Arkitektur- og designhøgskolen i Oslo
The Oslo School of Architecture and Design

DIPLOMA PROGRAM FALL 2017

Diploma candidate: Robert Sømod

Institute: FTH

Main supervisor: Beate Hølmebakk

Second supervisor: Lars Danielsen Holen

External supervisor:

Company cooperation:

Title of project:

Lysebotn 1

Pre-diploma rapport

”Lysebotn 1”

Robert Sømod
AHO, Fall 2017

Supervisor:
Beate Hølmebakk

Introduction

Lysebotn1 water power facility began construction in 1947, with an aim to supply the county of Rogaland in the south-west Norway with power in a time when society had an ever-increasing consumption of electricity. Due to post-war politics and restrains, the facility was constructed 50 meters inside a mountain. Both to secure this important facility from bomb-raids and to save cost in materials. It was constructed next to a natural mountain shelf in the beautiful Lysefjorden.

Historically, because of intervention in nature, waterpower-facilities have been controversial, but in the same time it has brought work and pride to locals. Today, some look at these spaces as something sacred.

The owners of Lysebotn1 is constructing a new facility, Lysebotn2, which will take over and increase the production. Lysebotn 1 and its halls carved out of mountain will then close down.

I consider these halls to be highly interesting, and want to open them for public.

My fascination is that the aim of the infrastructural program has do with the most essential needs of structure. In the fact that these industrial facilities require specific logic systems, and programs that deal with infrastructure demands a specific architecture in means that only the most necessary will be done.

Thesis

My starting point for this diploma is a desire to investigate this dark, dramatic and unfamiliar place that is a result of industrial architecture. I'm interested in what space this facility have required and how to transform it to a place where visitors can experience them without destroying the existing qualities.

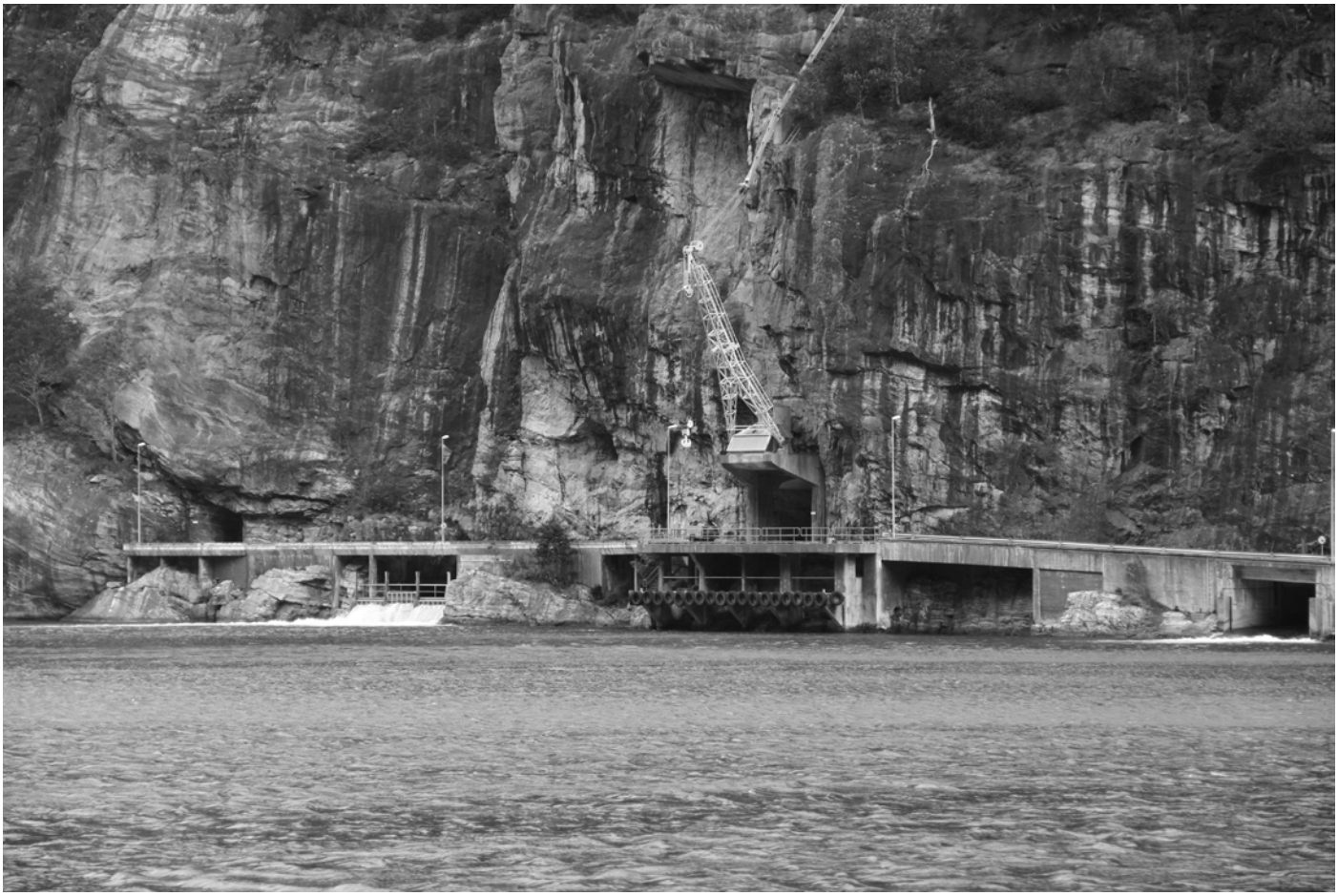
How to work with and inhabit a big and dark space with existing boundaries created in the scale of machines that does not have a source of natural light will be a main focus point.

