickClayClass	the risk that a landslide may inflict damage on an area, categorized according to risk classes Note: This attribute cites a classification of risk that the area will be vulnerable to landslide damage. The classification method is based on a review of damage consequences and hazard levels.	0	1	LandslideRiskQuickClayClass	
5.9	landslideAreaName	place name which is used in connection with a landslide event	0	1	CharacterString	
5.10	Role boundaryAvalancheLandslideHazard		1	N	AvalancheLandslideHazardBoundary	Aggregration

1.2.6 AvalancheLandslideHazardBoundary

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
6	Class AvalancheLandslideHazardBound	boundary line which shows the extent of potential avalanches/landslides				

	ary					
6.1	border	course following the transition between different real world phenomena	1	1	CurveWithQuality	
6.2	Role (unnamed) AvalancheLandslideHazardZone		1	1	AvalancheLandslideHazardZone	

1.2.7 AvalancheLandslideLocation

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
7	Class AvalancheLandslideLocation	location where damage has occurred as a result of avalanche/landslide				
7.1	position	location where the object exists	1	1	PointWithQuality	
7.2	avalancheLandslideType	what type of avalanche/landslide masses there will be in connection with the avalanche/landslide hazard or event Note: Various types of avalanche/landslide masses, such as rock, snow, boulders, soil and combinations of these	1	1	AvalancheLandslideType	
7.3	avalancheLandslideDamageType	what has been damaged by avalanche/landslide	1	1	AvalancheLandslideDamageType	
7.4	avalancheLandslideNumberOfDead	the number of fatalities resulting from an avalanche/landslide event	1	1	Integer	
7.5	avalancheLandslideTimeOfEvent	indication of time of avalanche/landslide event Note: Is used for events in historical time	0	1	CharacterString	

1.2.8 AvalancheLandslideObsHistorical

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
8	Class AvalancheLandslideObsHistorical	place where an individual avalanche/landslide event from historical times has been described				
8.1	extent	objektets utstrekning	0	1	SurfaceWithQuality	
8.2	position	location where the object exists	0	1	PointWithQuality	
8.3	avalancheLandsli	what type of	1	1	AvalancheLan	

	deType	avalanche/landslide masses related to the avalanche/landslide hazard or event Note: Various types of avalanche/landslide masses, such as rock, snow, soil an			dslideType	
8.4	avalancheLandslideTimeOfEvent	indication of time of avalanche/landslide event Note: Used for events in historical time	0	1	CharacterString	
8.5	avalancheLandslideTimeUncertainty	uncertainty with regard to stated time Note: Is used for events in historical time	0	1	CharacterString	
8.6	landslideVolume	estimated volume of the landslide masses Note: Stated in m3	0	1	CharacterString	
8.7	avalancheLandslideDamageType	what has been damaged by avalanche/landslide	0	1	AvalancheLandslideDamageType	
8.8	avalancheLandslideNumberOfDead	the number of fatalities resulting from an avalanche/landslide event	0	1	Integer	
8.9	landslideDescription	description of landslide event Note: Descriptive text field or link (URL) to textual description	0	1	CharacterString	
8.10	avalancheLandslideRunoutAreaType	the area which is affected by the avalanche landslide masses	0	1	AvalancheLandslideRunoutAreaType	
8.11	avalancheLandslidesourceAreaType	the type of source area for the avalanche/landslide Note: Unstable rock slopes, snowdrifts, etc.	0	1	AvalancheLandslideTriggerAreaType	
8.12	avalancheLandslideEvacuation	was evacuation in the hazard zone carried out (yes/no)	0	1	AvalancheLandslideEvacuation	
8.13	avalancheRescue	organized rescue initiated	0	1	AvalancheLandslideRescue	
8.14	avalancheLandslideWidth	the width of the avalanche/landslide Note: Stated in metres	0	1	Integer	
8.15	avalancheLandslideLength	total horisontal length of the avalanche/landslide Note: Stated in metres	0	1	Integer	
8.16	avalancheLandslideHeightOfDrop	height of drop of the avalanche/landslide Note: Stated in metres	0	1	Integer	
8.17	avalancheLandslideDamageTransportation	damage to transportation infrastructure resulting from the avalanche/landslide	0	1	AvalancheLandslideDamageTransportation	
8.18	avalancheLandslideDamageObject	the avalanche/landslide resulted in damage to	0	1	AvalancheLandslideDamage	

	s	object			Objects	
8.19	avalancheLandslideDamageOther	the avalanche/landslide resulted in damage to forest or animals	0	1	AvalancheLandslideDamageOther	
8.20	avalancheLandslideObservationGUID	unique national ID which can be used to link data from various sources	0	1	Integer	
8.21	Role boundary		0	N	GeoDelimLine	Aggregration

