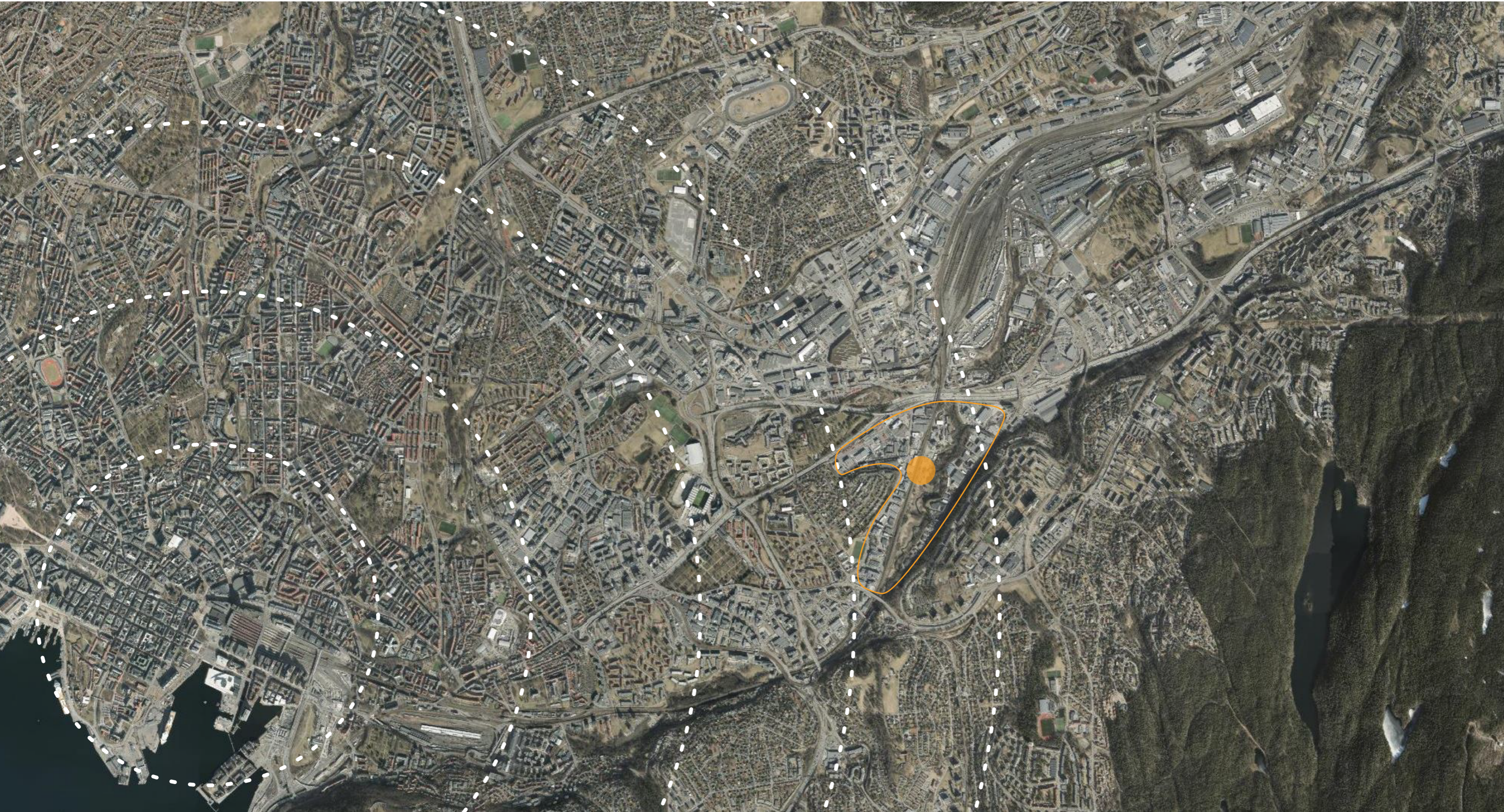


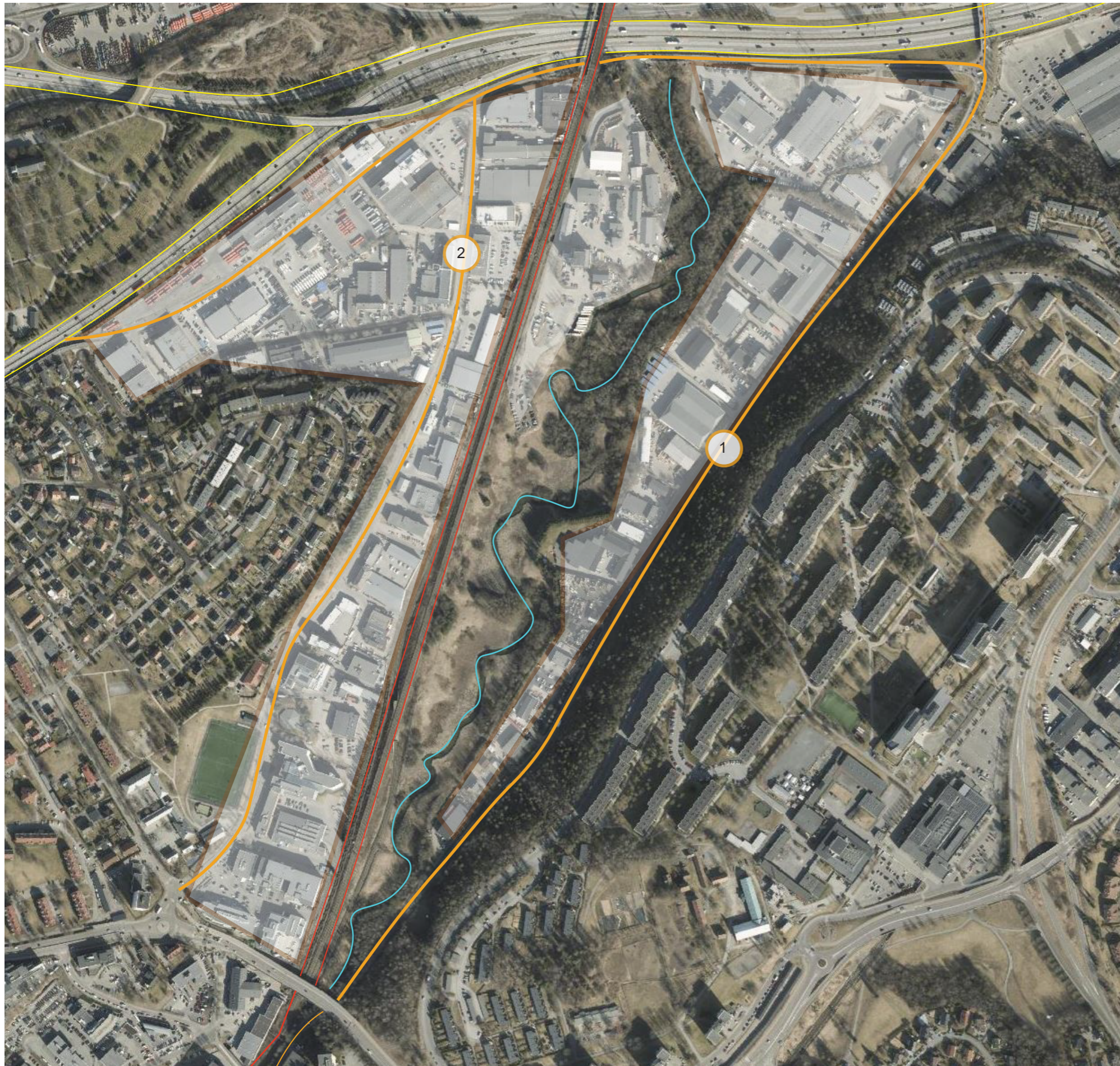
This is an analysis over Breivoll. It is separated in five different parts:

1. Breivolls location, current state and intersecting infrastructure
2. Breivolls past
3. Breivolls future development
4. Analysis over the project specific site, its topography, immediate nature, material palette and nearby architecture and infrastructure
5. Typical river vegetation and species



Breivoll is located in Oslos outer city between Ring 3 and Alnabru. It is between 4 and 5 kilometers in a straight line from Breivoll to Oslo Central Station.

Main Characteristics



Breivoll is situated right north of E6. This highway acts as a large barrier in the area, significantly closing it off from areas such as Haraldsrud and Stubberud just north of Breivoll.

On the south after the bridge lies Bryn characterized by large areas of asphalt and roads, while the architecture is mainly large public or office buildings.

On the west of Breivoll the topography goes up a steep hill covered in forest and typical Oslo suburban housing blocks.

East of Breivoll is characterized by suburban single and row housing with private gardens.





Breivoll is split in three by two main elements. The first being Alna river that goes in a meandering pattern through the area. The second being the train tracks that lead from Oslo Central Station all the way out of Oslo towards Lillestrøm.

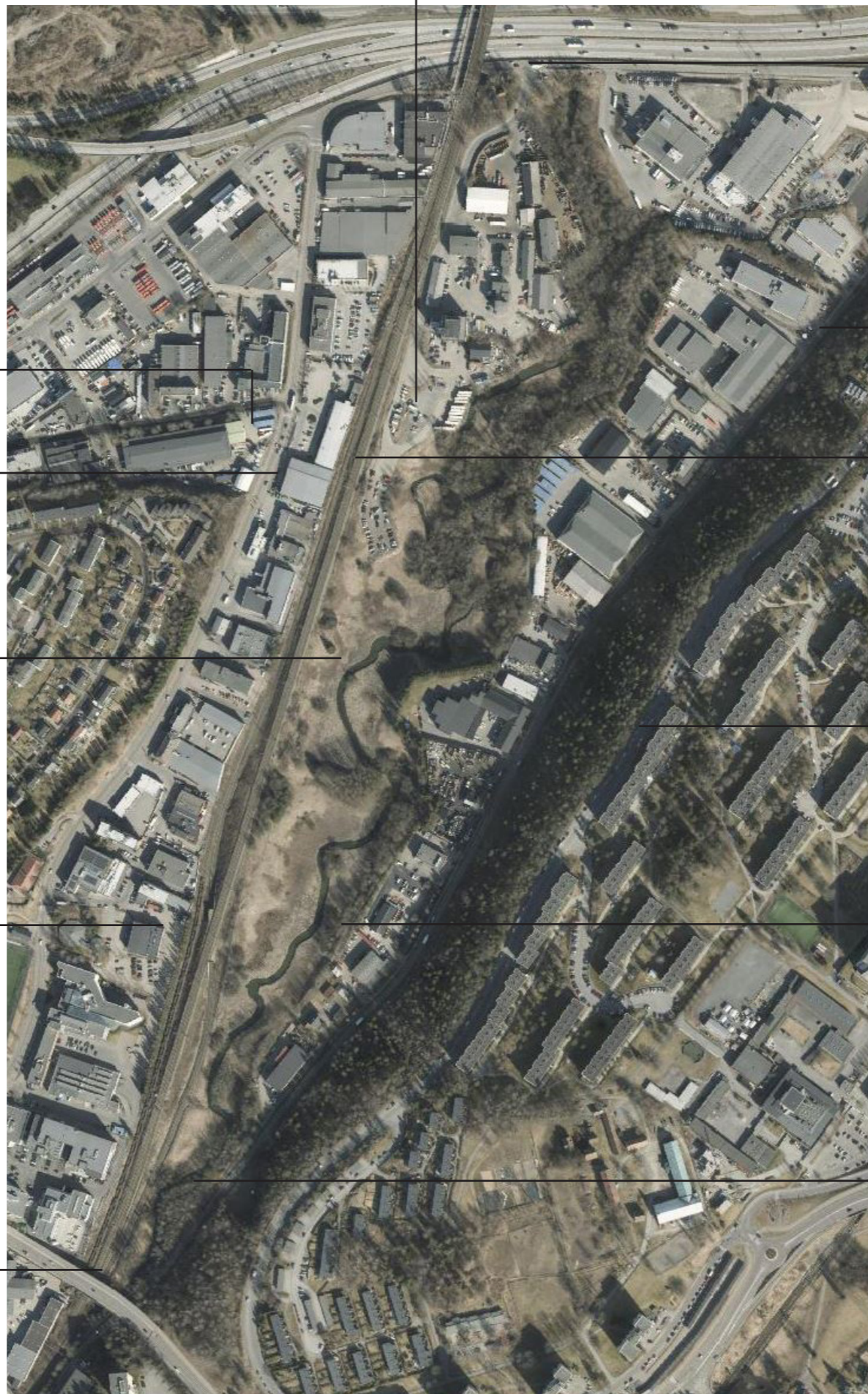
On each side of these dividers are large areas of asphalt, parking spaces and industrial buildings. They vary from older brick and concrete buildings to simpler storage units with metal sheet cladding to wooden sheds. The area on the east side of the train tracks are more urban, with warehouse stores and office buildings while the areas on the east side consists of workshops, factories and storage.