During construction of Lysebotn 1 water power facility. Showing the concrete vault.
This is my inspiration for the task.

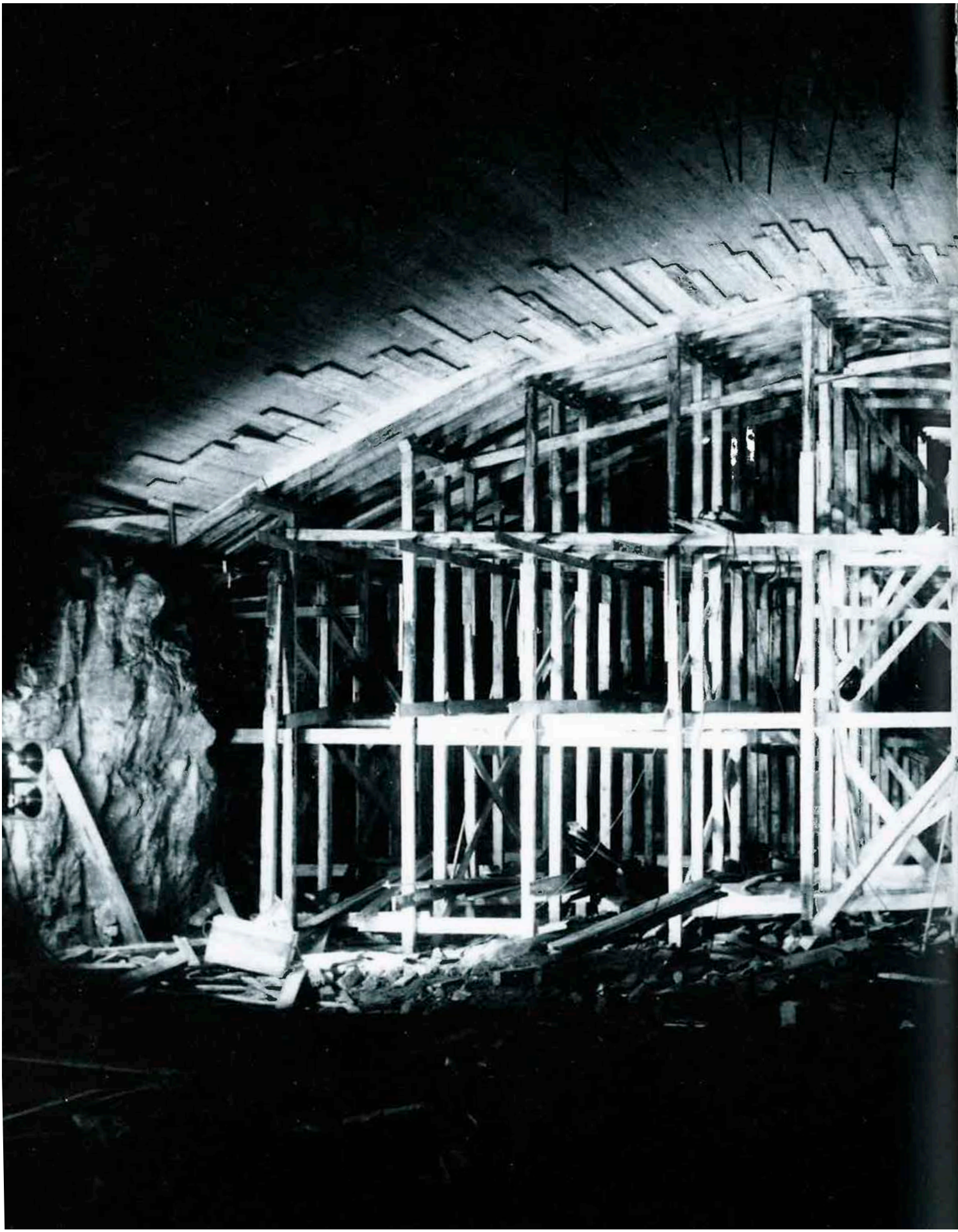
Approach

In my process I will analyze and map the existing spaces through available drawings and by visiting the facility. Further, I will explore the potensial for new structures and accessibility through models, photo, illustrations and drawings.

I wish to replace the existing program without destroying the qualities of the spaces and its distinctive expression.



Entrance to the facility.