1.2.9 AvalancheLandslideObsPrehistoric

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
9	Class AvalancheLandslideObsPrehistoric	place where scientific work has been carried out, describing avalanche/landslide events from prehistoric times				
9.1	extent	area over which an object extends	1	1	SurfaceWithQuality	
9.2	avalancheLandslideType	what type of avalanche/landslide masses related to the avalanche/landslide hazard or event Note: Various types of avalanche/landslide masses, such as rock, snow, soil an	1	1	AvalancheLandslideType	
9.3	landslideAgeDetermination	age of the landslide event in years, determined using geological methods. Stated including +/- the number of years Note: Is used for prehistoric events with dated age determination	0	1	CharacterString	
9.4	landslideDescription	description of landslide event Note: Descriptive text field or link (URL) to textual description	0	1	CharacterString	
9.5	avalancheLandslideRunoutAreaType	the area which is affected by the avalanche(??/landslide) masses	0	1	AvalancheLandslideRunoutAreaType	
9.6	landslideVolume	??assumed/estimated volume of the landslide masses Note: Stated in m3	0	1	CharacterString	
9.7	Role boundary		1	N	GeoDelimLine	Aggregration

1.2.10 AvalancheLandslideObsPoint

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
10	Class AvalancheLandslideObsPoint	place where observations, measurements, etc. have been carried out in connection with avalanche/landslide mapping and surveys				
10.1	position	location where the object exists	1	1	PointWithQuality	
10.2	avalancheLandslideType	what type of avalanche/landslide masses related to the avalanche/landslide hazard or event Note: Various types of avalanche/landslide masses, such as rock, snow, soil an	1	1	AvalancheLandslideType	
10.3	avalancheLandslideMeasurementMethod	investigation/sampling used at measuring station or observation point	0	1	AvalancheLandslideMeasurementMethod	

1.2.11 PotentialAvalancheLandslideHazardArea

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
11	Class PotentialAvalancheLandslideHazardArea	area where there is a potential avalanche/landslide hazard				
11.1	extent	area over which an object extends	1	1	SurfaceWithQuality	
11.2	avalancheLandslideType	what type of avalanche/landslide masses related to the avalanche/landslide hazard or event Note: Various types of avalanche/landslide masses, such as rock, snow, soil	1	1	AvalancheLandslideType	
11.3	snowRockAvalancheHazardEvaluation	rough indication of how exposed an area is to avalanches and rock falls. Note: The classification has been used in the preparation of hazard zone maps for rock and snow avalanches. These are based on NGI's geomorphological	1	1	SnowRockAvalancheHazardEvaluation	

		interpretation of the terrain on maps, aerial photographs and in the field, drillings, geothecnical conditions, climate and other landslide related information				
11.4	Role boundary		1	N	GeoDelimLine	Aggregration

1.2.12 RunoutAreaBoundary

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
12	Class RunoutAreaBoundary					
12.1	extent	area over which an object extends	1	1	SurfaceWithQuality	
12.2	avalancheLandslideType	what type of avalanche/landslide masses related to the avalanche/landslide hazard or event Note: Various types of avalanche/landslide masses, such as rock, snow, soil	1	1	AvalancheLandslideType	
12.3	landslideHazardLevelClass	the degree of probability that there will be an avalanche Condition: The attribute landslideHazardLevelClass or avalancheStatisticProbability is mandatory. landslideHazardLevelClass is used in the case of quick clay and avalancheStatisticProbability in the case of steep terrain Note: ??<truncated>	1	1	LandslideHazardLevelClass	
12.4	avalancheLandslideStatisticProbability	statistical probability that an avalanche landslide will take place Condition: The attribute landslideHazardLevelClass or avalancheStatisticProbability is mandatory. landslideHazardLevelClass is used in the case of quick clay and avalancheStatisticProbabili	1	1	AvalancheLandslideStatisticProbability	