In between these industry areas the river area stands in stark contrast with its large open areas of wetland and at times dense deciduous forest.

The two main roads are Ole Deviks vei and Smalvollveien both going through the area from north to south.

Breivoll and its surrounding area is characterized as a typical place within Hovinbyen. Planned with the logic of production, storage and car based retail and movement with areas of monofunctional housing in close proximity divided by main roads or railway.

-  Industry and warehouse areas
-  Alna river with surrounding wetland and forest
-  Train tracks
-  E6
- 1 Smalvollveien
- 2 Ole Deviks vei



Typical section



Conclusions

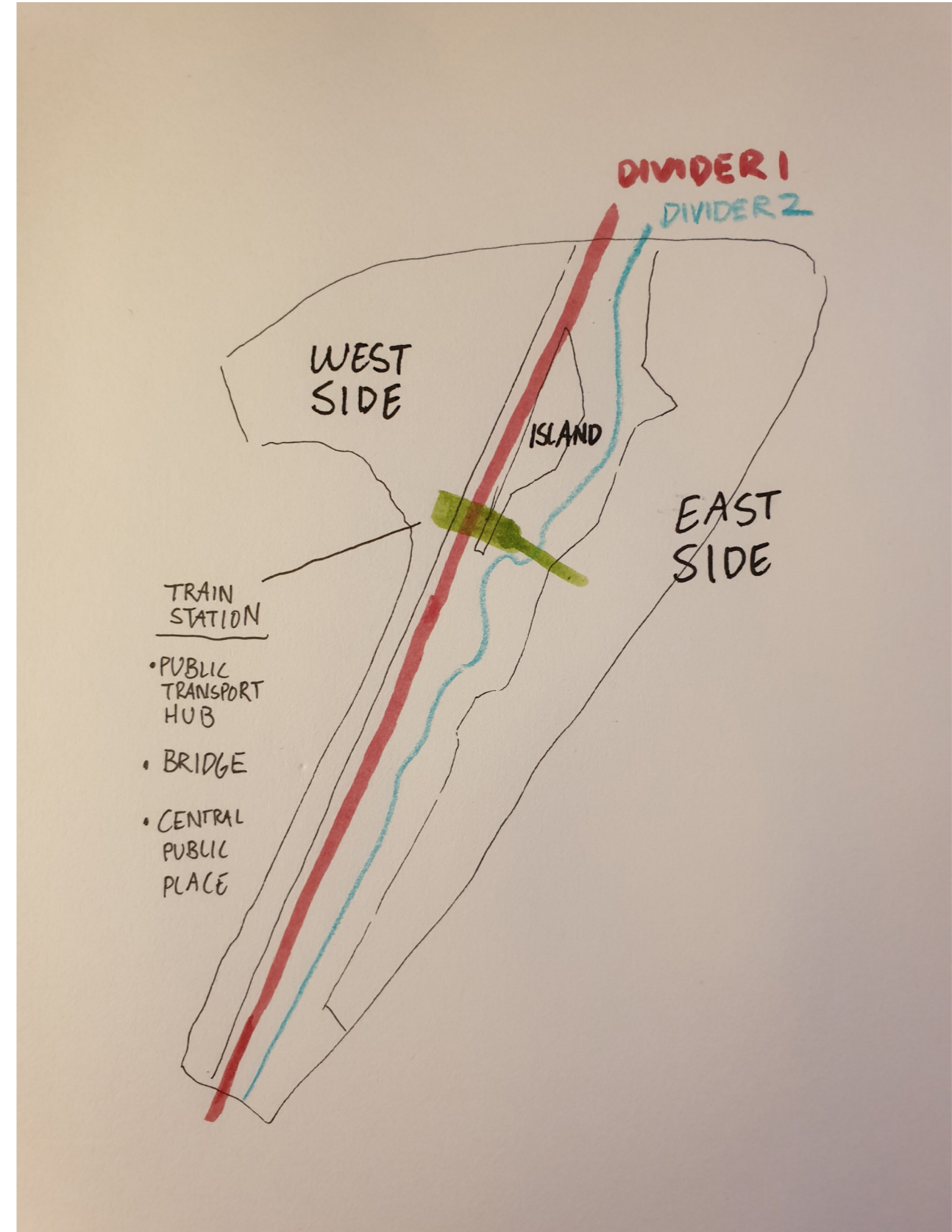
THE DIVIDE

The partition of the area with the train tracks and the river area will have a large impact on how to design the train station

A well functioning station that is supposed to be a hub needs to be accessible. There is great potential for the station to function as a bridge between the areas of each side of the divide.

As some sort of bridge needs to be constructed to bring people over from the east side over to the west side, the placement of the station is crucial for the bridge to work well. The bridge needs to be as non invasive in the vulnerable nature areas as possible. Therefore, the placement of the bridge needs to work together with the demand for nature preservation and that of a good access line between the DIVIDERS.

As the Station needs to be accessible for WEST SIDE, EAST SIDE and ISLAND it makes sense for the station to be a central public space that not only provides ease of access throughout the area but also provides facilities for other activities around the station to enhance the public space.



