

Final thesis in Landscape architecture
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Skagafjörður Lowland

*Landscape Character Assessment around the stable area in
Sauðárkrókur Iceland
with focus on future land use and planning*

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Forewords

This study is the result of 20 points of Final Thesis by the Department of Landscape Architecture in the Swedish University of Agricultural Sciences in Alnarp. This work is about analysis of diversity, wild life and uniqueness of landscape, in and around the stable area in Sauðákrókur Iceland. Design and planning of the site with emphasis on sustainability and land use. This is written by Guðbjörg Guðmundsdóttir a student at the Landscape Architecture program at SLU, Alnarp.

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Many have been helpful in this process and I would like to thank them all. The Planning Department of the Municipality Skagafjörður, the board of the Riding Club and the Riding Hall. The STOD engineering Ltd. for technical information and assistance. The Hólar University Collage that provided an office and necessary facilities. At last but not least my family and specially my husband that has given me the opportunity to do this and have been most helpful through this study.

Abstract

Land is limited resource and therefore land has become more valuable than ever. Land use is changing, cities are growing bigger and that demands more land for urbanisation. Increased understanding of human impact on nature and environment underlines importance of sustainable land use and planning. In that perspective the importance of landscape analysis and understanding of interaction of nature factors and human activities becomes more and more significant.

The aim of the project is to clarify the situation of the stable area and its surroundings with special focus on formation, vegetation diverse, current and past land use. This is done to strengthen judgements regarding future land use and possible sustainable development of the area. The assessed area is spectacular in many ways it's wetland and has been mostly recognised for rich bird life and is partly a nature reserve area. Stakeholders interested in future management and development of the area are the Municipality, the Riding Club and nature based activities. It is important to give all stakeholders a formal opportunity to express their opinions and they were involved in all phases of the procedure of the analysis and judgements.

Landscape Character Assessment (LCA) was based on methodology described in the Scottish LCA. The key principles of the LCA approach is that the emphasis is placed on landscape character and the division between the process of characterisation and the making of judgements to inform decisions. The roles of both objective and subjective approach is recognised in the progress and the potential for application at different scales.

Judgements are based on the results of the characterisation process. The conclusion from this character analysis was the platform for preparation of proposals about planning, land use and design of the surrounding. Notice has been taken of the ideas from stakeholders and those who has interest in the future use of the area.

Sammanfattning

Mark är en begränsad resurs och i takt med att markanvändningen ändrats har dess värde ökat. Städer växer och behovet av mark ökar i takt med urbaniseringen. Ökad förståelse för människans påverkan av naturen och miljön understryker nödvändigheten av långsiktighet i markanvändning och planering. I detta perspektiv blir betydelsen av landskapsanalys och förståelse för samspelet mellan naturen och människan mer viktig.

Syftet med projektet är att förtydliga användningen runt stallområdet och dess närmiljö med fokus på platsens utformning, vegetation samt nuvarande och tidigare användning av marken i området. Detta görs för att förtydliga beslut gällande framtida skötsel och möjlig utveckling av platsen. Det utvärderade området är speciellt på många sätt, bland annat är det väletablerade våtlandet erkänt för sitt rika fågelliv och är delvis naturreservat. Markaktörer som är intresserade av den framtida skötseln och utveckling av området är kommunen, ridklubben och naturbaserade aktiviteter.

Den utförda landskapsanalysen baseras på den metod som beskrivs av the Scottish LCA, (Landscape character assessment). Nyckelprinciperna för denna metod är att fokus läggs på landskapskaraktären samt gör en uppdelning av bedömningen i en objektiv samt en subjektiv del för att kunna ta informerade beslut.

Den uppgiften av både objektive och subjektive synsätt är känd i framsteget och resurser för framställning i olika skalor. Beslut baseras på resultatet av landskapsanalysen. Resultatet från den här landskapskaraktärsanalysen tillsammans med de framtida aktörers intressen utgör grunden för de förslag gällande planering, markanvändning och design för området som läggs fram i detta arbete.

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Purpose

The aim of the project is to make a landscape character assessment of the stable area and by that awake interest and understanding of the importance of the lowland in Skagafjörður County. The area that is the subject of this project is the northernmost part of the lowland. In continuation judgement where done for the surrounding of the stable area. The plan is supposed to embrace a Landscape analysis by characters and design of the of the stable area surroundings.

Making judgements is based on Landscape Character Assessment and they were done by a request from the Riding Club Léttfeti, and with a formal approval from the Municipality Planning Department and the Board of the Riding Hall. The Municipality delivered necessary materials like aerial photos and information about the current Detailed Land Use Plan. An Environmental Plan for the surrounding of the stable area has never been done, just Detailed Land Use Plan for houses and roads. Private stables in close connection to urban areas is probably a distinctive Icelandic arrangement. They are usually not in close connection to grazing fields and therefore not part of detailed land use plan.

The site is already defined in the Master plan and in the Land Use Plan for the municipality as stable area and grazing fields for horses. Some parts of the site are also defined as a reservation area for birds, but the area is heavily populated with birds during the summer. That makes the area interesting for bird watchers and therefore it is a challenge to try to make bird watching more accessible without conflicts between different interests. Interests of horseback riders and bird watchers.

Included in the Detailed Land Use and Environmental plan is to estimate whether current and past land use has improved or weakened the vegetation of the area. It is also a goal to find out whether current land use and traffic affect the bird live. The design of the area takes to account different interest for usage of the area.

The project starts with a landscape analysis performed as a desk study and then progresses to a field study. Proposals are made of possible solutions to what can be done to make the site serve better not only for the current land use, like horseback riding and bird watching, but also for other recreational activities and general accessibility. It is hoped that the work around the analysis and the final report will positively influence the locals and underline the importance of the area.

The method used in the analysis is a Landscape Character Assessment, Guidance for England and Scotland, from the Scottish Natural Heritage. This may be considered as an attempt to see if this method is suited for Iceland and Icelandic conditions. The site that was analysed is a flat area and may not have so clear visual characteristic boundaries. Through the Landscape analysis information will be collected to give the possibilities to evaluate the influence of current and past land use on the area.



An old map of Iceland. <http://kort.bok.hi.is/kort.php?a=gm&id=25>

Location

Skagafjörður is located in the Northern part of Iceland and it is a fjord and a wide valley reaching as far south as the glacier Hofsjökull. The valley is surrounded by high mountains in the South, West and East and the coastline of the north to the Atlantic ocean is only 50 km south from the Arctic circle. The size of Skagafjörður area is 5.357 km² and the population density 0,80 pr km². Around 2/3 of the area is uninhabited, mountainous areas and deserts (Íslands handbókin, 1989). The site Flæðar, is the main area in this analysis and it is 776 ha.

Skagafjörður has two municipalities, Skagafjörður and Akrahreppur.

The population in Skagafjörður municipality counted 4.078 people in December 2006. In Akrahreppur municipality there are 222 inhabitants. The biggest town is Sauðárkrókur Town with population of 2.610 inhabitants. (Ásgeirsson, 18.10.07.)

The economy in the rural area is mostly traditional agriculture, sheep farming and milk production but industries and services in the towns and more densely populated areas.

The Icelandic National Planning Agency is a state authority responsible for the administration, monitoring and implementation of the Planning and Building Act, the Environmental Impact Assessment Act (EIA) and the Strategic Environmental Assessment Act (SEA).

Among the main roles of the National Planning Agency is to give advice on planning and building issues, assist local authorities in preparing spatial plans and to review spatial plans produced by local authorities. The National Planning Agency also oversees the implementation of the EIA Act and provides guidelines in accordance with it. The Agency determines according to art. 6 and Annex II of the Act whether a project is to be a subject to environmental impact assessment.



(ÍSLANDSATLAS)

Regarding projects that are always subject to an EIA according to art. 5 and Annex I of the Act the Agency makes a decision on the developer's scoping document proposal and finally gives an opinion on the proposed project and resulting activities, based on the developer's environmental impact statement (EIS). In this process it is the Agency's role to make the scoping document proposal as well as the Initial Environmental Statement (IEIS) known to the public and to give the public the opportunity to comment and contribute information before the Agency issues its decision on the scoping document proposal and opinion on environmental impact assessment of a project (*The Icelandic National Planning Agency* www.skipulagsstofnun.is)

Municipal plan: A development plan for a specific municipality expressing the local authority's policy regarding land use, transportation and service systems, environmental matters and the development of settlement in the municipality during a period of not less than 12 years.

Local plan: A development plan for specific areas within a municipality, based on the municipal plan and containing further provisions on its implementation. Local planning provisions apply equally to urban areas and to rural areas.

Regional plan (optional): A development plan covering more than one municipality. The role of a regional plan is to co-ordinate policies regarding land use, transportation and service systems, environmental matters and the development of settlement in the region during a period of not less than 12 years.

Collection of information's

Main sources of information's

- # Internet – websites
- # Library
- # Articles and reports
- # Interviews
- # Aerial photos
- # Proceedings of meetings from the riding club
- # Detailed Land Use Plan of the stable area
- # Investigation trips and photos

Most important source of information's in the Landscape Character Assessment part in addition to aerial photos was information obtained by recording interviews with people that has been responsible somehow for natural aspects in the area.

Like former consultant in Agriculture and manager of Soil Conservation Service of Iceland. Also was recorded interviews with people that has grew up in Sauðárkrókur and has known the site all their lives.

The purpose by doing this was to inform if and then how the site has changed through out the years.

Further information's are found in Annex III

Why Landscape analyse

Landscape meets our eyes where ever we are. The experience of landscape is different between individual's depending of ones experience and background. Landscape is not constant trough time, both nature and humans change the landscape. The nature forces are ripping down and building up, constantly by rain, wind, sunshine and changes in temperature, and humans are causing changes in land use management, agriculture and forestation, but also by built development.

Land is becoming more valuable than ever and it will be more important in planning progress to analyse the landscape and measure the quality of the land. How do we want to use the land in the future? Are we going to need more land for agriculture, grazing areas or forestation? It is for example not wise to start foresting on the best agricultural sites. It is important to analyse what kind of land we have and what land use is suitable on each site.

Landscape change has been a scientific object of study for a long time. In Germany for instance, the concept of the landscape change analysis has been developed through different geographical research approaches. (Bender, and more. 2003)

A Guidance for Landscape Character Assessment is used in the planning system In Scotland and the main issue is to analyse landscape characters. It has also extensive use in casework and in Environmental Impact Assessment. New ways are also being developed to use this method. (Campell, 2007)

Denmark has already published guidance for the Danish landscape "Landskapskaraktermetoden". The background for that was the UK Landscape Character Assessment, with Danish adjustment built on their knowledge and experience. In the Scandinavian countries, methods of landscape analyse have been studied.

Character

A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

Characteristics

Elements, or combinations of elements, which make a particular contribution to distinctive character.

Elements

Individual components which make up the landscape, such as trees and hedges.

Features

Particularly prominent or eye-catching elements, like tree clumps, church towers, or wooded skylines.

Characterisation

The process of identifying areas of similar character, classifying and mapping them and describing their character.

(LCA)

No such guidance or approach has been worked out for Icelandic Landscape Assessments. The Icelandic landscape is in many ways spectacular but has similarities to the Northern peripheral areas of Europe. Even though the bedrock differs, the vegetation is similar.

What is landscape and what makes it special? Is the interplay of distinctive identity and potentials or the sense of place? The specific interaction between natural and cultural environment, and visual features that give an area its distinctiveness and make it different from neighbouring areas. (Nellemann, 2007).

It's important that classification and description of landscape character types is a factual process because results can be used for different purposes. When it comes to making judgements and guidelines a tailored approach to particular circumstances is needed. There are many diverse causes to change in the landscape, but the most significant causes of change are built development and changes in land management. The use of the methodology of Landscape Character Assessment can be a valuable contribution to the formulation of land use development and planning.

The key principles of the Landscape Character Assessment (LCA) approach:

- the emphasis is placed on landscape character;*
- the division between the process of characterisation and making of judgements to inform decisions;*
- the roles for both objectivity and subjectivity in the progress;*
- the potential for application at different scales;*

(Landscape Character Assessment. 2002).

The LCA is concerned primarily with landscape character, rather than with landscape quality or value. These latter factors are nevertheless still relevant when LCA is used to inform decisions, when judgements must be made about implications of assessment. An important distinction is between the two main stages:

“Landscape is about the relationship between people and place. It provides the setting for our day-to-day lives. The term does not mean just special or designated landscapes and it does not only apply to the countryside.

People’s perceptions turn land into the concept of landscape. This is not just about visual perception, or how we see the land, but also how we hear, smell and feel our surroundings, and the feelings, memories or associations that they evoke. Landscape character, which is the pattern that arises from particular combinations of the different components, can provide a sense of place to our surroundings.”
(Guidance for England and Scotland, Landscape Character Assessment page 2-3 in chapter I).

- the relatively value-free process of characterisation;*
- the subsequent making of judgement based on knowledge of landscape character.* (Landscape Character Assessment. 2002)

Therefore the judgement made can contribute to informing the decision-making processes – for example: should a particular development proposal be allowed to proceed (or with what conditions)? Or where would it be appropriate to encourage land use change such as the planting of new woodland in an area.

Judgements are based on the results of the characterisation process. The outputs may directly inform decisions about landscape through, for example the preparation of planning policies, and strategies for the conservation and enhancement of landscape character or feed into broader decision-making tools and strategies where landscape is only one of a broad range of environmental issues under consideration.

There is a role for both objective and subjective approaches in LCA. In LCA it is accepted that there is a role for subjective inputs, but these must be made in a systematic and transparent way. The process of characterisation should be an objective process in the main, while making judgements to inform decisions involves an element of subjectivity which can be clarified by using criteria agreed beforehand.

In this project the UK method was selected as an attempt to find out whether the UK method of Landscape Analyse can be used for Icelandic landscapes, as in England and Scotland in a local scale. The steps are explained in more detail in the appendix. The main reason for selecting LCA in this project is that it assumes that character assessment can be used as a tool to make judgements and proposals of management and future sustainable development.

