

# Aarsleff's guide to biodiversity on land

A guide to incorporating biodiversity initiatives into Aarsleff's building and construction projects

# Contents

- **INTRODUCTION TO THIS GUIDE** (p.3)  
The reason we have written a guide on biodiversity
- **IMPORTANT PRINCIPLES** (p.4)  
What you need to know before getting started
- **OVERVIEW** (p.5)  
See what the guide contains
- **GOOD MEASURES BEFORE PLANNING** (p.6)  
Dialogue with customers, nature assets, what can be preserved, logistics, soil conditions
- **USE THE LOCAL RESOURCES** (p.12)  
Gravel, sand, stone, soil, brushwood and trees
- **MORE EXTENSIVE MEASURES** (p.16)  
Green roofs, green facades, amphibian fencing, fauna passages, rainwater use, rubbish bins
- **LESS EXTENSIVE MEASURES** (p.21)  
Nest boxes, insect hotels, nutrient-poor soil, etc.
- **GLOSSARY** (p.34)  
Overview of common terms used in relation to biodiversity
- **AFTERWORD** (p.35)  
Biodiversity and climate are closely linked



*Biodiversity is a focus area regarding how Aarsleff works with the environment, and we are seeing interest in this area from our investors, customers and partners. We are working to identify and implement specific measures in our projects wherever relevant and feasible. This applies to projects on land as well as when we work in and around the sea. We hope that we can inspire others to do the same.*

*Jesper Kristian Jacobsen  
Group CEO*

# Introduction to this guide

This guide is for all Aarsleff employees who can influence biodiversity considerations in building and construction projects – from start to finish.

The guide is intended to raise awareness and knowledge of biodiversity throughout the Group and to spark an interest in working with both opportunities and challenges. We want to show how biodiversity considerations can be incorporated into building and construction projects, and what this typically entails in practice.

This guide focuses on on-site biodiversity measures. That is, the direct biodiversity impacts of the building or construction project on the building site in question. Here are examples of measures that can be put into practice. As a contractor, we can contribute input and concrete solutions in dialogue with the developer.

Although the greatest impact by far on biodiversity and ecosystems occurs off-site – i.e. in connection with the extraction and transport of the project's raw materials – a broad effort is still needed. In this guide, we will share examples on how we can work towards reducing the impact on nature where our machines operate.

But why even spend energy and resources on the local initiatives?

One important reason is that some measures can help to create habitats, hiding places and sources of food for local species compared to if we did nothing. Another thing is that we humans also benefit greatly from being near areas where we can experience nature.

Thirdly, increasing biodiversity measures in our local environments can raise our awareness of what wilder nature actually looks like and hopefully increase our interest in taking care of nature.

We are also subject to EU requirements to document our work with environment and climate, including the EU Corporate Sustainability Reporting Directive (CSRD), which means that we must report annually on our efforts in the areas of environment and climate, social issues and governance. This applies, among other things, to biodiversity.

Aarsleff's guide to biodiversity on land has been prepared by the Group's Sustainability unit. A corresponding guide to marine and coastal biodiversity has been produced, which you can read on our [website](#).

This guide has undergone quality assurance by Rambøll.

# Important principles

When working with biodiversity measures, we hope that you will keep a number of principles in mind. You can also read more in Aarsleff's Group policy on climate and environment, which is available on our website [here](#).

- **Preserve valuable existing nature before thinking new**

A key principle is to investigate which existing natural assets can be preserved within the scope of the project. For example, trees can serve as habitats for a wide variety of organisms, but their growth can take many years.

- **Preserve or restore connectivity**

Focus on creating and maintaining connectivity in relation to biodiversity. It is about trying to maintain the continuous and uninterrupted existence of different species and their habitats over time. This can help to create a stable environment, giving species a better chance

to adapt and thrive. Creating green passages between different areas can help different species to expand. It is better to have large contiguous areas than a multitude of small, fragmented areas.

- **Stay focused on local conditions**

Every place can have its own unique blend of species and ecosystems. For example, when attempting to improve biodiversity by planting, it is important to choose native plants that fit into the local ecosystem. Native plants are often better adapted to the local environment and more effective at supporting local species than non-native plants.

- **Variation**

There are great differences in whether species prefer sunlight, shade, wet or dry environments, so you can strive to create variation with the measures you choose to take. For

example, a pile of branches in the shade will attract different species than if the same pile was in a sunny location, but both are relevant.

- **Maintenance**

It is important to keep future operational needs in mind when choosing solutions. In many cases, you can design solutions where nature takes care of itself without the need for intervention. Then nature can change in its own way, which can lead to greater variation in the area, but in many cases it still requires maintenance. So remember that biodiversity measures often require operation and maintenance – both the ambitious and less demanding measures.

# Examples of biodiversity measures

In the following pages you will find examples of specific measures you can propose to customers, partners and colleagues in connection with building and construction projects.

The measures are examples and will not always result in demonstrable improvements in biodiversity. The measures must therefore always be assessed within a local and professional context.

We have taken into account that different measures are not equally relevant in all phases of the building process. Therefore, we have structured our various ideas according to when they are relevant to focus on.

