



Lessons from Freiburg, Germany

A report on the learning from the PERFECT project study tour to Freiburg, Germany

March 2019



This report has been written by the Town & Country Planning Association and Dr Ingo Schuder, Brillianto.

Introduction to the PERFECT project

In March 2019, the PERFECT partners and their stakeholders spent three days in Freiburg, Germany. During peer-to-peer working in September 2018, partners identified the need to have more experience and good practice examples of well-established green infrastructure policies and practices which would help to develop Action Plans and persuade stakeholders of the long-term benefits of investment in green infrastructure. It was great to visit Freiburg due to its 30-year history of green policies and investment in green infrastructure.

Freiburg

Freiburg is a city in southwest Germany, not far from the borders with France and Switzerland.

In the 1970s, there was a proposal to construct a nuclear power station not far from the city but there was fierce resistance to the idea from the residents of Freiburg. The city was tasked with finding an alternative source of energy and decided to invest in renewables. This was the beginning of the long-term green policy of Freiburg and acted as a catalyst for change across all departments. The GI network was key to much of the planning process and it was included in the spatial planning from the very beginning. It now extends throughout the city and also creates a valuable link with the surrounding natural landscape.

Political leadership has been paramount in the achievements, with many initiatives only possible due to the leadership of the municipality and high levels of financial support from the public sector.

The city has plans to expand; a 2019 referendum asked residents if they supported the development of a new district (which will be called Dietenbach and 60% voted in favour. New housing development will start in 2022.

The report

We have used the itinerary of the Study Tour to capture the feedback and learning from across the partnership. During the visit, partners discussed the relevance and transferability of each site and completed learning logs.

New Town Hall

Visited on Wednesday 27th March 2019

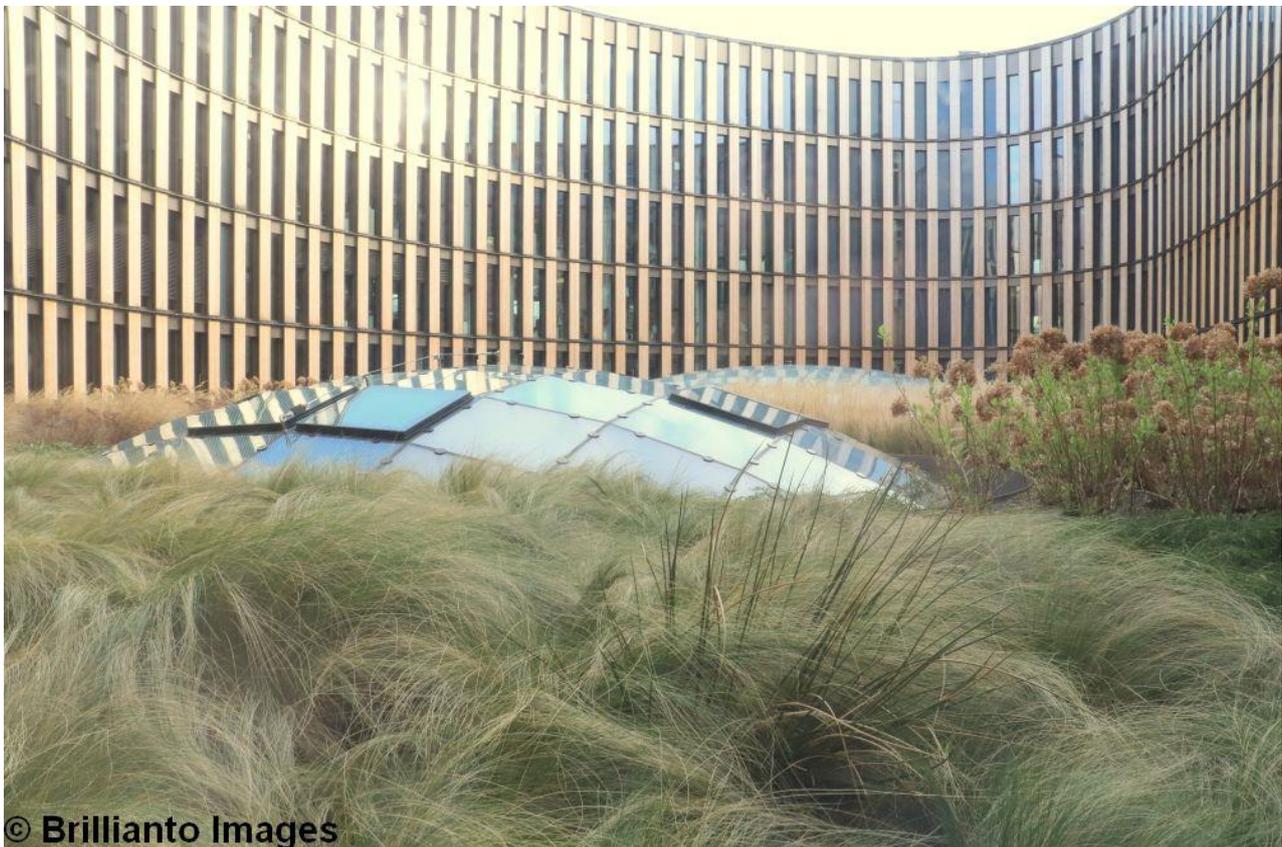
The inclusion of solar panels, a green roof dome, stormwater management system, green footpaths and cycle tracks all contribute to make the new Town Hall a 'plus' energy building as it generates more energy than it consumes. The 840 city administration employees who work there have access to a kindergarten and there is a tram stop immediately opposite the building.