2 - Breivoll historical development



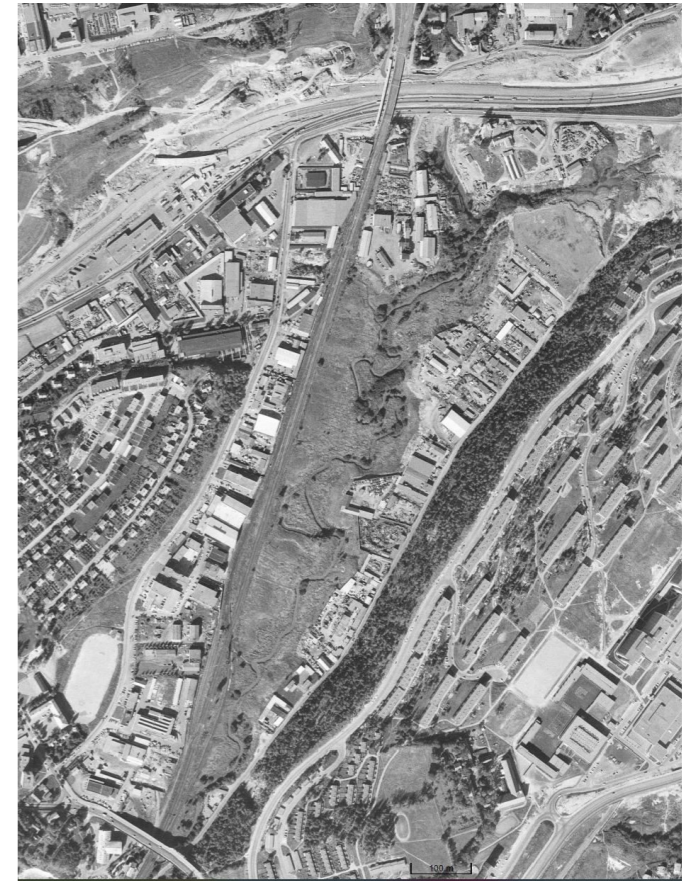
1875



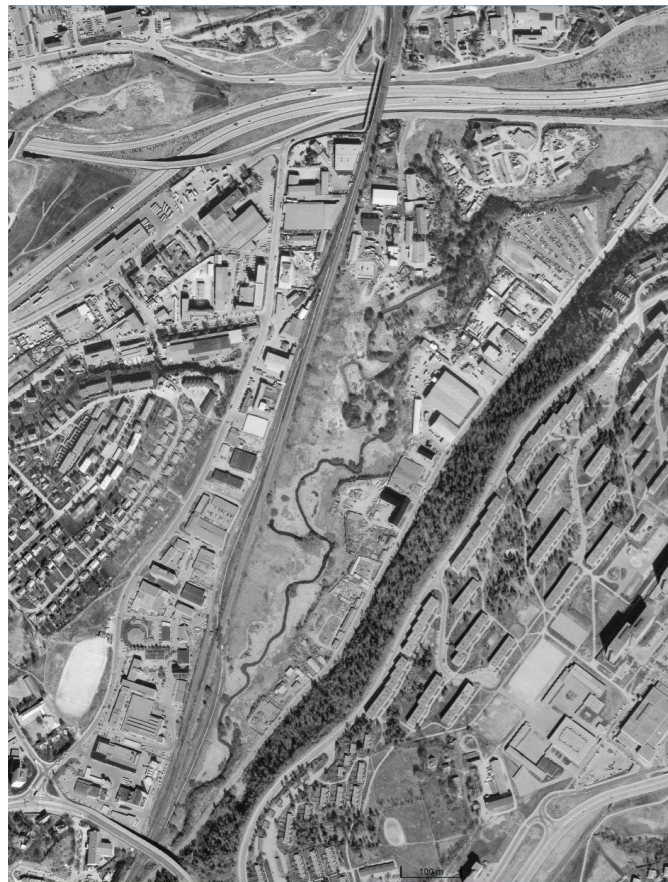
1937



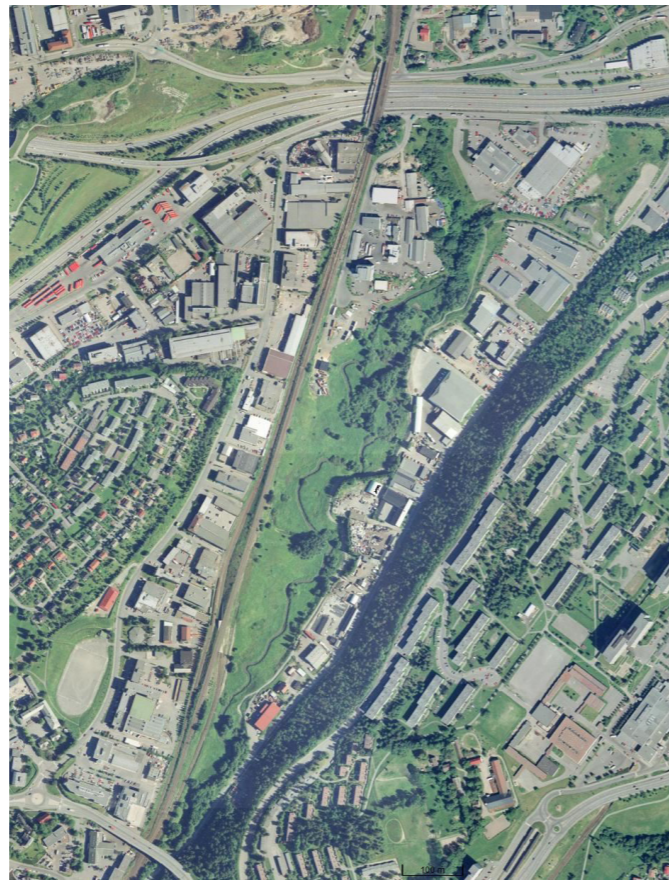
1956



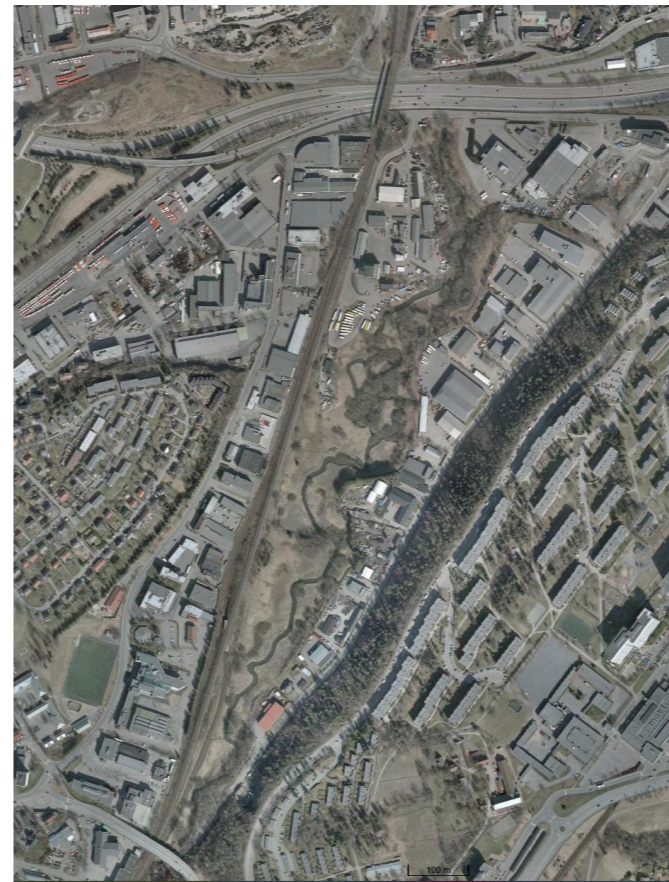
1971



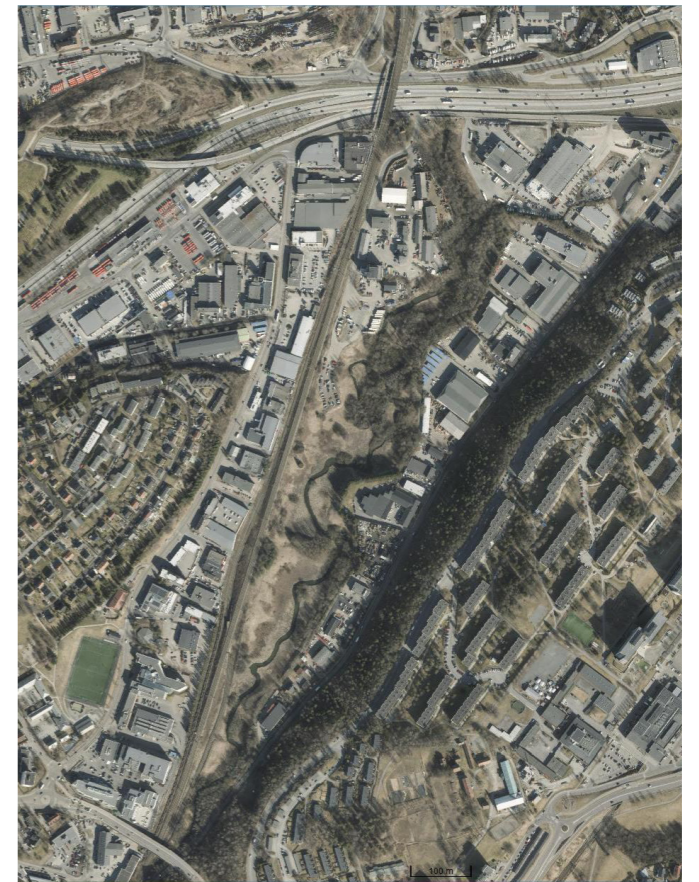
1984



1997



2008



2020



Breivoll in 1964 (above) and 1959 (below). From the photos we can see that the topography is different from what it is today. The characteristic slopes especially on the eastern side of the river is in many places man made (this is also commented on by Bendiksen and Bakkestuen in "Flora og Vegetasjon langs Alna og Tokerudbekken") and the river wetland has in some places been wider than what it is today.

Alna river and its surrounding areas has been in use by humans since they started inhabiting the area that is now Oslo. In the viking age the river was used to drag boats inland, and the rich soil has been used for farming since the iron age.

There is uncertainty about exactly what type of activities there were at Breivoll before the 1800s apart from farming. The river was used as a source of energy for sawmills and there were several along the rivers, so there was in all likelihood sawmills in addition to farms at Breivoll.

In 1930 the river became regulated for drinking water, and the sawmill industry along the river closed down.

In the 1960s E6 was established.

The main use of Breivoll up until the 1950s was farming. The larger part of the wetlands around Alna river belonged to Breivoll farm. The farm has been there since at least the 1600s.

The fields were slått and then used as pasture fields for animals. These types of flower fields are now a prioritized nature type in Norway as these fields are exceptionally good for biodiversity and pollinators.

There is nothing left of these fields today, but the vegetation in some areas towards the train tracks is still characterized by the species grown in flower fields.

From the 1950s and onwards, the farming ended and industry took over. By the 1970s the areas previously covered in pastures were now covered in asphalt, workshops, factories and storage units were the predominant architecture of the place.

Little has changed about the built area since then apart from the shifting out buildings.

The main change since the end of the farming era was the regrowth of the natural river vegetation. After a little over 50 years the vegetation is now close to a natural equilibrium.

As of today the industry is on its way out of the area. Breivoll is a part of one of the largest urban densification projects in northern Europe, the Hovinbyen development. Breivoll is set to be one of the main hubs and is facing a massive change with new residential, commercial and public areas.



3 - Breivoll future development

Breivoll is currently awaiting big changes. The area is regulated to be transformed into a dense residential and commercial area in connection to the development of Hovinbyen.

Breivoll is not set to be developed before around 2030, and the current plans are not yet developed in a detailed manner.

The train station is however stated by most involved as the most important first step to build and will likely be developed in the next few years.

Alnaelva is also under rapid change. Throughout the years, the river has been built into tunnels and suffered heavy pollution from the industry along its edges. There is now a movement from the municipality to bring Alnaelva out in the open and restore the river to a healthy state.

The most important documents that serves as a layer for developing the projects are these:

VPOR for Breivoll

- a document outlaying the guiding principals for how to develop Breivoll

Plan og idékonkurranse for Hovinbyen

- competition booklet containing the drawings from the four winning proposals for the Hovinbyen development

Strategisk plan for Hovinbyen

- The plan for the overall development of Hovinbyen. This mainly shows Breivolls connection to its surrounding areas.

Kommunedelplan for Alna Miljøpark

- a document stating the strategies for restoring Alna river.

Breivoll stasjon realisering 2018

- a short brief from Oslo Nord showing a suggestion for the train station principle

Fastsatt planprogram for Breivoll- / Alnaområdet

- containing an analysis of the area and specific suggestions for solving the barrier problems in the area.

The following analysis will be constructed in the following sections:

1 - Breivoll in a larger context

This pertains to Breivoll in the connection to Hovinbyen and how the larger infrastructure and connections intersect with Breivoll.

Documents: Strategisk plan for Hovinbyen

2. Future Breivoll

This will show the main elements of how a future Breivoll is imagined. Public spaces, street through lines and how the spaces are intended to be used.

Documents: mainly VPOR, Idékonkurranse, fastsatt planprogram

NB

One of the biggest take aways from digging through the available material is that the plans for Breivoll is still open for change.

The solutions for overcoming the E6 barrier is a part of manglerudtunnelen, a large scale restructure of Oslos main roads, a project currently on hold awaiting political action.

The areas suggested for residential and commercial buildings are hinted at through symbols and sketches.

For my project I therefore have to assume some things to give it context. The looseness of the given material is challenging as it is hard to put the project in a yet non existing situation, but at the same time it gives freedom for the project to act as a catalyst project, free of many constraints, and can act as an example project for the further development of Breivoll.

3.1 - Breivolls larger context

Hovinbyen is one of the the largest development projects in Oslo. The area is on the edge of Oslo inner city, with an area as large as the inner city within ring 2.

It is projected to be built within 30.000 to 40.000 new residential units and between 50.000 to 100.000 new jobs in Hovinbyen.

Hovinbyen will be planned with all future transport needs to be covered with either walking, biking or public transport. Breivoll is set to be developed as one of the main public transport hubs

Hovinbyen is thought of as a continuation of the dense city and will future more of the characteristics from the inner city fabric than of the outer city suburban areas.

There is a great focus on the environment in the Hovinbyen plans. A quote from the plan is as following:

“relevant subjects to be taken further in the strategic plan is among others:

- Runoff water management
- Prioritize pedestrians and biking
- reduce car traffic
- Programs for environment follow up
- reduce loss of biodiversity
- Local energiproduction and -use

Comment:
The aim of reducing biodiversity is too low. The aim should be to improve it

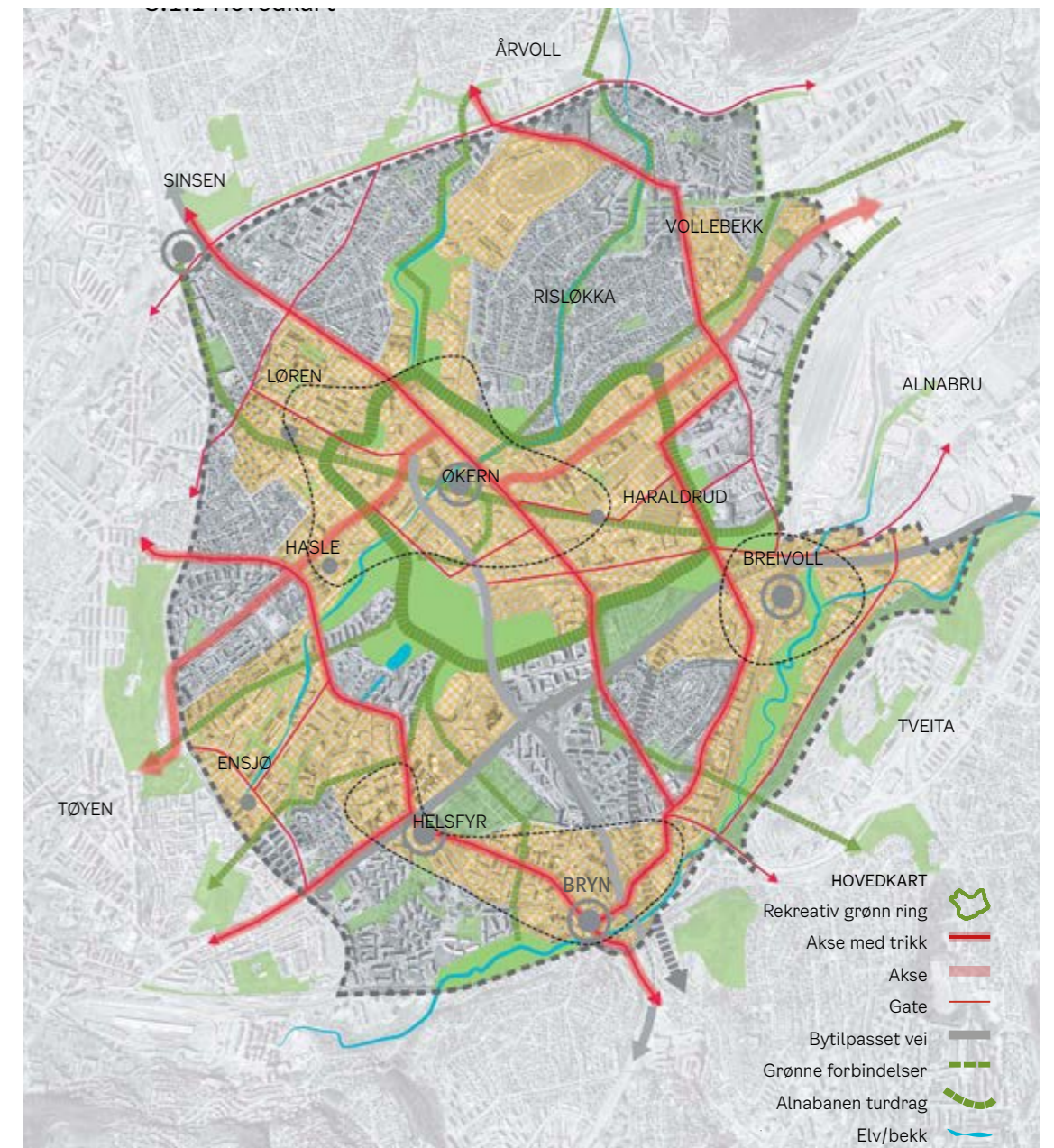
To meet the demands of a dense urban city, these following criteria is assumed for the development of Hovinbyen:

- A new train station at Breivoll before 2022
- A new subway line from Økern to Breivoll secured before 2022 and finished before 2030
- A new subway line from Breivoll to Furuset finished before 2050

From these criteria it is clear that Breivoll station will be a central infrastructure for facilitating the needs of public transport for Hovinbyen. Its close proximity to the river and the fact that it will be the first project to be built in this area gives it the possibility of being a positive catalyst project for the further development.



Top: Breivoll in connection with Hovinbyen and Oslo
Bottom: Hovinbyen with the main public transport connections, green areas and building mass.h



From Strategisk plan for Hovinbyen:

“Ved de store kollektivknutepunktene har det vokst frem et sterkt næringsliv av regionale og nasjonale kunnskapsbedrifter. Mange som jobber her kommer fra andre deler av regionen og landet for øvrig. Kort reisetid og en kombinasjon av urbane og grønne kvaliteter er Hovinbyens stor konkurransefortrinn. Hovinbyen gir rom for å tenke annerledes!”

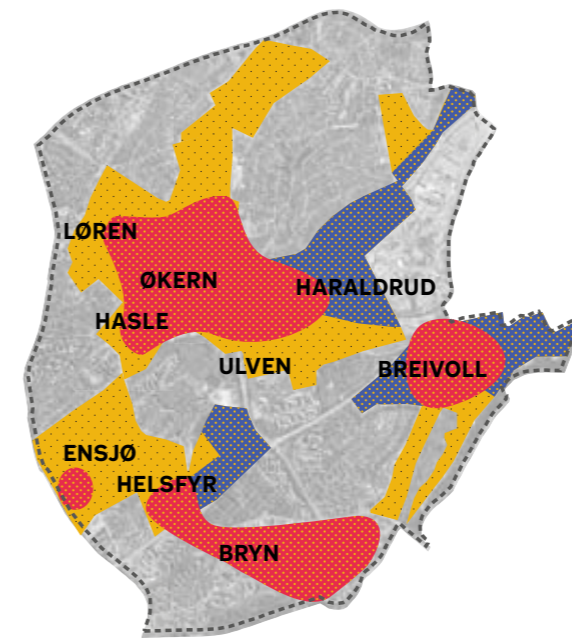
MÅL 1:
Hovinbyen skal være en fremtidsrettet og klimasmart byutvidelse

Hovinbyen skal teste ut fremtidsrettede løsninger for klimasmart byutvikling

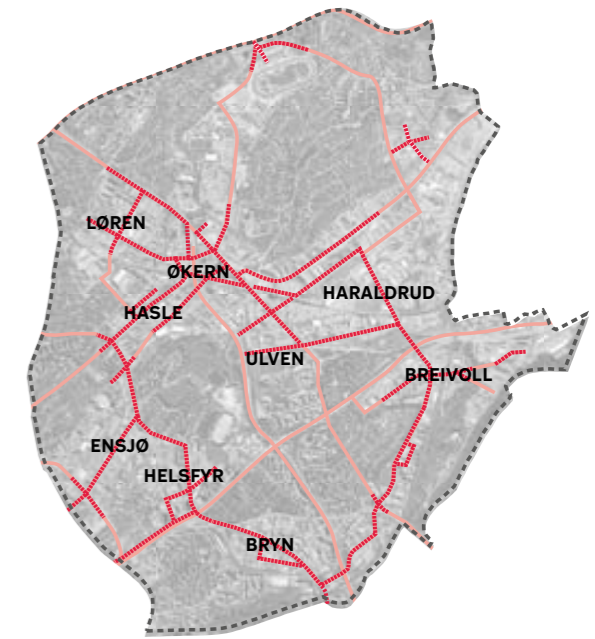
In addition to that, there is a high focus on dense building structure and a high degree of mixed functions especially around the hubs (Breivoll included).

the area around Breivoll station will not only be a place for transit between the different modes of public transportation, or just the point of transit entry for the inhabitant of Breivoll. The area is stated to be a place for commerce and have a large portion of workplaces. With the addition of tram, bus and subway making it easily accessible to the larger part of Oslo, and the trains connection to Lillestrøm via local train, the area will be bussing with workers mingling with the Breivoll residents.

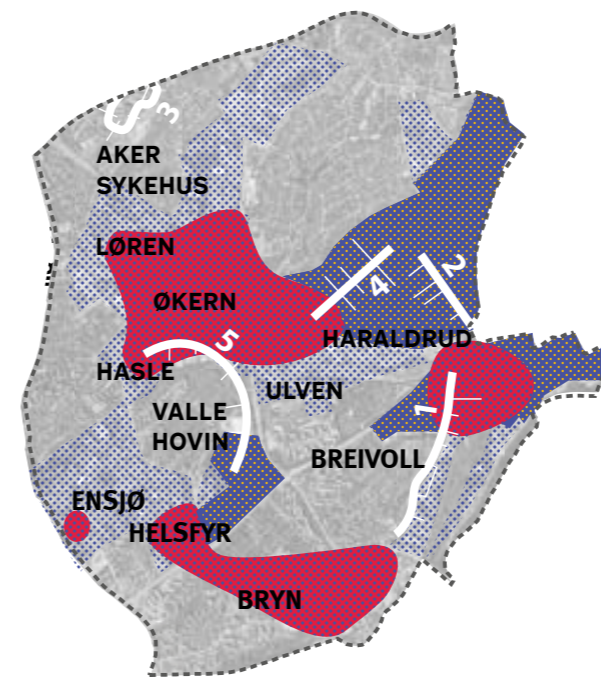
The plan also points out the importance of green cargo distribution. Maybe the train station can be a contributor to this?



Funksjonsblanding
Sentrumsblanding med flere formål i hvert bygg
Flerfunksjonell by med hovedvekt på næring
Flerfunksjonell by med hovedvekt på bolig
Eksisterende formål videreføres

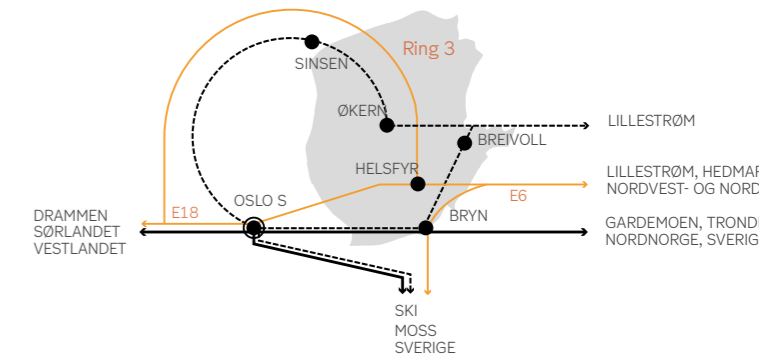


Åpne første etasjer
Åpne første etasjer med innslag av publikumsrettede funksjoner
Åpne første etasjer med stor grad av publikumsrettede funksjoner



Næringsområder i Hovinbyen
Arealeffektive kunnskapsnæringer ved knutepunkt
effektive og utadrettede næringer i de flerfunksjonelle byområdene
Næringsområder hvor ny bebyggelse skal tilpasses fremtidig bystruktur
Viktige næringsstrenger

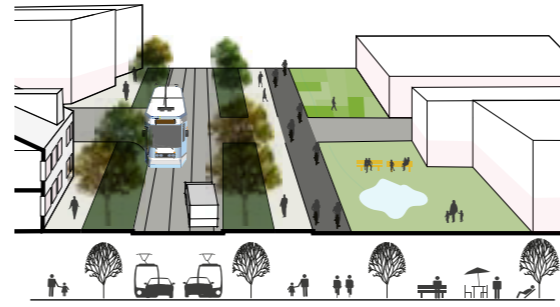
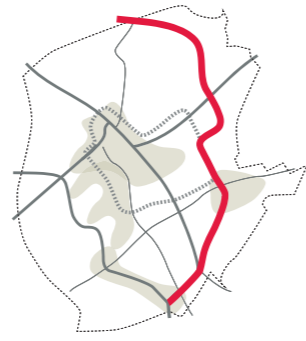
Kartet viser eksisterende næringsområder som ønskes integrert i bystrukturen angitt med hvitt:
1) Håndverksbedriftene langs Ole Deviks vei på Breivoll
2) Gjenvinnings- og renovasjonsanleggene på Haraldrud
3) Helsefunksjonene ved Aker sykehus 4) Næringsmiljøet i Kabelgata
5) Idrettsfunksjonene på Valle Hovin. Disse skal utvikles.