Many of the measures are relatively simple to implement, whilst others require further clarification, collaboration and planning before they can be implemented.

## BEFORE PLANNING

- Investigate whether biodiversity considerations are part of the project
- Measure nature assets
- Preserve as much as possible
- Replace inorganic surfaces with nature
- Learn about soil conditions
- Logistics plan: Make sure that there is a good plan from the start

## USE LOCAL MATERIALS

- Gravel, sand and soil piles
- Leave large stones together or individually
- Leave logs and branches
- Establish brushwood fencing and piles of branches

## MORE EXTENSIVE MEASURES

- Green roofs
- Green facades
- Amphibian fencing
- Fauna passages
- Rainwater

## LESS EXTENSIVE MEASURES

- Nest boxes
- Insect hotels
- Gentle trimming of trees
- Native species
- Measures at site huts
- Nutrient-poor soil
- Berry bushes and fruit trees
- Tall grass
- Flower beds
- Planter boxes
- Fight invasive species
- Avoid pesticides and fertilizers
- Prevent waste in nature

# Before planning

*As a contractor, you can contribute input in the early project phases of some projects, when the framework is being established, even though our primary role usually starts later in the process.*

*You can for example provide input on how biodiversity can be integrated into the project. This can be at meetings during the sketch phase and when looking at financial estimates.*

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## **Investigate whether biodiversity considerations are part of the project**

Investigate whether the customer and other partners have considered biodiversity in general, or whether they are interested in working with it.

### *Helpful tips*

- Explain why it is important to consider biodiversity and ecosystems. It does not have to be a highly specialised or detailed explanation.
- Tell them that you would like to explore which measures could be a good fit for the project.
- Share the various measures that you think are most relevant.
- You cannot carry out every type of measure as a contractor, but it is helpful to present ideas nonetheless.



### Measure nature assets

To establish a stronger basis for assessing which types of measures may be relevant to the project, it may be a good idea to take stock of the nature assets that already exist on the site. This can help you compare conditions before and after a project and discuss possible changes to the physical framework of the site.

A simple way of doing this is by mapping out valuable trees on site and using resources such as [miljoeportal.dk](http://miljoeportal.dk) or [arter.dk](http://arter.dk) to check for protected habitats and species in the area.

Another approach is the “Biofaktor” tool, which is often used in Denmark to measure the degree of green elements in an area. Here, for example, trees score higher than mowed grass, and asphalt gives zero points. “UrbanBioScore” is a more recent example of a method that translates data into an overall biodiversity score in urban areas. The method can be used to compare areas and to track developments over time, and it is also included in newer versions of DGNB-certification.

### Helpful tips

- If you use the Biofaktor model, keep in mind that although the method can help to quantify the greenness of an area, a high score using the model is not necessarily correlated with high biodiversity. A high Biofaktor score indicates that the area contains several green elements, which in most contexts may point to an increased potential for life.
- If you are interested in learning more about measurement methods, you can read about Biodiversity Net Gain (BNG), which is used in the UK. This method is also used in connection with construction projects that are to be BREEAM-certified, but a specialist is required to perform the calculations with this model.
- It may be relevant to reach out to professionals with experience and knowledge of different measurement methods.



### Preserve as much as possible

Rather than rushing to buy or develop new solutions to enhance biodiversity, it is important to start by taking a good look around the construction site.

It may be worth investigating whether parts of the original natural environment can be preserved, as existing features can be of great importance to local species. Trees are a good example. They can be home to many different types of life, and they often take decades to grow large. There may also be protected habitats and species in or near cities.

If possible, it also makes sense to avoid clearing the construction site completely. Deadwood or piles of stones that are not in the way of the construction project can be used as part of the local landscape and provide habitats for local species.

### Helpful tips

- Explore what is already present on the site.
- You can find good information about local species on the website [arter.dk](http://arter.dk), and inspiration regarding types of nature at [danmarksarealinformation.miljoeportal.dk](http://danmarksarealinformation.miljoeportal.dk).
- Ask customers and other partners if they have looked into what can be preserved.
- Make concrete proposals about what can be preserved.
- Make sure to inform all relevant employees about the reasons for decisions to protect certain areas, trees, etc.



### Replace inorganic surfaces with nature

Asphalt and similar inorganic surfaces offer limited opportunities for plants to grow and provide habitats for animals and insects. Replacing inorganic surfaces with different types of vegetation can help create additional areas that can serve as habitats for various species.

### Helpful tips

- You can consider using a surface with grass reinforcement mesh. This can support the drainage of rainwater and offer habitats for smaller insects such as ants and beetles. Furthermore, vegetation can result in cooler surface temperatures than black asphalt.
- Start a dialogue with the customer about potential opportunities to incorporate vegetation in areas with inorganic surfaces.
- Offer good ideas for measures such as replacing inorganic surfaces with foliage.
- Explore whether some of the car park can be converted into green areas with vegetation. It could be that there is room between the cars or alongside the car park.



### Learn more about soil conditions

Soil conditions at the site have a big impact on both the construction project and biodiversity. Therefore, it is important to conduct a thorough assessment of the soil conditions. Knowledge about the soil conditions can provide information about the most appropriate choices in terms of plants and landscaping.

