Project Report - Slite recreational landscape

Disclaimer

As students of landscape architecture we are not scientists in the traditional sense. Therefor we do not consider this report to be our main contribution to the Quarry Life Award. Instead we see addendum 1, our master thesis with the design, illustrations and plans, as the key part of our project. This report summarizes the project work and some of the subjects and facts in the master thesis. The thesis was written in Swedish and the facts in this report is translated from facts in the master thesis. All references can be found in the thesis. In this report, the thesis is referred to as addendum 1 or page, (p. xx). Addendum 2 is an erratum with some corrections of facts that has emerged after the publishing of the thesis. The facts are corrected in this report.

Abstract

Concrete Biodiversity is a design proposal for a recreational landscape in the Western Quarry and its nearby nature in Slite. The quarry is an 89 hectare wide and 45 meters deep quarry on the northern part of Gotland where marlstone is being extracted for the production of cement. In the surroundings of the Western Quarry there are natural environments where several endangered species have been inventoried. In the year of 2031 the Western Quarry has reached its endpoint and the existing restoration plan, with a focus on restoring habitats of the surrounding area, will be fulfilled. This project starts out in this complex and dynamic environment. An environment where the nature meets the industrial cultural landscape.

During the project, inventories and analyses have formed the basis for the methods that have been developed for the different parts of the project. The site has been visited at two occasions when we analyzed the placeness, sightlines, valued experiences and accessibility at the site. Interviews were held with local authorities, associations and companies to implement their engagement and initiatives. The theoretical specializations in the project covers biodiversity and restoration plans. The design process starts out with a vision that was formulated to create a direction for the project. The total mapping of the site results in nine places that are selected as hotspots in the landscape.

These nine hotspots and how they can be made accessible is the foundation in the design of the recreational landscape. The result is “Concrete Biodiversity”, a design where the cultural and natural landscape togehter with the restoration plan makes the site accessible by adding paths, footbridges and hotspots with an object, a built structure. The hotspots are designed to attract visitors to the area and enhances the experience of the landscape. To inform about the biodiversity within the site, the objects are placed in different biotopes and has been given a design that makes it easier to discover and learn about the endangered specie in that spot.

The project also results in a master thesis, “Slite recreational landscape - to design for biodiversity”, where the design proposal is presented together with facts about the site, biodiversity and restoration plans. The thesis discusses the challenge in handling such a large site that always has, and still are, under a large impact of the human being. Biodiversity is brought up as a wide subject which has been a challenge to use as a limitation or as a method. To design hotspots within the area to attract visitors to the landscape and inform them about the biodiversity is described as a method presumed to increase the knowledge about biodiversity.

In this project, the handling of a quarry and how it can be restored was breaking new ground for us. The new knowledge has been weaved together with a natural environment just as complex. Through the design the public gets access to this natural and cultural landscape with new aesthetic values and experiences.

Introduction

This project has resulted in a design proposal for the Western Quarry in Slite, “Concrete Biodiversity” and in a master thesis, “Slite recreational landscape - to design for biodiversity”. The master thesis was written during spring term 2014 as a part of our studies in landscape architecture at SLU, the Swedish University for Agricultural Sciences.

In this project we have struggled with many of the challenges we find as landscape architects and we have experienced all phases of the design work. From the first project proposal and how it grows with impressions and knowledge. To how the project hardens by insights and thoughts and finally is shaped with a coherent expression. To us, handling an existing quarry and how it can be restored has broken new ground. To weave this new knowledge together with a familiar but just as demanding nature has been an educational challenge.
By reading this report, our thesis and by studying our plans and illustrations we hope that you can sense the birds behind the reed curtain, feel the water seep into your boots, feel the smell of the wetlands and experience the view over the pines and the edge of the quarry. All through a fine layer of chalk dust.

