

TOWARDS A QUALITY CHARTER FOR GROWTH IN THE CAMBRIDGE AREA

FREIBURG STUDY TOUR BRIEFING PACK

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BUILDING FOR LIFE
Vauban Case Study

GERMANY



Freiburg City Centre



Hotel Rheingold (Eisenbahnstr 47)

Zum Roten Bären (Oberlinden 12)

RIESELFELD

The planning — the issues

Urban quality

- for 10.000-12.000 people
- high density with 3-5 storey buildings
- district without barriers
- City of short distances

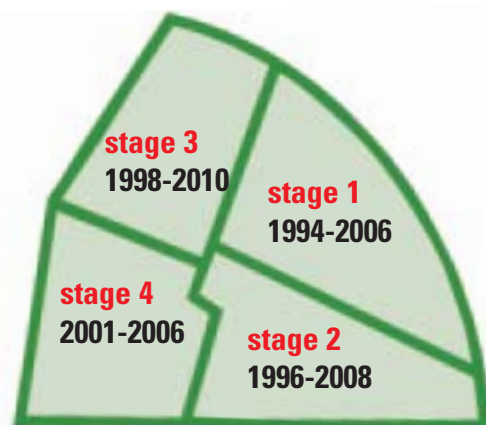
Mixed use shop / houses

- an attractive urban residential area
- creation of 1.000 jobs
- mixed use shop/houses for trade and services along the Rieselfeld alley
- central shopping opportunities
- commercial and mixed use area
- specific building complex at the entrance of the district

Balance of structures and housing forms

- combination of privately financed and subsidized housing construction
- various housing forms
- ground-plans suitable for families, women, children
- public participation
- model projects (e.g. „Stadt und Frau“, private building communities, reasonably priced house construction)
- local district social worker services

The schedule: stages of construction



Various construction forms

- small building lots and variety of designs
- diversity of target groups and building types
- partly living without barriers

Well-developed private and public infrastructure

- primary school
- secondary school
- sports hall
- independent Waldorf school
- tram
- local meeting centre with mediothek for children and young adults, and youth work
- sport and leisure areas
- facilities for children
- churches
- shopping facilities
- private services

High leisure time quality

- public green spaces
- private courtyards for common use
- nearby recreational areas “Tiergehege Mundenhof” (1 km distance), “Mooswald” and “Opfinger See” (within a 3 km radius)
- sport and leisure areas
- an “experience nature” path

Environmentally orientated

- low energy building (65 kWh/m²a)
- district heating connection
- priority for the tram
- speed limit 30 km/h over the whole district
- concept for rainwater use with drainage in the district and in western Rieselfeld
- Western Rieselfeld as a nature reserve





VAUBAN, FREIBURG: a model for sustainable development

Freiburg is an ancient university town in the South Western part of Germany, and is known as one of the most sustainable cities in Europe. Vauban, along with Rieselfeld, is a relatively new district of the city, which exemplifies ecological approaches to landscaping, the use of housing cooperatives, car free layouts and sustainable energy systems.

Background

This former army barracks on a site of 38 hectares has been developed for 5,000 inhabitants and 600 jobs. The scheme is intended to engage the creativity of the community in creating a sustainable and flourishing neighbourhood. It was promoted by the City of Freiburg, and has been developed largely through a number of housing co-operatives and self-builders using a series of briefs. One of the objectives is to be a child friendly development, and by 2002 more than 20% of the inhabitants were under 10. The developments were inspired by reactions to a government decision to locate a nuclear reactor nearby, which united liberal towns people and conservative farmers.