You can also support certain plants by leaving nutrient-poor soil on the surface of areas after the building and construction phase. This has a big influence on the development of biodiversity later in the operational phase. You can read more about this in the section on nutrient-poor soil.

It is also important to avoid leaving the soil too compact after completion of the project, as this can make it difficult for many plants to establish themselves.

### Helpful tips

- Conducting a soil analysis of drilled samples from the construction site provides information about the composition and properties of the soil.
- Analysing geotechnical surveys can also provide insights on the soil conditions.
- Collecting data from existing geographic reports and drilled samples can help you to understand the soil conditions. These reports can also give an indication of how the work should be performed.



**Logistics plan: Make sure that there is a good plan from the start**

It is beneficial to incorporate biodiversity considerations from the very beginning. When developing a logistics plan, it is important to take various considerations into account. This does not preclude good ideas later in the process, but it can often be difficult to change plans in the middle of a project. In this way, you can help ensure a more appropriate use of resources and ensure that customers, partners and colleagues understand the various measures.

**Helpful tips**

- Make specific suggestions about what could be good to include in the contract.
- Carefully plan the introductory phases of the project, the layout of the construction site, and the logistics plan in a way that makes it possible to avoid working in specially designated areas.
- Make sure to inform all relevant colleagues about the various measures that you and they are responsible for implementing.



# Use the local materials



***Why transport gravel, sand, stones and soil away from the site if it can benefit the local biodiversity after the last machine has left the construction site? In the next measures we cover here, you can see some of the materials that you should consider leaving at the construction site.***

## **Gravel, sand and soil piles**

*Gravel piles* can create ideal environments for the insects that require loose, well-drained material, e.g. for digging passages and laying eggs, and those which thrive in small crevices and caves. The presence of insects can also attract small mammals and birds looking for food.

*Sand piles* can collect solar warmth, providing an ideal habitat for the sand lizard, which is rapidly disappearing in Denmark. Many insects need warm places to survive.

*Soil piles* can attract and provide habitats for microorganisms, insects and small animals.

It is a good idea to consider establishing various piles of gravel, sand and/or soil along motorways, rail tracks, etc.

By keeping the materials at the construction site, you also reduce transport.

## **Helpful tips**

- Talk with the customer about whether they are interested in leaving piles of gravel, sand or soil behind after the construction and building phase.
- If so, then propose well-suited locations for these piles.
- Explore whether local materials from the construction and building phase can be used.
- Carefully plan where the materials can be stored during the construction and building phase. If there is not enough room, it may be possible to store these materials nearby.
- Calculate how much you can save on transport by keeping materials at the site. This is both relevant in terms of finances and carbon emissions.
- Ensure that all relevant employees on the project are aware of the plans.

### Leave large stones together or individually

Areas with stones can benefit nature. They offer good hiding places for amphibians and reptiles, among others. Small cracks and fissures in the stones, as well as cavities between the stones, provide shelter and hiding places for insects, amphibians, small mammals and reptiles. Stones are also used by many species for sunbathing.

### Helpful tips

- Working with the customer, explore potential areas where you can leave large stones individually, in heaps, or as stone dykes.
- Choose sunny locations for the benefit of cold-blooded animals that need heat to stay active.
- Carefully plan where the stones can be stored during the construction and building phase. If there is not enough room, it may be possible to store them nearby.
- Calculate how much you can save on transport by keeping materials at the site. This is both relevant in terms of finances and carbon emissions.
- Ensure that all relevant employees on the project are aware of the plans.



### Leave logs and branches

Deadwood, such as hollow tree trunks and branches, can serve as habitats and support many different species. It is an important part of nature and offers habitats, refuge and breeding places for fungi, insects, small vertebrates and bats. The decomposition of the wood attracts bark beetles, which in turn attract birds and small mammals. For example, you can leave deadwood such as tree trunks lying on the ground or leave tree trunks standing with their roots in the ground.

### Helpful tips

- If you have to cut down trees, it is worth investigating whether it makes sense to leave the deadwood at the site after the construction and building phase.
- Explore whether the wood can be stored somewhere on the site or nearby.
- Place groups of smaller tree trunks together.
- Large solitary tree trunks can also provide good hiding places.
- It can be beneficial for younger trees to be veteranised, and dense wooded sections can benefit from being thinned out, as most places lack natural dynamics.
- It is also a good idea to place tree trunks and branches in varied environments in terms of light/shadow, dry/wet, etc.
- Larger stumps can be left in place without removing them completely. In the case of trees posing a risk, consider reducing the crown and keeping the trunks in place instead of felling the entire tree. Please consult professionals regarding the assessment of hazardous trees.
- Calculate how much you can save on transport by keeping materials at the site. This is both relevant in terms of finances and carbon emissions.
- Ensure that all relevant employees on the project are aware of the plans.



### Brushwood fencing and piles of branches

Brushwood fencing and piles of branches can serve as resting and breeding places for small animals, birds and insects. This can provide a breeding ground for reproduction and survival.