		ty in the case of steep terrain Note: Indicated as a yearly probability of avalanches/landslides. In the Planning and Building Act consideration must be given for the yearly probability of 1/1000				
12.5	landslideDamageConsequenceClass	what economic and social consequences follow a quick clay slide, and risk of loss of human lives Note: Qualitative classification of consequences of damage in connection with risk of fatalities, personal injuries, financial loss, value reduction as well as the risk that important social functions can be affected	1	1	landslideDamageConsequenceClass	
12.6	landslideAreaName	name of site which is used in connection with a landslide event	0	1	CharacterString	
12.7	avalancheLandslideTriggerAreaType	the type of source area for the avalanche/landslide Note: Unstable rock slopes, snowdrifts, etc	0	1	AvalancheLandslideTriggerAreaType	
12.8	avalancheLandslideSourceAreaSlope	the type of source area for the avalanche/landslide Note: Unstable rock slopes, snowdrifts, etc	0	1	AvalancheLandslideTriggerAreaSlope	
12.9	Role boundary		1	N	GeoDelimLine	Aggregration

1.2.13 RunoutArea

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
13	Class RunoutArea	area which is affected or covered by avalanche/landslide masses when an avalanche/landslide occurs				
13.1	extent	area over which an object extends	1	1	SurfaceWithQuality	
13.2	avalancheLandslideType	what type of avalanche/landslide masses related to the avalanche/landslide hazard or event Note: Various types of avalanche/landslide masses, such as rock, snow, soil an	1	1	AvalancheLandslideType	

13.3	avalancheLandslideRunoutAreaType	the area which is affected by the avalanche(??/landslide) masses	1	1	AvalancheLandslideRunoutAreaType	
13.4	avalancheLandslideStatisticProbability	statistical probability that an avalanche/a landslide will take place Condition: The attribute landslideHazardLevelClass or avalancheStatisticProbability is mandatory. landslideHazardLevelClass is used in the case of quick clay and avalancheStatisticProbability in the case of steep terrain Note: Indicated as a yearly probability of avalanches/landslides. In the Planning and Building Act consideration must be given for the yearly probability of 1/1000	1	1	AvalancheLandslideStatisticProbability	
13.5	landslideDamageConsequenceClass	what economic and social consequences follow a quick clay slide, and risk of loss of human lives Note: Qualitative classification of consequences of damage in connection with risk of fatalities, personal injuries, financial loss, value reduction as well as the risk that important social functions can be affected	1	1	landslideDamageConsequenceClass	
13.6	Role boundary		1	N	GeoDelimLine	Aggregration

1.2.14 GeotechDrilling

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
14	Class GeotechDrilling	method for identifying soil conditions				
14.1	position	location where the object exists	1	1	PointWithQuality	
14.2	drillingFirm	name of firm which carried out the drilling	1	1	CharacterString	
14.3	drillingType	which kind of drilling was used	1	1	BoringType	
14.4	drillingDepth	vertical drilling depth Note: Stated in metres	0	1	Real	

14.5	boringDate	point in time when drilling was carried out	0	1	Date	
14.6	boreholeNumber	ID of place where drilling has been carried out	0	1	CharacterString	
14.7	investigationNumber	ID of investigation where drilling has been carried out	0	1	Integer	
14.8	soilBoringReference	reference to report or other documentation Note: Can be used as URL link to online information	0	1	CharacterString	
14.9	depthToQuickClay	depth down to quick clay Note: Stated in metres	0	1	Real	
14.10	depthToBedrock	the distance from the ground surface down to solid bedrock Note: Stated in metres	0	1	Real	

1.2.15 TsunamiArea

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
15	Class TsunamiArea	land area which would be affected by a potential tsunami caused by avalanche/landslide masses which run into in the sea or a lake				
15.1	extent	area over which an object extends	1	1	SurfaceWithQuality	
15.2	avalancheLandslideStatisticProbability	statistical probability that an avalanche/a landslide will take place Condition: The attribute landslideHazardLevelClass or avalancheStatisticProbability is mandatory. landslideHazardLevelClass is used in the case of quick clay and avalancheStatisticProbability in the case of steep terrain Note: Indicated as a yearly probability of avalanches/landslides. In the Planning and Building Act consideration must be given for the yearly probability of 1/1000	1	1	AvalancheLandslideStatisticProbability	
15.3	landslideDamageConsequenceClass	what economic and social consequences follow a quick clay slide, and risk of loss of human lives Note: Qualitative classification of	1	1	landslideDamageConsequenceClass	

		consequences of damage in connection with risk of fatalities, personal injuries, financial loss, value reduction as well as the risk of ??<truncated>				
15.4	tsunaimiHeight	calculated maximum tsunami height from an avalanche/landslide event Note: Stated in metres	0	1	Integer	
15.5	Role boundary		1	N	GeoDelimLine	Aggregration