During construction, 1960

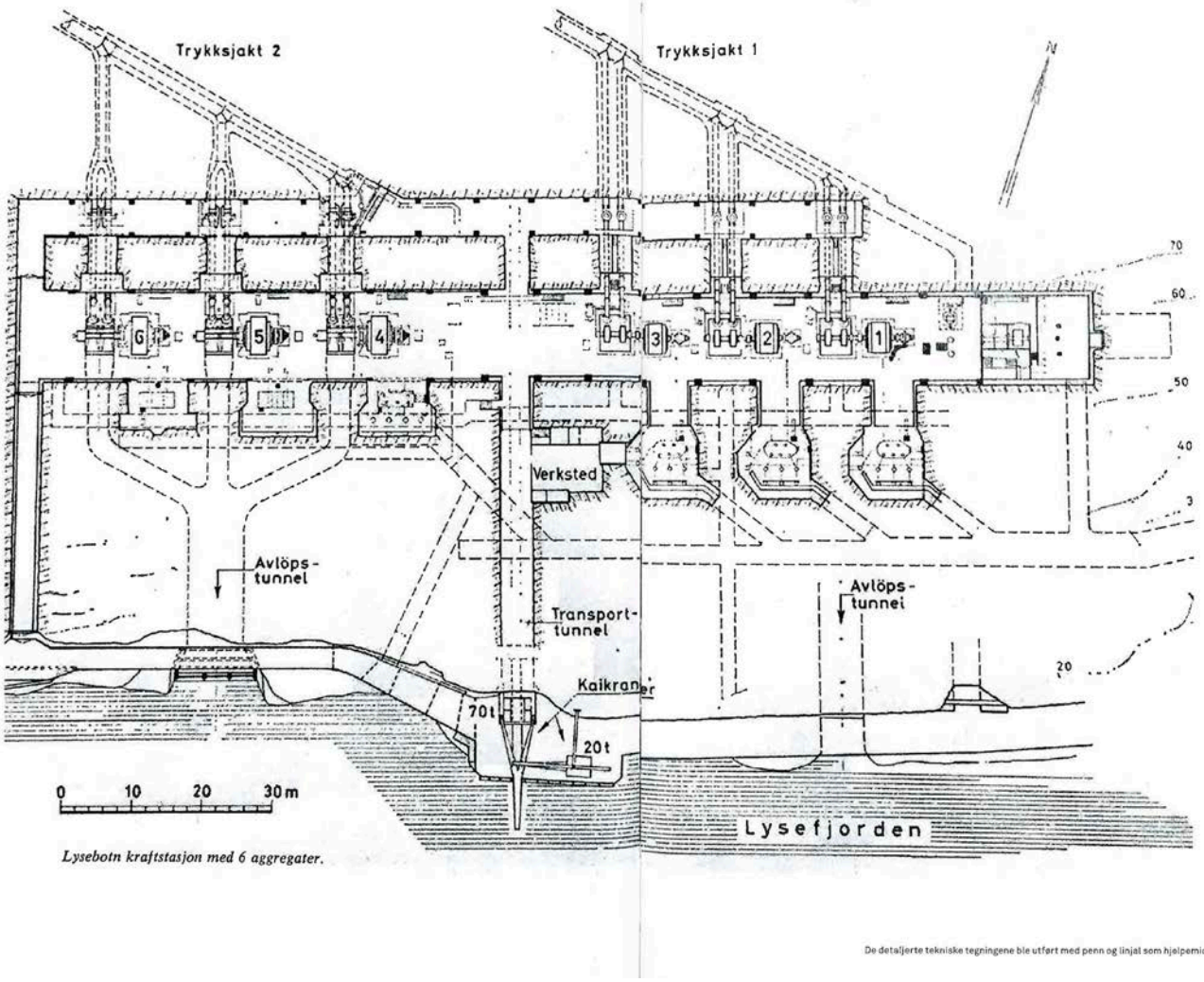
Mye trematerialer har gått med til forskaling av hvelvstøp som ligger over kraftstasjonen, 1950.

Program

The program consist of sleeping and bath for tourists.
Created for mainly hikers, base-jumpers, mountain-climbers and campers wanting to experience a different way of traveling. Considering the given and extreme condition of the place, this will not be a conventional place to sleep.

The program will replace the existing functions in the already existing halls, and be placed over an area of approximately 4000m2.

The project consist of:
Area for reception
Sleeping for 30/40 people
Place to eat
Kitchen
Service and administration area
Showers & Wardrobe
Swimming
Sauna
Steam-bath
Cleaning stations



Lysebotn kraftstasjon med 6 aggregater.

De detaljerte tekniske tegningene ble utført med penn og linjal som hjelpemidler.

Original plan

Site

Lysebotn 1 power plant facility is located near Lysebotn, a small village with 13 permanent residents in the end of Lysefjorden, a 42 kilometer (26 mi) long fjord that lies in the Ryfylke area in southwest of Norway, a 3.5 hour drive from the city Stavanger, Norway's third biggest city.

The facility is built on the north side of the fjord with the entrance facing south.

The surrounding scenery of Lysebotn gives the village a dramatic identity, with hight mountains on two sides and water falling down the 90 degrees mountain-walls, giving a clue on why this location was established as a center for power extraction. At times a thick fog lies as a roof over the village.