Objectives

We are loosing hundreds or even thousands of species per year. The main reason is the human actions which has changed or destroyed habitats through exploitation and how we have affected the climate and ecosystems by pollutions. At the same time abandoned industrial sites can contain valuable species and increases in popularity as tourist attractions. In this project we saw a possibility to unite these aspects by designing a sustainable recreational landscape with high social values while at the same time engaging local associations and authorities. Our aim and ambition was to:

- create a cohesive design proposal that weaves the nature and industry together.
- increase the knowledge about biodiversity by highlighting endagered species through the design of hotspots and information boards.
- implement and make use of existing knowledge within local organizations, associations and authorities.
- investigate and point out the high values of experiences within the area and make them accessible.
- design a trail which makes the project site accessible.

Background

Preconditions

According to the European Landscape Convention, a landscape is:

”An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.” (Addendum 1, p.10).

The landscape we address in this project is affected by actions and is in interaction with these natural and human factors. In the master plan of Region Gotland the limestone industry is described as one of the primary industries of the island. All around the island we can find traces of the industry with both active industrial environments and abandoned quarries that has been transformed into popular tourist spots and bathing sites. A quarry is a place where the human being has made a large footprint in the landscape but at the same time uncovered the grand natural processes in the landscape by making the stratification in the ground visible. The landscape we have designed consists of a large-scaled quarry and a more intimate wetland area, a contrast we wanted to catch. The new recreational landscape nearby the Western Quarry could be a part of the efforts made by the region to strengthen the cultural values of the industry and eco tourism. The Western Quarry in Slite is a protected area both for its values in nature and for its values in materials and minerals. The area is of national interest for these public interests and they have to be taken into consideration in future exploitation of the area.

Site description Slite

The barren and rocky limestone landscape in Gotland with its unique flora and fauna was tempting to us and filled with new challenges. Slite is the largest urban area on northern Gotland with its 1500 inhabitants. The industry is strongly influencing the village but several other activities are being planned in the newly expanded harbour. The shallow lake Bogeviken is situated in the south of the Western Quarry. Bogeviken and the seven digged canals used to be important fishing places. Today, lake Bogeviken is strongly affected by the problems of eutrophication and sediment that makes the salinity level the same as in the ocean and therefore have negative affects on the fish stock which today has to big amount of small fish.

There are several local active associations working with the development and future of Slite. The main focuses among them are the ambitions of developing Slite to an important meeting place in the region and the interest of restoring, developing and maintaining the heritage from the industry.

Project site

Our project site (p. 17) consists of the Western Quarry and the surrounding environment. The site is defined by a pine forest in the west, a quarry dirt road in the north, lake Bogeviken in the south and the sports field and road 147 in the east. The quarry is dominating the project site and consists of two ground levels, pile 1 at -25 meters below sea level and pile 2 at -45 meters below sea level. The quarring is completed in pile 2 and the ground is now being filled with material extracted from the ongoing expansion of pile 1. The showroom in the eastern part of the quarry shows how the design of a restored quarry can look like with softer edges, water and vegetation. The showroom and large parts of the quarry can be seen from the viewpoint along road 147. During the winter of 2013 the creek of Spillings was moved further to the west to make place for the expansion of the quarry. A pond where the northern pike could play was constructed along the creek. It was a starting point for us in this project to make this pond accessible.

South of the quarry, landfill forms softly shaped hills in the flat landscape. The eastern landfill is the old municipal garbage dump of Slite and the western ones are landfills from the quarry. In the southeastern parts of the site, the sports field of Slite is situated with an ice hockey rink, a football pitch and an illuminated track. The track continues out in a nature site where calcareous pine forest and wetlands continues. A curtain of reed close to the shoreline of Bogeviken is framing the wetlands. See the project site at page 17 in addendum 1.

Other quarries

There are several other abandoned quarries on northern Gotland with new functions as tourist attractions. We looked closer to five of them and mapped down the activities and experiences they offered (p. 19). What we saw was that these environments have been transformed into popular and well visited places. The new use differs, one is a popular bathing place, one has a hotel and restaurant and another one is a place for culture events. What we learned from this were that these environments are strong attractions which can offer various new activities and have a strong social value. Another thing we noticed was that none of them focused on the nature values. The existing restoration plan for the Western Quarry (p.26) has a strong focus on the nature values. Our ambition is to combine those values with the social values that should be possible to strengthen within the site.