### Helpful tips

- Working with the customer, explore their interest in keeping branches and twigs at the building site after completion of the project.
- Carefully plan where these branches and twigs can be stored during the construction and building phase. If there is not enough room, it may be possible to store these materials nearby.
- Collect branches, leaves and twigs in piles or fences.
- Place these brushwood piles in various environments in terms of light/shadow, dry/wet, etc.
- If you need to remove piles or brushwood fencing, be aware that they may be home to breeding birds, hedgehogs and hibernating amphibians and reptiles.
- Calculate how much you can save on transport by keeping materials at the site. This is both relevant in terms of finances and carbon emissions.
- Ensure that all relevant employees on the project are aware of the plans.

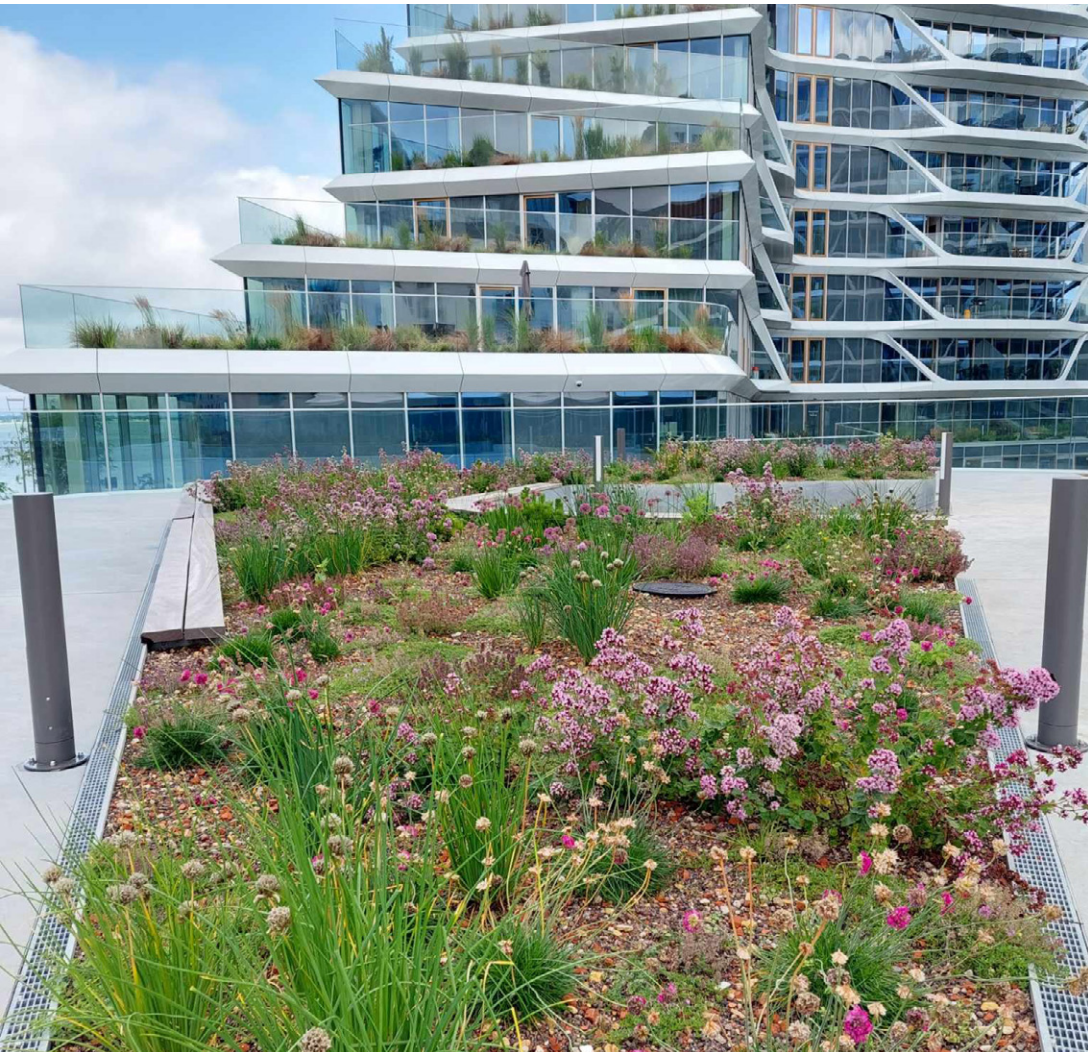
### Brushwood fence in Lystrup

This large brushwood fence was established at Æblevænget in Lystrup in connection with a large-scale tree trimming project.

Landscaper: Dan Jord A/S.



# More extensive measures



*Some biodiversity measures are more demanding than others. In this section, you will be presented with some of the measures that will probably require the customer to help cover the increased costs associated with the measure.*

## Green roofs

Every square metre counts, and roof areas can offer an excellent opportunity to create new green areas, especially in densely developed areas. They can help reduce the load on sewage systems and provide a cooling effect on buildings. The green living roofs are also popular refuges for some insects and birds, and they can provide relaxing environments for us humans as well.