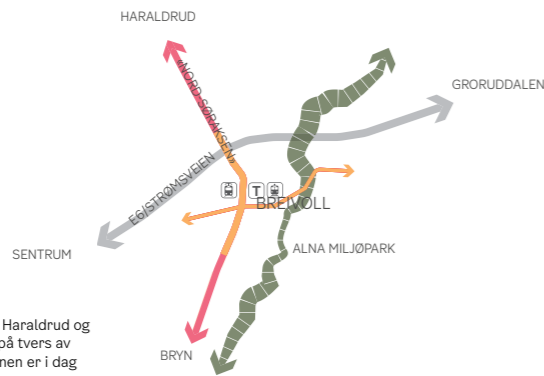
Overordnet veinett
Jernbane
Lokaltog
Hovinbyens kobling til det regionale vei- og kollektivnettet

4.2.5 Nord-søraksen

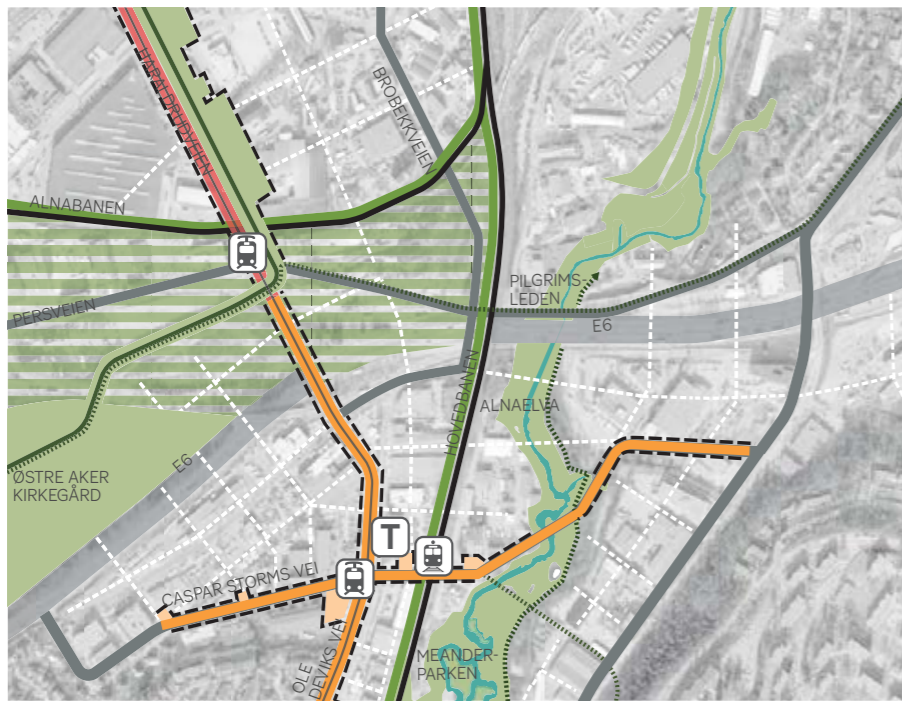
Brobekkveien - Haraldrudveien - Ole Deviks vei



example of the road structure through The north south axis (Ole Deviks vei)

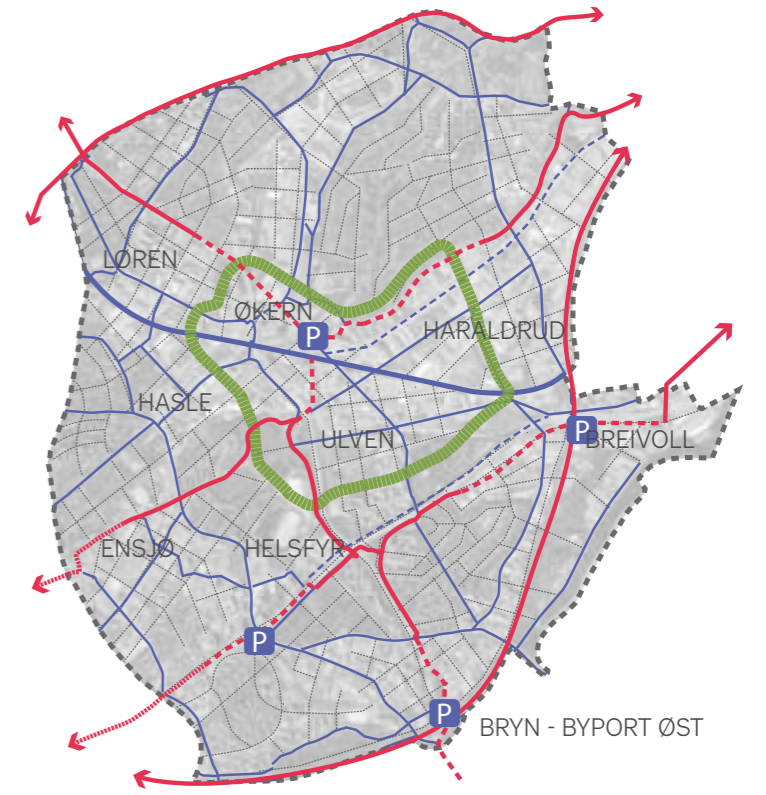


Nord-Sør aksen knytter Breivoll til Haraldrud og Bryn. Strømsgaten samler Breivoll på tvers av barrieren Alna miljøpark og jernbanen er i dag

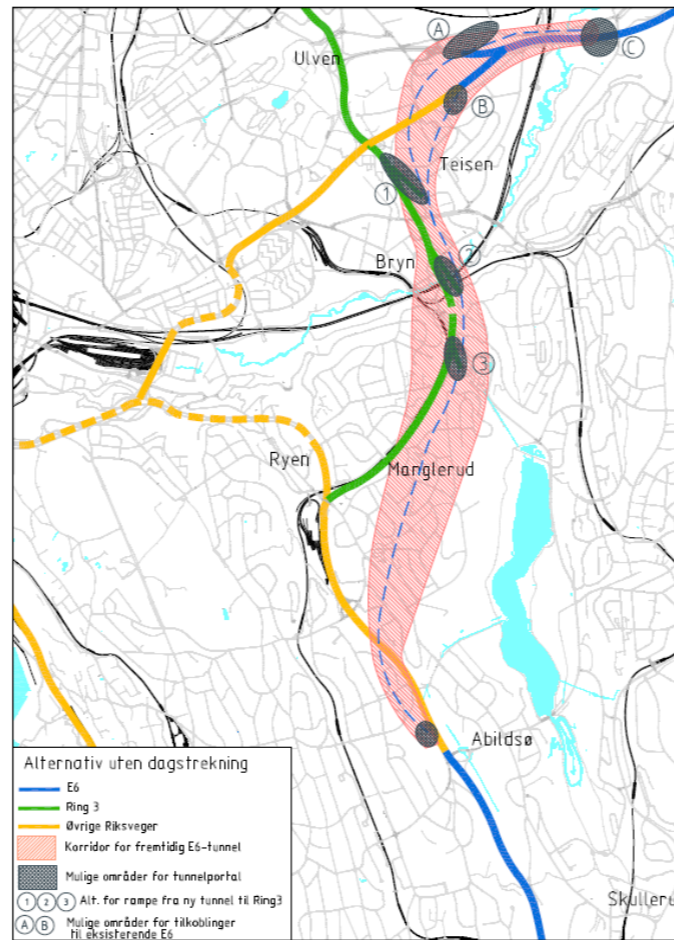


Prinsippkart Breivoll

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> — Akser — Strømsgater - - Åpne førsteetasjer med publikumsrettede funksjoner — Prinsipplassering av torg i kryss og ved kollektivstopp | <ul style="list-style-type: none"> — Fremtidig byutvikling med hovedvekt på park — Prinsipielt gatenett — Den grønne ringen — Park/kirkegård — Alnabananen/hovedbanen m. gang/høystandard sykkelvei — Hovedturvei | <ul style="list-style-type: none"> — Lokalgater — E6 — T-bane — S-bane — Trikk — Trikkelinje — Tog- / t-banelinje — Tog- / t-banelinje i tunnel |
|---|--|---|



- Sykkelnettverk**
- Rekreativ sykkelrute —
 - Høystandard sykkelvei —
 - Høystandard sykkelvei (bytilpasset) —
 - Sykkelveinett (oppdateres ettersom områder utvikles) —
 - Sykkelveinett (uavklart) - -
 - Sykkelrute langs Alnabananen —
 - Større sykkelparkeringsanlegg P
 - Tett prinsipielt nett av sykkelbare gater —



Figur 59 – Tunnelalternativ 2, med kopling mellom E6 og Ring 3 under bakken. Som for dagsone-løsningen er det to varianter av tunnelplassering i Ulvenområdet og minst 3 varianter av plassering av plassen av E6 og Ring 3.

3.2 - Breivoll in the future

Breivoll is prognosed to have 2-3000 new residential units and up to 150.000 new jobs.

One of the main challenges for the development of the area is to solve the barriers. The main barriers are Alna river and the rail tracks, the highway north of Breivoll, but also its eastern and western borders to the neighbouring residential areas.

The main contributors to solve this are a well developed and accessible public transport and bridges and “underganger”.

The VPOR specifies that the station area should have the highest use and mixed functions to facilitate life in the surrounding areas.

The VPOR also states that the area should have high ambitions regarding environmental adaption and architecture.

Below: three important diagrams for Breivoll.

Comment: it seems like an off choice to have the plazas in the east west passage where the station is to be partitioned like they are in the diagrams instead of utilizing the passage as a more coherent public space





KARAKTER OG STANDARD PÅ DE OFFENTLIGE ROM

Utviklingen på Breivoll skal være med høy kvalitet og bygge på områdets eksisterende karakter. Det foreslås at det for de prioriterte og sentrale offentlige rom utvikles en høyere standard som er tilpasset områdets egenart. Øvrige deler av området foreslås utviklet med en mer generell standard.

Normal standard: følger Oslo kommunes standard for gater, torg og parker.

Høy standard: Tilpasses stedskvaliteter inkluderer designutførelse av møbler, belysning og universell utforming. Materialvalg gjøres med tanke på områdets karakter.

Design elementer (belysning, møblering e.l.) som er tilpasset stedskvaliteter. Dette er særlig forhold til materialer, det industrielle preg i området og/eller naturområdene rundt Alna.

DIFFERENSIERING AV STANDARD

	Normal standard	Høy standard
Gater	Fortau: Asfalt Kjørebane: Asfalt. Sykkelfelt markeres i rød asfalt e.l. Kantutforming: Naturstein, betong Gatevarme: Ingen Beplantning: Skal vurderes Møblement: Skal vurderes, enkel standard. Skal inngå ved holdplasser o.l. Belysning: Kommunal standard Kunst/utsmykning: Ingen Vannelementer: Ingen	Fortau: Naturstein, tegl Kjørebane: Asfalt. Sykkelfelt markeres i rød asfalt e.l. Kantutforming: Naturstein Gatevarme: Ber vurderes Beplantning: Trær i rekke eller klynger Møblement: Skal inngå. Inkluderer benker og mulighet for opphold. Design Belysning: Design Kunst/utsmykning: Skal vurderes Vannelementer: Skal inngå der markert (kap. 3.8)
Sambudsareal / Gøttum	Dekke: Tegl, asfalt, betongheller e.l. Gatevarme: Ingen Beplantning: Skal vurderes Møblement: Skal vurderes, enkel standard Belysning: Kommunal standard Kunst/utsmykning: Kan vurderes Vannelementer: Ingen	Dekke: Naturstein, tegl, plassert betong e.l. Gatevarme: Ber vurderes Beplantning: Trær i rekke eller klynger. Annes beplantning rundt oppholdssoner skal vurderes. Møblement: Skal inngå. Inkluderer benker og mulighet for opphold. Design Belysning: Design Kunst/utsmykning: Skal vurderes Vannelementer: Skal inngå der markert (kap. 3.8)
Torg / Plass	Programmering: Skal vurderes hvor ikke markert i prissiplanen. Dekke: Betong, asfalt, gatestein Gatevarme: Ingen Beplantning: Skal vurderes Møblement: Skal vurderes, enkel standard Sykkelstativ, soppelbøtter, benker, e.l. Belysning: Kommunal standard Kunst/utsmykning: Kan vurderes Vannelementer: Kan vurderes	Programmering: Gjennomtenkt og helhetlig programmering. Høy opplevelsesverdi (ref. "opplevelsesbarometeret i KDP Torg og møteplasser") Dekke: Kombinert av materialer: naturstein, tegl, betong, metall, gummedekke e.l. Gatevarme: Skal vurderes Beplantning: Skal inngå og tilpasses program Møblement: Skal inngå og tilpasses program. Design Belysning: Design. Effektbelysning skal vurderes på primære bydelsplasser. Kunst/utsmykning: Installasjoner e.l. ved primære bydelsplasser Vannelementer: Skal inngå der markert (kap. 3.8)
Gangsykkelvei / Sti	Dekke: Grus, asfalt Beplantning: Skal vurderes Møblement: Skal vurderes, enkel standard Kunst/utsmykning: Ingen	Dekke: Grus, betong, tre, asfalt Beplantning: Skal tilpasses lokal vegetasjon Møblement: Skal inngå og gi mulighet for opphold (benker e.l.) Kunst/utsmykning: Kan vurderes
Parker / Grønne områder	Terreng/ landskapsform: Ber vurderes Harde overflater: Grus og asfalt Vegetasjonsbruk: Trær i klynger, busker, stauder, grus. Mulighet for arbant jordbruk i naboolagsparker / grønne lommer skal vurderes. Møblement: Benker, lekeapparat, o.l. skal inngå. Belysning: Kommunal standard Kunst/utsmykning: Ingen Vannelementer: Skal vurderes	Terreng/ landskapsform: Tilpasses eksisterende menndrende elvelandskap. Harde overflater: Grus, tredekke, gatestein, naturstein. Vegetasjonsbruk: Tilpasset med særlig vekt på lokal biologi. Mulighet for arbant jordbruk i naboolagsparker / grønne lommer skal inngå. Møblement: Skal inngå og tilpasses program (Våtstuspark, eksperimentarium) Designutførelse Belysning: Design, effektbelysning skal vurderes Kunst/utsmykning: Installasjoner skal inngå i programmerte deler (Våtstuspark, eksperimentarium) Vannelementer: Skal inngå der markert (kap. 3.8)