1.2.16 Association <<Topo>> QuickClayHazardZone-QuickClayHazardZoneDelim

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
16	Association QuickClayHazardZone-QuickClayHazardZoneDelim					
16.1	Role boundaryQuickClayHazardZoneDelim		1	N	QuickClayHazardZoneDelim	Aggregation
16.2	Role (unnamed) QuickClayHazardZone		1	1	QuickClayHazardZone	

1.2.17 Association <<Topo>> QuickClayArea-QuickClayAreaDelim

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
17	Association QuickClayArea-QuickClayAreaDelim					
17.1	Role boundaryQuickClayAreaDelim		1	N	QuickClayAreaDelim	Aggregation
17.2	Role (unnamed) QuickClayArea		1	1	QuickClayArea	

1.2.18 Association <<Topo>> PotentialAvalancheLandslideHazardArea-GeoDelimLine

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

	heLandslideHazardArea-GeoDelimLine					
18.1	Role boundary		1	N	GeoDelimLine	Aggregation
18.2	Role (unnamed) PotentialAvalancheLandslideHazardArea		0	1	PotentialAvalancheLandslideHazardArea	

1.2.19 Association <<Topo>> RunoutAreaBoundary-GeoDelimLine

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
19	Association RunoutAreaBoundary-GeoDelimLine					
19.1	Role boundary		1	N	GeoDelimLine	Aggregation
19.2	Role (unnamed) RunoutAreaBoundary		0	1	RunoutAreaBoundary	

1.2.20 Association <<Topo>> AvalancheLandslideObsHistorical-GeoDelimLine

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

1.2.21 Association <<Topo>> AvalancheLandslideObsPrehistoric-GeoDelimLine

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
21	Association AvalancheLandslideObsPrehistoric-GeoDelimLine					
21.1	Role boundary		1	N	GeoDelimLine	Aggregation
21.	Role		0	1	AvalancheLan	

2	(unnamed) AvalancheLandslideObsPrehistoric				dslideObsPrehistoric	

1.2.22 Association <<Topo>> AvalancheLandslideHazardZone-AvalancheLandslideHazardBoundary

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
22	Association AvalancheLandslideHazardZone-AvalancheLandslideHazardBoundary					
22.1	Role boundaryAvalancheLandslideHazard		1	N	AvalancheLandslideHazardBoundary	Aggregation
22.2	Role (unnamed) AvalancheLandslideHazardZone		1	1	AvalancheLandslideHazardZone	

1.2.23 Association <<Topo>> TsunamiArea-GeoDelimLine

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
23	Association TsunamiArea-GeoDelimLine					
23.1	Role boundary		1	N	GeoDelimLine	Aggregation
23.2	Role (unnamed) TsunamiArea		0	1	TsunamiArea	

1.2.24 Association <<Topo>> RunoutArea-GeoDelimLine

No	Name/ Role name	Description	Obligation/ Condition	Maximum Occurrence	Type	Constraint
24	Association RunoutArea-GeoDelimLine					
24.1	Role boundary		1	N	GeoDelimLine	Aggregation
24.2	Role (unnamed) RunoutArea		0	1	RunoutArea	