## Rooftop terraces at Lighthouse

One of Dan Jord A/S' projects was the establishment of a public rooftop terrace and private rooftop terraces of various sizes at Lighthouse in the city of Aarhus.

Developer: Anpartsselskabet Lighthouse United. Contractor: Per Aarsleff A/S. Landscaping: Dan Jord A/S.

## Helpful tips

- Ask your customers and other partners if they have considered establishing green roof areas.
- Remember that the building's structure must be able to withstand the heavy roof.
- Consider, for example, a grass/herb roof, turf roof, stonewort roof or moss-sedum roof.
- Consider establishing a biotope roof using, for example, dead-wood, stones and gravel.
- You can consider large roof areas or, for example, bicycle sheds.
- Insects can fly surprisingly high, so even roofs on tall buildings are worth considering.
- Remember that rooftop gardens require operational resources, so the customers must understand that there is a subsequent operational task associated with a green roof.

### Green facades

Planted facades have many of the same benefits as green roofs. Depending on their design and location, they can help to cool a building in the summer, retain heat in the winter, and provide a completely different aesthetic look. They can also offer food and nesting sites for birds and insects and absorb rainwater.

### Helpful tips

- Ask customers and other partners if they have considered establishing green facades.
- Remember to consider the type of soil used. What is the best match for the types of plants you are considering?
- Consider the height, weight and colour of the plants.
- Keep in mind that much vegetation is often unappealing in appearance during winter, and the customer must also be informed of this.
- You can also integrate insect hotels and nest boxes in the green walls. Explore the need for support, trimming and tying.
- Determine the correct placement in relation to shadow and sunlight.
- If possible, use native species. For example, you can use native climbing/creeping plants such as ivy or honeysuckle.



### Amphibian fencing

It is important to protect animals as much as possible during the construction and building phase. This can be done, for example, by establishing amphibian fencing which, when correctly installed and maintained, can guide amphibians and other small animals safely around the construction and building site. Amphibian fencing can also make sense as a permanent installation to guide amphibians and small animals under, over or along roads and railways. All amphibians in Denmark are protected, and eight of them are strictly protected – you know them as salamanders, frogs or toads.

### Helpful tips

- Explore whether there is a frequent occurrence of migratory amphibians in the area of the construction and building site. Registrations of species can be found at [www.arter.dk](http://www.arter.dk).
- Note that waterholes and wetlands may be protected habitats, and they may also be found in the cities – see [miljoeportalen.dk](http://miljoeportalen.dk).
- As all species of amphibians are protected, special laws apply to the areas that they use as habitat.
- The tender documents should state whether the project involves a protected area with amphibians.
- You can find more information on amphibian fencing design in the Danish Road Directorate's publication "Hegning langs veje – anlæg og planlægning" (Fencing along roads – construction and planning). It is recommended that the amphibian fencing has an overhang, so that amphibians do not climb up and over the fencing.
- Familiarise yourself with the guidelines on periods for erecting fencing and fence design.

### Amphibian fencing along Baltic Pipeline in Jutland

When Per Aarsleff A/S, in a joint venture with two German companies, built the Baltic Pipeline in Jutland, various measures were taken to protect amphibians, bats and birds. Here you can see amphibian fencing that is being erected in connection with the construction of the gas pipeline.

Developer: Energinet. Contractor: Per Aarsleff A/S



### Fauna passages

When animals cross roads and railways, it can be dangerous for both animals and humans. It is difficult to avoid completely, but greater access to fauna passages can help animals move more freely between habitats. It is especially important to prevent the isolation of animal populations.

### Bridging

*Fauna bridge* A broad spectrum of species can traverse bridges over traffic corridors. It is important to make the bridges wide enough so that there is room for various species and a sense of a coherent landscape. In some cases, it may be enough with a rope bridge for martens, squirrels, etc.

### Passageways

*Landscape bridge* Landscape bridges can give a wide range of species important access to passage under traffic corridors. This is especially relevant for species linked to streams and wetlands. Some landscape bridges are designed for larger deer species.

*Tunnelling* Tunnels of various sizes under traffic corridors can provide passageways for a variety of species. Some caveats are that it is not possible to create vegetation through the passageway and that they can be less effective than landscape bridges. Tunnels that are too long have a minimal effect.

### Helpful tips

- Working with the customer, explore potential fauna passages, if these have not already been incorporated into the construction projects.
- Note that it is important to consider a wide range of local considerations relating to location, size, etc.
- The examples we've described are often large construction projects in themselves and therefore cost intensive.
- Fauna passages can also be passages such as streams and connected tree canopies.

### Fauna passage in Tvis

This fauna passage is an example of a passageway under a motorway overpass, giving animals and nature the ability to live as uninterrupted as possible after construction of the motorway.  
Turnkey contractor: Aarsleff. Developer: The Danish Road Directorate. Consultant: ISC.



## Rainwater

Many rainwater solutions not only have the potential to handle rainwater but can also contribute with measures that take local biodiversity into account. If rainwater is diverted to waterholes or ponds, for example, these can serve as habitats for plants, insects, amphibians, birds and other organisms that seek wet environments. In this way, rainwater management and consideration for species' habitats can be combined.