Key benefits provided by the green infrastructure:

- Climate change adaptation, by pluvial water absorbency of the green roof; and flood risk management, through sustainable urban drainage;
- Energy reduction through solar panels; and
- Sustainable transport solutions through foot path, cycle route, proximity of tram

Lessons learnt:

- Leadership of municipality in designing its own flagship building using sustainable principles, including an abundance of green infrastructure;
- Public buildings must be easily accessible by public transport to reduce the need for cars, in this case, the tramline stop is right next to the entrance;
- Providing good cycling facilities (including safe and pleasant cycle routes and secure bike storage) encourages employees and the public to cycle to work/city council service locations; and
- Integrating kindergarten provision into the building area, with outside playspace, makes practical use of green infrastructure and a benefit to employees.



Green tram tracks

Visited on Wednesday 27th March 2019

Freiburg has an extensive network of tramlines which are integrated with the bus and rail transport. New tramlines were added with the development of the Rieselfeld and Vauban districts, and investment into expanding the tram network continues. For Rieselfeld, the tramline was installed before any houses were built, the municipality understanding that it was crucial for people to have easy access to the city as soon as they moved in.

Around 50% of the tracks of tramlines in the city are covered by grass – this results in, at least, a 50% reduction in noise compared to tarmac or gravel lined tramways.

Key benefits provided by the green infrastructure:

- Sustainable transport solutions, by reducing the maintenance costs and improved lifespan of infrastructure; and
- Better health and human wellbeing, through the reduction in noise pollution.

Lessons learnt:

- Greening the tramlines saves maintenance costs, increases the longevity of the tracks and reduces noise by up to 50%;
- Providing excellent public transport reduces the need to use cars, Freiburg has one of the lowest car use rates in Germany;
- Anticipatory planning, plan public transport and GI first thereby creating positive conditions for (other) core urban functions; and
- Greening of tramways is connected to noise reduction.



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Seepark

Visited on Wednesday 27th March 2019

Seepark is a large public park with a lake at its centre. It was redesigned in 1986 following the successful application to hold the 'Landesgartenschau' (Federal state Flower and Gardening trade show). It also contains a football pitch, athletics track and a crazy golf park.

A redwood forest was planted with mature trees 33 years ago but the soil was not suitable for redwood trees due to its shallow depth and high acidity. The forest is now being transformed into a 'climate change forest' comprising 23 species of tree that are more adapted to the present conditions and resilient to future climate change.

Key benefits provided by green infrastructure:

- Enhanced recreation and tourism opportunities due to variety of uses in the park;
- Increased biodiversity; and
- Improved air quality in a central area.

Lessons learnt:

- A public iconic event can act as an engine for regeneration and the creation of new green spaces;
- Species and biodiversity are changing; trees must be resilient and, if necessary, replaced on a regular basis; and
- Prioritising GI as an integral part of city development enables all departments to work together to create a more economically viable city.



Eco-station Freiburg

Visited on Wednesday 27th March 2019

The eco-station was built within the Seepark as part of the Landesgartenschau. It has a green roof, solar panels and a medicinal herb garden. The city council uses it for environmental education, not only for schoolchildren but also holds events, seminars and workshops for the general public. The staff are proactive and opportunistic in developing innovative and attractive projects for enhancing awareness of the environment and sustainable development.

Key benefits provided by green infrastructure:

- The green roof can act as flood risk management, through rainwater retention;
- Increased biodiversity within the Seepark and on the green roof; and
- Community integration and social equality, through environmental education.

Lessons learnt:

- An exemplary building can demonstrate what can be achieved and inspire others to change how they design and construct buildings.



Social Housing Wannerstrasse

Visited on Wednesday 27th March 2019

The Wannerstrasse Social Housing is an example of a refurbishment leading to a higher quality environment. When the houses were refurbished, balconies were added and the parking was moved underground to create open green space for recreational use.