1.2.25 CodeLists

1.2.25.1 <<CodeList>> BoringType

Nr	Code name	Definition/Description	Code
1	CodeList BoringType	which kind of drilling was used	
1.1	Unknown boring type	Unknown type, or type which is not found in the code list	0
1.2	Rock control drilling	drilling down to and in bedrock	1
1.3	Rotary weight sounding (Penetration of a twisted point into the ground by rotation, where the rod system is loaded by a normative weight of 100 kg.)	sounding with rotation of probe	2
1.4	Simple sounding or percussion sounding	Sounding without registration of resistance, e.g. flush boring, hammer boring (manual or using a machine), etc.	3
1.5	Cut, excavation, sample pit	Sample pit/shaft which is dug by an excavator	4
1.6	Sampling serie	the samples taken using drilling equipment auger, sampler, diamond core drill, etc.)	5
1.7	Shovel blade sampling	Drilling with sampling at predetermined intervals, e.g. every metre	6
1.8	Piezometer	Including measurement of ground water level	7
1.9	Bedrock outcrop/exposure	Drilling not necessary, rock structure exposed on the surface	8
1.10	Piezocone test (CPTU) Measures tip resistance (qc), Sleeve friction (fs) and pore pressure (u).	registers tip resistance, side friction and pore pressure	9
1.11	Rotary pressure sounding (Rod penetrates the ground with a combination of rotation and static pressure.)	mechanical sounding with automatic recording	10
1.12	Ram sounding	registers the ramming resistance against penetration	11
1.13	Total sounding (Rod penetrates the ground with a combination of rotation and static pressure.)	Boring which passes through entire package of soil strata as well as into bedrock	12
1.14	In-situ vane test / apparatus	Registers undisturbed and remoulded shear strength	13
1.15	Gravity corer	sampling tube which is pressed down into sediments by means of gravitation/a weight	14
1.16	Sampling by vibration	sampling tube which is pressed down into sediments by means of vibration (and gravitation)	15

1.17	Block sampler	Sample by means of block sampler (circular, 30 cm in diameter)	16
1.18	BAT-system	sample of pore water and gas	17
1.19	T-BAR (Registers net tip resistance and can also measure total water pressure upon penetration. This instrument is used in soft clayey material)	Registers total resistance as probe is pressed down	18

1.2.25.2 <<CodeList>> AvalancheLandslideEvacuation

Nr	Code name	Definition/Description	Code
2	CodeList AvalancheLandslideEvacuation	evacuation initiated in connection with the avalanche	
2.1	Yes	Igangsatt evakuering	1
2.2	No	Ikke igangsatt evakuering	2
2.3	Not specified	Ukjent status på evakuering	99

1.2.25.3 <<CodeList>> LandslideHazardLevelClass

Nr	Code name	Definition/Description	Code
3	CodeList LandslideHazardLevelClass	the degree of probability that there will be an landslide Note: Reflects the degree of hazard as regards the area's stability, based upon topographic conditions, geological/geotechnical conditions and erosion conditions. The landslideHazardLevelClass is based a weighed hazardfactorscore (0-51on an evaluation	
3.1	Low hazard level	Favourable topographic conditions. Soil surveys show that the soil conditions are acceptable. There is little or no active erosion in the watercourse. There has been little landslide activity in the area. No intervention in terrain; intervention in terrain has had stabilizing effect (Hazard level score 0-17)	1
3.2	Medium hazard level	Less favourable topographic conditions. Deficient soil surveys, or the soil surveys show less than favourable soil conditions. There is active erosion in the watercourse. There has been substantial avalanche/landslide activity in the area. Any intervention in the terrain has little or no stabilizing effect (Hazard level score 18-25)	2
3.3	High hazard level	Adverse topographic conditions. Deficient soil surveys or the soil surveys show adverse soil conditions. There is substantial, active erosion in the watercourse. There has been major landslide activity in the area. Intervention in the terrain with stability reducing effect (Hazard level score 26-51)	3

1.2.25.4 <<CodeList>> AvalancheLandslideMappingQuality

Nr	Code name	Definition/Description	Code
4	CodeList AvalancheLandslideMappingQuality	status quality and degree of detail regarding the mapping work	
4.1	No examination	Only topographic evaluations form the basis for	0
4.2	Simple investigation	Simple investigation of the zone, overview mapping.	1
4.3	Supplementary investigation / stability	Supplementary investigation and assessment of stability carried out	2
4.4	Safeguards expedited	Sikringstiltak er utført	3

1.2.25.5 <<CodeList>> AvalancheLandslideMeasurementMethod

Nr	Code name	Definition/Description	Code
5	CodeList AvalancheLandslideMeasurementMethod	investigation sampling method used at measuring station or observation point	
5.1	Manual registration		1
5.2	Radar		21
5.3	Geophones		22
5.4	Tape measure		51
5.5	Theodolite or "Total station"		52
5.6	Extensiometer		53
5.7	GPS phase measurement, static measurement	Previously GPS, differential	54