The main steps in Landscape Character Assessments are as follows:

Stage I. Characterisation

- Step 1. *Defining the scope*
- Step 2. *Desk study*
- Step 3. *Field survey*
- Step 4. *Classification and description*

Stage II. Making judgements

- Step 5. *Deciding the approach to judgements*
 - Step 6. *Making judgements*
- (Landscape Character Assessment. 2002)

Further information's in Annex I .

Analysis - Desk study

Landscape Character Assessment spatial hierarchy

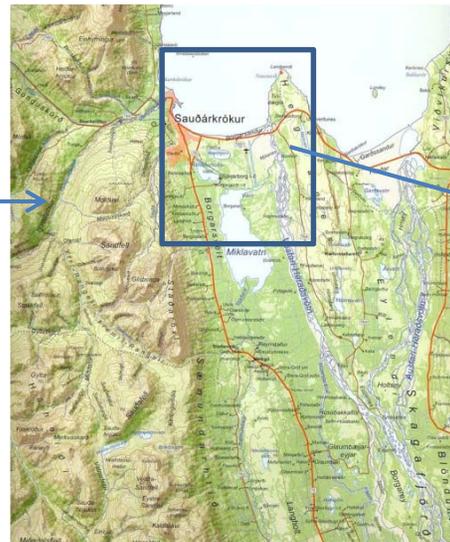
Relationship between the different levels



Character Area
Skagafjörður county North Iceland



Character type
Skagafjörður
Broad river valley
Basalt mountains
Lowland



Character Area
Skagafjörður Eylendi
Plateau



Character Type
Skagafjörður Eylendi Flæðar,
grassy moor land

Overview map

Landscape character areas

Skagafjörður - broad river valley

Basalt mountains

Lowland plateau

Settlement

Hills/rocks

Landscape character types

Basalt mountains – Staðarfjöll / Tindastóll

Lowland plateau - Eylendi with sandy soil and moor land.

Hills – Hegranes – Nafir – Sjárvarborg

Settlement – Sauðárkrókur – Stables – Airport



History

Settlement in Sauðárkrókur started in the year 1871 when a Blacksmith name Árni Árnason rented a land to settle. The farmers had their fisherman's huts in the area and when they went fishing they used the opportunity to trade what they needed from the blacksmith at the same time (Króksbók 1993).

Soon Sauðárkrókur started to develop as a place serving the mercantile fleet and the traders started to build up stores and warehouses for trading. The importance of the place as mercantile centre for Skagafjörður increased, resulting in more frequent arrival of ships and it was often “crowded” during the summer when the ships arrived. Then more people settled in Sauðárkrókur and it started to become more densely populated. Along with increased settlement in the area there was also an increase in livestock and grazing. The immigrants needed to guarantee access to fresh meat and milk for their families. Most people had at least one cow, few sheep and maybe a horse. This required assess to grazing fields for the livestock (Pálsson, 1999).

The main grazing fields for the livestock were to be found in an area that is called Flæðar. The cows where collected on one spot in the village and then rounded up to the fields during the day for grazing. But even though cow and sheep farming is no longer a traditional part of people’s lives in Sauðárkrókur, popularity of the horse and horsemanship increased and has never been as popular as it is today. (Guðmundsson, 2007). Skagafjörður is now often named as the Mecca of horsemanship and breeding of the Icelandic horse in Iceland.

The Riding Club, Léttfeti was established in 1933. In 1954 the chair wrote to the municipality and asked for potential land for grazing fields for horses.



People in Saudárkrókur going for riding trip. Picture taken late in the 18.th century (District Archive of Skagafjordur)

A year later, or in 1955, they received reply from the municipality stating that they could have access to a part of Flæðar for the horses. It was in 1975 that the municipality first did a Detailed Land Use Plan for the stable area. The year 1980 the municipality and Riding Club Léttfeti signed agreement about the use of the whole area for grazing (Fundargerðarbækur Léttfeta. 1954, 1955, 1980).

Since then many stables have been build in the planned area and all stables are private owned. The Land Use Plan has been updated several times.

A new airport was built in the area in the years 1973 – 1976, close to the glacial river Héraðsvötn. The new location was more spacious and not as close to the town as the older airport (Pálsson, 1999).

The wetland around Miklavatn became a nature reserve area in the year 1977, as a bird reserve (Stjórnartíðindi nr. 29, 1977). The birdlife in the area is spectacular and has been analyzed irregularly since year 1987.

A club house for the Riding Club was inducted 1992 and was named Tjarnarbær, but the name is taken from an old peasant named, Tjörn that stood by the lake Tjarnartjörn. A Riding Hall 2.600 m² was opened in August 2001 and is used for training horses, competitions, teaching, festivals and sports.

In the past the beach was more even than it is to day, the sand was flat up from the shore, and it had much less vegetation in the strand area. The sea could easily flow up towards the land on flood tides, but now sand hills at the shore protect the land side. The glacial river Héraðsvötn is unrestrained and floods are common in the area especially in ablations in the springtime (Pálsson, 1999).

The costal vegetation has increased a lot in the last decades or since the Landgræðslan (Soil Conservation Service of Iceland) started a special project for re-vegetation in the northern highlands in 1980 in connection to hydropower construction. It was done by sowing and fertilising the eroded land area, by aeroplanes that were based at the new Sauðárkrókur airport. Weather changes rapidly in the mountain areas and few times the plane was forced to return to the airport without reaching the eroded land area. Thanks to the fog and bad weather conditions they were forced to release their fertilisers supplies before landing the plane and often the choice was to spread it over the sandy coastline close to the airport. The fertilizers' effect was high, the vegetation started to retard the sand from blowing around, and the plant that was the most important one in that progress was Lime grass, *Leymus arenarius*. Long time effects of the fertilisation back in 1980 is clear, vegetation has been in progress ever since then. (oral reference 2007. SG, HL, SR, EB.)

The Riding Club has manured the grazing fields for fertilising and improving the soil structure by organic matter in order to strengthen the vegetation and the sandy soil structure. The club manages and organizes the grazing to control the strain on the land.



The sand hills (gg)



The shore on a windy day (gg)

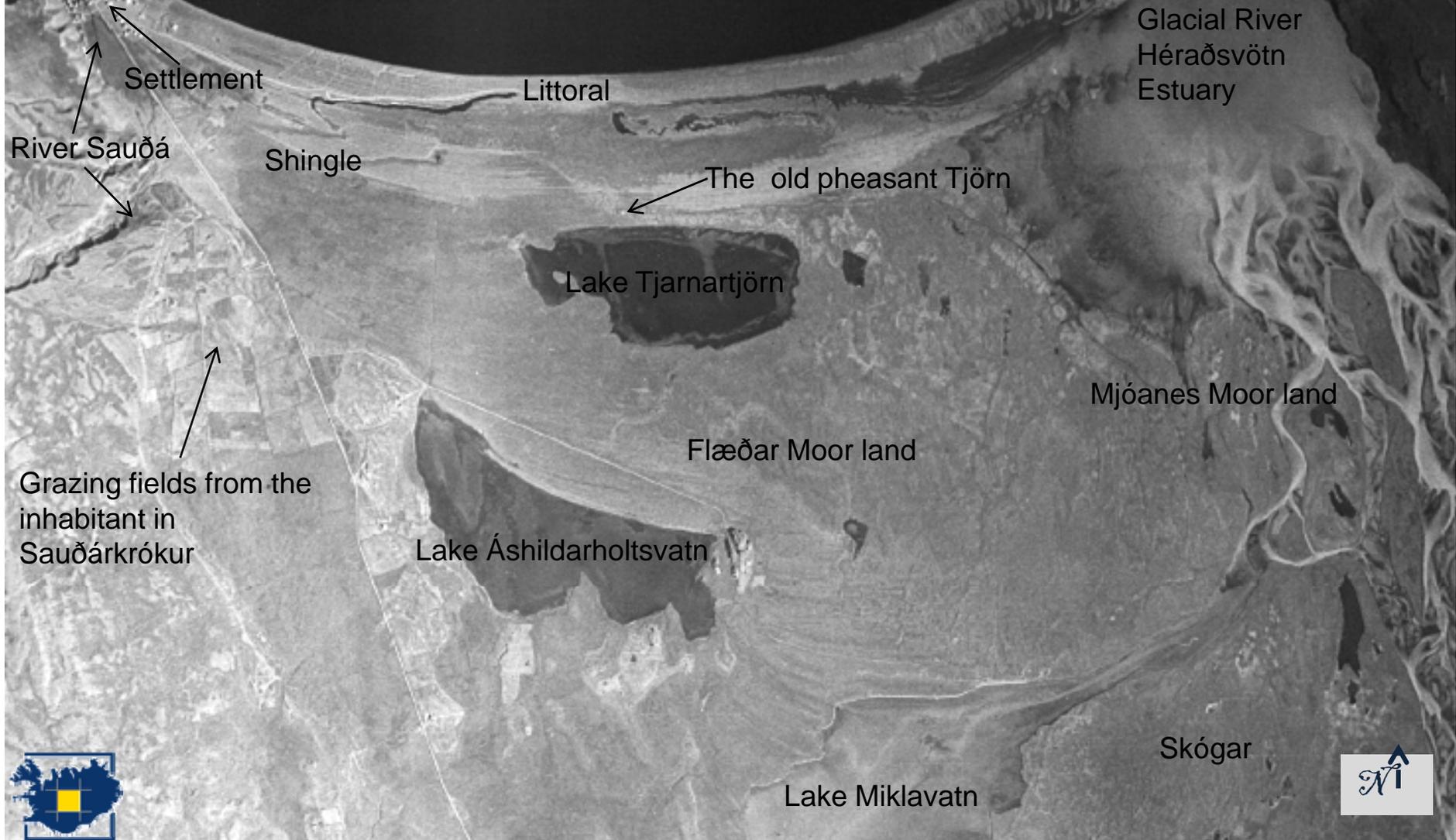


The Club house Tjarnarbær (gg)

This Aerial photo is taken 11.09.1946

The town is much smaller than to day and hardly more than a Village. The river Sauðá is running throughout the Village as it did in the beginning when the settlement started. Here is no Airport not even the old one. The coast is notably flatter than to day.

Bridge over the river mouth →



Settlement

Littoral

Glacial River
Héraðsvötn
Estuary

River Sauðá

Shingle

The old pheasant Tjörn

Lake Tjarnartjörn

Mjóanes Moor land

Grazing fields from the
inhabitant in
Sauðárkrókur

Flæðar Moor land

Lake Áshildarholtsvatn

Skógar

Lake Miklavatn



(National Land Survey of Iceland)



Arial Photo

Arial photo from around year 1973-75. The construction of the new airport has started. The river Sauðá is now running in a canal in to the lake Tjarnartjörn but not on same place as it runs to day.

It is not longer easy to see the location of the old pheasant Tjörn by the lake. The coastal area is starting to change it does not seem so flat as on the older picture. It is quite difficult to analyse vegetation from a black and white picture, but the darker grey colour seems to show more vegetation than the light gray. Also to day those areas that have light gray colour are sandy soil areas, and dryer than those that is dark grey in colour.



(National Land Survey of Iceland)

Arial photo taken in August 2007

The town has grown considerably, a new bridge has been built over the river Héraðsvötn. It is still possible to see where the old Airport was located. And the river Sauðá runs in a new place. There is visibly more vegetation and sand hills on the coast.



Landform

The main topography character of Skagafjörður is Broad River Valley, formed during the last Ice Age that ended for about ten thousand years ago. On the fjord are two main islands, Drangey and Málmeý.

In the middle of the valley is a floodplain where a big glacial river, Hérðasvötn flows. The river comes from a glacier Hofsjökull in the highlands. The way from origin to the sea is 130 km and drainage basin is 3.650 km² (Íslands handbókin, 1989).

The mountain circle reaches up to more than 900 meters above sea level. In the east is a tremendous mountain range that is named Tröllaskagi, that means Troll peninsula, but in the West are slightly lower mountains Staðarfjöll, in the South the mountain Mælifellshnjúkur rises up 1.138 meters above sea level.

Many small rivers flow from the mountains around and combines the big one. The lowland is relatively flat and there are several lakes and ponds to be found.



The river Sauðá (gg)



Whooper Swan family on a small pond (gg)



To North (gg)

Geology

Skagafjörður is in the West part of the basalt bedrock that is dominating in the middle part of northern Iceland. The bedrock is 8-12 million years old. The sedimentary strata slants a bit to the west on the northern part but when coming in over the land the strata slants more towards to the south.

The area is outside the main active volcanic belt in Iceland although few extinct central volcanoes from prehistoric time are found in the area.