Key benefits provided by green infrastructure:

- Greater quantity of green space for recreational uses;
- Greater community integration and social equality, through increased community cohesion;
- Reduced flood risk;
- Better health and human wellbeing, through greater access to green space; and
- Uplift in property values in the area.

Lessons learnt:

- Moving car parking underground releases land for green spaces to enhance the quality of life of residents;
- Community involvement in improvement plans results in places where people want to live;
- Nature-based solutions can work well in social housing developments; and
- Addition of green roofs and the 'de-sealing' of the ground materials to increase permeability can improve the urban microclimate in existing developments.



Freiburg historic city Centre

Visited on Wednesday 27th March 2019

Freiburg is a historic city, founded in 1120. The city centre was largely destroyed in World War II and only a handful of the original medieval buildings have survived to the present day.

It was restored and regenerated from the 1950s onwards. As a result, the iconic Freiburg Minster and other historic buildings are situated right next to modern buildings. Green roofs and facades, street trees and small public green spaces are present throughout the city centre.

The city has an extensive cycle track network – e.g. the cycle bridge near the main station is used by over 11,000 cyclists every working day.

Key benefits provided by the green infrastructure:

- Climate change adaptation, through reducing the urban heat island effect;
- Improved air quality;
- Flood risk management, through stormwater management;

Lessons learnt:

- Attention to detail in design is essential for creating high-quality environments;
- Converting busy roads to pedestrian zones/ areas open for cycling and public transport only can create high-quality environments; and
- The large quantity of cycle parking was in good use despite not being overly designed. This demonstrates that bike storage schemes that are not under cover or locked can be successful.

Sandfang District (renaturation of an urban river)

Visited on Thursday 28th March 2019

Sandfang is the district located around the River Dreisam. Historically this stretch is used to slow down the river, so that sand could sediment – as part of the river renaturalisation, willows are used to slow down the flow of the water. Water is channelled into the small channels that flow through the city streets ('Bächle') and so catching the sand here is critical to avoid them clogging up.

The location we visited also featured a hydro-power plant, natural restoration of the river Dreisam and a cycle highway (the only place in Freiburg where a cycleway-road crossing gives priority to cyclists).

Key benefits provided by the green infrastructure:

- Flood risk management;
- Enhanced recreation and tourism opportunities; and
- Increased biodiversity.

Lessons learnt:

- Providing high quality networks for cycling is essential for encouraging active travel.
- The renaturation of an urban river increased the visitor and usage numbers;
- Incline of a river needs to consider fishes jumping between tiers. Fish-ladders may be required near hydro-power stations.
- Flood protection should be planned well in advance, taking into consideration the existing and planned parts of the city.
- Small-scale hydropower schemes can efficiently produce energy. The technology operates at extremely low and high water levels (and is therefore resilient to climate change).



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Solar Info Centre (part of Blooming Landscapes)

Visited on Thursday 28th March 2019

This information centre and business building features solar panels, a green roof, and some SuDS elements.

Key benefits provided by the green infrastructure:

- Better health and human wellbeing, through increased access to green space for employees (also leading to improved productivity);
- Climate change adaptation, through temperature reduction in buildings; and
- Creation of jobs, through the apprentice scheme.

Lessons learnt:

- Green infrastructure can improve the internal climate of a building;
- Tranquil and well-designed external green spaces and internal greening contribute to workforce wellbeing and productivity;
- Changing industrial areas requires a long-term strategy. As part of the long-term strategy, GI creation can be promoted, leading to employees working in the area benefitting from access to green space; and
- Cooperation between the municipality and local businesses is key for implementation of GI improvement projects in industrial areas.



Zentraler Betriebshof (council depot) (part of Blooming Landscapes)

Visited on Thursday 28th March 2019

This council depot features green walls and a large SuDS pond. It is part of the Blooming Landscapes project/trail. The project is working with apprentices. It will create green areas in this industrial area which can be used by employees during their breaks.

Benefits provided by the green infrastructure:

- Flood risk management, through water retention;
- Better health and human wellbeing, through increased access to green space for employees (also leading to improved productivity);
- Climate change mitigation, through energy savings from green wall cooling (along with reduced costs).

Lessons learnt:

- Green walls do not have to be technically complicated – they can be created using metal ropes and climbing plans (e.g. ivy).
- Sustainable Urban Drainage ponds provide multiple benefits, including nature conservation, growing food and workplace well-being.
- Trees in car parks alter the microclimate by providing shade, and are therefore an action for adapting to climate change.
- Environmental awareness work and education combined can change the attitude of the general public towards car parking and GI.
- The step-by-step transformation of an industrial area can be effective for securing support from stakeholders.
- Water attenuation areas can act as public recreation space when not flooded.