Before the power plant was established, the village consisted of only a few farmers who carried out their work with no electricity. During the construction, a small community rose in Lysebotn, with their own cinema, church and community-house. These buildings is in use today, and works as different functions for the company who own the power plant.

People

Although Lysebotn only has 13 permanent residents, it is from time to time temporarily populated by workers from the nearby power plant stations such as Lysebotn 1 and Tjodan.
Because of its beautiful and mysterious nature it is also a destination for over 100 000 tourists a year, mainly hikers, camping tourists, mountain climbers and base-jumpers that use the popular rock-formation kjerrag nearby to jump from. Lysebotn today has its own campground, bed & breakfast, and tourist cabins. Guided kayak tours and other activity offerings are available during the summer.

Accessibility

There is only one road to Lysebotn, Fv500. This road section between Lysebotn and Sirdal consist of 27 ”hairpin” turns on the northern mountainside and is 32,8 km long. It opened in 1984 and have its highest point 932 meters above sea level and is Rogalands highest public road. The road is closed in the winter, due to high levels of snow.

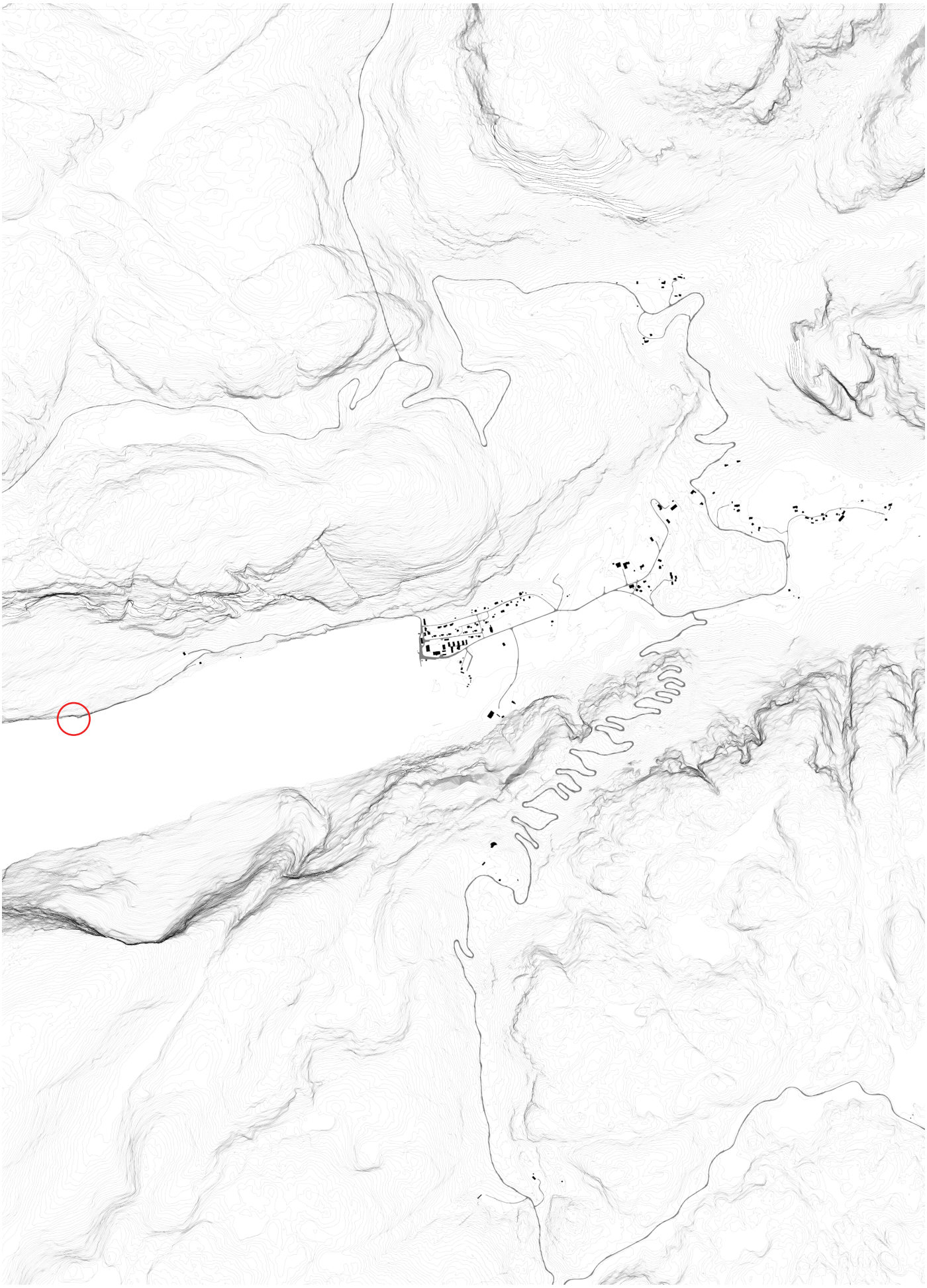
The most usual rute to Lysebotn is the ferry that takes you from the beginning of Lysefjorden in the west. This is considered a very beautiful tour were you get to see the majestic mountains with the Pulpit rock, Kjerrag and Flørli power station with its 4444 steps as main attractions. Today, it departs two to three times a day all year long and stretches 41 km. In particular cold winters the fjord freeze to ice and prevents the boat from reaching the piers. Lysebotn becomes temporarily isolated.