1.2.25.6 <<CodeList>> LandslideRiskQuickClayClass

Nr	Code name	Definition/Description	Code
6	CodeList LandslideRiskQuickClayClass	the risk that a landslide may inflict damage on an area, categorized according to risk classes Note: This attribute cites a classification of risk that the area will be vulnerable to landslide damage. The classification method is based on a review of damage consequences and hazard levels.	
6.1	Risk Class 1	Areas where any further evaluation or action will normally not be relevant. For any intervention in the form of construction, documentation that safety is satisfactory will be required.	1
6.2	Risk Class 2	As with Risk Class 1, neither will further evaluation or action normally be relevant here. For any intervention in the form of construction, documentation that safety is satisfactory will be required.	2

6.3	Risk Class 3	Includes zones that may in part be heavily built-up.	3
6.4	Risk Class 4	Mainly comprising zones that are heavily built-up. Must be given high priority in the further work on preventive measures against avalanche/landslide.	4
6.5	Risk Class 5	Comprising zones with the greatest injury consequences and highest hazard level. Must be given high priority in the ongoing work of avalanche/landslide prevention.	5

1.2.25.7 <<CodeList>> StabilityEvaluationQuickClay

Nr	Code name	Definition/Description	Code
7	CodeList StabilityEvaluationQuickClay	assessment of the stability in an area where a quick clay investigation has been carried out Note: Will be omitted/discontinued when new landslide risk evaluations have been carried out	
7.1	Quick clay identified, stability unacceptable	Stability is assessed as unacceptable	1
7.2	Quick clay identified, stability not assessed		2
7.3	Quick clay identified, stability acceptable	Stability acceptable for the current usage of the area	3
7.4	Possibly quick clay	drillings have not been carried out or they are difficult to interpret	4

1.2.25.8 <<CodeList>> SnowRockAvalancheHazardEvaluation

Nr	Code name	Definition/Description	Code
8	CodeList SnowRockAvalancheHazardEvaluation	rough indication of how exposed an area is to avalanches and rock falls. Note: The classification has been used in the preparation of hazard zone maps for rock and snow avalanches. These are based on NGI's geomorphological interpretation of the terrain on maps, aerial photographs and in the field, drillings, geothecnical conditions, climate and other landslide related information	
8.1	Potential avalanche/landslide hazard area	Area where there is a theoretical, potential avalanche/landslide hazard because of sloping terrain. Slopes and cliff faces higher than 30 metres and longer than 50-100 metres will normally be included on maps where the cartographic information is suited to scale 1: 50,000. Areas where there is an obvious risk of other landslide types. In tarrain with slope between 20 and 30 degree, the risk for avalanches/landslides can be difficult to determine. This areas can include no risk areas as well	1
8.2	Little or no avalanche/landslide hazard	Skredfaren er vurdert til å være liten eller ikke tilstede	2
8.3	The avalanche/landslide hazard has not been assessed	area where a decision has been made not to investigate the avalanche/landslide hazard because there are few buildings/little traffic	3

1.2.25.9 <<CodeList>> AvalancheLandslideTriggerAreaType

Nr	Code name	Definition/Description	Code
9	CodeList AvalancheLandslideTriggerAreaType	the type of source area for the avalanche/landslide Note: Unstable rock slopes, snowdrifts, etc	
9.1	Topling		1
9.2	Slope failure		2
9.3	Complex source areas		3
9.4	Snowdrift/cornice		4

1.2.25.10 <<CodeList>> AvalancheLandslideTriggerAreaSlope

Nr	Code name	Definition/Description	Code
10	CodeList AvalancheLandslideTriggerAreaSlope	steep area with a slope angle greater than designated code value	
10.1	27 degrees	Indicates area with slope greater than or equal to 27 degrees	27
10.2	30 degrees	Indicates area with slope steeper than or equal to 30 degrees	30
10.3	45 degrees	Indicates area with slope steeper than or equal to 45 degrees	45
10.4	60 degrees	Indicates area with slope steeper than or equal to 60 degrees	60

1.2.25.11 <<CodeList>> AvalancheLandslideRunoutAreaType

Nr	Code name	Definition/Description	Code
11	CodeList AvalancheLandslideRunoutAreaType	area which is influenced by the avalanche/landslide masses	
11.1	Land		1
11.2	Lake		21
11.3	Sea		22
11.4	Watercourse		23