Se forøvrig følgende kapittel i VPOR for: Programmering av off. rom kap 3.3, 3.6, 4.2 - 4.5; Plass hierarki kap 3.4; Vannelementer kap 3.8

Planforklaring

Definisjon brukt i Kommunedelplan for torg og møteplasser vist i parentes

Prioriterte offentlige rom	Grøntanlegg / friområde
Bymessig tverforbindelse	Park, naboolagspark, grønn lomme (KDP T+M §3.1.2)
Bymessig tverforbindelse	Friområde
Bymessig tverforbindelse	Sti, turvei
Bymessig tverforbindelse	Trappeanlegg etc.
Bymessig tverforbindelse	Overordnet åpen overvannshåndtering
Bymessig tverforbindelse	Rense- og fordryningsdammer
Bymessig tverforbindelse	Annet
Bymessig tverforbindelse	Planavgrensning
Bymessig tverforbindelse	Unganger
Bymessig tverforbindelse	Broer
Bymessig tverforbindelse	Historisk bebyggelse med stedskvaliteter
Bymessig tverforbindelse	xxx m2 Angr størrelse. Endelig form angis i den enkelte saks behandling.

PRINSIPPLAN FOR DET OFFENTLIGE ROM - BREIVOLL

Plankart VPOR-BR-01
Planforslag til politisk behandling

Dato: 17.12.2013
Rev. dato:

0 50m 100m 200m 1:2500 @ A1 1:5000 @ A3

Plan- og bygningsetaten Oslo kommune
Vahlgate 1, 0187 OSLO
Sentralbord: 23491000

NORD

underway

underway

bridge

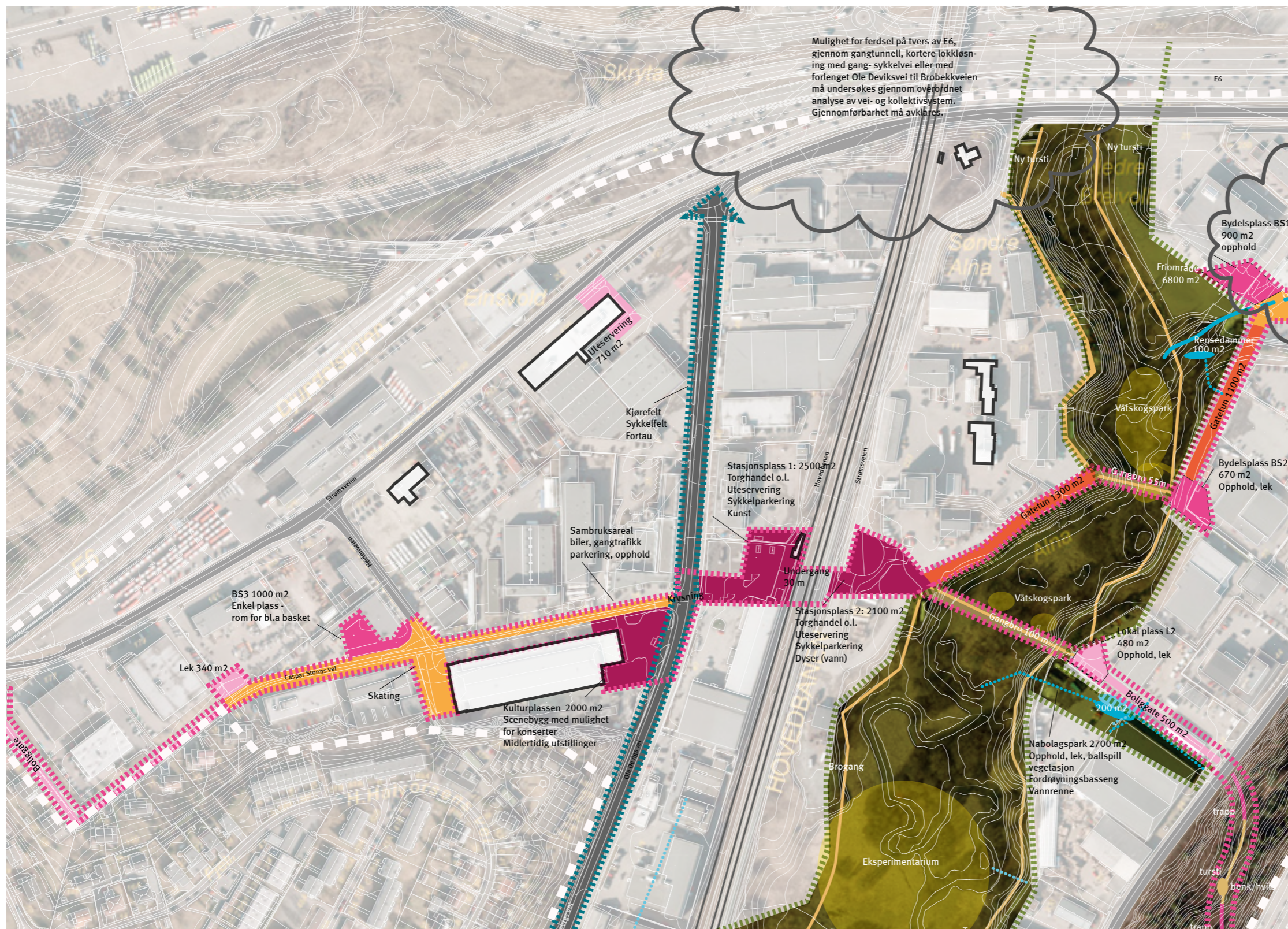
The above diagram is the most detailed material showing the future Breivoll. In general we can see that there are planned multiple crossings over the river area. especially around the station area, the forest is dense with high terrain differences. It is unclear from the material how such bridges will work and the impact it will have on the nature.

There is also multiple pathways on the east side to provide access to the nearby areas.

There are 3 bridges and underways over and under the railways.

In addition to this there is plans for two bridges connecting the east side to the bridge. There is also a plan for a bridgeway from the middle of west-side to the bridge connecting the east side to the island.

This seems like an extensive invasion of the vulnerable nature!! This has to be planned in a different manner!



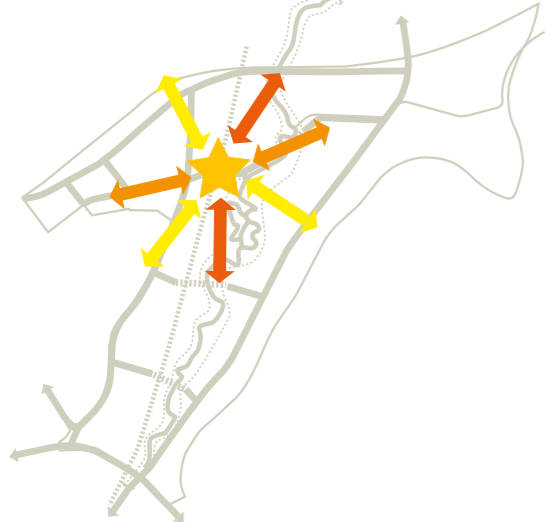
A closer look at the east west passage gives an indication on how the public areas are imagined spread out.

road lead either directly over to the east side over a bridge or along a public road a bit north that can either take you over the river or out of the area under E6.

The old industry building is imagined as a culture house with a plaza. The road crosses Ole Deviks vei to a station plaza with a passage under the rail tracks to a second station plaza. From there, the

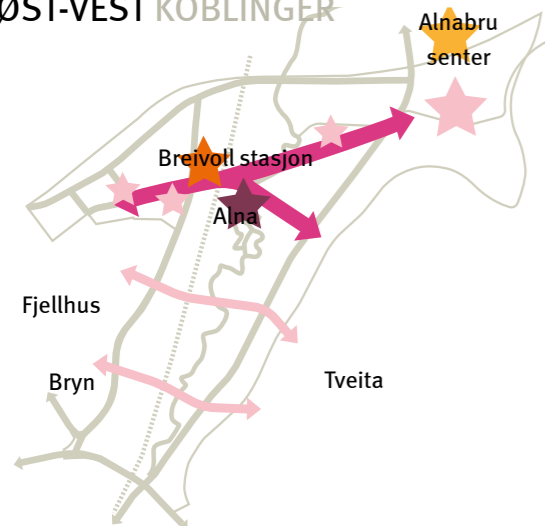
It is unclear, however, where the station buildings are supposed to be and how it relates to the plaza and the mixed use and activity imagined at the place.

KNUTEPUNKT I SENTRUM



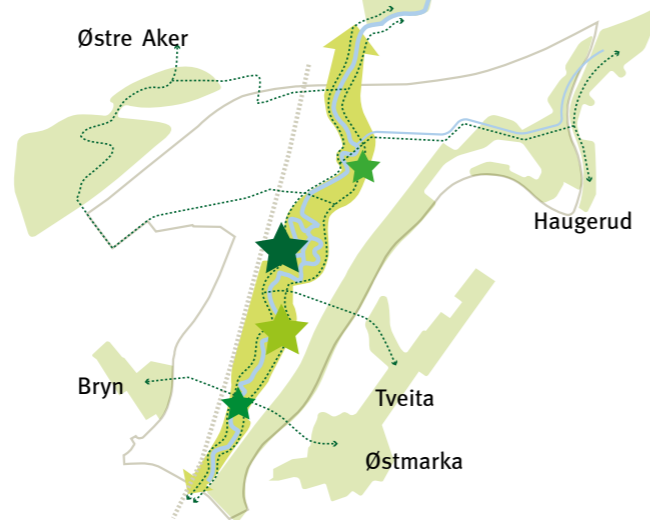
Oppkoble, feire og skape god tilgjengelighet til transformasjonsområdet med knutepunktet.