Examples of rainwater solutions:

- Drainage basins
- Green roofs
- Permeable surfaces
- Waterholes and rainwater lakes
- Restoration of natural streams

## Helpful tips

- Working with the customer or other partners, explore whether they have considered diverting rainwater and the possibility of incorporating solutions that can create habitats for various species that seek wet areas.
- Investigate whether there are good locations for collection of diverted rainwater.
- If there is a landscaping architect on the project, it is often their task to look into local drainage of rainwater.
- Be careful to avoid creating slippery and steep edges around wetlands, as it may be difficult for animals to get out of the waterhole again.
- Remember to think in terms of amphibian-friendly design. They need flat edges around waterholes, and that the waterhole is shallow and in direct sunlight.
- Do not put fish or crayfish in the waterholes, as they eat amphibian fry.

### Søpark with rainwater as the common denominator

Here is Låsby Søpark (Låsby Lake Park), where the entire facility is designed with several interconnected lakes that act as a rainwater buffer. It is now a recreational park with a variety of activities and good opportunities for relaxation and exercise.

Contractor: Dan Jord A/S. Developer: Skanderborg Municipality.



# Less extensive measures



***Many biodiversity measures on local construction sites are not necessarily cost intensive. In this section, you can find examples of what we call “less extensive measures”.***

Nest boxes come in a variety of designs and can provide birds and bats with the optimal breeding conditions. They are especially relevant in areas without natural breeding and resting areas such as old trees, cracked bark and hollow trunks.

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## **Nest boxes**

To offer the area's birds and bats with more opportunities for nesting and roosting, you can install nesting boxes.

When correctly designed and installed, they can also provide protection against ground-dwelling predators.

## **Bird nests at Fydenspark**

In connection with a complete renovation of Frydenspark in Amager, the construction team grew concerned about the impacts of the project when a flock of common swift saw the residential area as a breeding ground. The common swift is a protected bird species, so in collaboration with a bird expert, nesting boxes were installed on the scaffolding and permanent nesting boxes were installed on the gables of 14 buildings.

Contractor: Hansson og Knudsen A/S., Developer: DAB, Consultant: Dominia

### Avoid waste in nature

It negatively impacts nature when we leave waste behind in nature. Therefore, it is important to make sure that waste does not fly away during the building and construction phase, but that you place it in our waste containers. It is also important to ensure access to rubbish bins for residents and passersby in public areas both within and outside the city. Cigarette butts and chewing gum can poison and choke the animals that eat them. Small mammals and reptiles can become trapped in bottles, and larger animals can cut themselves on shards of glass.

### Helpful tips

- Make sure that waste is placed in waste containers and does not fly away while carrying out projects.
- Explore whether bins or other options for disposing of waste have been considered in the projects.
- Make suggestions about good locations for rubbish bins in the various common areas.



### Insect hotels

Insect hotels can attract and provide shelter for various species. They can provide habitats and space for eggs and larvae of bees and other important insects. It is often best to make them using natural materials such as wood, bamboo, clay or other elements, and with various spaces where insects can lay eggs, hibernate or seek shelter.

### Helpful tips

- It is important to place the hotels in the right locations, for example near flower beds, fruit trees and other areas with naturally occurring insects.
- Different species have different needs, so it is important to decide which species you want to design the insect hotel for. Bees must live in dry locations with direct sunlight, while other insects prefer moist areas on the ground surface.
- Insect hotels can be anything from a frame with a lot of different compartments to a simple wooden log with holes drilled into it.
- Avoid maintenance – many insects have immobile/low-mobility life stages (eggs/larvae), and the generations often overlap. Maintenance can disrupt entire generations.
- Note that materials such as plastic do not provide breathability and the natural feel that insects often prefer.



### Gentle trimming of trees

It is important to treat trees with care, as they are often a habitat and source of food for many different species. They have many important roles and functions that influence the environment, people and ecosystems. This can include carbon storage and the release of oxygen – depending on the type of tree and local conditions. How we prune trees is therefore important for supporting their health and reducing the risk of damage. You can read more about conservation of natural assets such as trees in the section on conservation of nature.

### Helpful tips

- Working with the customer, check whether trees need to be trimmed and, if so, make sure to do so as gently as possible.
- Start by assessing why the tree needs to be trimmed. Is it necessary to remove dead or diseased branches, reduce the size, improve air circulation around it?
- It is often best to trim deciduous trees during the winter when the tree is dormant. Evergreen trees can be trimmed all year round, but avoid trimming in extreme heat or cold.
- Avoid over-trimming – do not remove more than 25% of the tree's foliage during one season, as this can harm the health of the tree.
- Sometimes it can make sense to engage in the practice of 'veteranisation', where we imitate nature's damage and defects on trees (artificial ageing).
- Please feel free to consult professionals or others with solid experience in tree pruning.



### Native species

To promote biodiversity through planting, you should strive to use native plants that are adapted to the local ecosystem. Native species are preferable because other local species, both animals and plants, often thrive best with plants they already know. Native plants for the area are adapted to the local environment and are good for supporting local species.

