ABSTRACT

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SUPERVISOR:TINE HEGLI

BITS, BYTES AND BATHS:
data center and public swimming pool creates synergies in Åkrehamn

fall 2020 - Master in Architecture
The Oslo School of Architecture and Design

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data center and public swimming pool creates synergies in Åkrehamn

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Architecture

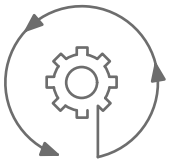
T H E S I S

As students of architecture we often search for the Zeitgeist - the spirit of our time - and the means to communicate it spatially. What are the cathedrals of our time? All our contemporary advances have been enabled by our ability to extract and store data. Today we store this information in data centers.

In my diploma work I wish to investigate an architecture that through a synergy of functions can support city development and where excess heat can power social interaction. In my attempt I will focus on the data center in synergy with a pool facility.

WHAT ARE DATA CENTERS?

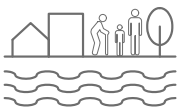
When sending information from one personal computer to another there are a dozen other computers working as a bridge to connect the two. All of these linked computers make up the "internet"; the basic computer network. This connection between computers are a mixture of the old copper cables, the newer fiber-optic cables, wireless radio connections and satellite links. By these the internet moves computerized information from place to place, in packets. The packets can flow through many routes around the world in pieces. But in between, all the photos, videos and Wikipedia articles, need to be stored somewhere. This is where the serVers are introduced. Server computers provide the shared services we need to process and store internet services.



SUSTAINABILITY

The reality is that these servers that connect us and store data for us need enormous amounts of energy to keep running. Contradictory they need almost the same amount of energy to cool the servers, as they need to keep them in operation. This makes data centres account for 2% of global power demand.
There are a handful of environmental challenges connected to data centers, and require modifications on both a smaller and larger scale; something that will connect various professions. One of the clearest issues is extraction and use of excess energy. One way to solve this is to make sure excess thermal energy is not wasted. Lately we have seen an increase in projects that connect other programs to utilize the excess heat from data centers, such as residential heating[1], and swimming pools[2]. My project will be an example of the latter.

1 https://www.klimaoslo.no/2018/10/09/overskuddsvarme-fra-datasenter/
2 https://www.networkworld.com/article/2277915/swimming-pool-heated-by-data-center-s-excess-heat.html

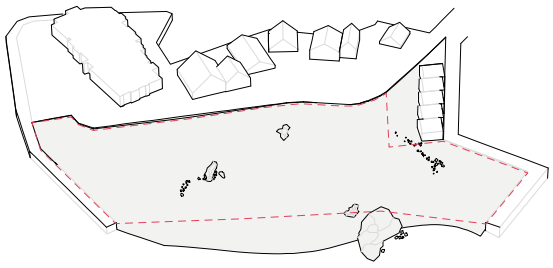


AIMS

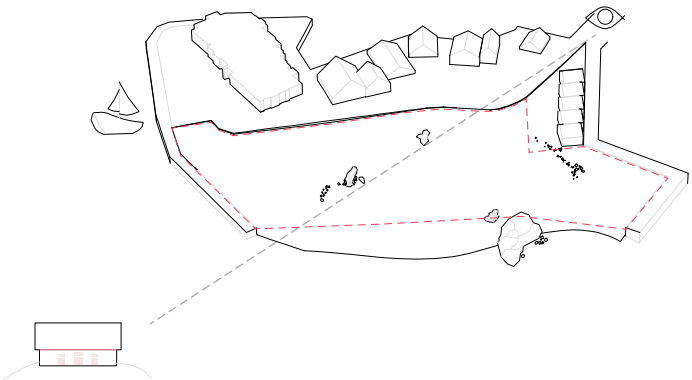
The project aims to make the data center a visible and beneficial part of society. This typology that is such a crucial part of our modern world is often either hidden away in mountains or on fields far away form our inhabited areas. The building of data centers are often heavily discussed in small communities, for example Kolås in Ballangen and the building of a center on topsoil on Jæren.

