



OPPLAND
fylkeskommune

Programme of action

*The Lågen plan – Regional master plan for
the Gudbrandsdalslågen and its tributaries*

1. Action plan

According to section 8-1 of the Norwegian Planning and Building Act (PBA), a programme of action must be created for the regional master plan:

A programme of action shall be drawn up for implementing the regional master plan.

The programme of action shall be adopted by the regional planning authority and shall be rolled over annually.

Chapter 8 of the PBA sets the frameworks that serve as the basis for implementing guidelines and programmes of action, and how often these must be updated. As the regional plan is implemented, it is important to roll over the plan to ensure that, on the basis of experiences gained, it is a well-functioning plan in the long run. The same applies to the programme of action.

The programme of action is adapted to the issues encountered during planning work.

An annual assessment should be made as to whether there is a need to roll over the programme of action. The main rollover of the plan is set to take place every four years, coinciding with election periods, the training of politicians, and rollover of the regional master plan for water management in the Glomma water region.

1.1 Content of the programme of action

The programme of action contains an overview of measures that should be implemented both regionally and nationally:

- Permanent sediment removal sites and/or sediment basins that should be established
- Relevant flood embankments that should be constructed
- Other physical measures
- Competence-boosting initiatives
- Measures for binding cooperation
- Relevant measurement stations and surveys that should be carried out
- Overview of the need for improvements to the knowledge base
- Proposals for changes to national framework conditions

A more comprehensive description of the individual measures can be found in this plan document and in the appendix "[Relevant measures in tributaries of the Gudbrandsdalslågen](#)".

This plan is not exhaustive in relation to the need for measures, but addresses the most important challenges in Gudbrandsdalen. Proposed measures here will also provide good experience and form the basis for continued work on similar measures in other parts of the Gudbrandsdalslågen and in other rivers and streams. The programme of action contains a number of measures, but the possibility cannot be ruled out that there may be a need to implement measures also in other locations.

Responsible and co-responsible/stakeholders

The programme of action specifies who should take the initiative to implement the individual measures. Furthermore, it defines who should be designated as co-responsible and/or has an interest in seeing the measure implemented. This applies to proposals for establishing a permanent sediment removal site, and areas where certain stakeholders may be interested in using the extracted material, for example.

Financial performance and monitoring

There is no guarantee that the measures described in this plan will be implemented, but the plan is indicative for how the various agencies should prioritise measures and cooperation. Most of the proposed measures are new and require studies to be carried out prior to any implementation.

Neither does the plan include funding for implementing the measures. Financing of each individual measure will be clarified after studies have been carried out and in agreement with affected parties in line with the programme of action. All proposed measures will require applications and permits from various agencies, in the same way as other measures.

Prioritisation of measures

During the planning process, a number of concrete measures have been considered that may have a flood control effect on various types of areas, such as residences, other buildings, roads, railways and farmland. Measures are selected based on a risk assessment, i.e. the degree of risk and potential consequences in terms of damage to existing buildings and risks to life and health. Measures are also prioritised on the basis of expected socio-economic benefits and impact on the natural environment. This gives the following order of priority:

1. Life and health – residences, institutions
2. Other existing buildings and infrastructure
3. Farmland

The programme of action contains recommendations on when the various measures should be implemented and completed. However, this depends on the initiator submitting an application to begin the process. Furthermore, it is dependent on budgetary and capacity-related factors.

The programme of action includes measures that will only safeguard farmland and that will have no significant negative consequences for other stakeholders. Within the currently available financial frameworks for mitigating measures against floods and landslides in Norway, it will likely be impossible to implement such measures with public funding. Nevertheless, the plan recommends that such measures be implemented, as food security and soil conservation are important issues. Agriculture is an important industry for the municipalities along the Gudbrandsdalslågen. We should therefore work to increase government funding for measures that prevent flooding and rockslides in farm areas.

In general, this plan should provide guidance with regard to how individual agencies prioritise measures. As a result of Norway's participation in the PHUSICOS project, which is linked to the European Union's Horizon 2020 research and innovation programme, there may be changes in the order of priority of measures in the programme of action during the first four-year period.

The need for zoning plans

Zoning plans should be developed for all major sediment basins and permanent sediment removal sites. Section 12.1, third paragraph, of the PBA requires a zoning plan for all major building and construction projects and for other projects that may have substantial effects on the environment and society. A zoning plan will help to ensure that the project is properly executed, with due consideration for the environment and society. For projects and interventions in watercourses that affect significant environmental protection areas, a zoning plan may also replace the licensing process under the Norwegian Water Resources Act and processing according to the Regulations on Physical Measures in Watercourses for each individual measure. However, this requires that relevant measures and interventions be described and assessed according to the requirements set out in the various special laws and that relevant mitigation measures be described in the plan provisions. Planning work will also provide an overview of the overall environmental and social impact of the measures.