Our Vision

We formulated a vision (p. 20) for our work with the recreational landscape of Slite and the concept of Concrete Biodiversity. Our vision is to create a place for both human and nature out of cultural and social aspects. In our project we want to combine the cultural environment of the quarry with the surrounding natural environment. Strong hot spots are created where both activities and biodiversity are highlighted. The recreational landscape is accepting the cultural history of the place and emphasizes the nature by the following three focus points: *experience and accessibilize, attract and unite and educate and inform.*

Biodiversity

Several endangered species have been inventoried in the nature surrounding the Western Quarry. The quarry and its environments of early succession has a potential of being a refuge for endangered species that used to benefit from cultivated land. In the year of 2031 the quarry has reached its endpoint and the existing restoration plan, with a focus on restoring habitats of the surrounding area, will be fulfilled. Sweden has signed the convention on biological diversity and thereby we are committed to nurture our biological diversity and to preserve it. In the convention, biological diversity is defined as:

"The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems." (p. 23)

Sweden has a relatively poor flora and fauna because of the latest ice age. Many of our species has wandered into the country from other locations and very few species are unique. However many of the indigenous stands often have developed genetic features that differ from other stands of the same specie. The adaptation to our climate makes it hard to re-establish species by collecting them from other parts of the world. Although, Gotland and Öland are richer in species than other areas with the same climate due the latest ice age when the flora in Sweden consisted of species benefitted of the limestone.

According to the Swedish Biodiversity Centre the term Biodiversity accentuates the meaning of variability, the fact that we have a landscape with many different biotopes, species and a great genetic variety within the species. Variability is of great importance in all conservation of natural resources, both practical and esthetical. Most ecologists accept the fact that the more species there are in an ecosystem, the more productive and stabile the ecosystem will be. What keeps an ecosystem stabile is the "principle of insurance" of biodiversity, if one specie disappears from an ecological community the niche will be populated faster if the amount of different species around it is bigger. The problem is to define the importance of a single specie since they all are depending on each other, we do not know what the consequences will be if one specie is extinct. In studies (p. 23) that examine the impacts of nature on our health, the arguments for biodiversity are mainly anthropocentric, they are referring to the needs of human beings and the experiences of a varied nature. Richness in species is described as one of eight important characteristics in a good nature. At the same time it is explained that it is not as simple as that maximal biodiversity gives the most positive experience. The sight of a sufficiently varied nature stimulates activity and is experienced as the most positive. Studies show that persons who know more species think higher of the biodiversity than others.

The Red List

In Sweden there are about 500 species of plants and animals that are critically endangered (p. 23). Since 1970 the threats towards flora and fauna have been summarized in the Red List by the International Union for Conservation of Nature (IUCN). The Red List is designed to determine the relative risk of extinction, and the main purpose is to catalogue and highlight those plants and animals that are facing a higher risk of global extinction. In Sweden, ArtDatabanken at SLU publishes the Red List every fifth year. There are different classifications in the Red List, determined by the risk of extinction. The different classifications are:

(EX)	Extinct	(VU)	Vulnerable
(RE)	Regionally extinct	(NT)	Near threatened
(CR)	Critically endangered	(DD)	Data deficient
(EN)	Endangered	(LC)	Least concern

The Swedish Red List from 2010 is based on evaluations for 20 800 species. 4 127 of them are classified as endangered or extinct. The estimations are national and therefore a support while prioritizing what action to take to preserve the diversity. Many of the red listed species live in biotopes that used to be common but today are more rare. How these biotopes are used and cultivated determines the survival of many species.

To protect endangered species, a high diversity in biotopes is needed. A biotope can be defined as an area of uniform environmental conditions providing a living place for a specific assemblage of plants and animals (p. 23). In the chapter of nature values in the master plan of Region Gotland they first explain that the nature of the island is unique and that a large part of the island therefore is being pointed out as an area of protection for its nature values. One of the goals of the region is to preserve the species in viable stands and with a good genetic variety. A sub goal in the master plan is to produce methods and plans to examine how the natural values can be preserved in the most threatened biotopes and where Gotland has a special responsibility. According to the Swedish Biodiversity Centre the biotopes created by infrastructure such as quarries, edge of the roads and similar environments created by humans can be some of the most important environments for several endangered species.