Light and weather

The surrounding mountains affect the weather in Lysebotn. Due to the hight the sun does not reach Lysebotn approximately four months in the winter. It is also twice as much rain as in Stavanger, giving the good conditions to create electric power from water.

Rock

The name means light-fjord, a name said to be derived from the lightly colored granite rocks along its sides. Lysefjorden is long and narrow, with rocky walls falling nearly vertically from up to 1000 meters into the water that has a dept of over 400 meters at its deepest. it consist mainly of Migmatite, a rock that is a mixture of metamorphic rock and igneous rock.



Migmatite inside the hall. Artificial light.

Migmatite inside the hall, reflection from a direct lightsource in a dark room

Submitted materials:

Drawings
Maps in suitable scales
Situation 1:1000 and 1:500
Plans and sections of the project 1:250 / 1:100
Selected details: 1:10

Models
Selected sketchmodels (varies in scale)
Situation 1:500
Project 1:100
Selected spaces: 1:50

Text
Diagrams
Illustrations

(The material for submission may change)

Refrences:

Projects:
Allmannajuvet Zink Mine - Peter Zumthor
Per Berntzen - Generator 1, Generator 2
Norwegian Scenic Routes

Telephone:
Lyse Energi
Forsand Municipality
Andritz hydro

Books:
Tjelveit, Herbjørn. *"Det første kraftverket i Lysebotn"*. Stavanger Offset. 2015
K.Ø Gjerde, G. Nerheim, L. Ramskjær. *"Ingen skal fryse med kraft fra Lyse"*. Stavanger Offset AS. 1997
Tanizaki, Junichiro. *"In praise of shadows"*. Vintage. 2001
McHeleny, Joshia. *"The light club of Batavia"*. The university of Chicago press. 2010

Photos in rapport is by the author and from the book "Det første kraftverket i Lysebotn"

Work Plan

My process will be driven by investigating and analyzing.

I will organize my work in phases, and takes into account minor changes in the process.

The process will culminate in a complete architectural project.

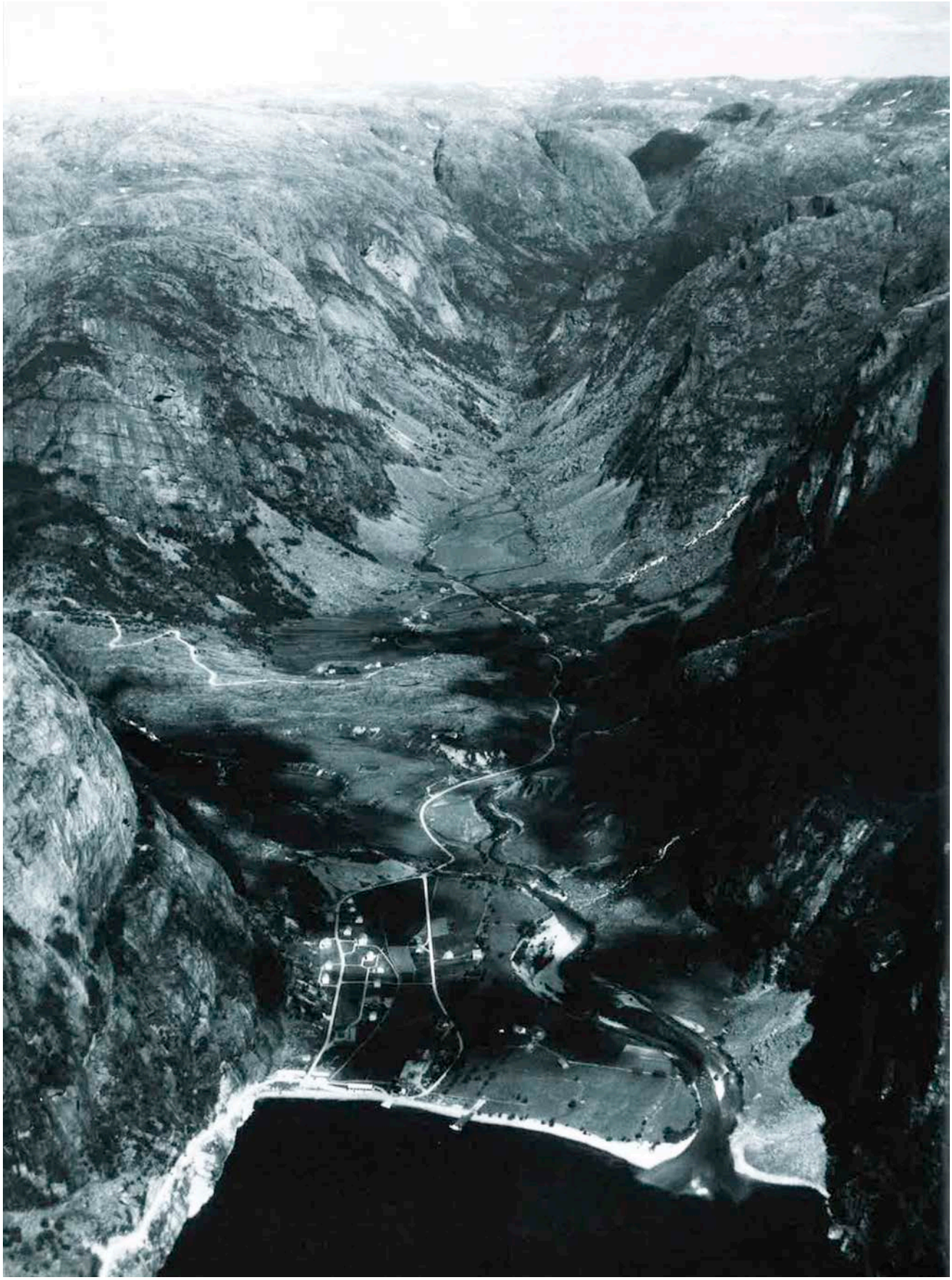
Phase 1 / The Facility
In phase 1 i will define the exact framework around the project and map the current situation. Due to lack of digital material of the existing hall,
I will have to draw it according to the handcrafted drawings from 1946. I will find out number of square meters, heights, delimitation, rooms, functions etc.