1.2.25.12 <<CodeList>> AvalancheLandslideType

Nr	Code name	Definition/Description	Code
12	CodeList AvalancheLandslideType	what type of avalanche/landslide masses related to the avalanche/landslide hazard or event Note: Various types of avalanche/landslide masses, such as rock, snow, , soil and combinations of these	
12.1	Rock avalanche	>10000m3	1
12.2	Small rock avalanche	100 - 10 000 m3	2

12.3	Rock fall	<100m3	3
12.4	Clay slide		11
12.5	Quick clay slide		12
12.6	Other soil slides		13
12.7	Debris flow		14
12.8	Dry snow avalanche		21
12.9	Wet snow avalanche		22
12.10	Slushflow		23
12.11	Snow and rock avalanche		24
12.12	Ice fall		31
12.13	Subaquatic slide		41
12.14	Not specified		99

1.2.25.13 <<CodeList>> AvalancheLandslideStatisticProbability

Nr	Code name	Definition/Description	Code
13	CodeList AvalancheLandslideStatisticProbability	statistical probability that an avalanche/a landslide will take place Condition: The attribute landslideHazardLevelClass or avalancheStatisticProbability is mandatory. landslideHazardLevelClass is used in the case of quick clay and avalancheStatisticProbability in the case of steep terrain Note: Indicated as a yearly probability of avalanches/landslides. In the Planning and Building Act consideration must be given for the yearly probability of 1/1000	
13.1	1 avalanche/landslide per/50 years		50
13.2	1avalanche/landslide per/ 100 year		100
13.3	3 avalanche/landslides per/1000		333
13.4	1avalanche/landslide per/ 1000 year		1000
13.5	Margin of uncertainty	uncertainty as to whether the area is part of the hazard zone	U
13.6	Uncertain upper part of area where an avalanche/landslide might begin)	statistical probability of run-out extent	L

1.2.25.14 <<CodeList>> AvalancheLandslideDamageType

Nr	Code name	Definition/Description	Code
14	CodeList AvalancheLandslideDamageType	what has been damaged by avalanche/landslide	
14.1	People		1
14.2	Cultivated land		11

14.3	Forest		12
14.4	Animals		13
14.5	Buildings		20
14.6	Roads/bridges		31
14.7	Railway		32
14.8	Telecommunication		33
14.9	Power lines		34
14.10	Quay facilities		35
14.11	Ski lifts		36
14.12	Vehicle		41
14.13	Vessels		42

1.2.25.15 <<CodeList>> AvalancheLandslideDamageTransportation

Nr	Code name	Definition/Description	Code
15	CodeList AvalancheLandslideDamageTransportation	infrastructure which was damaged in an avalanche/a landslide	
15.1	Road		1
15.2	Railway		2
15.3	Road and railway		3

1.2.25.16 <<CodeList>> landslideDamageConsequenceClass

Nr	Code name	Definition/Description	Code
16	CodeList landslideDamageConsequenceClass	what economic and social consequences follow a quick clay slide, and risk of loss of human lives Note: Qualitative classification of damage consequence in connection with risk of fatalities, personal injuries, financial loss, value reduction as well as the risk that important social functions can be affected	
16.1	Less serious	Low risk of personal injuries, loss of life; limited economic and social consequences (0-6 points).	1
16.2	Serious	Risk of personal injuries/loss of life or substantial economic and social consequences (7-22 points).	2
16.3	Very serious	High risk of personal injuries/loss of life or very great economic and social consequences (23-45 points).	3

1.2.25.17 <<CodeList>> AvalancheLandslideDamageOther

Nr	Code name	Definition/Description	Code
17	CodeList AvalancheLandslideDamageOther	other damage as a result of avalanche/landslide	
17.1	Forest		1
17.2	Animals		2
17.3	Home fields		3

1.2.25.18 <<CodeList>> AvalancheLandslideRescue

Nr	Code name	Definition/Description	Code
18	CodeList AvalancheLandslideRescue	organized rescue initiated	
18.1	Yes	Igangsatt organisert redning	1
18.2	No	Ikke igangsatt organisert redning	2
18.3	Not specified	Ukjent status på organisert redning	99

1.2.25.19 <<CodeList>> AvalancheLandslideDamageObjects

Nr	Code name	Definition/Description	Code
19	CodeList AvalancheLandslideDamageObjects	installations and vehicles which were damaged in an avalanche/a landslide	
19.1	Vehicle		1
19.2	Ski lift		2
19.3	Electrical installations		3
19.4	Telecommunication installations		4