According to our vision for the recreational landscape of Slite, information about the different biotopes and the endangered species will be presented along a nature trail. The hotspots and their objects should highlight these aspects and make them accessible (pp. 36-39).

Restoration plans

When applying for permission to quarry a restoration plan needs to be presented for the county administaration board. The restoration plan shows how the area should be restored and is an important document they base their decision on. According to Miljösamverkan Sverige the following structures are particularly valuable when benefitting the biodiversity while restoring a quarry:
Bare mineral soil with different particle size, moist and exposure. Environments of early succession with frugal vegetation. Environments rich in species. Ground poor in nutrients. Scarps and slopes. Varied topography. Shallow water. Moist ground close to groundwater level. Extremely dry ground.

To increase the biodiversity in the quarry, the following advices should be implemented according to Miljösamverkan Sverige:
Do not cover the area with soil. Do not broadcast grass seeds, if you need to protect the ground water, use meadow seed, and only on the base of the quarry. If the quarry is not spontaneously colonized, plant in proper species. Where it is possible – do not plant forest. Do not level off existing southern scrapes, save or create a steep scrape for the sand martins if the material and location is suitable for them. Most of the trees should be felled at regular intervals. Save valuable trees such as willow since it flowers early in spring when other sources of nectar are missing for the bees. Save areas with valued flora. Save bodies of water. Do not allow motocross as a way to restore bio diverse quarries. This will heavily wear and tear the ground in an uncontrolled way.

The visual aspects of industrial interference in the landscape have varied over time in Sweden. From monumental in the early 1900's to hidden and integrated within the landscape between 1930-1949. During 1950-64 were a more geometrical expression essential but after 1965 the aesthetics played a much smaller role and industrial acitivities should be hidden due to the fact that people were more aware about environmental aspects. Later on this came to decline when people engaged in environmental movements did not want to be part of designing industrial environments which created a big gap between industry and environments. Today there are two main starting pionts while working with the design of a restoration plan. The first is to make the industrial site blend in to the landscape. The second point is to add a new value to enrich the landscape, a scrape with a view for example. Another aspect of today is the trend of reclaiming abandoned industrial sites and give them new life and functions. How the restoration is planned often depends on the amount of material there is left at the site.

In 2011 a restoration plan for the Western quarry was designed by the ecologist dr. Ulrich Tränkle. The main targets of his restoration concept are:
To restore habitats which are useable for the important plants and habitats of the Natura 2000 sites in the region of File Hajdar. Special consideration will be given to Pulsatilla patens (pasqueflower). To develop biodiversity as high as possible. To restore the important habitats of the surrounding area (e.g. calcareous grassland).

The restoration plan by dr. Tränkle has a strong focus on biodiversity and to re-establish the habitats in the surrounding nature. The more cultural-industrial biotopes that has developed in the quarry is not as strongly taken into consideration. We think that many of the ideas in the existing restoration plan will be favourable for the biodiversity. However there are some steps that can be done to improve it. After studying the structures valuable in quarries and how to contribute to the biodiversity (page. 24) we think that the following targets should be added to the plan:

Preserve nature of early succession through management and deforestation. Pinewood should not be planted in such large amount. The topography should be more varied. The site should not be completely covered with soil, open areas with stone should be preserved. All surfaces should not be sawn with grass seed, open soil should be preserved. The motocross area suggested in the north west corner of the site should not be allowed since this will heavily wear and tear the ground in an uncontrolled way. Except from these additions we are missing the social aspect in the plan.

Methods

The Vision

Early in our process we formulated a vision (p. 20) to be able to achieve our purpose. The vision defines the design of the hotspots and is a development of the purpose. The vision mainly consists of three focuses to fulfill:

- Experience and accessibilize
- Attract and unite
- Educate and inform

Literature

The literature studies focused on biodiversity and the high value of protecting endangered species and a variety of biotopes. We have studied plans, strategies and reports about nature and culture in Gotland. We have also studied the cement production at Cementa and the material concrete. Finally we have studied restoration plans in general and the restoration plan for the Western Quarry in detail. To be updated about other master thesis's within the subject quarries, restoration of quarries and biodiversity we have read the work of Lina Andersson (2010) "Ahr – transformation of the cultural landscape" from production landscape to recreation landscape and the work of Emil Gottberg (2013) "Artificial Nature" in the crossroads between industry and nature.