However, it is not always easy to find seeds for native plants, and sometimes the customer might want a different aesthetic expression that requires non-native plants. Although native species are often considered appropriate in biodiversity contexts, non-native species may also be introduced, if they are not invasive and are deemed suitable for the specific area.

### Helpful tips

- Make the vegetation varied to attract different insects, birds and small animals.
- Also choose herbs with different flowering periods to establish a continuous source of food.
- If you want to help native plants, you can make patches of bare soil and see if they emerge on their own.
- In some places it is a good idea to sow or transplant native plants if they are not found in the local surroundings.
- You can collect and sow high quality seeds from local nature areas.
- A guide to choosing trees and bushes can be found at [plantevalg.dk](http://plantevalg.dk).
- Native plant species that are beneficial to biodiversity can be found in DCE's Plant Catalogue. (Teknisk rapport fra DCE - Nationalt Center for Miljø og Energi nr. 193).



### Measures next to site huts

Biodiversity measures next to site huts can improve the aesthetic look of the construction site for the benefit of those working at the site and other stakeholders in the immediate area.

It is a less significant measure for local biodiversity, but nevertheless it can show that creative efforts are being made to find space for vegetation in many different places.

### Helpful tips

- Make the vegetation varied to attract different insects, birds and small animals.
- Explore whether space can be designate for planter boxes or plant walls.
- Explore whether you can use recycled materials to make the plant wall.





### *Helpful tips*

- You can remove the top layer of soil. There are often many nutrients in the top layer of the soil.
- Add gravel or sand on top of the soil. This can reduce the amount of nutrients.
- Avoid adding nutrient-rich soil after the construction phase if you want to maintain the nutrient-poor quality.
- If performing excavation, use the deeper soil as the top layer, as it has less nutrients than the existing topsoil. In some cases, there may be gravel or sand layers deeper underground that are well-suited for creating nutrient-poor habitats.

### **Nutrient-poor soil**

It sounds a bit counterintuitive, but nutrient-poor soil can, in some contexts, be beneficial for biodiversity. Nutrient-poor soil can prevent dominant species from taking up too much space and make room for a greater diversity of plants. It can contribute to the formation of different habitats, including areas with limited vegetation, open landscapes and varied microenvironments. Nutrient-poor areas can also be important habitats for rare or endangered species that thrive in these particular conditions.

### Berry bushes and fruit trees

Berry bushes and trees are excellent sources of food for many species and can attract butterflies and wild bees, among others. Birds also benefit from berry bushes and fruit trees, as they provide a source of food and water during dry and cold months. Birds, hedgehogs and other animals also utilise the berry bushes as hiding places. We humans can also harvest berries and fruit, so in this way, incorporating fruit trees and bushes into the project provides both recreational and biodiversity value.

### Helpful tips

- Explore whether there is space for berry bushes and fruit trees. When it comes to berry bushes, you can consider raspberry bushes, blackberry bushes or a variety of other species. When it comes to fruit trees, you can plant everything from Mirabelle plums to apples, pears, plums, etc.
- Examples of fruit trees and bushes, which are often used in planting schemes with a focus on biodiversity, include blackthorn, wild cherry, rowan, elder and hawthorn. They have many flowers, which benefit insects and provide a wealth of fruit for wildlife. It is best to vary the composition of fruit trees and bushes, as they flower and grow fruit at different times, which helps to maintain a continuous source of food for wildlife.
- You can find good ideas for native plant species that benefit biodiversity in DCE's Plant Catalogue (Teknisk rapport fra DCE - Nationalt Center for Miljø og Energi nr. 193).



### Tall grass

Tall grass provides more habitats and food sources than frequently mown grass, but in Denmark we have lots of grassy areas, so areas with flowering plants instead of grass are preferable if possible. If this is not possible, mowing 1-2 times a year is preferable – ideally in the autumn and early spring. Clippings should also be removed from the area to prevent the accumulation of nutrients. Wild, Danish, insect-friendly flowers often thrive where grass has difficulty growing – so you make good conditions for insects by making life miserable for the grass.

It is important to remain patient, because the wild flowers might not start appearing right away. In urban and industrial environments, it can be a good idea to demarcate wild areas with a natural border, making it appear more intentional to the human eye.

### Helpful tips

- Explore whether the site has grassy areas that can be allowed to grow.
- It can be beneficial to establish varied terrain, maintain mowed paths, and mow the grass in mosaic patterns.
- Make sure to plan the logistics to avoid these areas, if possible.
- Make sure that those working at the site are informed that the grassy area is to be preserved.
- The purpose of this measure must be made clear in these communications.
- Remember that not everyone appreciates areas where plants are allowed to grow wild. It can quickly look uncontrolled, so it can be a good idea to show that the wild growth is intentional. To address this problem, you can make paths alongside the grass that is allowed to grow.
- The grass must not be fertilized or sprayed.



### Flower beds

Flower beds provide food for a wide range of insects such as bees, butterflies and other pollinators that are attracted to the flowers' nectar and pollen. Smaller insects and spiders can also find good habitats and hiding places among the flowers and on the ground.