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New districts - Rieselfeld and Vauban

Visited on Friday 29th March 2019

Rieselfeld

Rieselfeld district was built from 1996 onwards on a former open sewage irrigation field of over 700 hectares. It features innovative courtyards for surrounding residents, green walls, natural playgrounds, a walkable green roof gym, networks of cycle paths and foot paths and a large nature reserve to its north. There are 140 tree pits in the district that local residents care for and have taken ownership of.

Vauban

Vauban, a former army barracks, is the newest district of Freiburg, converted to residential use from 1992 to 2012. The development retained some of the history of the area. For example, in the playground, artefacts found during the development are cemented into the wall. The district features car free streets, many green roofs, natural playgrounds and many other eco-friendly features. Parking in Vauban is restricted to several perimeter car parks to ensure that walking, cycling and public transport are the first choice for residents rather than the more inconvenient walk to the car.

There are two multi-story car parks at the edge of the district. In addition, a further space has been designated as a car park (to ensure the development complied with German law). But the car park has not been built as there is no need for more parking. Instead the space is used as a community garden. Families are encouraged to take on a section of the garden, which is made up of raised beds. There is also a 'willow dome' which is used to hold workshops and other community events.

Cooperative housing

The planning system and how houses are built in Germany is quite different to other European countries. There is usually a greater role and involvement of the public sector. In the case of Vauban, there is a very high proportion of flats with only a limited number of terraces, semi-detached and detached homes. Plots of different sizes are developed by commercial housebuilders, private investors, social landlords, housing co-operatives or individuals. Some



people in Germany physically build their own home. It is a common feature that an individual, a collective of individuals (Baugruppe) or a housing-cooperative commissions an architect to build their house or block of flat according to their own specifications. As a consequence, the diversity of the housing stock is very high compared to, for example, the UK

In **Vauban** there is only a single multi-story block of flats developed by a commercial developer. This was built during the very last phase of developing Vauban.

In **Riselfeld**, for each square block, each section of the block was allocated to a different developer. Many of these developers were collectives of individuals (Baugruppen). This led

to a great diversity in architectural styles in each block. The residents of each square block also designed the inner yards of the square blocks, leading to a variety of green spaces

There are many public spaces which have been designed to be used by all residents, from children to the elderly.

Key benefits provided by the green infrastructure:

- Community integration and social equality, notably through food growing opportunities;
- Increased biodiversity;
- Improved air quality; and
- Climate change adaptation, through cooling effect from shade from trees.

Lessons learnt:

Sustainable transport

- Easy access to open green spaces contributes to equality, health & wellbeing and encourages walking & cycling.
- Ensuring that new districts have strong public transports connections from the very start facilitates a shift in the transport habits of residents.
- Moving car parking underground leaves more room for green spaces.
- Easy access to open green spaces contributes to equality, health & wellbeing and encourages walking & cycling.
- The Vauban and Rieselfeld districts were both planned based on the principle that all residential dwellings were within 500m of a tram stop.
- When parking right outside your house is not permitted, people will get used to other options.

Community Cohesion

- Involving residents in the design of the inner courtyards encouraged a greater diversity of green spaces as well as increasing their sense of ownership. It also reduced the risk of vandalism and anti-social behaviour.
- The use of the woods, in the nature protected area, where children played outside using very few artificial toys or tools. Just sticks, leaves and sand were enough to provide them with a play area.
- In both Rieselfeld and Vauban, 'Baugruppen' provide a mechanism for groups of future owners and investors to commission new residential units.
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Planning and design

- Good urban planning means well connected to public transport planning, beautiful place making and atmospheres. Good access to surrounding landscape.

- Allowing a mix of private, business and co-operative developers for a single housing block creates a great diversity of the housing stock.
- There is value in integral planning schemes. These lead to high quality new residential areas that are well-connected to the city centre and economic nodes.
- Good to see co-living working in practice and how the funding/management of amenity space works as that will assist when working with developers to bring forward schemes
- The combination of playgrounds/recreational areas and nature protection area, at neighbourhood level was impressive
- High-density housing development enables greater investment in quality places.
- If the design of a place makes cycling the easiest mode of transport, then people will cycle.
- By giving responsibility to the community in the design and development of an area (for example the decision to retain the old military buildings), there is a greater diversity in what is built, and the community feels greater ownership over



GI and the environment

- A publicly accessible, 'walk-on' green roof promotes the concept of green roofs in general by bringing it to life.
- Natural environment can be brought closer to the inhabitants.
- A polluted area can be decontaminated and transformed from an environmental burden into a residential area where people live close to nature.
- Applying innovative technologies can save natural resources.
- The synergy between the man-made and natural components can be very effective.
- Abandoned buildings can be transformed to residential ones using technologies that save energy and allow people to live in accordance with the nature.
- Even small-scale green infrastructure projects (such as urban community gardening) can bring a wide range of benefits.