Phase 2 / Investigation
In the phase 2, i will do research in model the existing spaces which will result in drawings and photo. Here i will investigate how to relate to the different spaces. In this phase I want to uncover the main focus of my process further.
I will build a 1:500 site model and work in models 1:50 with spacial studies.

Phase 3/ Developing
This is the phase that will consume most of the time. In developing my project regarding the investigations and discoveries i have made. The developing of the project will also happen parallell to the other phases.

Phase 4 / Completion
About 3 weeks before deadline, i will start creating the final documents that will be submitted. I will set aside at least one week to finish the final model(s)

Week	Theme	Note
33	Startup, August 16th.	
34	PHASE 1:	
35	Define project, research, mapping, understand the facility	
36	Fieldtrip	
37	...	
38	...	Part-review 22.09
39	PHASE 2	
40	Space-/ light-/ size-study in model (photo/plan/section)	
41	...	
42	...	
43	...	Part-review 26.10
44	PHASE 3 Developing	
45	...	
46	...	
47	...	Part review 23.11
48	PHASE 4 Completion	
49	...	
50	...	Final delivery
	2008	
1	Exhibition	
2	Presentation	



Lysebotn with its rising community.

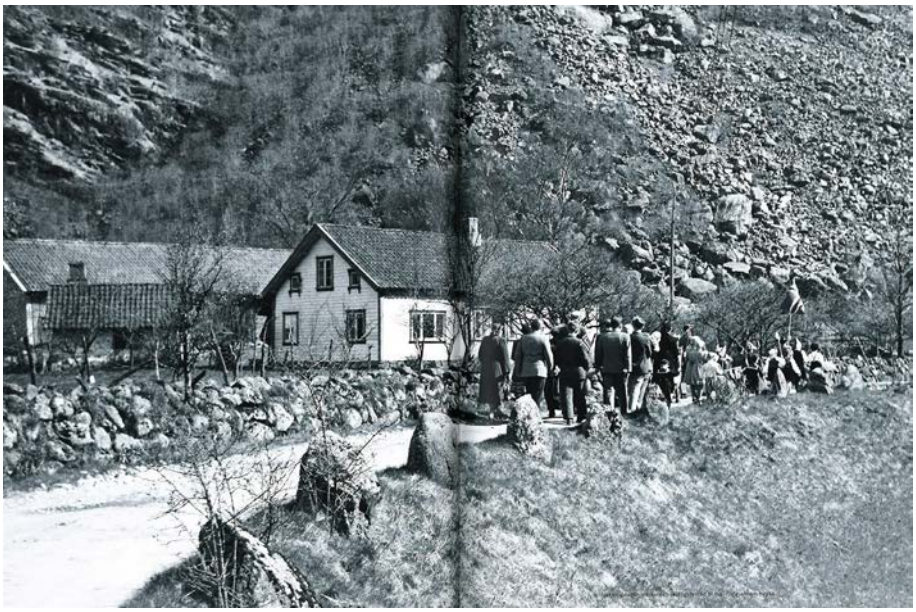
Before the construction of the powerplant began in 1949, Lysebotn consisted of a few smaller farms. These farms did now have any electrisity at the time.

The sun hits the northern mountainwall during the winter months.

The construction-workers before a game of football.