Local associations, authorities and companies

To be able to make the most of already ongoing projects and engagements within the site we contacted local associations, authorities and companies. These are: The Ornithological Society of Gotland (GOF), Sportfiskarna (angler society), Region Gotland, Gotlands Botaniska Förening (GBF) (The botanical society of Gotland), the Institute of Freshwater Research and the County Administrative Board. The contacts have been established mainly by mail but also through telephone calls and conversations. Our aim was to gather information about endangered species, suggestions of development and to implement the proposal within interested and concerned groups.

Visits to the site

We visited Slite during February and March 2014 to get to know the project site. We saw the site by our selves, but also with the Manager of Quality and Environment, Kerstin Nyberg, and the geologist, Anders Birgersson, from Cementa in Slite. During these visits they shared their thoughts about the future design and possibilities with the site. The site was analysed and documented through sketches and photographies. We also visited abandoned quarries at northern Gotland which now has been given a new kind of attraction.

Investigations

Our aim with our investigations at the site was to point out potential hot spots. Our method was to produce and fill out a questionnaire with values that we wanted to identify. The values we investigated at potential hotspots were a sense of place, high value of experience and perceived needs.

Methods for selections and investigations

The result from our investigation was compared to the suggestions we collected from associations, authorities, companies and Cementa. Spots identified by Cementa, an association or authority which was located in the same area as we had identified through our investigations were selected as a hotspot. In every hotspot one threatened specie were to be presented. To be able to make a selection of species, the collected information from associations and visits to the site were compared with the Red List. From the species that occurred within the Red List, the most endangered were selected. After that selection we filtered the result once more, we wanted to select species from different groups, for example bird, fish and orchid. The aim was to raise a variety between the species and their biotopes. The final selections were also based on the appearance and size of the species, which we wanted to be easy for visitors to recognise.

The Design, The Hotspots

A design program (p. 46) was formulated for the design of the hotspots. To be able to inform about and show an endangered specie and at the same time enhance identified experience values at each hotspot they were given an addition, a built structure, an object. The choice of materials in the objects were based on what the place had lost due to the industry, in this case concrete and wood. The concrete was selected for its sustainability and its suitability for wet environments. The geometric design was founded on our impressions of the concrete industry and the shapes of the quarry. To make the area accessible a new trail that reached every hotspot were drawn. At the hotspots whose endagered specie is a herb it is planted in suitable conditions.

Results

Result Design

The result of the design project is Concrete Biodiversity, a design proposal for a recreational landscape. In the proposal, a trail stretches from a nature-like landscape with wetlands, shorelines, reeds and forests, to a man-made industrial landscape with dramatic changes in levels and a huge scale. The trail measures 7,5 kilometres and starts off close by the sport facilities of Solklintshallen in the western part of Slite. The visitor is greeted by a sign, which shows the area in a map and how the trail stretches through it. To start off the walk, a concrete footbridge leads over the wet field and into the forest. Along this trail are there nine different hotspots. Every hotspot has a unique character, it presents an endangered specie and the biotope it is located within. Every hotspot has an addition, an object. Each object is adapted to the environmental conditions and enhances the identified experience at each hotspot (p. 49).

Hotspot 1 “The Pine Glade”. Four trails meet here and the biotope is calcareous pine forest. The endangered specie the sign presents is *Brompsis ramosa*, a grass, which reaches 0,8-2 metres and is favoured by chalk from the lime stone. It thrives in glades and forests with gaps. The object is a round disc placed in the middle of the glade. Within the disc the grass is planted. This should be a suitable place since the grass is vulnerable to pasture, mowing and ditching (p. 53).

Hotspot 2 “The Bird Watching Tower”. This hotspot is located at the edge of the cape which offers a panorama view over lake Bogeviken. The bird watching tower is a three floor high building were the ground floor is accessible for baby strollers and has a long ramp leading up to it. The second floor is a hiding and has the densest walls which provides shelter from winds. The top floor is an open area with 360 degrees view and is reached by the stairs. This biotope is lake shoreline and the endangered specie is the bird *Carpodacus erythrinus* (pp 54-55).