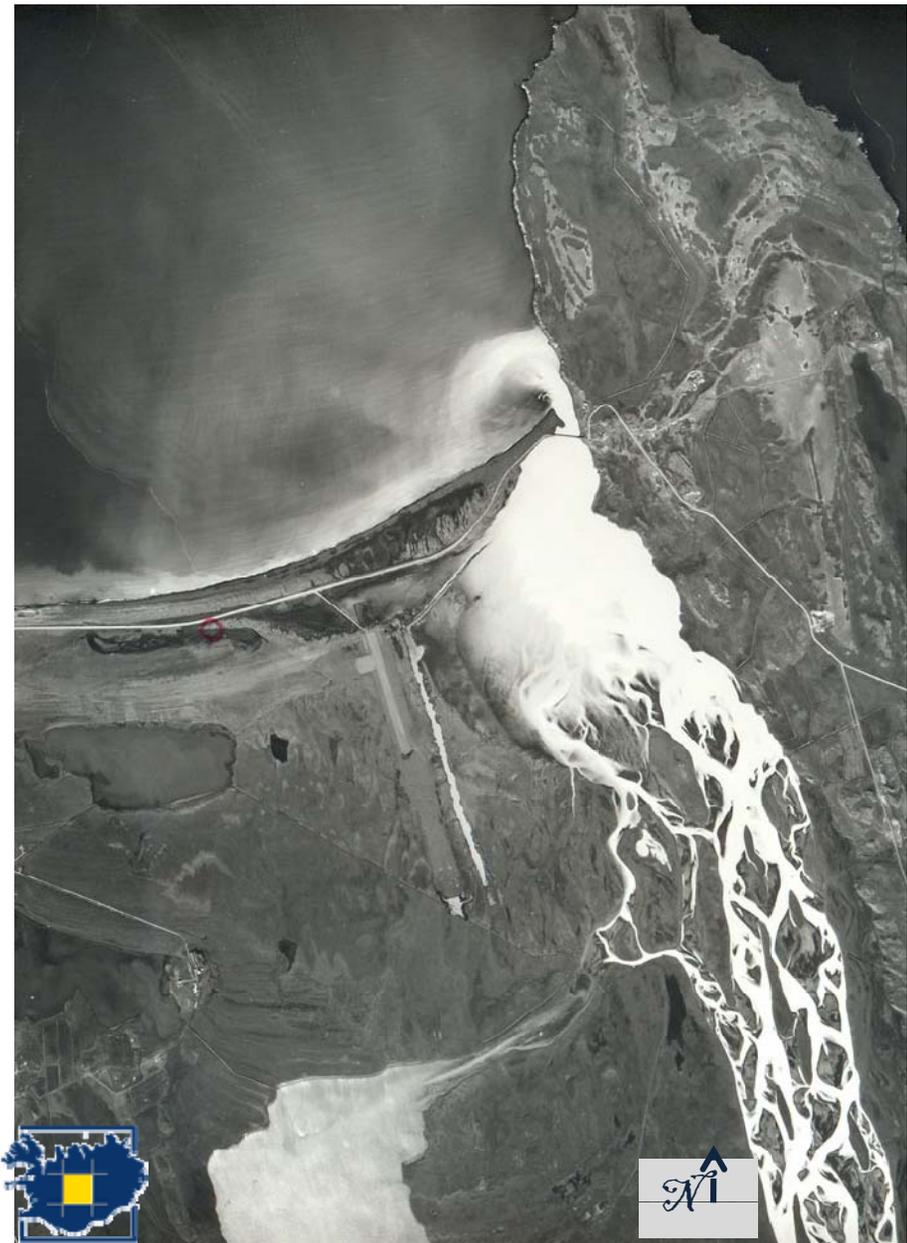
The flat part of the area has been built up through out the centuries, by the placer from the glacial river coming from the glacier Hofsjökull and the highland. When it reaches the sea the clay and sand sink to the bottom and then the waves shovel the sand up to the shore. (Landið þitt Ísland, 1981).

The picture to the right shows notably how the placer is carried by the river Héraðsvötn to the sea and how it colours the sea water to a considerable distance out from the coast.

The soil

It is difficult in many ways to compare Icelandic soil to the soil in some other countries. The soil is called *Andosol*, which is a volcanic soil that contains much ash. This is the main reason for how evaporable it is. And erosion has been a problem in Iceland almost since the times of settlement, caused by eruptions, cold weather and over-grazing (<http://www.rala.is/andosol/andosol/>).

The flood plain in Skagafjörður is constantly extending because of the placer from the glacial river.



(National Land Survey of Iceland)

Aerial photo (Landmælingar ríkisins).

Land cover

Most of the area is covered with wetland plants. Diversity in plant species is not so high in its entirety. But the wetland plants are quite miscellaneous, because there are several kinds of swamps that have dominating plants as, *Carex lyngbyei*, *Carex chordorrhiza*, *Carex rostrata* Stokes and *Eriophorum angustifolium* (Jónsdóttir, and Ágústsdóttir, 2004).

The vegetation is natural and the diversity is not so high. About 100 species were registered in field survey carried out in the nature reserve during the summer of 2003. Neither rare plants were found nor any plants from watch list. (Jónsdóttir, Guðrún Á and Ágústsdóttir, Kristín 2004).

The water level in the flow mires varies between years. It depends on the rainfall each year (Jónsdóttir, and Ágústsdóttir, 2004).

The farmers have been using the flood plane for grazing for a long time and in the past also for meadow hay making (Jónsdóttir, and Ágústsdóttir, 2004).

In the past the vegetation was not as close to the sea as it is today, it was only sand constantly moving around (Guðmundsson, 2007). In the damper parts the vegetation is a mix of grasses and flowers. *Carex* species grow in the wet parts and some *Salix* species and *Betula nana* species have become more characteristic (Jónsdóttir, and Ágústsdóttir, 2004).



Leymus Arenarius, Lime grass (gg)



Flowering meadow (gg)



Salix species (gg)

Landscape

The landscape is analysed from the coast to the landmark of Sjárborg, which is a farm south of Sauðárkrókur.

The coastal line affects the landscape from the coast. The landscape is open and flat except at the beach where the Lime grass restrains the sand and builds up some hills. Actually it is a bit higher than the land behind the lime grass hills. The sand is though dominating the soil further in to the land. This is because the Lime grass retards the sand so it piles up. The flood plain reaches 25-30 km to the south.

A main road goes athwart through the area from west to east. The planning site lies south of the main road and along the road lies some grazing fields. Further south the stable area is located with stable houses of different types, sizes and age. Each house has an enclosure in front of it. There is also a huge parking lot with gravel on the surface in front of the Riding Hall. In proximity to the Riding Hall there are the club house and competition fields.

South of the competition field are big grazing fields around the lake Tjarnartjörn. Those grazing fields are not cultivated, only natural vegetation but some of it has been fertilized with horse manure.

The site is an floodplain and moor land that has low elevation and is therefore wet especially in the spring time. The land rises then up from the lowland to the hills of the mountain circle around.

The character area is Skagafjörður in north Iceland.
The character type is Eylendi Skagafjarðar lowland / plateau.



Pond (gg)



Sand waves at the coast (gg)



The river Sauðá (gg)



Ducks on a little pond (gg)



Competition area (gg)



Main road and stable area (gg)

Nature reserve

A part of the area is named Skógar. It is a part of the reservation area and is well known for its rich birdlife. It was affirmed as a nature reserve for birds in 1977. Traffic is limited in the period June to July because of nesting season. The smaller areas marked as protected areas are wet land with small ponds that have a special agreement for protection, between the Riding Club and the municipality.

Extensive analysis has been done several times and the Ornithologist, Pedersen, Ævar visited every year between 1964 – 1970. A special survey of the site was done in the summer 1987 because of upcoming ideas on enlarging the airport (Guðmundsson, 2006).

The nature reservation area has been used for grazing live stock since the settlement, but now only for horses. The area is densely populated with birds during the summer and is therefore of interest for bird watchers. The Icelandic Institute of Natural History, monitors the site regularly and counts birds each year. The emphasis is mostly on counting birds on and near lakes, ponds and canals, because most of the bird species are waterfowl or ducks. The number of birds is clearly fluctuating between years but it is not easy to say why. It is not likely that the grazing has this effect because the area has been used for grazing for a long period of time and is less than it was in the past when there were 130 cows and more than 1000 sheep in the area. (Guðmundsson, 2007).

Three reports of bird counting are available, the oldest one is from 1987 and then from the years 2006 and 2007. The bird counting reports are not quite comparable because the counting methodology is not configured in the same way. Because of that no attempt is done to put measurements on the population and stock changes.



Birds that are seen regularly on or around the lake Tjarnatjörn

Ducks	Goose	Wading birds	Sea gull	Birds that has been seen but are not in the counting's
anas penelope	cygnus cygnus	sterna paradisaea	larus ridibundus	gallinago gallinago
anas strepera	branta leucopsis	charadius hiaticula	larus canus	ardea cinerea
anas crecca	anser anser	pluvialis apricaria	larus argentatus	stercoraius parasiticus
anas platyrhynchos		calidris alpina	larus fuscus	podiceps auritus
aythya fuligula		tringa totanus	larus marinus	falco columbarius
mergus serrator		limosa limosa		asio flammeus
somateria mollissima		numenius phaeopus		lagopus mutus
aythia marila		phalaropus lobatus		motacilla alba
anas clypeata				turdus iliacus
anas acuta				corvus corax
				sturnus vulgaris
				plectrophenax nivalis

(The Icelandic Institute of Natural History, 1987,2006, 2007,).



Analysis – field survey

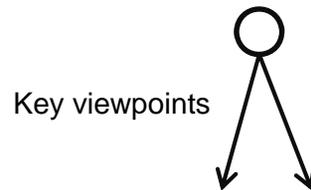
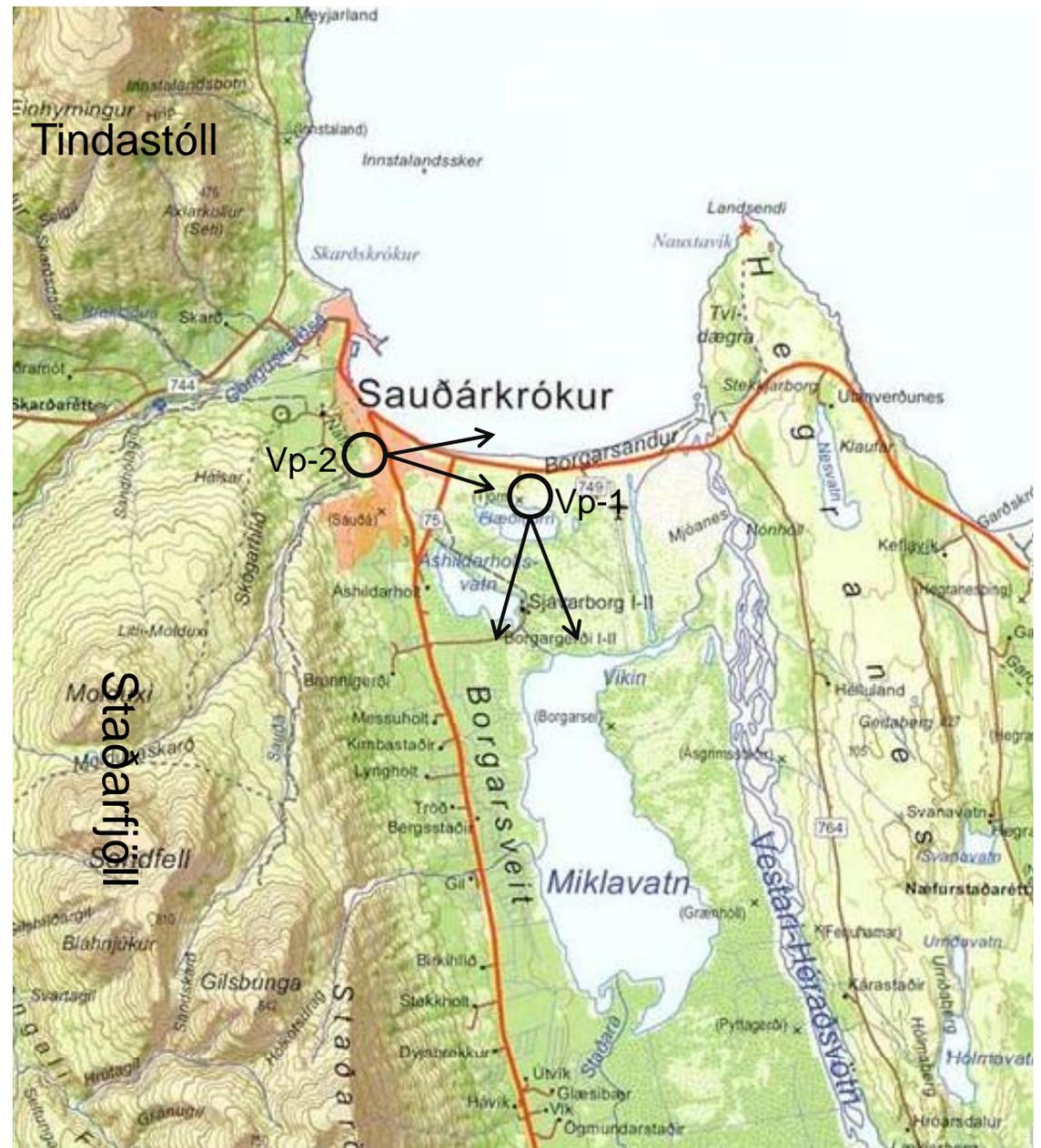
Annotated field survey map

To analyse the site two view points were selected, both of them give a good and different overview of the site.

Viewpoint 1 is showing the view to the south from the shore. The view point is on earth mane that the riding club made to make a perspective over the competition area.

Viewpoint 2 is from above the town to east over the coast, to the glacial river and Hegrans.

In the field survey sheet on next page selected characters of the area are underlined.



Field survey sheet

Flæðar on the plain by Sauðárkrókur town

Viewpoint 1 Location: competition field

Date: 10.08.07.

Picture: view to south

Panorama photo 1.

Landscape Character Type: Flood plain / marsh land

Landscape Character Area: Flæðar – lowland

Geology: Sandy floodplain

Topography:

Flat	plain	dry valley
Undulating	rolling lowland	deep gorge
Rolling	<u>plateau</u>	<u>broad valley</u>
Steep	<u>scarp/cliffs</u>	narrow valley
Vertical	hills	<u>mountains</u>



Dominant land cover and landscape elements:

Buildings: <u>farm buildings</u> masts <u>pylons</u> industry settlement	Heritage: summerhouses field systems prehistoric ritual hills <u>old relics</u>	Farming: <u>fences</u> <u>fields</u> arable improved pasture rough grazing	Land cover: <u>scrub</u> hedges fields <u>semi cultivated</u> <u>improved pasture</u>	Land use: cultivated <u>marsh</u> peat bog <u>moor / heath</u> species rich	Hydrology: river stream dry valley <u>pond</u> <u>lake</u>	Communications: road <u>track</u> footpath lane communication masts
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Brief description: the land is totally flat with some ponds and lakes between the mountains on both sides. Behind the pond, in the middle rises a rock above the surface. On the rock is a farm and an old church that is under the protection of the National Museum of Iceland.

Key Characteristics: flood plain Flæðar, flat landform with ponds and lakes and marsh land, totally open landscape, rich birdlife gives an specific experience of wildness.

Rarity: the wetland is protected as a bird reserve area,

Condition: good, the vegetation cover is rich of species.