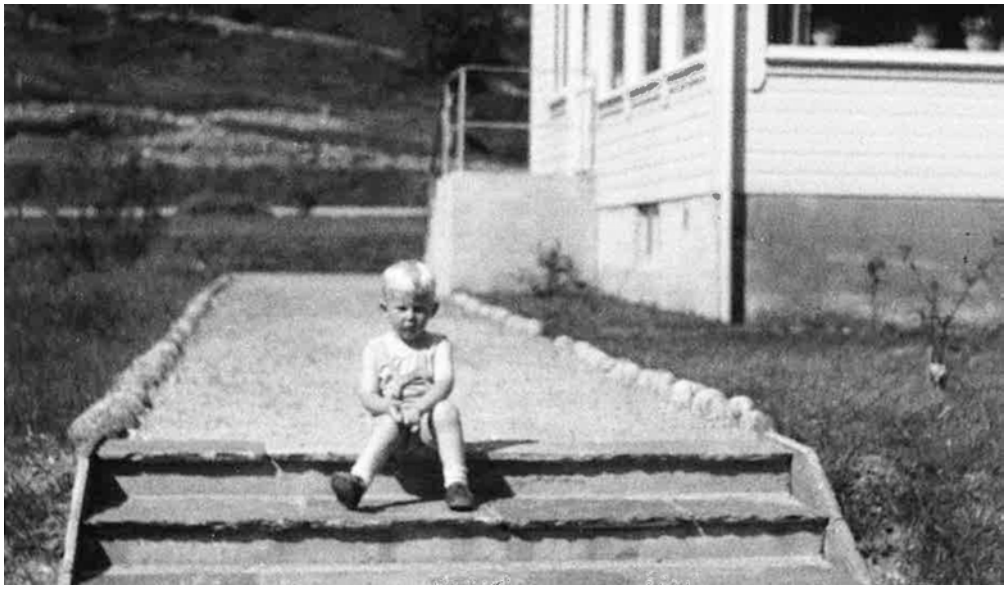
The carving was mostly done with hand tools.

Rails was installed to help place the parts for the machines.