Hotspot 3 “The Wetland”. This hot spot is highlighted by three four-squares laying down in the grass and enables visitors to come close to the endangered orchid *Herminium monochris*. This orchid is 5-20 centimetres high and blossoms in June and July with small yellow/green flowers which smells like honey (pp. 56-57).

Hotspot 4 “The Bridge”. This is an answer to our frustration of never being able to reach the ever present water. A footbridge leads out to the bridge which by its layered design offers a close connection to the water. This makes it easy to step into a canoe or a smaller boat. It also enables fishing. In this biotope, loch/lake, the little bird *Clangula hyemalis* is scouted. It spends the winters in the Baltic Sea and can be seen from October until April/March (pp. 58-59).

Hotspot 5 “The Pike Factory”. This is a artificial pond were the Northern Pike plays. Along the eastern side of the pond a walkway of concrete offers the visitors a closer look and an opportunity of learning more about the Pike and its important effects on the ecosystem in lake Bogeviken. The Pike itself is not an endangered specie but is highlighted due to the fact that the share of small fish in lake Bogeviken is to high which affects the ecosystem in a negative way. A higher amount of larger predator fishes can stabilise the balance between fishes and this also affects the ecosystem in a positive way (pp. 60-61).

Hotspot 6 “The Plateau”. This is the first hotspot within the quarry-area. The edges of this landfill highpoint has been stabilised and a big disc is placed in the centre of it. To make this place accessible enables a great view which stretches across the quarry in the north and over lake Bogeviken in the south. The biotope here is the nearby power-line clearing. This is a corridor in the landscape were the butterfly *Maculinea arion* thrives. This butterfly is depending on the ant *Myrmica* and the herb *Thymus serphyllum*, both of these species occurs in dry and sun exposed areas. Therefore is the herb planted in the gravel that surrounds the disc (pp. 62-32).

Hotspot 7 “The Concrete Walk”. This walk stretches over the sweet-water lake which now has filled pile 2. Cubes of concrete lies in a row. The lower parts of the cubes are perforated to serve as suitable habitats for the crayfish *Astacus astacus*. As walking along the cubes the visitors can glaze over the water and if lucky spot a crayfish at the bottom of the lake. This biotope is quarry, an infrastructure biotope (pp. 64-65).

Hotspot 8 “The Stonewall”. The biotope here is scree, which also is an infrastructure biotope. At this sun-exposed calcareous wall, the fern *Gymnocarpium robertianum* grows. The fern is depending on the high amount of limestone and the warm location to thrive. A bench is placed at the foot of the wall. While sitting here a sunny day, visitors can experience the smell of oranges from the fern (pp. 64-65).

Hotspot 9 “The Viewpoint”. This spot is a part of our result but we have not added a structure here. The biotope is verge, also an infrastructure biotope. You can find the pasque flower *Pulsatilla patens* here. This hotspot has the highest accessibility since visitors simply can stop with their cars along the road. Those who are not interested of the pasque flower can gaze over the quarry.

Result Biodiversity

This trail and the hotspots let visitors come closer to the nature and the industry and tells them about the different biotopes and endangered species (pp. 48-65). Planting endangered species gives existing stands better pre-conditions. Each chosen endangered specie is presented togehter with its hotspots, biotope and experienced value.

Result Local associastions, organisations and authorities

The local associations, organisations and authorities were contacted and gave information about local engagements, inventoried threatened species and suggsestions of development.

Result Restoration plan

The modified resoration plan has a few differences from dr. Tränkles plan. We have decreased the area with pine wood within the quarry in accordance with the guideline from Miljösamverkan Sverige. Instead of the pine wood with calcerous grassland we added two areas filled with easily drained material, gravel. We have also added some topography in the shape of two hills in the south western corner of the quarry. The motocross area has been removed from the plan since it is causing a high friction (p. 27).

Result Design and Hotspots

The design, location of hotspots and the trail is presented in plans showing the project site. Every hotspot is accessible by the trail or road 147. The hotspots are presented in plans, photomontages and sections (pp. 48-65).