Permanent sediment removal sites and/or sediment basins

Description of measure	Safeguards	Prior-ity	Responsibility for initiation	Co-responsibility / stakeholders	2018	2019	2020	2021	Comments
Løsnes/outlet Tromsa (17) Sediment removal site upstream and downstream of Fåvang bridge.	Farmland	3	Landowner and Ringebu municipality	Landowners					Must be considered against a possible flood tunnel.
Otta Sediment removal site in the Gudbrandsdalslågen as part of the flood protection plan for Otta town centre.	Residences, commercial area, roads	1	Sel municipality	NVE, landowners					In progress.
Lora (A) Routines and execution for cleanout of weirs.	Farmland	3	Landowner, Lesja municipality	NVE, municipality, landowners					Working plan according to applicable zoning plan should be prepared.
The Gudbrandsdalslågen through Lesja (B1) Establish sediment basins in two tributary streams to the Gudbrandsdalslågen. Clean up the channels.	Farmland	3	Lesja municipality	NVE, landowners					
Hjellåi (D) Weir / sediment basin, possibly replace culvert.	Residences, roads and rail	1	Bane NOR / NPRA (OFK)	NVE, municipality, landowners					Important measure. Should be started immediately. Water gauge with warning should be established until other measures have been implemented.
Einbugga (E) Permanent sediment removal site on the upper side of the local road; in addition, remove sediment when needed upstream of Fredheim medical centre.	Residences, roads and medical institution	1	Dovre municipality	NVE, landowners					
Ilka (F) Establish a permanent sediment removal site in the lower parts of Ilka. Repair flood protection.	Residences	1	Dovre municipality	NVE, landowners					

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Tundre/Åstri (G) Sediment basin.	Residences, farmland	1	Skjåk municipality	NVE, landowners					
Skjøle (H) Permanent sediment removal site.	Infrastructure (roads)	2	Skjåk municipality	NPRA, landowners					
Finna (J) Permanent sediment removal site.	Residences, other buildings, infrastructure	1	Vågå municipality	NVE, landowners					
Sjoa (K) Establish two permanent sediment removal sites.	Infrastructure, farmland	2	Sel municipality	Landowners					May help ensure that flood protection work completed in 2017 will last longer.
Frya (N) Establish a permanent sediment removal site.	Waterworks, farmland	2	Ringebu and Sør-Fron municipalities	Landowners, Frya business park					Zoning planning work started in 2017. The sediment removal site should be completed in 2019.
Jøra (P) Establish three permanent sediment removal sites.	Farmland (residences)	2	Gausdal municipality	NVE, landowners					
Dørja (O) Sediment basin. Erosion protection also considered in connection with sediment basin.	Residences, commercial areas and roads	1	Gausdal municipality	NVE, landowners					
Augga Sediment removal site and sediment basins.	Farmland	3	Gausdal municipality	Landowners					

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Gausa Sediment basins and permanent sediment removal sites.	Farmland, natural assets	2	Gausdal municipality	NVE, landowners					
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Flood embankments

Description of measure	Safeguards	Priority	Responsibility for initiation	Co-responsibility / stakeholders	2018	2019	2020	2021	Comments
Jørstadmo flood embankments south (measure 3b) A flood embankment will safeguard farmland. The flood embankment should be moved sufficiently far in that it protects a wide area of natural vegetation along the river bank.	Farmland	3	Lillehammer municipality	Landowners					Measures must be adjusted and clarified in relation to the protection regulations for the area.
Jorekstad (12d) Establish flood embankment along the banks of the river along the Gausa. Will safeguard residential housing, Jorekstad sports facility and farmland, while also protecting the alluvial forest along the Gausa.	Residences, sports facility, farmland	1	Lillehammer municipality	NVE, (NPRA), landowners					Should be seen in conjunction with the new E6 near Lillehammer, and possibly the replacement area for the Lågen delta nature reserve.
Kvitfjell (Strande/Mæhlum) (18a/19) Raise the flood embankment so that it protects the farmland even in the event of larger floods. Should be combined with opening the spillway on the inside during normal through-flow. A closing mechanism that closes in the event of flooding should be established.	Farmland	3	Ringebu municipality	Municipality, landowners					