Visual Assessment Criteria:

Pattern	<u>dominant</u>	strong	broken	weak
Scale:	intimate	small	medium	<u>large</u>
Texture:	smooth	<u>textured</u>	rough	very rough
Colour:	monochrome	muted	<u>colourful</u>	garish
Complexity:	<u>uniform</u>	simple	diverse	complex
Remoteness:	wild	<u>remote</u>	vacant	active
Unity:	<u>unified</u>	interrupted	fragmented	chaotic
Form:	<u>straight</u>	angular	curved	sinuous
Enclosure:	<u>expansive</u>	open	enclosed	constrained
Visual dynamic:	<u>sweeping</u>	spreading	dispersed	channelled

Perception:

Security	intimate	comfortable	<u>safe</u>	unsettling	threatening
Stimulus:	monotonous	bland	interesting	challenging	<u>inspiring</u>
Tranquillity:	inaccessible	remote	vacant	<u>peaceful</u>	busy
Pleasure:	unpleasant	pleasant	attractive	<u>beautiful</u>	

Architecture:

Local material: basalt black sand

Settlement form: farmland

Additional comments: a little erosion is visible by the lake,

Field survey sheet

Flæðar on the plain by Sauðárkrókur

Viewpoint 2 Location: the hills above the town

Date: 11.08.07.

picture: view to east

Panorama photo 2.

Landscape Character Type: Settlement, Flood plain / marsh land

Landscape Character Area: Flæðar – lowland

Geology: Basalt Sandy floodplain

Topography:

<u>Flat</u>	<u>plain</u>	dry valley
<u>Undulating</u>	rolling lowland	deep gorge
Rolling	<u>plateau</u>	<u>broad valley</u>
<u>Steep</u>	<u>scarp/cliffs</u>	narrow valley
Vertical	<u>hills</u>	



Dominant land cover and landscape elements:

Buildings:

farm buildings
masts
pylons
industry
settlement

Heritage:

summerhouses
field systems
prehistoric ritual
hills
old relics

Farming:

fences
fields
arable
improved pasture
rough grazing

Land cover:

scrub
marsh
fields
semi cultivated
improved pasture

Hydrology:

river
stream
dry valley
pond
Lake

Communications:

road
track
footpath
lane
communication masts

Brief description: view from above the town to the east over the plateau to Hegrans, the plateau is flat with some ponds and lakes. The stable area is seen to the right and the coast line by the see.

Key Characteristics: flood plain Flæðar, flat landform with ponds and lakes and marsh land, totally open landscape to the Hegrans that is seen as a low hill east of the area. Many small ponds and peat bogs, and the river Sauðá and the glacial river Héraðsvötn runs between Flæðar and Hegrans which is hilly and rocky area.

Rarity:

Condition: the vegetation cover is strengthening by the shore.

Visual Assessment Criteria:

Pattern	dominant	<u>strong</u>	broken	weak
Scale:	intimate	small	medium	<u>large</u>
Texture:	smooth	<u>textured</u>	rough	very rough
Colour:	monochrome	muted	<u>colourful</u>	garish
Complexity:	uniform	simple	<u>diverse</u>	complex
Remoteness:	wild	remote	vacant	<u>active</u>
Unity:	<u>unified</u>	interrupted	fragmented	chaotic
Form:	straight	angular	<u>curved</u>	sinuous
Enclosure:	expansive	<u>open</u>	enclosed	constrained
Visual dynamic:	<u>sweeping</u>	spreading	dispersed	channelled

Perception:

Security	intimate	<u>comfortable</u>	safe	unsettling	threatening
Stimulus:	monotonous	bland	<u>interesting</u>	challenging	inspiring
Tranquillity:	inaccessible	remote	vacant	<u>peaceful</u>	busy
Pleasure:	unpleasant	pleasant	<u>attractive</u>	beautiful	

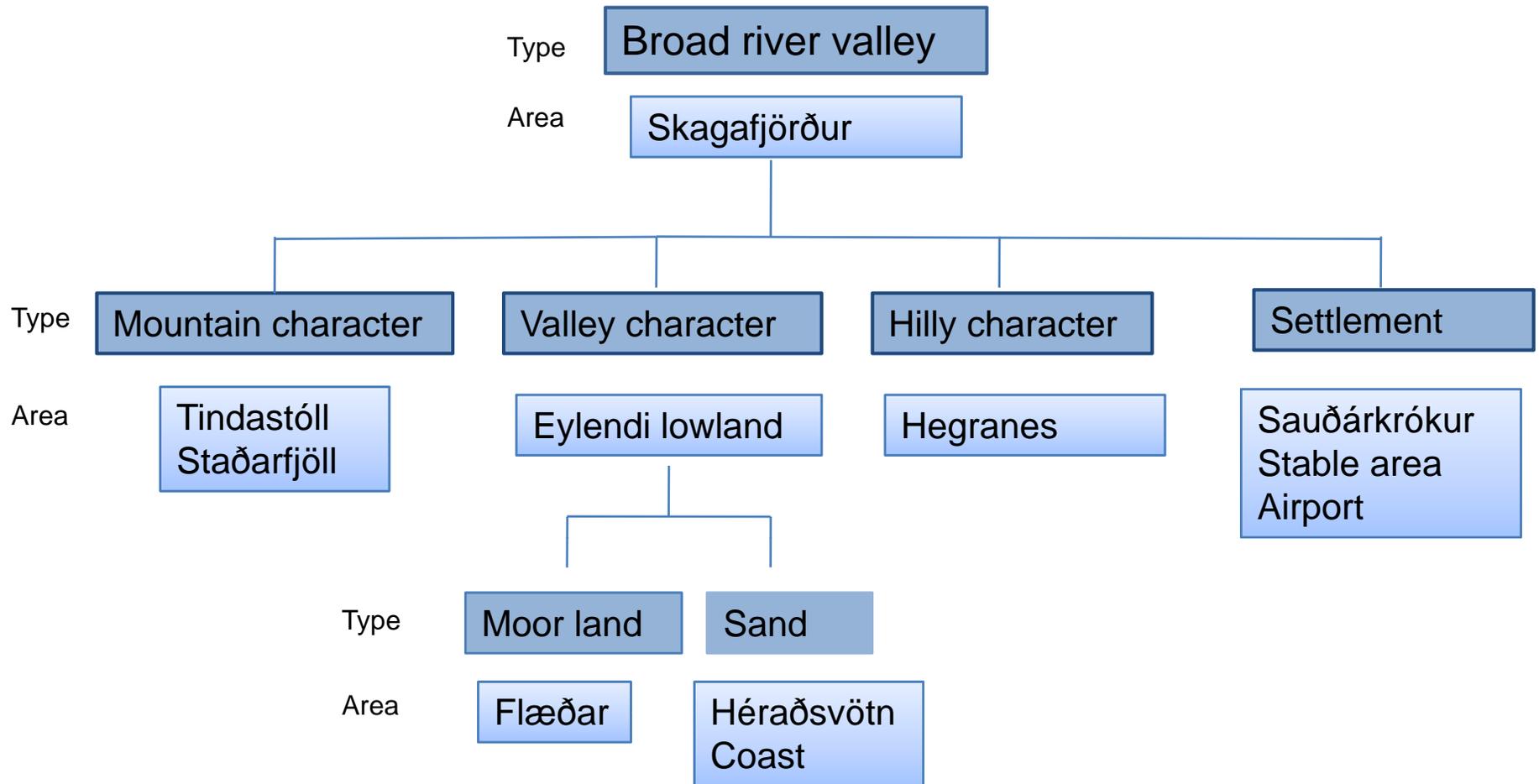
Architecture: urban to unsettled

Local materials: basalt - sandy

Settlement form: modern grid pattern

Additional comments: the coast affects the landform from the shore to the inland, the sand retards near the shore because of the Lime grass.

Character types and character areas



Character areas map

This map shows the character areas on the lowland.

The settlement

- Town
- stables
- competition field
- airport

The sandy coastline

The Flæðar

- semi cultivated
- moor land
- marsh land

Farmland

Hills / rock

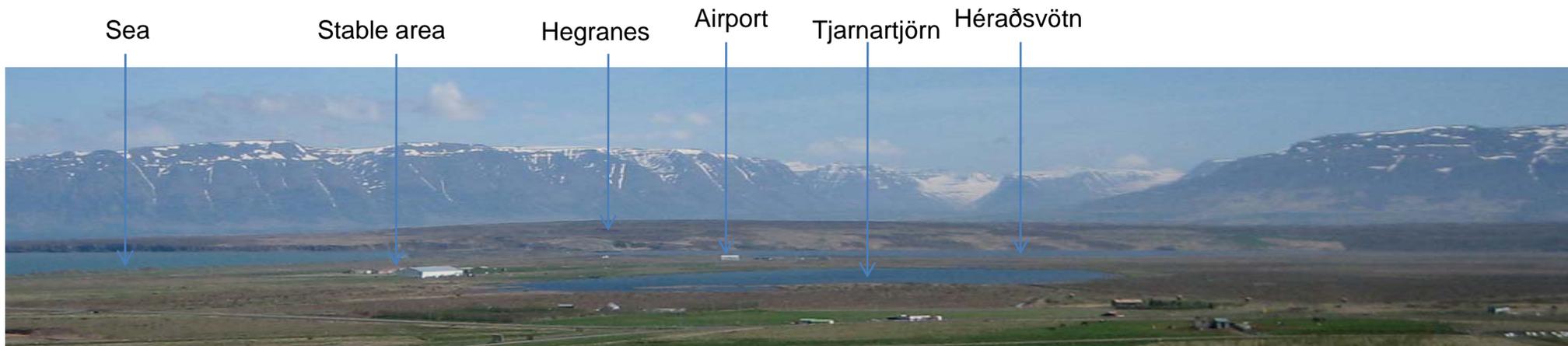
In this project the main issue is to address the Flæðar and the stables areas.



Landform, panorama view



To South panorama picture 1. competition field in the foreground (gg)



To East panorama picture 2. overview to Hegranes (gg)

Description of key characters

A subjective description – distinct sense of place

Sand

- the coast line and semi cultivated area

It is peaceful and relaxing to walk on the beach specially in low tides when the sand is wet so you don't sink in to it, like when it is dry and heavy to walk in. The scale is relatively long but not so wide, you get the feeling that you could walk until the next day without seeing nothing but black sand. In windy days especially when the north wind blows it is not so peaceful. When coming up on the sand hills the lime grass reach you up to knee and on the inside of the hills the vegetation changes to grasses and the land is dry and open.



Flæðar

- the moor and marsh land

When walking in to the Flæðar in the summer the birds are all around you and some of them try to attack because they are protecting their nests or their young ones. It is necessary to be careful where to walk, not only because of the birds, but because of the wet soil, the soil will probably move under your feet and you could get wet if you are not careful. The rock Sjárvarborg that rises up from the moor land and looks like an island in this flatness, so it is no wonder that people build a house on it to have the overview. When looking up to the mountains around the flood plain you feel how small you are in this scale and it is magnificent to feel that you are part of this world.



Floodplain

Land use

The site Flæðar is used as grazing fields for horses and have been used as that for about fifty years. The reason for that the land use has not changed during the time is probably that, it is not acceptable for buildings because it is flat and wet. The level is not more than 2 meters above sea level what cause bad drainage and high groundwater, and occasionally the water level is above the surface of the ground. Therefore the site is not so highly evaluated in the community and have been in the care of the riding club as a grazing field since the inhabitants left off holding cows for milking.

The riding club organises the grazing, each grazing field is closed by fence and they varie in size. The smaller ones are used for short time grazing and the big ones are used for horses that are not in riding programs or for longer periods and each field is grazed for about two months period. (stakeholders, 2007).



Land form

The coast affects the landform from the shore to the inland. The stables are about 280 meters away from the coast. The land is quite flat and is not more than 1,5 - 2 meters above sea level. That affects the groundwater level, making it quite high, especially in high tides. Sometimes especially in the spring, the water level can rise above the surface. When the snow melts in the spring, and it is raining, the groundwater rises and finds no clear runway. That causes poor drainage. The water covers 80 hectare of the site with ponds and lakes, but the totally size of the area that is analysed is 776 hectares.

Two rivers runs through the area, the Héraðsvötn a glacial river coming from the glacier Hofsjökull, and the river Sauðá, which is a spring river that comes from the mountains west of the area. The Sauðá River runs in a man- made canal and through the pond Tjarnartjörn and again through a canal to the glacial river Héraðsvötn.

Soil

The soil in Iceland is mostly Andosol and it is evaporable. But the flood plain in Skagafjörður is a bit different because the low land is mostly made of the placer from the glacial river. The soil on the coast is sand and is rather week in construction and constantly moving and stacking. The sandy soil up from the coast line, gets dry in the summer. In the past the sand was flat up in to the land but now there are some sand waves that defend the sea from flowing up on the land and retards the sand from blowing much further. (oral reference 2007, SG, HL, RÖ, EB, BM,)

Because of the low elevation there are some wet areas that can be classified as mire or even as a swamp. Around the ponds and lakes the soil is relatively damp to wet all year around (<http://www.nnv.is/index.php?pid=18>).



View to South (gg)



View to North (gg)

Land cover

The vegetation cover, starting from the shore, is weak and filmy. The sand is dominating and plants are rugged. Most of them short except the Lime grass, *Leymus arenarius* that is tall and coarse. Lime grass grows in the sand and it thrives quite well in sandy areas and is known as a salt tolerating coast plant. The plant has also notable ability to restrain the sand. (Runólfsson, 1988) The Lime grass has prevented the sand from blowing constantly from the coast inwards over the land. Instead the sand accumulates in sandy hills right up from the coast. There is also smaller plants for example Sea Sandwort, *Honckenya peploides* and some grasses come in a little bit further in land, and then starts to come in some flower plants. The *Salix callicarpaea* is starting to grow in the sand.

When coming into the grazing area there is more density in the vegetation. There are more grasses on the sandy and dry areas than in the damp to wet areas. Where it is more like floral meadow and in the wet areas is more sedge, such as *Carex serotina*, *Carex nigra*. Then there are some heath plants and some shrubs like *Salix phylicifolia*, *Salix lanata* and *Betula nana*.