ØST-VEST KOBLINGER



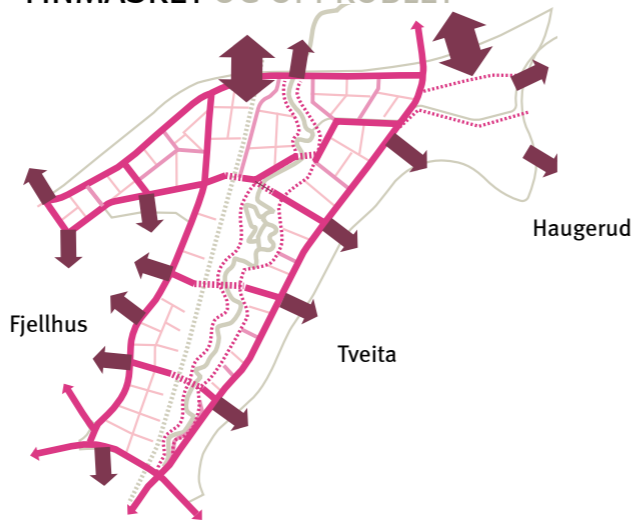
Nye øst/vestlige forbindelser etableres på tvers av områdets mange barrierer. I nord etableres det en tydelig akse som forbinder viktige målpunkter og sikrer en god tilgjengelighet til stasjonen.

REKREATIVE ALNA



Alna tilgjengeliggjøres og utvikles som destinasjon og rekreativ forbindelse og sone

FINMASKET OG OPPKOBLET



Tilgjengeligheten til omkringliggende områder økes ved å etablere flere forbindelser. Breivoll gjøres tilgjengelig både som destinasjon og for gjennomfart. Et finmasket nettverk, med tydelig hierarki som prioriterer fotgjengere og syklistene etableres internt.

VITAL OG MED TIDSDYBDE



Synliggjøre Breivolls industrielle historie gjennom å gi eksisterende bygninger og byrom nye attraktive funksjoner.

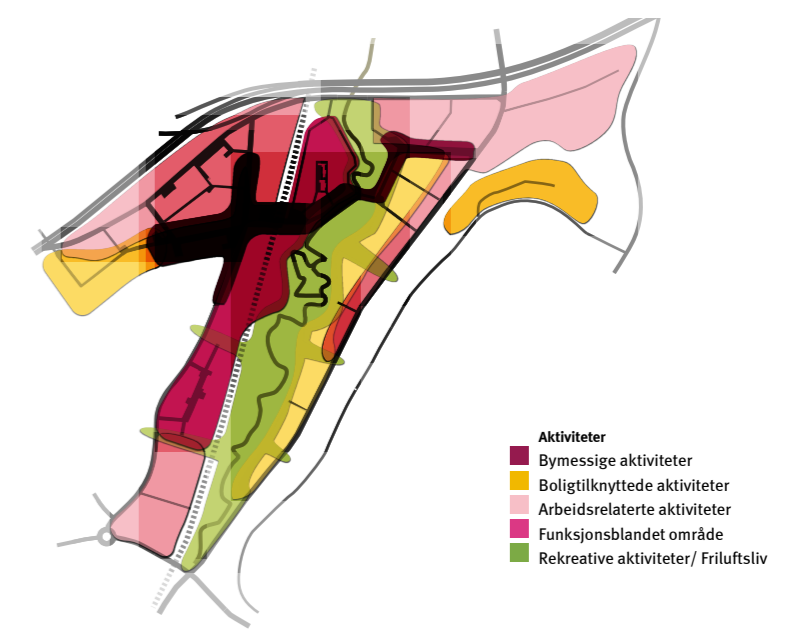
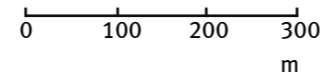
TRYGG MED FUNKSJONSBLANDING



En blanding av funksjoner etableres for å skape et levende og trygt Breivoll. Dette er særlig viktig langs den tverrgående hovedaksen.



- Meanderparken
- Alna og sidebekker
- andre grøntområder
- primære byrom
- sekundære gater/byrom
- lokale gater (indikativ plassering)
- primært fotgjengernettverk
- destinasjoner
- stasjoner, kollektivtrafikk
- avstand fra kollektivtrafikk, 500 m
- planområdet



- Aktiviteter**
- Bymessige aktiviteter
- Boligtilknyttede aktiviteter
- Arbeidsrelaterede aktiviteter
- Funksjonsblandet område
- Rekreative aktiviteter/ Friluftsliv



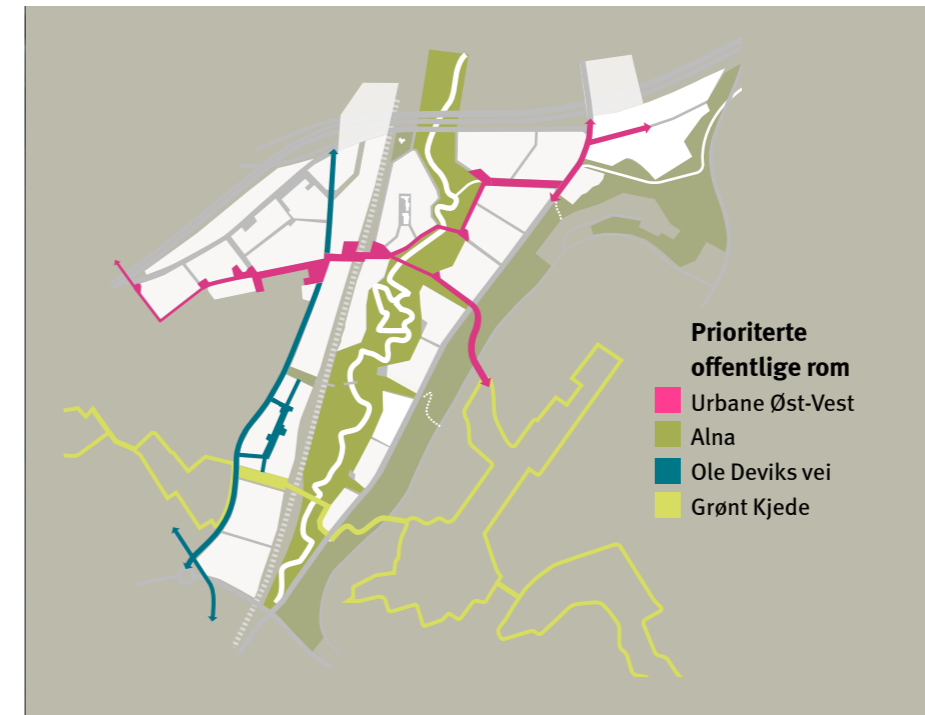
- Alna og Trosterudbekken
- Kanaler
- Indikert trasé
- Overordnet dreneringsretning på overvann
- 'Swale'
- Infiltrasjonssone
- Vannelementer
- Erosjonssoner

undergang

undergang

bro

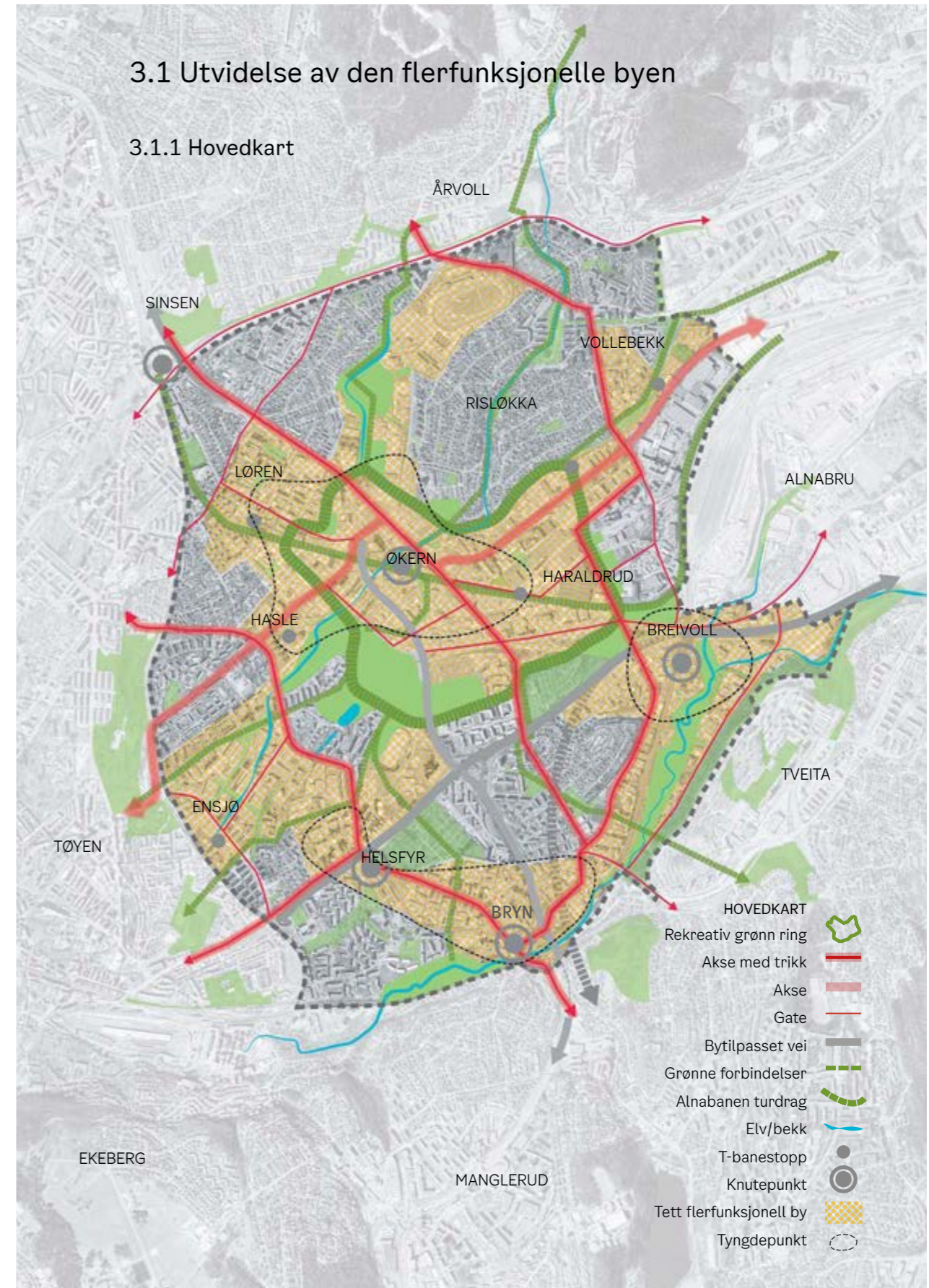
Det er planlagt 3 overganger og underganger over jernbanen

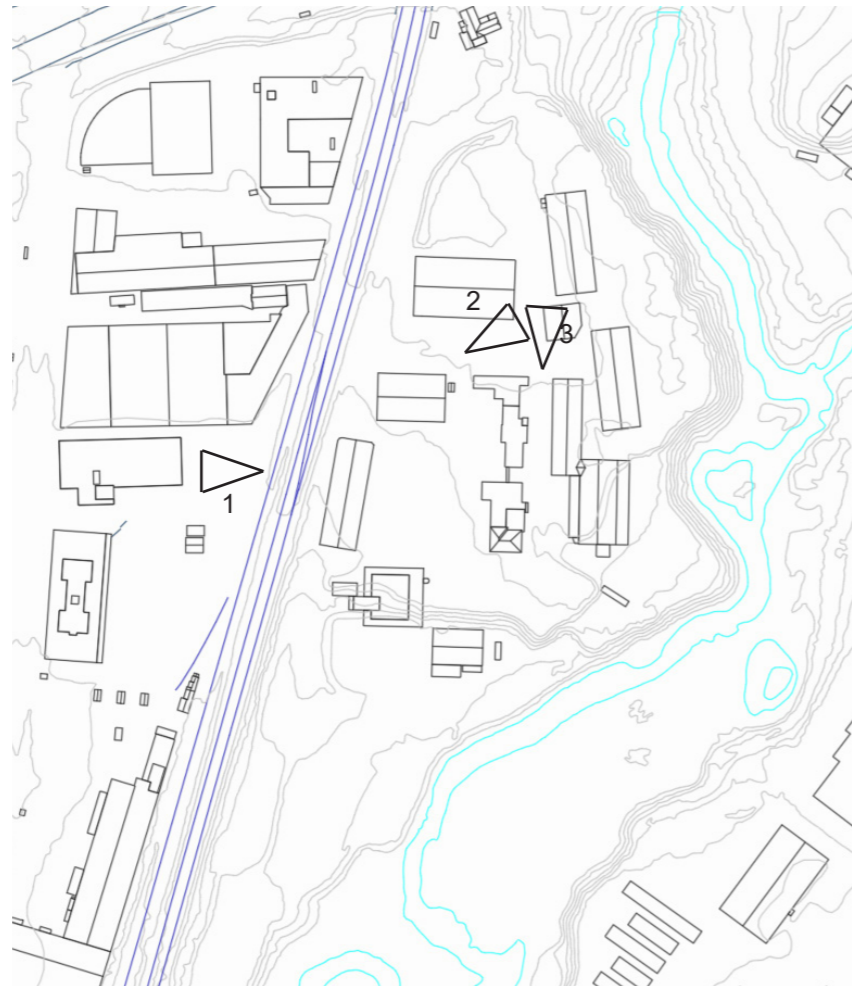


about the weather

Breivoll is in the bottom of the valley. Cold air will come from north east and drift downwards through Breivoll. Buildings in the north of the area close to E6 can mediate this, but buildings around the public plazas should take this into account. It is also important for the building mass alongside the river to open up so air can flow through the river parth southwards to avoid air stagnation in the area.