Other physical measures

Description of measure	Safeguards	Priority	Responsibility for initiation	Co-responsibility / stakeholders	2018	2019	2020	2021	Comments
The Gudbrandsdalslågen through Lesja (B2) Construct a spillway past Hattrem bridge.	Farmland	3	Lesja municipality	Landowners					A hydraulic calculation must be performed to see whether the measure has any effect. Must be seen in conjunction with other measures in Lesja (A and B1).
Tretten (15c, d) Flood tunnel at Trettenstrykene.	Infrastructure and farmland	1	NVE	NVE, landowners					Will require additional studies before a final opinion can be reached as to whether the measure should be implemented.
Jora (C) Repair of water control weir.	Waterworks, forest areas, farmland	2	Dovre and Lesja municipalities	NVE, landowners					
Measures in agricultural areas to reduce flood damage (mixing in sand, profiling, trenching and channelisation).	Farmland	3	County Governor	The municipalities, landowners					

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Landowner's responsibility, role and rights in watercourses – for landowners			OFK	OFK, County Governor, NVE, municipalities, landowners					A professional development evening was held on 30 January 2018. Need for more professional development days/seminars/courses, and preparation of leaflets.
Planning of measures in watercourses – how to safeguard flood, landslide and environmental considerations – for consultants, municipalities			NVE	County Governor, OFK					
Practical implementation of measures in watercourses – for contractors			NVE	OFK					For new (VGO) and existing contractors.
Flood and landslide considerations in the forestry industry			County Governor	NVE, OFK, Mjøsen, Skogkurs, the municipalities, NIBIO					

Binding cooperation

Description of measure			Responsibility for initiation	Co-responsibility / stakeholders	2018	2019	2020	2021	Comments
Establish group for follow-up of the plan			OFK	NVE, County Governor, NPRA, Bane NOR, the municipalities, organisations					Very important point to ensure implementation of the measures in the plan.
Regional planning forums			OFK	NVE, County Governor, NPRA, Bane NOR, the municipalities					It is desirable to make greater use of planning forums for matters relating to landslides and floods.
Professional development days			OFK	NVE, County Governor, NPRA, Bane NOR, the municipalities					
Establish routines to ensure comprehensive planning			OFK	NVE, County Governor, NPRA, Bane NOR, the municipalities					

Measurement stations and surveys

Description of measure			Responsibility for initiation	Co-responsibility / stakeholders	2018	2019	2020	2021	Comments
Sediment measurement station in Dørja			Gausdal municipality / NVE	NVE, landowners					
Sediment measurement station in Frya			Ringebu and Sør-Fron municipalities / NVE	NVE, landowners					
Monitoring of erosion in Tromsa			NVE / Ringebu municipality	NVE, Norwegian Mapping Authority, landowners					Need for repeated laser measurements.
Monitoring of sediment transport and sediment deposition in the Gausa			NVE / Lillehammer municipality	NVE					
Establishment of fixed profiles for surveying			NVE	NVE, County Governor, NPRA, Bane NOR, the municipalities, landowners					
Water discharge stations			NVE	NVE, GLB, landowners					
Precipitation measurements			NVE	MET, Bane NOR, NPRA, landowners					

Input for changed framework conditions

Description of measure			Responsibility for initiation	Co-responsibility / stakeholders	2018	2019	2020	2021	Comments
Proposals for changes to the Norwegian Natural Perils Pool			County Governor						
Support schemes for flood and landslide protection of farmland			County Governor	NVE					
Differentiated compensation for damage along watercourses			County Governor	The municipalities					
Clarification of how planning provisions should be formulated based on forestry and landslide expertise			County Governor	NVE					
Change of Norwegian PEFC Forest Standard to better take into account the risk of erosion and landslides			County Governor	Mjøsen, Skogkurs, NIBIO					
Increased use of protective forest as protection against natural damage			County Governor	NVE, NGI, NIBIO					

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Description of measure			Responsibility for initiation	Co-responsibility / stakeholders	2018	2019	2020	2021	Comments
Completion of registration of damage; establish a system for the registration of new damage.			OFK						
2D models.			NVE	OFK					
Attenuation in bogs as flood control measures – supplement with new information in the knowledge base, and include any measures in the programme of action on rollover.			OFK	NVE, County Governor, FNF Oppland					Follow projects under the auspices of the Natural Hazards Forum (<i>Naturfareforum</i>), and continuously evaluate research related to this.
Acquire more knowledge about regulation reservoirs as flood control measures, and consider them as a topic in the plan on rollover.			OFK	NVE, County Governor, GLB, FNF Oppland					



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