Planning

Planning started in 1993 and the development is intended to be complete by 2006. Detailed plans were completed between 1997 and 1999, and construction started in 2000. All new buildings must have very low energy consumption. Other rules have included the prohibition of detached houses, and no buildings to exceed four storeys. The self-build activity averages 50 dwellings per hectare, which is high by UK standards. Variety has been secured through individually designed facades, and the use of housing co-operatives. The plans for the green spaces were developed through workshops, creating green corridors through the site together with barbecue areas, play grounds, and water areas. Most of the buildings are divided into flats with lush green covered balconies. There is a district centre with shops, a primary school, kindergartens, and public green spaces which run through the development. It has been designed to be a 'district of short distances' and to enable those on low incomes to become home owners. (Rieselfeld is similar except it is entirely built around squares of enclosed public space, with Sustainable Urban Drainage systems creating beautiful gardens, and will accommodate 5,000 new homes or roughly 12,000 people when it is complete.)

Financing

Housing co-operatives involve joint ownership and self management. They have been formed to allow people with low incomes to be part of the Vauban process, using an ecological and low cost approach. At the start of the project ten barrack buildings were given to the Student Union, who turned the buildings into low cost dormitories, using recycled materials. There have been 45 groups of self-builders, and the aim has been to create a balance. Costs have been kept down through self-build, and by avoiding having to build speculatively. A major incentive is the savings on energy costs, which are reinvested in better quality components and outside spaces. Energy is produced locally from PV cells and sold back to the grid at very generous rates. All the money from land

sales is put into infrastructure, mainly new schools, community centres, roads, street lighting and drainage, and extensions to the tram system. In Rieselfeld the city puts in the infrastructure and then sells sites off to private house builders, housing associations or self-build groups.

Managing

The new town was developed by the City Council, in close consultation with citizens. *Forum Vauban* was set up to organise citizen participation, and was set up by a group of active citizens in 1995 who were dissatisfied with the Rieselfeld plan. There was an honorary executive board and five working groups concerned with reducing car use, a city quarter of short distances, ecological district heating, social mix, and cooperative self-build. A *Learning while Planning* approach was taken. Other partners in the development include a housing association, the students union and co-operative building associations, which support groups of households.

Plots are sold off through sealed bids. Because of the degree of co-operative ownership there is direct involvement in the way neighbourhoods are built and managed. Over 45 self-build groups were formed, supported by Project Vauban. In contrast Rieselfeld had many speculative investors, and was coordinating by the City Council's construction department. In 2004 Forum Vauban closed due to a funding dispute with the European Union.

Community engagement

Vauban originally aimed at 25% social housing, but due to state cut-backs this was reduced to 10%. In Rieselfeld the first two phases had a third social housing but this was cut to virtually nothing and as a result the social structure is almost exclusively German born middle class families. Whereas Vauban engaged the community from the start, a citizen's group was not formed in Rieselfeld until 1996, three years after construction had started.

Sustainability

The scheme is a short bus ride from the city (Rieselfeld was built on an extension of the tram lines) and is soon to be connected to the suburban line system. Cycling is normal, with one of the highest rates of usage of any city, and bikes can be carried on the trams at off peak times and enjoy superb parking facilities. 50% of the households are car free, and car sharing is encouraged, as residents receive a one year free pass for all public transport and do not have to pay for the community car park. Three large multi-storey parking garages were built, but many people feel that smaller ones should have been built.

The City decided that land sold by the City should only be available for low-energy houses. The energy concept was developed through the Freiburg Energy Company, Forum Vauban and the City, and includes a CHP plant run on gas and wood chips, and high levels of insulation. Solar panels have also been used, and Vauban is considered one of the main 'solar districts' with panels covering the old barracks. There are over 50 passive energy houses, and 100 units which generate a surplus. Photo voltaics are

produced in the city by locally owned businesses, and there is a solar training centre in the technical college which retrain plumbers and electricians. Sales of surplus energy are guaranteed at a commercial rate for 12 years. One project built the first ever multiple family Living and Working Passive House. This included fresh air ventilation with heat recovery, natural gas fired CHP, solar thermal collectors and PV panels, and a South facing wall that is 70% glazing while the other three walls have only 20% glazing. Though the construction costs were increased by 7%, there was a 79% reduction in primary energy use, and the construction costs should be amortised over 10-20 years.