Result Master thesis

The design is presented as a whole in the master thesis, "Slite recreational landscape - to design for biodiversity". The master thesis is published at: http://stud.epsilon.slu.se/7120/ where it also is avaliable for downloading.

Discussion

We present a proposal that is flexible in the design. These hotspots are not depending on each other which makes it possible to construct just one of them or as many as desired. The trail can also be constructed as a shorter route or as a whole. This makes it adjustable to suit budgets and ambitions while constructing the design. It also makes it possible to construct the hotspots in the south part of the site while the industry still is working at the quarry. Throughout the work we have thought about the affect the construction of this design will have. We have not investigated this further since this was not the purpose with our research. Before constructing anything from the proposal a constructor should be consulted to make the impact as small as possible.
We consider the gathered information in this project to be very trustworthy since its collected from authorities and engaged associations and organisations with much knowledge in very specific areas. To combine this knowledge and information in one proposal is a strenght we have as landscape architectures.

The aim of spreading knowledge about biodiversity through the hotspots is something we see as a strength with the design. The hotspots adds a value that can attract visitors who normally do not find an interest in nature or biodiversity. By visiting any of the hotspots they will come close to nature and the information every hotspot offers about biodiversity. Although the information deals with a few selected species it might be the seed that awakes a greater interest and engagement for our biodiversity.

One of the main issues we have been working with is the accessibility within the site. The work started off with the hotspot The Pike factory. To make this area accessible was one of our first missions. While working with this we found that a trail through the site can be what makes it a whole. This also adds the important social layer to the proposal. If the area was not accessible the effort with the hotspots would be in vain.

As landscape architects we understand the importance of seeing the bigger picture to maintain or increase biodiversity. Surrounding forests, cultivated land, ground water levels and much more needs to be taken into consideration. This is an aspect we have not worked with in detail in our proposal since that would be a very big project. It is also crucial that every biotope is maintained in a proper way to be preserved for the future.

Added value

Our aim is that our project will add value for biodiversity, the company and the society. By adding more individuals of endangered species at the hotspots we strengthen their chance to survive. The existing biodiversity will be strengthened by our design and with the right management of the nature. Along the nature trail and at the hotspots the visitors can learn more about biodiversity and therefor continue to value it. Through our project we have been in contact with several different associations in the society to listen to their knowledge and wishes for the site. This has been very giving and will hopefully lead to a place that is more sustainable and appreciated.

Instead of leaving a wound, through this project and in dialouge with the community Cementa can show their concern for the area and leave someting positive behind. A close collaboration with local actors favours Cementa.

The proposal also adds a nature experience for the inhabitants of Slite which they can enjoy while jogging or walking outdoors, fishing, paddling or birdwatching. The proposal also strenghtens Slite as a tourist attraction by offering visitors a new layer, a new kind of experience which combines the local cement industry with a unique landscape. The hotspots in this recreational landscape joins this two elements, concrete and nature, in a design which makes one of a kind. The ambitions in the future development of Slite makes the proposal suitable since it realizes the aim in preserving and maintaining the heritage from the industry.

Conclusions

This report is a summary of our project work at the Western Quarry in Slite. The project resulted in the design proposal “Concrete Diversity” and the master thesis about the design in “Slite recreational landscape - to design for biodiversity”. We believe that through implementing our plans and ideas to the existing restoration plan and making the site accessible we can enhance and spread the information about the biodiversity within the site. Trough reading this report and studying our thesis you have been able to watch the birds from the bird watching tower, walk dry shod over foot bridges in the aromatic wetlands and experience the view over the tree tops and below quarry edges. All through a fine layer of chalk dust.

Addendum 1

Slite upplevelselanskap – att gestalta för biologisk mångfald
Slite recreational landscape - to design for biodiversity

This addendum is our master thesis. Since the document is too big to upload to the Quarry Life Award page we have cleared with the administration for the contest to share the document through a link to the web page where it is published and also available for download. The master thesis is written in Swedish but since large parts of the content are illustrations, plans and maps we have chosen to refer to it in our report.

Link: http://stud.epsilon.slu.se/7120/