### Helpful tips

- Working with the customer, explore whether there is space for flower beds and then choose a suitable location.
- It is fine if the flower bed is on bare soil so that the flowers do not have to compete with hardy grass.
- Choose a wide range of native flowers to attract a range of different insects and other animals.
- By choosing plants that flower at different times of the year, you can provide food and habitats all year round for various species.
- Avoid the use of pesticides, which can have negative impacts on insects and other organisms.
- Choose seed mixes from trusted sources. Plants must be native and should fit into the local ecosystem.





### Helpful tips

- Working with the customer, explore whether there is space for planter boxes and then choose a suitable location.
- By choosing a wide range of plants for planter boxes, such as flowering plants, bushes and smaller trees, you can cater for various species of insects and birds.
- Plants that are in contact with the ground are preferred, if possible, as they require less maintenance.
- It is fine if planter boxes are large. The bigger, the better, in fact.
- Avoid the use of pesticides, which can have negative impacts on insects and other organisms. This will attract a wider variety of animals.
- Use plants with different flowering times. This will ensure food and habitats all year round.
- Remember to plan according to local conditions such as climate, soil type and sunlight conditions.

### Planter boxes

Planter boxes with flowers or other vegetation can be beneficial for insects such as bees, butterflies and other pollinators, which can play a part in the overall pollination of plants.

The hollow spaces between plant roots, soil and other organic materials in planter boxes can provide habitats and hiding places for small animals, including insects, spiders and microorganisms. Planter boxes can also contribute to local food chains, where insects, for example, serve as food for birds.

### Fight invasive species

Invasive species are not native to Denmark and have a way of life that can outcompete native species – and they can make survival difficult for other animals and plants that are native to the region. Unfortunately, the number of invasive species is growing, but you can help in the fight against them.

Widespread invasive species include goldenrods species, *rosa rugosa*, and giant hogweed.

### Helpful tips

- Explore whether invasive species are present before the project commences.
- Working with the developer, check whether the removal of invasive species can be written into the project.
- Be especially careful not to spread the seeds or vegetatively propagating parts of plants so that these species do not spread.
- Machines and equipment must be regularly cleaned when working in areas with the unwanted plants and animals.
- Registrations of invasive species can be found at [arter.dk](http://arter.dk).
- The EU list and the national list, as well as a report on invasive species can be found here: <https://mst.dk/erhverv/rig-natur/artsforvaltning/invasive-arter/de-invasive-arter>



### Avoid pesticides and fertilizers

The use of pesticides affects the well-being of insects. Frequent use can lead to resistance among pests and weeds, and continued use can disrupt the food chain. Bees, butterflies and other naturally occurring insects may struggle to survive, which can affect bird populations and larger animals. Pesticides can also impact the groundwater and drinking water. Therefore, it is a good idea to think before using pesticides.

You should also try to avoid using fertiliser, which can be damaging to biodiversity in multiple ways. For example, fertiliser can result in overgrowth of certain plant species at the expense of others, thereby reducing the diversity of plant species.

### Helpful tips

- Explore whether you can avoid the use of chemical pesticides and other substances.
- Building biological diversity and integrity can help reduce the risk of individual species taking over, which may reduce the need for pest control.
- Explore whether you can use biological control with natural predators of pests, or pesticides made of naturally occurring organisms such as bacteria, viruses and fungi.
- You can also choose a varied mix of vegetation, including resistant plants.



# Glossary

## **Biodiversity**

Biodiversity is about the diversity of living organisms in all environments, both on land and in water, as well as the ecological dynamics between the organisms. Biodiversity includes variation within and among species, as well as a diversity of ecosystems (UN).

## **Ecosystems**

An ecosystem comprises a defined area in nature where organisms can live in conjunction with their surrounding environment. The earth can be considered a single ecosystem, but it could just as well be a forest, a sea, or a bucket full of rainwater and old leaves in the garden (Danish Environmental Protection Agency).

## **On-site biodiversity**

On-site is about the impact of building and construction on biodiversity at the specific site.

## **Off-site biodiversity**

Off-site is about the biodiversity impacts of the building or construction project deriving from the production of materials and energy used for the building or project.

## **CSRD**

Biodiversity is included as a reporting topic in the annual reports of large companies in the EU, including Aarsleff. This may result in small and medium-sized enterprises becoming involved through value chain requirements.

## **ESRS E4**

The specific reporting area on biodiversity in CSRD is called ESRS-4. There are a total of 12 ESRS standards in CSRD.

# Epilogue

The biodiversity crisis is often overshadowed by climate change when it comes to public attention and prioritisation. But the decline of nature is at least as important. Furthermore, the two issues are intrinsically linked and interdependent. The climate affects the conditions for nature – and the state of nature affects the climate.

Talking about biodiversity and ecosystems can quickly seem abstract, but in reality it is very simple. Our access to clean water, air and food is closely linked to a diverse and well-functioning natural environment, for example the ability of bees and other insects to pollinate plants, which enables food production.

And we know that construction and building projects affect nature. This can happen, for example, on our construction sites or when raw materials are extracted for the materials we use.

At Aarsleff, we therefore consider how our projects may affect biodiversity and ecosystems.

# Aarsleff's guide to biodiversity on land