In the spring time the flower of *Cardamine nymanii* Gand. and *Chalta palustris* L. gives the impression of floral meadow and in the summer the Cottongrass, *Eriophorum*, *Myostis arvensis* Hill and *Ranunculus acris* L., *Trifolium repens* are more visible than all the other smaller flowers like *Calium verum*, *Platanthera hyperborean* L. and *Rhinanthus minor* L. In the damp area the *Salix* and *Betula nana* become more visible and more dominating each year.



Sea Sandwort(gg)



By the Tjarnartjörn (gg)



A small lime grass (gg)

The field survey

The field survey was done by walking from the shore to the lake Tjarnartjörn and around it, to see if there were changes in the character and to experience the site. The field survey was performed in August and the birds were exercising their flight abilities. The field survey showed that using aerial photos in the desk study was really helpful.

A broad river valley the area is in deed and the mountains forms a half circle around the plateau. The coast affects the landscape in to the land. The area is open and windy, where the north and south wind are the strongest wind directions. The coast is very sandy and the north wind blows it to the south and the Lime grass retards the sand and builds up hills above the shore. At the same time the hills protect the land inside.

When coming in to the grazing fields the soil is still sandy and gets rather dry in the summer. When coming near the Tjarnartjörn the land gets more wet and the vegetation changes. The birds fly around you all the time in the summer. The vegetation is in good condition and more of heath plants and scrubs are coming in.

The fields are not easily accessible for walkers and birdwatchers because of fences and some parts of the area is too wet for walking. Better access to the area is preferable.

The project has been formally introduced to stakeholders, the Municipality, the Riding Club and the board of the Riding Hall. Followed by a general public introduction meeting. The experience gained at these two meetings was that the project was a good input into the discussion of future management, land use and planning of the area but also in increased the awareness of the area as such and its sensitiveness. The locals have clearly underestimated the area and its future importance.

At these meetings a clear intention of increased cooperation between stakeholders was confirmed.



The coast on windy day(gg)



Sand hills with Lime grass (gg)



By the competition field(gg)



By a small pond (gg)



By the lake Tjarnartjörn (gg)



Horses grazing(gg)

Both regarding current land use and with regards to other interested such as recreational people and other that loves unspoiled nature.

It is a privilege to have an area like this in the backyard of a settlement which calls upon public responsibility towards the area, reasonable use and preserve.

Conclusion

In general the lowland in Skagafjordur is grassy and the vegetation cover is strong. The land use those last decades has almost totally been agricultural related, mostly as grazing fields for horses and hay making. Access of humans around the area last 30 – 40 years has been limited but in the old days the lowland was important as a communication route around Skagafjörður. Both at summertime but not least during winter when sledges were used. The importance of the lowland has therefore decreased since earlier times in agricultural and communicational aspects.

But at the same time interest of the area as a special wetland almost without interference of humans has increased. The diversity of the vegetations is relatively high and bird life is unique. The main purpose of this project was to awake interest and understanding of the importance of the part of the lowland that was selected and is the northernmost part of the area close to the see and the biggest settlement.

The use of LCA methodology which originates from Scotland / England has approved to be useful in relation to the project main goals. Nevertheless adaptation of guidance needed to be adjusted to Icelandic environment and nature. Especially when comes to descriptions of character areas and types. The methodology proofed to be useful tool to access different opinions of stakeholders and supported their cooperation in dealing with different attitudes towards the use, planning and management of the area.

This project is divided in two main parts – Landscape Character Assessment and making proposal to judgements. At the early stage of the LCA work the Riding Club asked for possibilities to involve planning proposals in the work. Their main interest was in finding solutions and proposals related to riding paths, separation of traffic, storing places, shelterbelts and general uplifting of the closest surrounding. Proposals made is now in general planning process and is more than likely to be processed in next coming years.

Making judgement based on landscape character

The main value of having a character assessment is to help in the process of managing change in a particular place. All sorts of change will shape future landscapes, and by applying this tool in an appropriate way we can help to ensure that such changes make a positive contribution.

The analyse underlines and describes the formation, vegetation, diversity, current and past land use of the area. It point out its diversity and those factors that are special reason to take to account in the planning and future sustainable management.

Judgement based on landscape characters need to take a count of several factors. Most important is to decide who is going to be involved in making the judgements. Its important to involve the stakeholders in this part of the process if the judgement are to command support. They should be as fully informed as possible.

When Making judgement as a part of an assessment should not only concentrate on the maintenance of existing character. This may be one part of the judgement made. The focus should be on ensuring that land use change or development proposals are planned and designed to archive appropriate relationship with their surrounding, and where ever possible contribute to enhancement, of the landscape in some cases by creating a new character.

The methodology to assess the subject by starting with detailed character assessment gives clear view of the area and it's current use and it's importance. That in cooperation with stakeholders contributes to the making judgement process of future land use and design.

Classification can be carried out at any scale and so can provide information on the extent and distribution of different types and areas of landscape from the national to the local scale. (Landscape Character Assessment. 2002, 6.2 page 37).

“Making judgement as a part of an assessment should not only concentrate on the maintenance of existing character. This may be one part of the judgement made. The focus should be on ensuring that land use change or development proposals are planned and designed to archive appropriate relationship with their surrounding, and where ever possible contribute to enhancement, of the landscape in some cases by creating a new character”.

(Landscape Character Assessment. 2002)

Proposal

Proposal

In present General plan the municipality have defined this area for stables and grazing fields for horses. Detailed land use plan has been done for the site for roads and houses not for the environment and surrounding of the stable area.

It seems that the riding club has handled the grazing quite well. They shift between fields in different times to avoid overgrazing and to secure sustainable land use. The analyse lead to the conclusion that it is important to be careful not to overgraze by grazing the horses in the fields for too long periods. This is because of the natural vegetation is sensitive and the soil sandy and vulnerable. The vegetation cover is strong though and it has spread over the sandy areas with help from the manure that has been spread over it. The vegetation cover is spreading and the grazing will help to keep the diversity of plants.

Storing place for hay-bales is located east of the stables where it is not so visible from the parking lot and competition area. The trailer parking is located beside the earth mound south of the stables. The analyse show that it is important to high the storing places to avoid floods.

Shelter belts – the analyse also lead to that recommendation that shelterbelts should be planted in the area to slow down wind and snow drift and to make the area more pleasant. The design of the shelterbelts should take notice of the main wind directions which are from north and south.

The area between the riding hall and club house should be designed as an entrance into the club's territory. Connecting the Riding Hall and Club House with trees would limit the feeling of drive through. The parking lot has already been planned so its planning falls outside the scope of this project.

Riding paths – the analyse show that the land around the lake is quite wet so it was designed to follow the dryer spots to avoid to mess up the wetland and it is necessary to separate riding paths in the stable area from roads. As shown on the principal diagram a new riding path is designed to connect the East part of the stable area to the big grazing field, so it will be possible to ride around the lake Tjarnartjörn and also connect to the path South of the Riding Hall.

A walking path for bird watchers and others is recommended by the west part of the lake because the analyse did show that the birdlife is richest in there. In that field there is no riding path and the field should be used for grazing in the autumn, so people that are afraid of horses can assess the area in the spring time and early summer when birdlife is richest. It would be useful to put down some platform for the birdwatchers, with a wall with peeking holes to make it possible to watch the birds with minimum disturbance.



Vegetation

The riding club has all the wetland in the north part of the area for grazing and on both sides of the airport. It is a natural vegetation in all the fields, but the dry areas can be called semi-cultivated because the vegetation has been strengthened by spreading horse manure on it. Some of the semi-cultivated fields were mostly sand areas for some years ago.

Now the grazing fields seem to be in good condition and are blooming in the summer. The analysis shows that the landscape changes are positive, in the way to strengthen the vegetation and the grazing seems to be adequate.

There are about sixty horses grazing in the area during the summertime. It is not allowed to put them there until the grass has grown and the pastures are enough to feed the horses. Then the horses are moved between different fields during the summer.

It is important though to be cautious in grazing because it is easy to over-graze natural vegetation like the one in the Flæðar. It should be considered to change between pastures more often or before the meadow are totally finished. Resting the meadow gives it an opportunity to recollect and grow again. To graze the field twice during the summer and leave it in good condition is a good habit instead of grazing it one time and totally finish the harvest. It's important to give the vegetation the possibility to mature and to build up seed banks. It is also important to have some vegetation in the autumn to protect the greensward during the winter, when the weather is constantly changing. When the temperature goes below zero ice crystals often build up in the humus, lifting it up and ripping the roots in the sward. That can cause some damage to the vegetation cover and this is more likely to happen if the grass has been bitten to hard.

The fields with natural vegetation are not fertilized in any way except what the horses leave while grazing. It could be considered to fertilize the smaller grazing areas and semi cultivated fields, that would most likely increase the harvest. Implementing this would enable those fields to could carry more stress than they do today.



Vegetation in the grazing fields (gg)

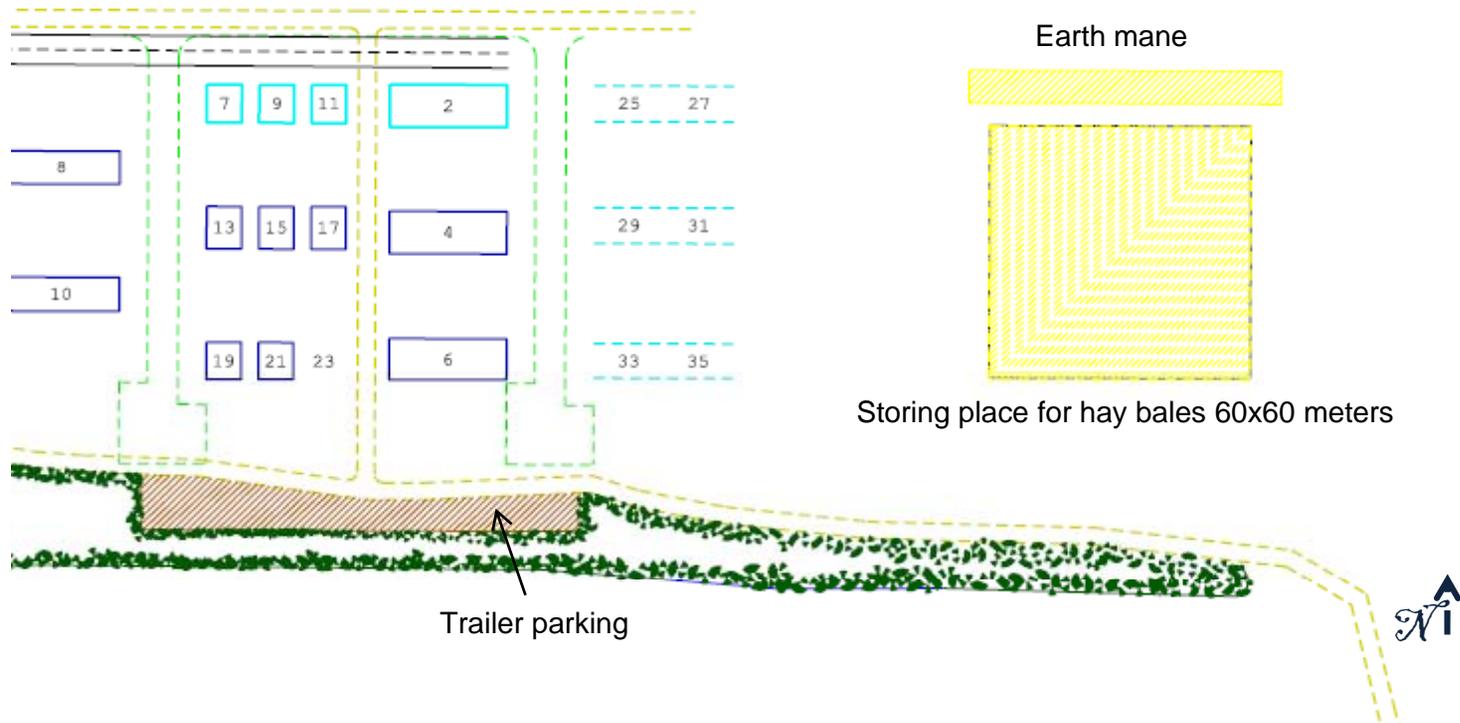
Storing places

Parking for Trailers

In this proposal the parking place for trailers is located South of the stables and is 100 meters long and from 7 to 13 meters wide. The trailers are of different sizes but most of them are no longer than 4-6 meters. It is also important to heighten this parking for about 1,5 meters, to avoid floods. As it is now the trailers are stored by and between the houses, that results in negative visual effects and can disturb accessibility for the neighbours. To store trailers in one place will therefore make the site look more tidy.

Hay-bales

Storing place for hay-bales is located East of the stables and its coverage is supposed to be 60 x 60 meters. The surface should be gravel or asphalt. It is necessary to heighten the storing place up to about 1,5 meter above sea level, to avoid floods. On the North site it would be advantageous to build some earth mounds up to 3-4 meters high, to shelter for snow. Today the hay-bales are almost all around the place and have negative visual effects on the environment. It is not allowed to store them between the houses so they have to be stored on the outskirts of the stable area. It is therefore recommended to make one storage location that is big enough for everyone and then it would be easier to keep the site clean from plastic.