Lessons

There are a number of benefits to be seen in the development. About 700 houses have been built by self-builders or self commissioners in groups of 5-12 terraced houses or small blocks of flats. This has overcome the major problem, which is access to plots. It has created somewhere very individual and creative, which is seen, like Rieselfeld, as ideal for bringing up children. It produces somewhere distinctive, and very walkable. 20% of trips in Freiburg in 1999 were by bike and only 43% by car, with the car share having fallen from 60% in 1976. The approach also promotes social equity, with little exclusion. Significantly the voluntary group who had promoted the vision went into bankruptcy due to a fall-out with one of its source of grants.

Relevance to Northstowe

Freiburg has a population of 214,000 with a further 60,000 living in the suburbs, and 60% are single. Both sites were former barracks, and the distances from the centre are not too dissimilar. What is different is that Germany is far more environmentally conscious, there is a much greater tradition of using housing co-operatives, and local authorities are much more important players in development. Freiburg offers lessons on how to build energy conscious housing, and attract families to live in a new suburb by offering places that are ideal for bringing up young children. It also may offer lessons on how to make housing affordable to a wider range of people.

City raises green standards

Freiburg in Germany is playing a leading role in efforts to promote a more sustainable urban future, reports **Andrew Mellor**

In the 1970s, local opposition to a planned nuclear plant just 30km from Freiburg started a chain of events that changed the face and the fortunes of the Black Forest city for ever.

The proposal galvanised the population into widespread protest. The plans were shelved in 1975. The story might have ended there but for a mix of raised environmental awareness and a large hole in the region's energy plans. This started a process that has driven Freiburg's status as an ecological model and destination for environmentally minded visitors.

After the nuclear plant proposal was defeated, politicised residents started to campaign for environmental solutions to the city's energy needs and a network of environmental, businesses and research organisations was founded. The council responded by adopting a series of increasingly ambitious environmental energy policies. Freiburg now styles itself as a "solar city" and the impact of the council's vision is clear to see.

Whole neighbourhoods have been planned and built to exacting environmental standards. Public transport is extensive and widely used. One-third of residents choose not to own a car and one-third of all journeys are made by bike. Even the lines for the city-wide tram network are interplanted with grass, creating a sustainable urban drainage system that also reduces running noise by 50 per cent.

It is the abundance and the ingenuity of the environmentally orientated buildings that really stands out. In Schlierberg, 58 timber-framed houses have been built off-site to formidable thermal and imaginative design standards. East-west aligned, with 400mm insulation exterior walls and a woodchip-fired combined heat and power plant, heating requirements are a tenth of those for a traditional house.

Many of the homes also have photovoltaics so produce more energy than they use. Residents are able to sell the surplus energy to the national grid. An imaginative five-storey mixed office, residential and retail block with passive heating and cooling systems forms part of the development and provides hot water for the houses from its solar vacuum collectors.

One of Freiburg's most ambitious projects is the mixed-tenure district of Vauban, home to 5,000 inhabitants who took part in the development and planning process. Resident co-building projects, strict environmental standards, an ecological transport concept and a socially orientated policy towards public space characterise this quarter, the subject of a masterplan produced by the city planning department.



Freiburg: whole neighbourhoods have been planned and built to high environmental standards in Germany's "solar city"

The city's involvement in masterplanning is central to Freiburg's development as an environmental exemplar. The city owns a lot of the available land and when this is sold it lays down rules using design codes. It often retains the masterplanning role for its in-house team, which works closely with external architects to ensure that the city's vision is applied. Planners and designers work together, avoiding the compartmentalised roles so often experienced in the UK.

The city is visually very green. The design of landscaping and civic space is often carried out in-house. Landscape design is viewed as integral in planning applications rather than a reserved matter or part of contingency costings, resulting in a high standard of landscaping throughout the city. Biodiversity is considered to add value to development rather than being an add-on.

Design codes are a strong feature of planning policy, stipulating tough environmental standards but leaving freedom for architectural flair. This has had a noticeable impact on the range and quality of house design, producing the sort of architectural variety and modernity that we are still striving to reach in the UK. Again, consultation with residents on house design very early on has been key.