1



2

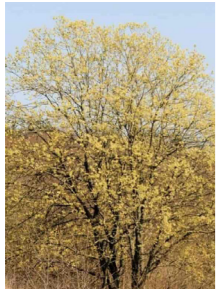


3





Dry land further from river



Selje



Hengebjørk



Spisslønn



Rogn



Osp



krossved



Nyperose



Bleikstarr



Engkven

Open areas in and along the river



åkertistel



stornesle



springfrø



Skogsivaks



skogrørkvein



strandør



sløke



Sennegras

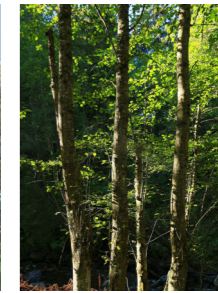
Wet forest along river



Gråselje



Heggekrott



Gråor



Svartvie



Løkurt



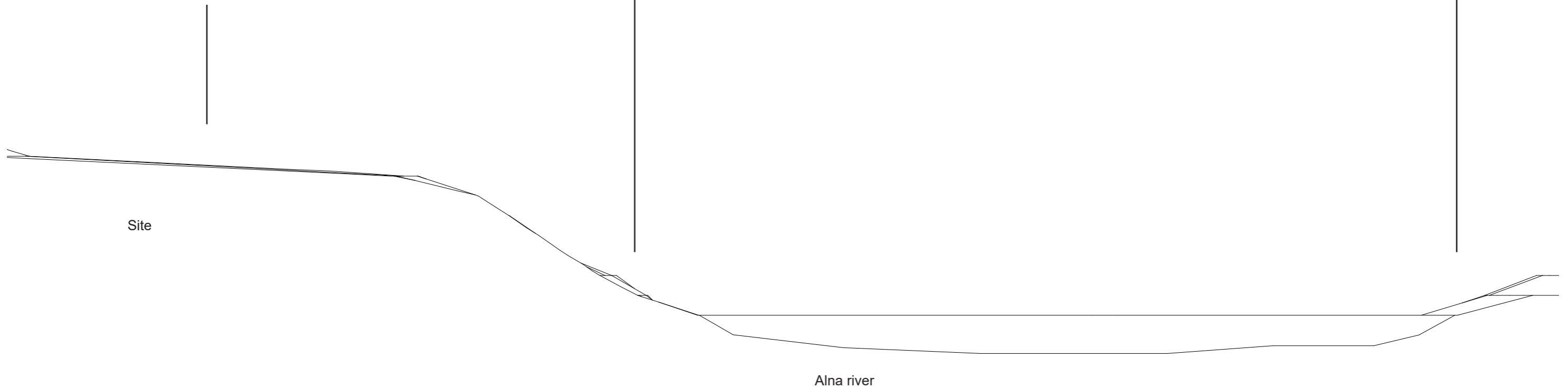
Skogstjerneblom



Vårkål



Mjødurt



Urban birds



Kjøttmeis



Tårnseiler



Pilfink



Taksvale

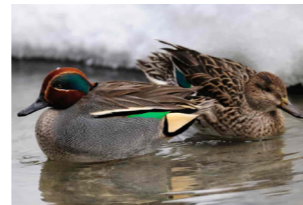


gråspurv



linerle

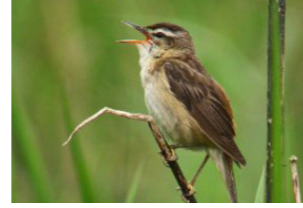
Birds along river



Strandsnipe



Vintererle



Sivsanger

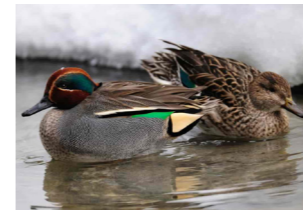


Sivhøne

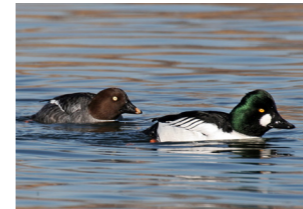


stilits

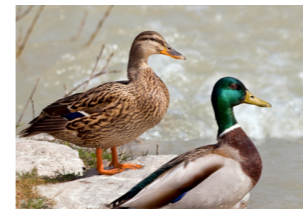
Water birds in river



Krikkand



Kvinand



Stokkand

Birds in forest



Spettmeis



Gjerdsmett



Grønnfink



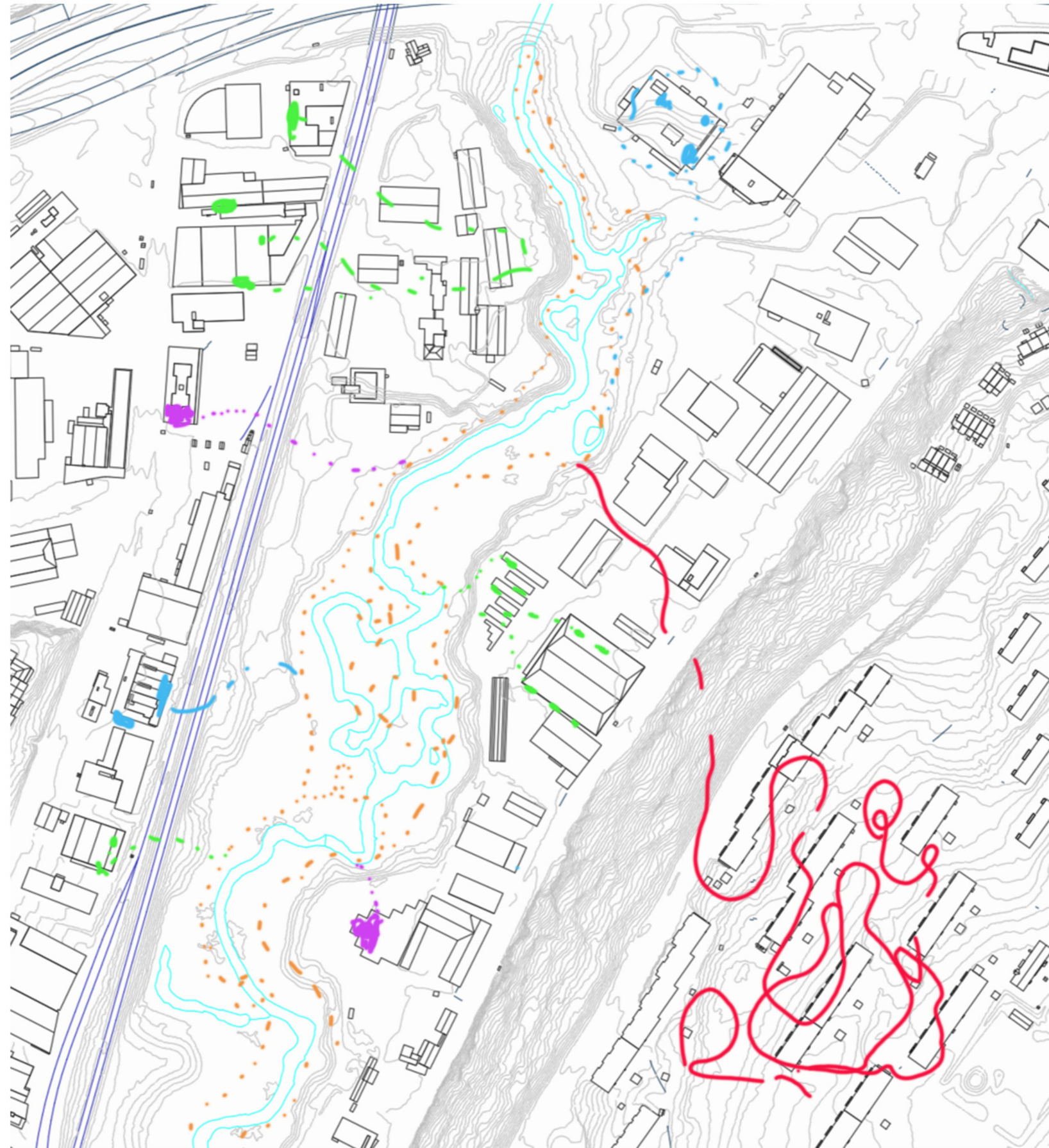
Svarttrost



Gråfluesnapper

Site

Alna river



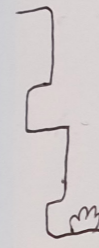
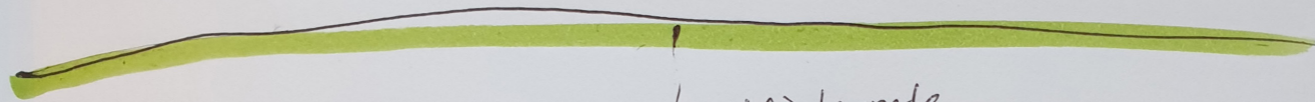
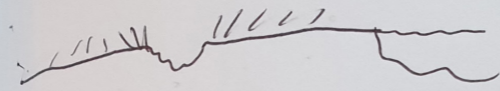
- Feeding ground
- Daily nest
- Winter hibernation
- FUN

Sketch map of bat activity around Alna river

Types of nesting

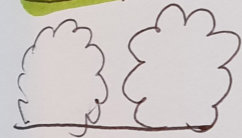
Stolliand
Strandsnipe

holes in ground close to river



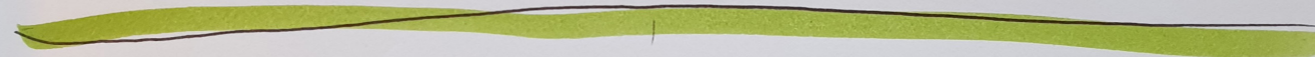
shelves
shelves w growth

Vintererle
Fossehall
Gräfluesnapper

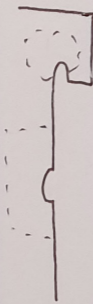


Thick hedges
or bushes

Rödshnipe
Gransanger
Hagesanger



~~holes
under ground
by trees
ground~~



Cavities

Blåmeis
Kjottmeis
Pitfink
Gråspurv
Taksvalp
Linerle
Tåruseiler

Kinand