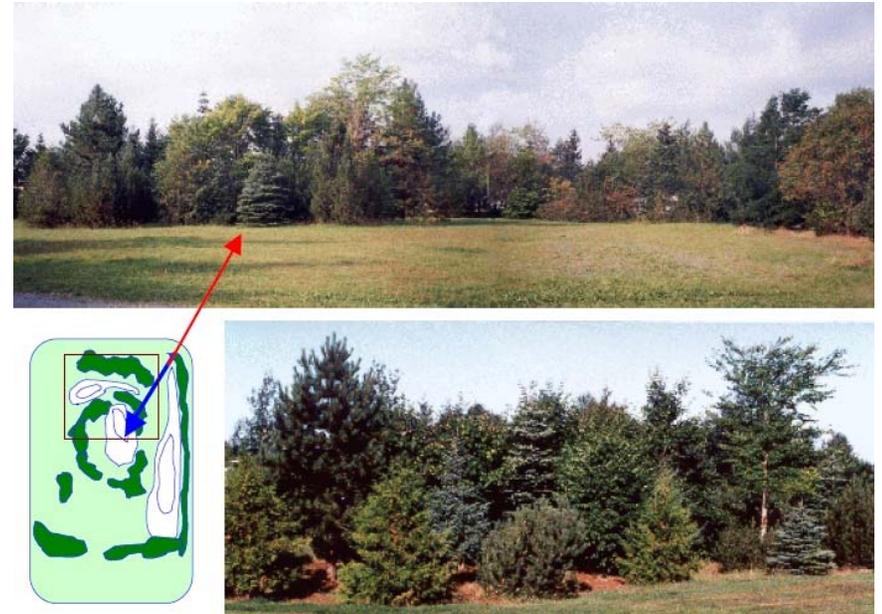
Shelter belts

The shelterbelts are meant to slow down wind and also to make the site more friendlier.

The planting model used could be called “*Stylised Nature*” that is a planting with an aesthetic that is recognisably inspired by wild plant communities but which is designed for visual effect. In this area there are no tall trees that grow wild so it is not possible to plant local trees. But it is important to have high level of dynamism in the ongoing development of the planting and self seeding will be allowed in the future. The maintenance will not be so high except for slashing when the trees becomes big and need some more space to grow.

The effect to slow down the wind is greater if the shelter belt has more diversity, like many species, with different form and height. Therefore it is recommended to plant leaf trees and confers in belts and some shrubs on the edge and in between. *“It is necessary to have some gaps or lower shrubs in the shelter belt to catch the snow drift without it breaking down the trees. It is important not to plant in straight lines because then is missing the effect for resistance, gaps and irregular mass is the best way to slow down the wind”*. (Robertson, 2004).

In this proposal it is recommended to plant tight or with only 1 meter between trees, it is different with shrubs that don't need as much space as trees. But by planting the trees so tight the goal is motivate the trees to compete with each other. By doing that the plants grow faster than if they had more space. To do this nursery trees are planted in between; those are meant to be removed when it is time to slash. How long this will take is not possible to estimate as it depends on how fast the trees will grow. This method is adapted from the “Tree laboratory” in Alnarp (SLU) where it has been used for experiments to see how fast trees can grow. By tight planting trees grow straighter and have more shelter from each other and the tree trunks become slender. Therefore it is necessary to be careful when slashing, not to take too much away at any one time so the trees will not brake down because of the wind and snow. (Gunnarsson, and Gustavson, 2006).



Shelterbelts (Robertson, Alexander 2004)

A tight wooded area, as recommended to plant by the club house, gives possibilities to design in future, a woodland rooms of different forms and shape. By planting woods and shelter belts opens an option to connect the lowland to the mountain area, were a big plantings have been done. By making walking path along the river with some shelterbelts on the way, it will make the experience and the recreational effect stronger, with different walls and spaces. The gorge that the river Sauðá runs through down the hill through the town and the canal to the lake Tjarnartjörn, gives opportunity to make a green belt through the town and strengthen the impression of a green-city.



The gorge Sauðárgil (gg)



From pond on the floodplain – seen to the wood above the town (gg)

How to plant

It is recommended to take all vegetation away before planting the trees and harrow the area. By doing that the grass and weeds do not take nutrition from the plants. It is important to keep the surface clean of weeds, for some years, or while the plants are settling.

It is important to plant tight, only 1 meter between plants. The reason for this is that the plants make shelter faster for each other and also to encourage the plants to compete with each other and to grow faster than if they have more space.



From the tree laboratory in Alnarp (gg)

Entrance

To demarcate the competition area are used plantings, parking's and a circle made of paving stones. Today it looks like the road stretches into the competition area. With vegetation, trees and stone walls in front of the houses it would look more like an entrance and not be as open as it is today.

The parkings and the riding path is separated with low lamppost that are 0,8 – 1 meter high. Paving stone is arranged around the Club house and a stone wall, 60 – 80 cm high, is used to define the surrounding of the house to the riding path. Located north of the Club house is a big shelter belt or wood, that will make a really good shelter and nice surroundings to the house and the competition area.

This depends on if the parking lot will be finished as designed in the present detailed plan for the area and asphalted.

A plan picture of this is shown on page 50-51.



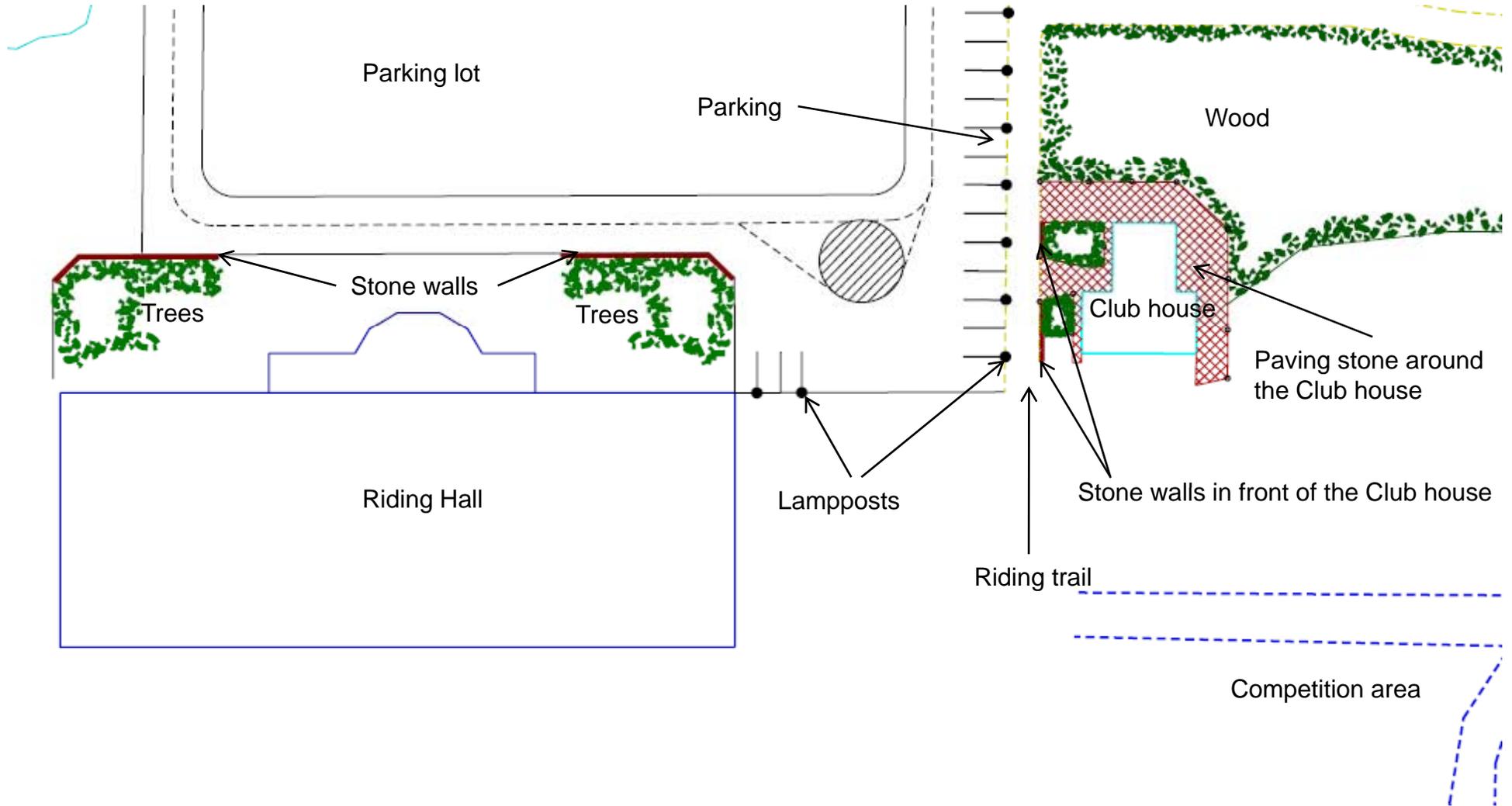
Examples of how the entrance could look like when the shelter belts have grown.

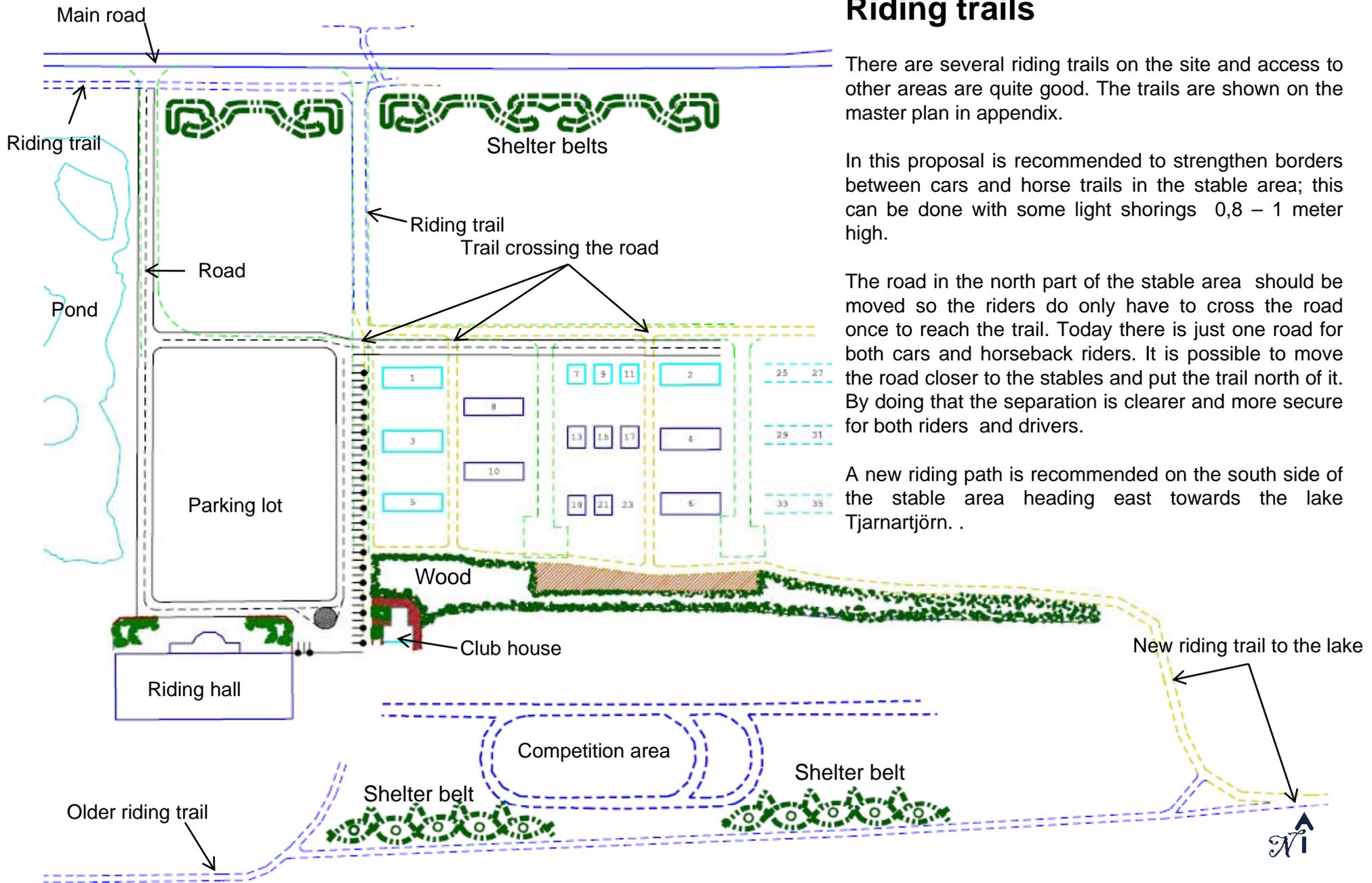
Stone walls are facing the parking lot in front of the houses

Entrance



1:6000





Riding trails

There are several riding trails on the site and access to other areas are quite good. The trails are shown on the master plan in appendix.

In this proposal is recommended to strengthen borders between cars and horse trails in the stable area; this can be done with some light shorings 0,8 – 1 meter high.

The road in the north part of the stable area should be moved so the riders do only have to cross the road once to reach the trail. Today there is just one road for both cars and horseback riders. It is possible to move the road closer to the stables and put the trail north of it. By doing that the separation is clearer and more secure for both riders and drivers.