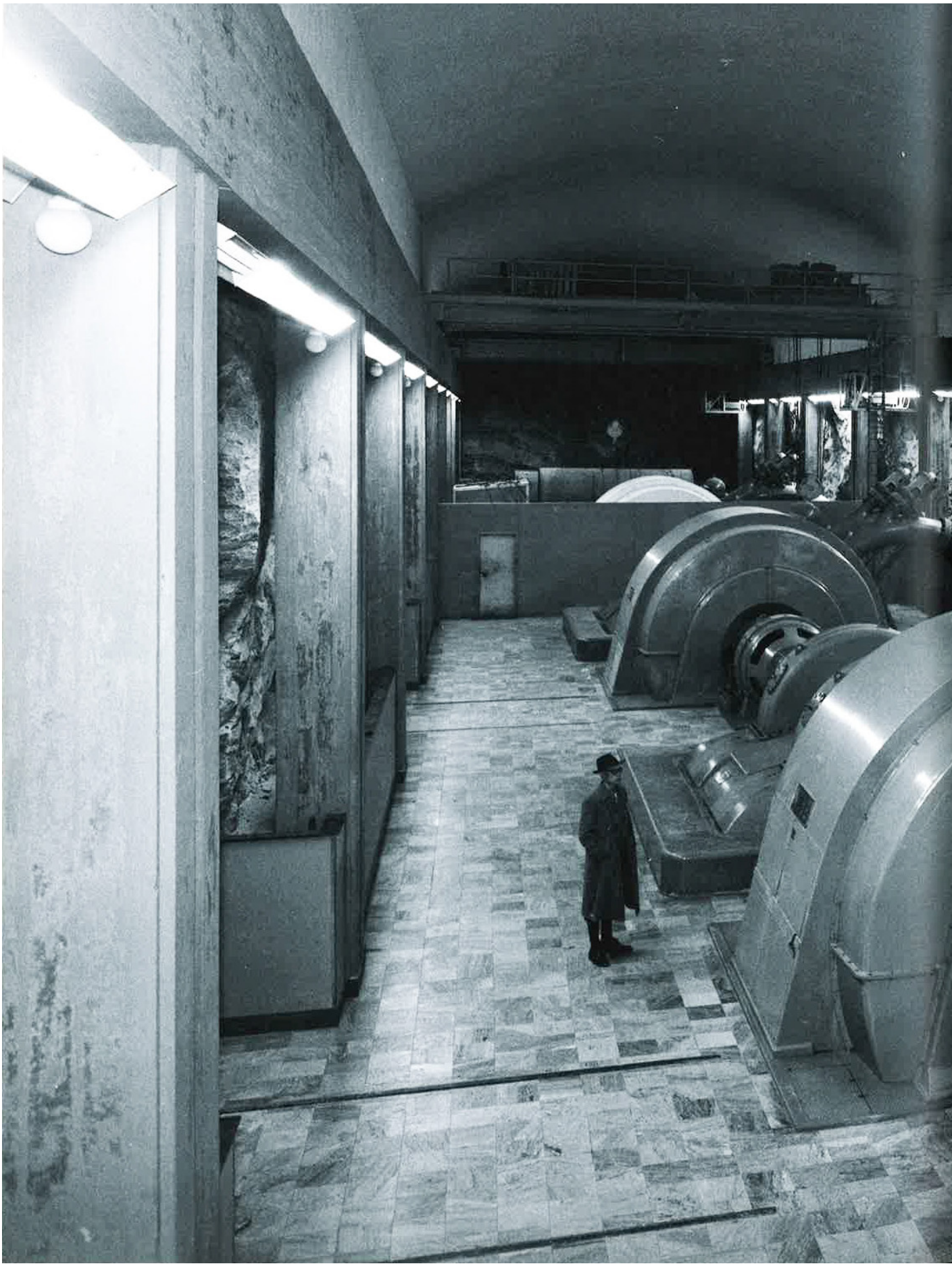


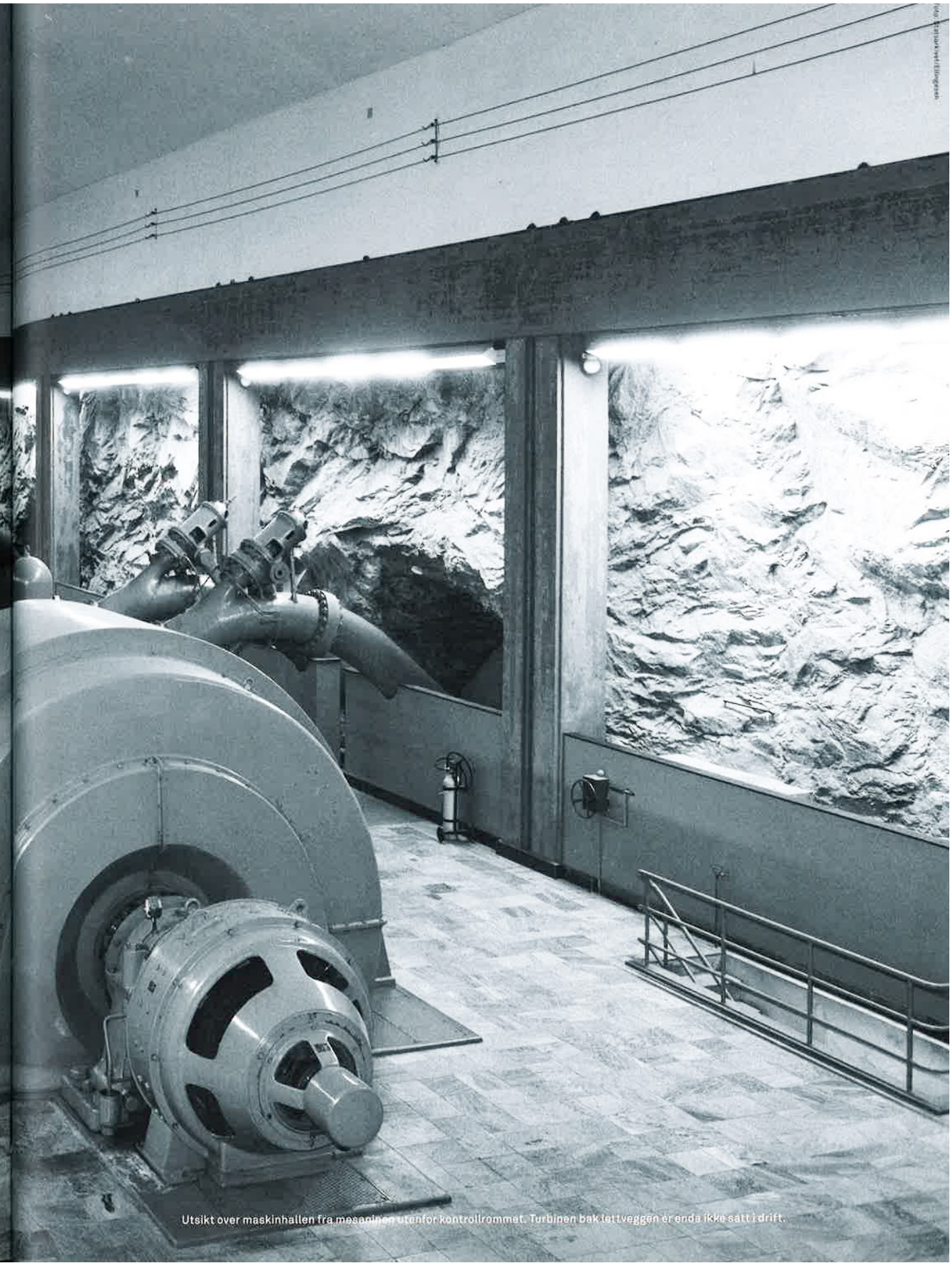
17th of may, 1950

View from the entrance of the ”messe”, a building serving as dining and living room for the workers.



A new generation in Lysebotn.





Utsikt over maskinhallen fra mesaninen utenfor kontrollrommet. Turbinen bak lettveggen er enda ikke satt i drift.

Changes in diploma program:

Thesis and approach

There has been major changes in my diploma, both the thesis and approach.

Site

Due to restrictions an lack access on materials, I have on the recommendation of Oslo municipality changed the site. My new site is in Lysebotn, and no longer in Oslo.

Program:

The program have changed from construction of a industrial facility and a public-related building to transformation of a industrial facility to a hotel and bath.

Process

There is also minor changes in the process. The process have not been driven by investigation and reinterpretation, but on mapping and analyzing of existing facility.