Freiburg's population is very different from the UK's. The environmental awareness and politicisation of the 1970s made the city a magnet for those interested in an environmentally sustainable lifestyle. Seventy per cent of the population votes Green. Many of the residents are happy to pay an extra five per cent on building costs for the payback in lower energy bills and social and health benefits.

Central to modern Freiburg's creation has been the energy and vision of the

Planning milestones

1975 Planning proposal for nuclear power station overturned.

1986 Guidelines adopted for future-oriented energy policy based on energy conservation, new technologies such as combined heat and power and renewable energy sources, in particular solar power.

1992 Resolution adopted allowing only low-energy buildings to be constructed on council land.

1996 Resolution passed to reduce carbon dioxide emissions to 25 per cent below 1992 levels by introducing further transport, waste and industrial initiatives.

2001 German renewable energy law set specific payback prices for surplus energy produced by renewable technologies.

Environmental aims

- To create a sustainable regional development.
- To promote an integrated planning culture.
- To encourage greater resident participation.
- To implement a sustainable transport network.
- To promote environmentally sound construction.
- To reduce energy consumption.
- To utilise renewable energy sources.
- To design socially orientated living spheres.
- To encourage mixed-use development.
- To consider unconventional solutions.
- To support local food production and farmers' markets.

city's chief planner, Wulf Daseking. An inspiring leader, he has been involved in many of the initiatives that have turned it into Germany's ecological capital. Another visionary figure is eco-architect Rolf Disch, who has designed several buildings in the city, including his own futuristic home, The Heliotope, which revolves to track the path of the sun.

Clearly, some of the pivotal factors in Freiburg's ecological development could not be replicated here. UK local authorities do not own as much land as in Freiburg and the city's history is unique. Yet the UK could learn several lessons. Early consultation with residents and close links between planners and architects have kept the community onside and delivered some exciting buildings. The city's approach to design codes has combined

architectural variety with uncompromising environmental standards. Visionary leadership from the city's planners has delivered remarkable results and a tangible sense of excitement.

Right now, the environment has never been higher on the political agenda. London mayor Ken Livingstone recently announced the creation of an eco-district to include 1,000 low or zero-energy homes. Politicians from all parties are trying to outdo each other over who is the most environmentally aware. Freiburg illustrates very clearly the central role that planners can have in creating an environmentally sustainable future.

Andrew Mellor, an associate at PRP Architects, recently took a delegation of architects, urban designers and clients to Freiburg.

Vauban

Freiburg, Germany

Vauban is a new district on a former French barracks site in the south of Freiburg, Germany.

Planning for the district started in 1993 and following three development phases, the project will be completed in 2006. The site (38 hectares) will be home to more than 5000 inhabitants and 600 jobs. The main goal of the project is to create a city district in a co-operative and participatory way, meeting ecological, social, economic and cultural requirements.

The landowner, the City of Freiburg, is responsible for the planning and development of the site. This has been characterised by a 'Learning while Planning' principle allowing flexibility in reacting to development proposals and through extended citizen participation.

A major achievement by the City of Freiburg has been to divide land into small plots and allocate it in preference to private builders and Baugruppen (co-housing groups). Although the development plan included some regulations for the design and layout of the homes, a variety of structures exists and builders have had the freedom to design and develop the homes they aspire to. Coherence is provided through the extensive use of ecological measures and the 'car-free' and 'parking-free' concepts of living.

Perhaps the greatest strengths of the Vauban project are the ideas, creativity and commitment of the people involved and their common goal in creating a sustainable and flourishing neighbourhood.