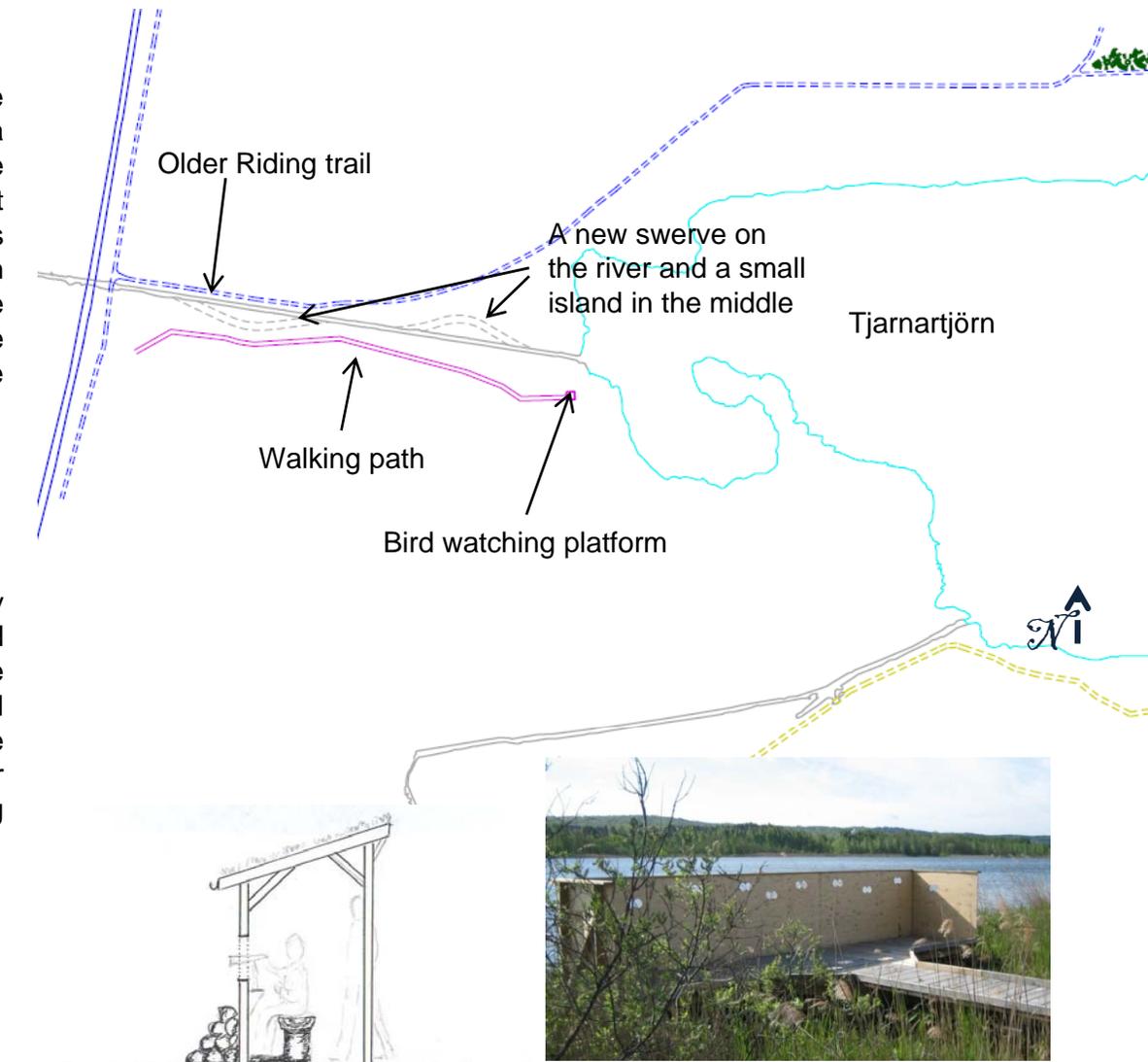
A new riding path is recommended on the south side of the stable area heading east towards the lake Tjarnartjörn. .

Bird watching

A walking path for bird watchers is recommended on the west side of the lake and on the south side of the Sauďá River. On that side of the lake there is no riding path and the field is not in use for grazing in the spring so there would not be any conflicts between riders and birdwatchers. It is necessary to build a ladder crossing the fence. The path should be made with gravel just to delimit where people walk, so can be guided around the area. A platform by the lake would be nice, with a wall with holes in it, to minimise the disturbance for the birds on the lake.

The river

The Sauďá River runs in a man made canal and is totally straight with steep banks. It would do much for the river and the surroundings to swerve the river to both sides from the canal. If that's done possibilities are open to make small islands in the river and to bevel the banks. This would make access to the water for birds much easier and the water would have more space to move in ablation without eroding the banks.



Two examples of platforms and shelter for bird watching

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Annex I

Main steps in Landscape Character Assessment

STAGE 1: CHARACTERISATION

These are the practical steps involved in initiating a study, identifying areas of distinctive character, classifying and mapping them and describing their character:

- **Step 1: Defining the scope.** All Landscape Character Assessments need a clearly defined purpose. This will critically influence the scale and level of detail of the assessment, the resources required, those who should be involved in its preparation, and the types of judgment that are needed to inform decisions. As part of defining the scope, it is normally essential that a familiarization visit is undertaken to allow those involved in commissioning or carrying out the assessment to learn more about the character of the location's landscape.
- **Step 2: Desk study.** This involves review of relevant background reports, other data and mapped information, and use of this information to develop a series of map overlays to assist in the identification of areas of common character (usually draft landscape character types and/or areas).
- **Step 3: Field survey.** Field data is collected in a rigorous way to test and refine the draft landscape character types/areas, to inform written descriptions of their character, to identify aesthetic and perceptual qualities which are unlikely to be evident from desk information, and to identify the current condition of landscape elements.
- **Step 4: Classification and description.** This step then refines and finalizes the output of the characterization process by classifying the landscape into landscape character types and/or areas and mapping their extent, based on all the information collected, followed by preparation of clear descriptions of their character. These descriptions will often recognize 'forces for change', such as key development pressures and trends in land management.

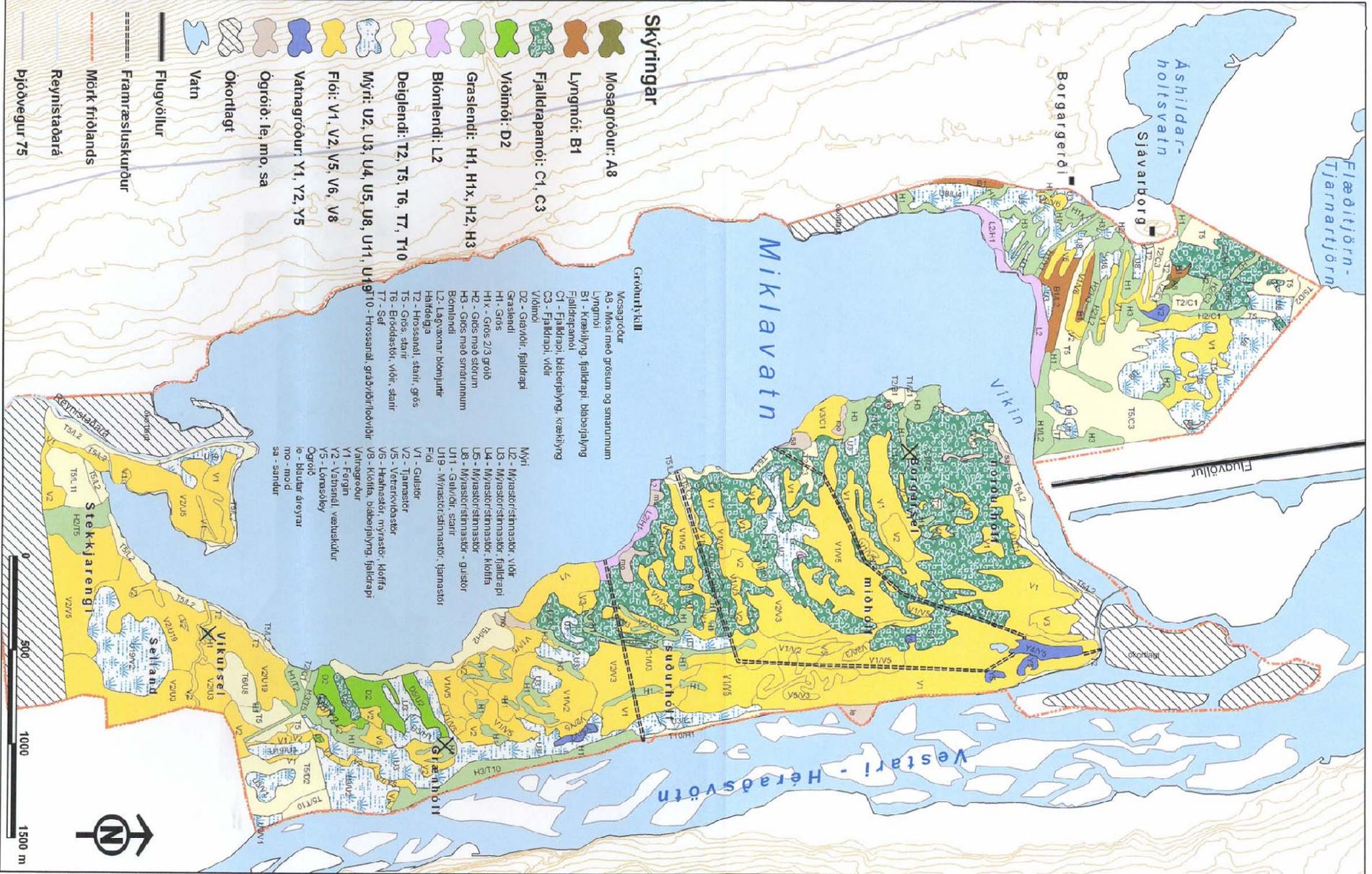
STAGE 2: MAKING JUDGEMENTS

- **Step 5: Deciding the approach to judgments.** Further work is usually needed to decide on the approach to making the judgments that will be needed to meet the objectives of the assessment. This will require thought to be given to the overall approach, the criteria to be used and the information needed to support the judgments to be made. Decisions will be needed on the role to be played by the stakeholders. Sometimes, especially if judgments are needed about landscape value, it may be necessary to look for evidence about how others, such as artists and writers for example, have perceived the area. Additional field work may be necessary, especially when additional applications of the assessment only emerge after the original characterization has been completed. Information from the field survey will need to be reviewed on topics such as the condition of landscape elements and features and the sensitivity of the landscape to change.
- **Step 6: Making judgments.** The nature of the judgments and the outputs that may result from the process will vary according to the purpose of the assessment (see **Chapter 7**). The main approaches to making judgments within the landscape assessment process are:
 - landscape strategies;
 - landscape guidelines;
 - attaching status to landscapes;
 - landscape capacity.

Annex II



Náttúrustofa Austurlands 2004. Gróðurkortlagt fyrir Náttúrustofu Norðurlands vestra í júlí og september 2003 af Berglind Ingvarsdóttur, Guðrúnu Jónsdóttur og Kristínu Ágústsdóttur. Hæðarlínugrunnur: Loftmyndir ehf. 1998, í eigu sveitarfélagsins Skagafjarðar. Gróðurgreining skv. gróðurlykli Náttúrufræðistofnunar Íslands 2002 (Viðauki I)



Gróðurfar í friðlandinu við Miklavatn í Skagafirði

Annex III

Interviews:

To illustrate how or if the area have changed during the time the riding club has had the guardianship of the area. An interview were recorded to some people that have known the area all their lives and have had overview of the situation. One of them had the task when he was a teenager to take the cows from the town to the Flæðar for grazing, and also he is the former chairman of the Riding Club. Two of them consultants form the Soil Conservation Service in Iceland. There where also one that is former Agricultural consultant in Skagafjörður. Some of them have used the site for their horses for grazing for a long time. The interviews were not formal and where taken in different places where the people were working and did take notes at the time. The length of the interviews were about 30 minutes including discussion.

Questions asked:

Has the coast changed during the time?

Has there been changes in vegetation at the coast?

Has the vegetation cover in the grazing fields strengthened or weakened during the decades?

Is it visible that the vegetation cover variety has changed during the decades?

General discussion of the area, its usage and management

People that was interviewed:

Sveinn Guðmundsson, Former chairman of the Riding Club Léttfeti

Sveinn Runólfsson, Manager by the Soil Conservation Service of Iceland

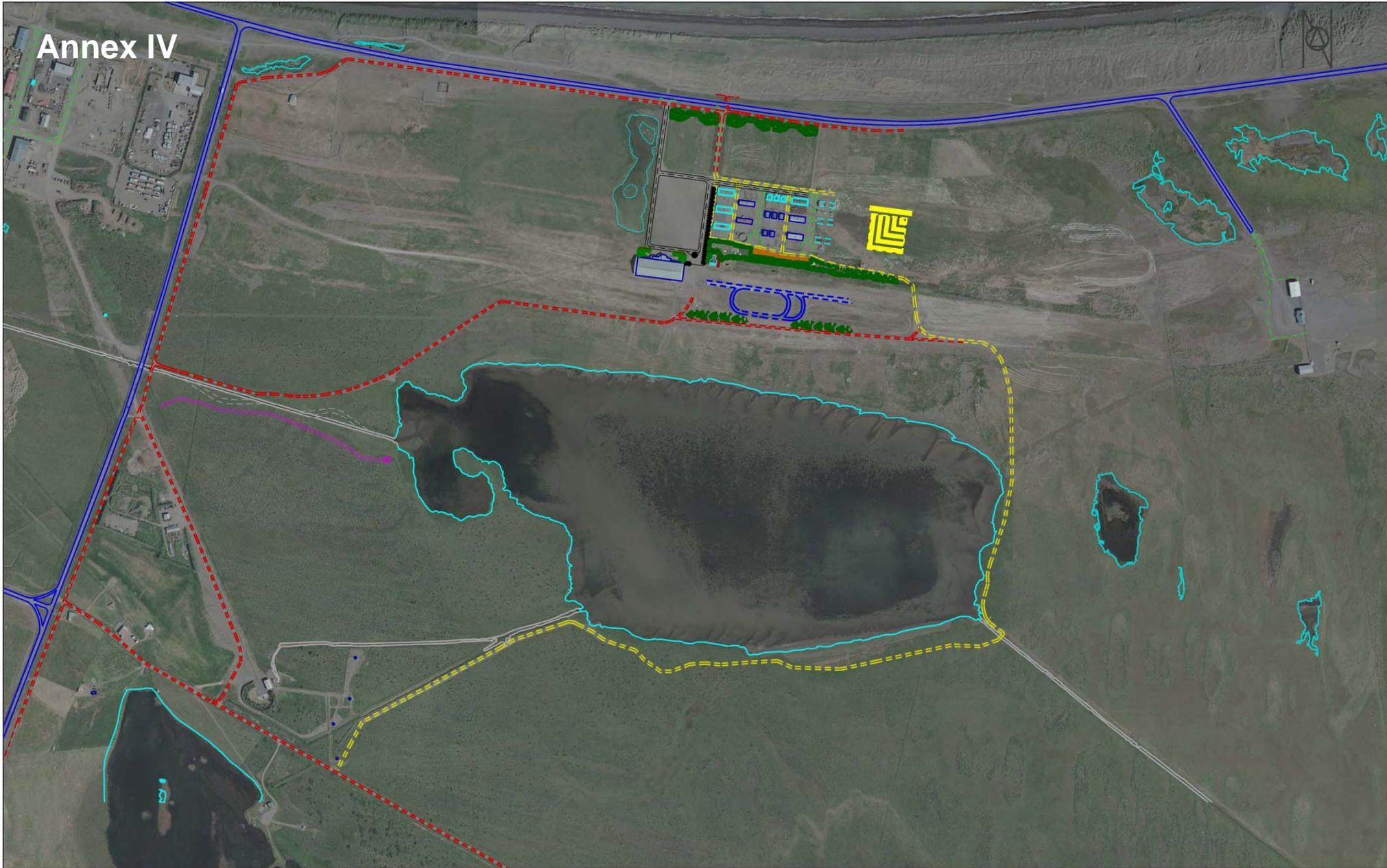
Egill Bjarnason, Former Agricultural Consultant