Therefore I have made the decition to find a more urban context, on already altered soil, to propose a new way of introducing the data centers in our communities. This way the facility can strengthen a community by creating a new gathering spot for local inhabitants, a destination for visitors and new workspaces in the municipality. In addition, the project introduces a way to tie two energy demanding programs in a symbiosis to decrese energy consumption, and give an architectonic solution.

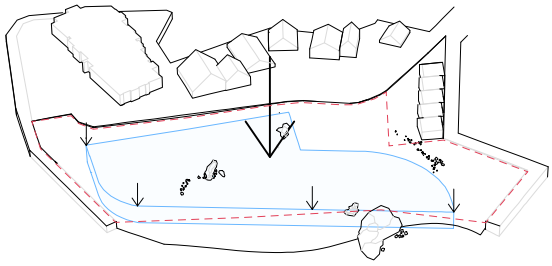
APPROACH



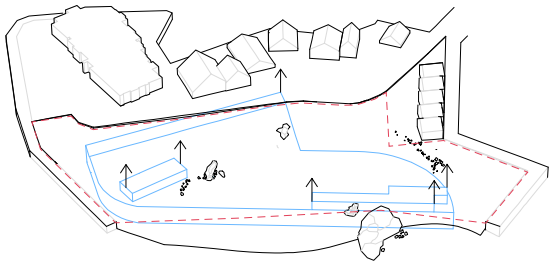
The project aims to bring the islet back to the people to use. Crushed and broken by human forces, nothing of this islet reminds of the archetypical textures and tactility of Karmøy.



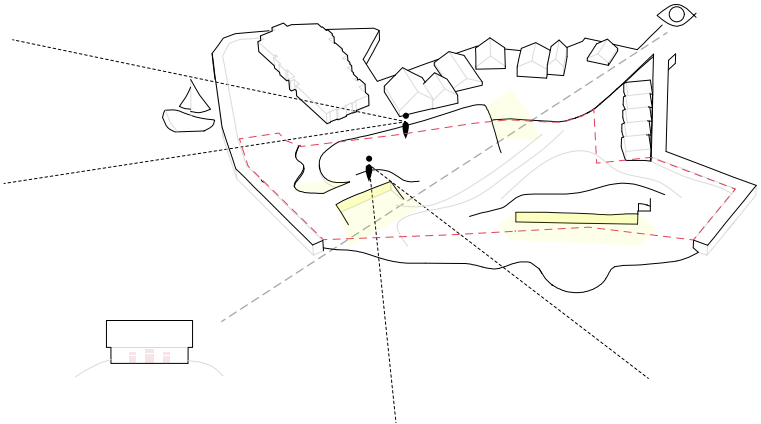
Keeping the sightline to the iconic Mortholmen on the islet across.



In respect to the surroundings and the fact that data centers often buildt in rock, the facility is brought under ground; blending in with the newly created landscape.



Some masses will be on ground level, such as the entrance building that is an extension of the ramp leading to the underground facility.



At last; the landscape forms around the buildings on ground level; making it a green area for the city to take part in and creating a beach and bath house as a free offer; giving back to the community.

The diploma work has been devided into the following "phases" and resulting documents:

ABSTRACT :	The essentials for knowing the project
POSTERS :	Digital posters for AHO WORKS (describes the project in shortest. Has some plans and sections that are not in the presentation.
PROGRAM :	The pre-diploma document. Account of the program and key arguments to understand theprogram. More in depth information about the background of the project.
ANALYSIS :	Programming and dimensioning, context of Åkrehamn and Karmøy, context of the site. Photos of the site are to be found here.
SKETCHES AND MODELLING :	Sketch models, sketch book and final drawings. Some extra drawings that are not in the presentation.
PRESENTATION :	The presented document for the final day.