Description

- Project type: new planned suburb, Freiburg
- Full address: Vauban, Freiburg, Southwest Germany
- Location type: former French barrack site
- Number of dwellings:
 - Students Organisation (SUSI) - 596 dormitory rooms and 45 housing units
 - Phase 1 - 422 housing units of which: 233 private build (185 of the 233 in Baugruppen - co-housing groups), 36 by Genova Housing Association, 153 by development companies.
 - Phase 2 - approximately 645 housing units
 - Phase 3 - approximately 85 housing units
- Dwelling type: student dormitories / apartments / houses
- Site area: 38 hectares
- Volume of estimated investments in Vauban: approx 500,000,000E

Design process

Soon after the City of Freiburg had purchased the Vauban site, discussions on the development plan began. The detailed concepts were completed between 1997 and 1999, and by 2000 the first section of the development was complete.

The planning process included competitions for the urban design as well as the implementation. The masterplan was commissioned with the objective of creating a new neighbourhood for 5000 people based on car free, low energy principles.

The City of Freiburg adopted a 'Learning while Planning' principle to Vauban, allowing flexibility in reacting to developments and incorporating new proposals at later stages. The City started a process of and financially supported an extended citizen participation that went beyond legal requirements and enabled citizens to participate, even in the planning process. The citizens' association 'Forum Vauban' applied to coordinate the 'extended citizen participation' process and was recognised as its legal body by the City of Freiburg in 1995.

Evaluation

Character

The development plan for Vauban included some regulations for the design and layout of the homes. These included the prohibition of detached houses, thus leading to a compact urban building structure and the prohibition of buildings exceeding four storeys.

Variety and distinctiveness have been encouraged through the preferential allocation of land to private builders and co-operative building projects. This is illustrated by the numerous individually designed façades which create a special atmosphere.

A diversity of building shapes has been created through the division of land into small plots and legibility is provided through the masterplanning of the district and the creation of a distinct market place and neighbourhood centre.

Roads, parking and pedestrianisation

An ecological traffic and mobility concept has been implemented at Vauban, where the principles of 'car-free' and 'parking-free' living have been applied. These are based on a reduced number of private cars, which are parked at the periphery of the site, and large parts of Vauban prohibiting the building of parking spaces on private property.

Nearly 50% of Vauban's households are 'car free'. These households are encouraged by good public transport provision, a convenient car sharing system and a higher quality of living. Car-free households save the substantial cost of a parking space in the community car park, as do development companies who put up car-free apartments for rent.

Residents who join the car sharing organisation have access to shared cars and receive a one year free pass for all public transport within Freiburg. In practice, some residents have reported problems on the ground with the enforcement of car free living and with visitor parking.

Two bus routes connect Vauban to the city centre and the main railway station, and a tramline and suburban train line are planned for 2006.

Design and construction

The energy concept at Vauban was developed through the collaboration of Forum Vauban, the City of Freiburg and the Freiburg Energy Company (FEW). In 1992 the City Council decided that land sold by the City should only be available for low-energy houses. All houses in Vauban are built to at least low-energy standard, with many exceeding this.

Forum Vauban has been particularly successful in encouraging developers to adopt an ecological approach. Their goal was to go beyond the ecological standards laid down in the development plan. Forum Vauban arranged focused and free advice at organised information exchanges and events to help inform self builders. They also ran practical DIY seminars for home owners and provided information on energy saving techniques.

There are over 50 passive houses and at least 100 units with 'plus energy' standard (houses which produce more energy than they need) in Vauban, which is estimated to be one of the largest 'solar districts' in Europe. Solar panels and photovoltaic cells are common 'ornaments' on rooftops across all parts of the development.

The Students' Organisation built Vauban's largest single solar installation (143sq.m) on one of their refurbished old buildings. A solar power installation is also being built on the roof of the community car park. Together with the solar panels, a co-generation plant operating with wood chips and natural gas provides hot water and 65% of the electricity for the district. A water management system has been set up aiming to increase the rainwater infiltration and reduce the run-off.

The streets and public spaces at Vauban have been carefully planned. They are playgrounds for children and places for social interaction. The design of the public green spaces, streets and the neighbourhood centre at Vauban were developed during meetings and workshops with residents.