Bjarni Maronsson, Consultant by Soil Conservation Service of Iceland

Hafsteinn Lúðvíksson, Administrator by the Ridinghall

Reynir Öxndal, the Road Authority

Annex IV



- | | | |
|---|---|---|
|  New riding trail |  Walking path |  Trailer parking |
|  Older riding trail |  Parkings and light shorings |  Storing place for Hay bales |
|  Competition field |  The river Saudá | |
|  Shelter belts |  Paving stones | |

Environmental plan Stable area in Sauðárkrúkur	
Master plan	drawing no. 1
date: 06.12.2007	scale: 1:6000
Name: <i>Guðbjörg Guðmundsdóttir</i> Agricultural University of Sweden Final thesis in Landscape architecture	

Annex IV



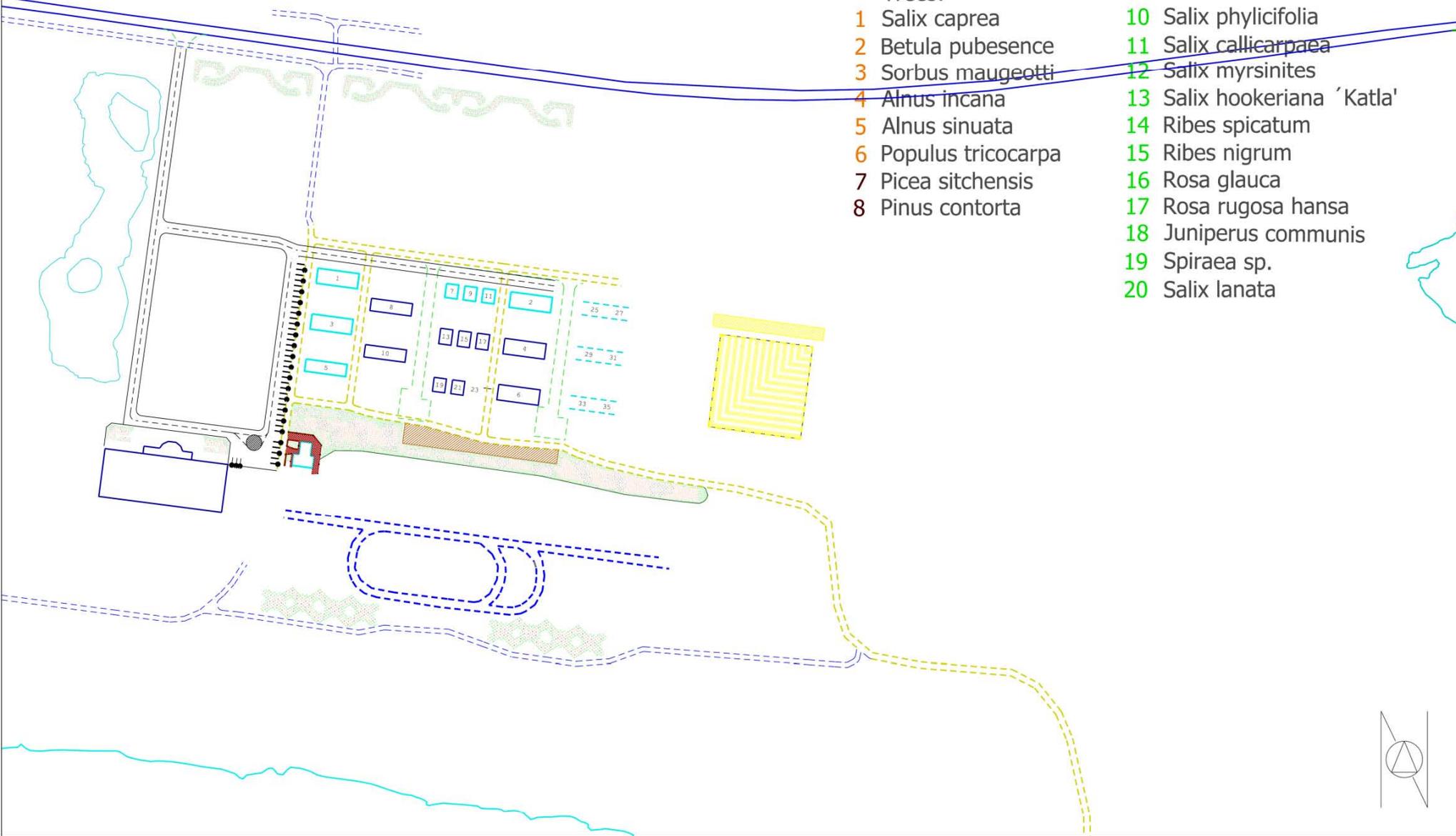
Annex V

Trees:

- 1 Salix caprea
- 2 Betula pubesence
- 3 Sorbus maugeotti
- 4 Alnus incana
- 5 Alnus sinuata
- 6 Populus tricoarpa
- 7 Picea sitchensis
- 8 Pinus contorta

Schrubs:

- 10 Salix phylicifolia
- 11 Salix callicarpaea
- 12 Salix myrsinites
- 13 Salix hookeriana 'Katla'
- 14 Ribes spicatum
- 15 Ribes nigrum
- 16 Rosa glauca
- 17 Rosa rugosa hansa
- 18 Juniperus communis
- 19 Spiraea sp.
- 20 Salix lanata



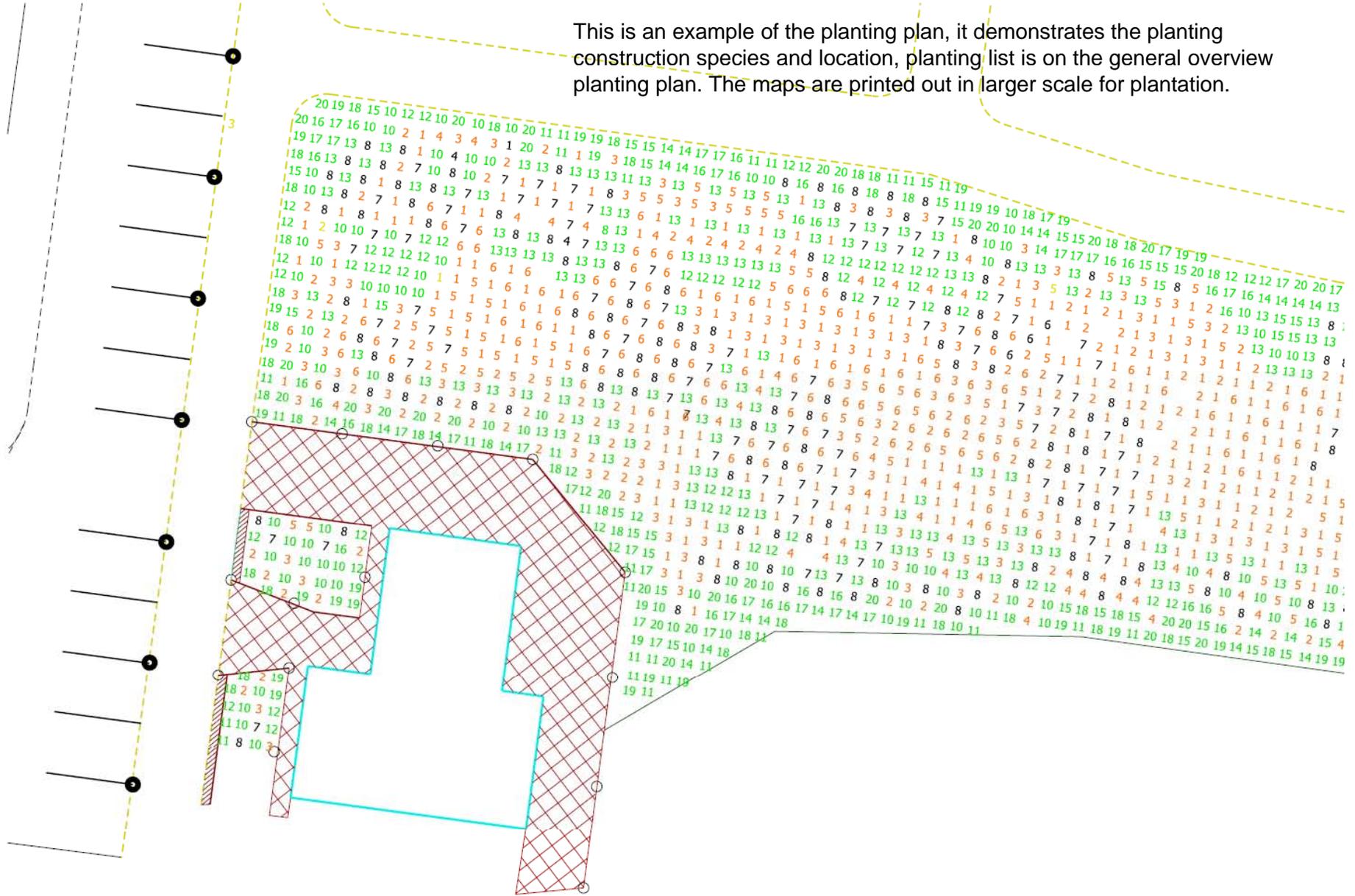
- New riding trail
- Older riding trail
- Competition field
- Shelter belts
- Walking path
- Parkings and light shorings
- The river Saudá
- Paving stones
- Trailer parking
- Storing place for Hay bales
- Lakes and ponds

Environmental plan
 Stable area in Sauðárkrúkur
 Planting plan drawing no. 2
 date: 06.12.2007 scale: 1:3000
 Name: *Guðbjörg Guðmundsdóttir*
 Swedish University of Agricultural Science
 Final thesis in Landscape architecture

Annex V

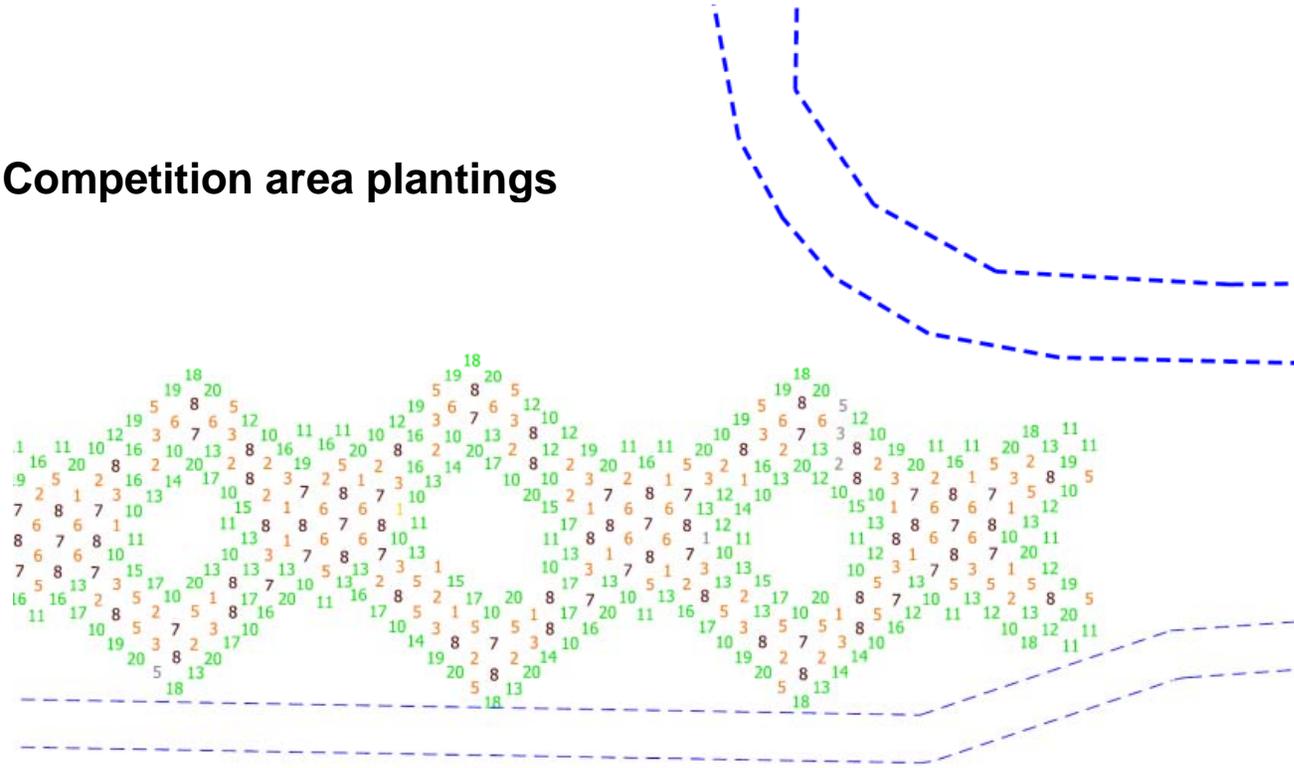
The plantings

This is an example of the planting plan, it demonstrates the planting construction species and location, planting list is on the general overview planting plan. The maps are printed out in larger scale for plantation.



Annex V

Competition area plantings



Annex V

Shelterbelts in the grazing fields