There are three main green spaces in the new district: the creek and its banks, the tree and shrub population along the central spine, and the undeveloped areas to the west end. Green corridors providing space for social activities (playgrounds, sun bathing areas, barbeque areas, water basins and pumps, seating areas) have been created between plots. The neighbourhood and community structures and semi public areas (access galleries, community gardens and rooms) were created mainly by the Genova Housing Association and co-building projects.

Environment and community

The joint building projects (around 30 groups of co-builders, the Genova co-operative, the self organised SUSI) and Forum Vauban have aimed to create a balance in the living and working areas and a balance of social groups in Vauban. Social interaction is a key characteristic of the neighbourhood, and the resident participation during the development process has helped to set up a stable community and neighbourhood structure. This structure has also developed through the farmers market and cooperative food store initiatives.

The overall costs for buildings are much lower within a cohousing project than with a private developer. This has enabled people on lower incomes to become home owners. One of the objectives at Vauban was to be a child and family friendly district. By January 2002 more than 20% of the inhabitants were children under 10 years old. This has led to some problems with the demographic structure. The primary school has had to be expanded, and Vauban will soon need its third kindergarten. There are also potential conflicts for the district's social workers arising out of this one-sided age structure.

A district centre has been created at Vauban with shops, a primary school, kindergartens and public green spaces. Vauban has been designed to create a 'district of short distances' where the schools, farmer's market, businesses, shopping centre, food coop, recreation areas and approximately 600 jobs will be within walking and cycling distance of residents.

Project team

There are a number of partners involved in the Vauban project:

Forum Vauban

The main roles of Forum Vauban have been in organising citizen participation, supporting the community-based building projects, working towards the realisation of a sustainable model district and co-ordinating the social work and implementation of a neighbourhood centre. Forum Vauban was initiated by a group of active citizens and is supported by an honorary executive board and several working groups.

Participation has been much stronger than expected, with people really 'identifying' with their district and taking part in workshops and local initiatives.

Buergerbau - Citizen's Building Stock Corporation

The Buergerbau (Citizens' Building Stock Corporation) specialises in co-ordinating the building cooperatives (Baugruppen). The corporation offer a range of services throughout the project development, right up until the builders move into their homes. These services include guiding the building group and answering any questions during the planning and building process, controlling costs, schedules and quality and overseeing the implementation of the

community building project. In Vauban, Buergerbau currently manage five co-operative housing groups.

Baugruppen - Building Co-Operatives

One of the development goals at Vauban is the creation of a variety of housing and a balance of social groups. The formation of Baugruppen is a good way to achieve these goals. Several households get together, decide on a piece of land, plan a building and hire an architect and building team, thus saving money and time. Ecological building becomes more affordable through this process, and social interactions through the planning and building process help knit community early on in the process.

Genova Housing Association

The Genova Housing Association originated from Forum Vauban and was founded in 1997 to allow people with low incomes to be part of the Vauban project. They have built 36 housing units in the first phase of development, and 40 units in the second phase. Genova works to the principle of the traditional cooperative society – the creation of affordable and ‘shapeable’ living space for different people through joint ownership with self-management. An ecological and inexpensive building concept has been adopted, and people of different ages and lifestyles are integrated into the project.

The residents participate in the planning process through the architecture, orientation and design of buildings, facades, colours) and the plans for the individual apartments. This participation takes the form of workshops, a co-operative council and residents’ representatives on the management team.

Students Union / SUSI

Before the urban planning had begun at Vauban, ten barrack buildings had been given to the Students’ Organisation and the SUSI initiative (Self-organised Independent Settlement Initiative). The Students’ Organisation created dormitories with rooms for 600 students in six old barracks and three new buildings.

The SUSI is a grassroots initiative and self-help project creating low-cost and ecologically sustainable living space in four of the old barracks.

The SUSI buildings are characterised by large balconies, external wooden staircases and their ecological qualities: maximum preservation of the barracks buildings, reuse of old building materials, outer insulation of walls with cork and cellulose, roof and loft insulation, and the use of ecologically sound building material (domestic wood, clay).