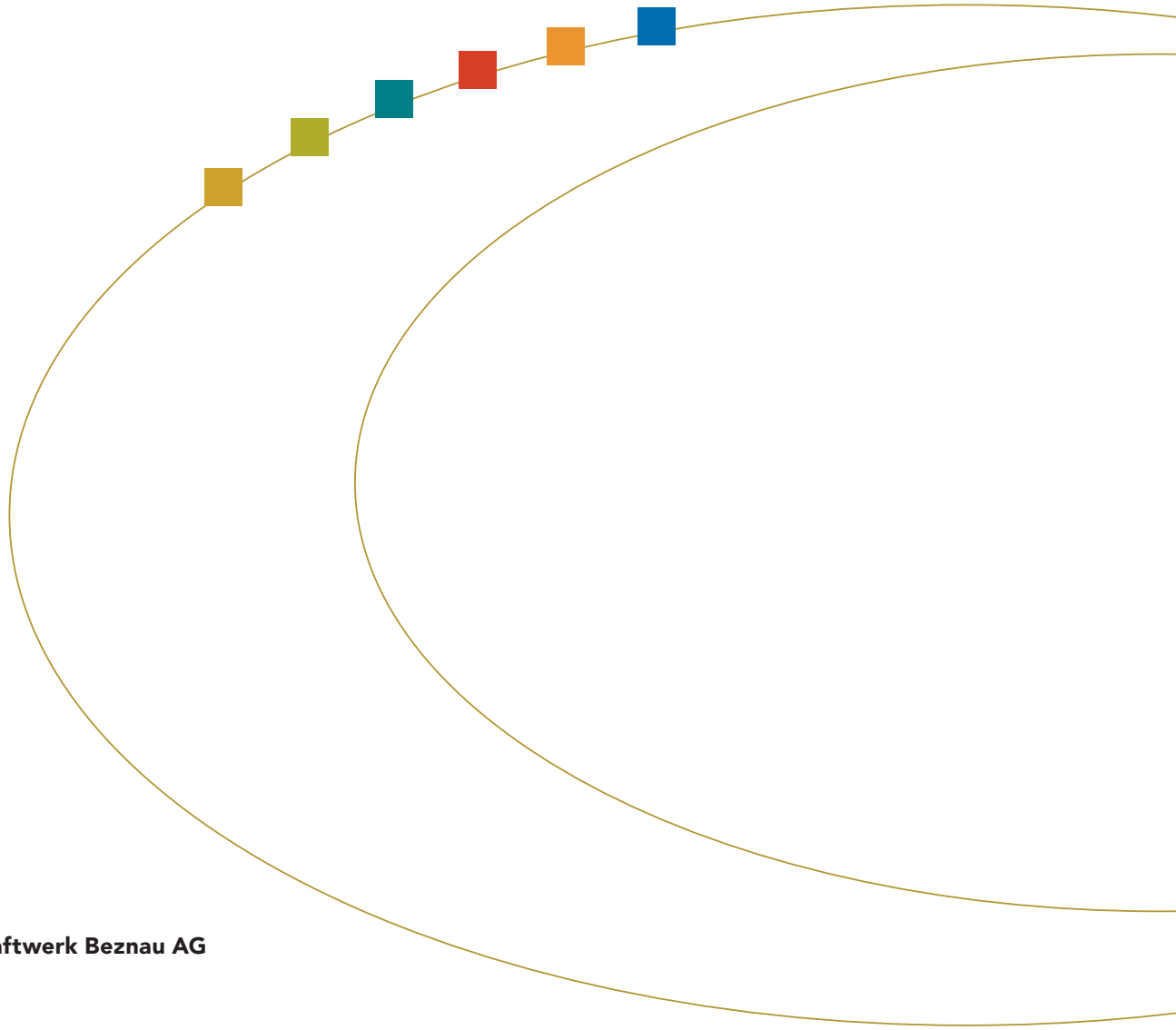
General License Application for the
Beznau Replacement Nuclear Power Plant

Summary of the Application Documents



Applicant:
Ersatz Kernkraftwerk Beznau AG

Issued by:
Resun AG, a joint planning company of
Axpo-Konzerngesellschaften Nordostschweizerische Kraftwerke AG,
Centralschweizerische Kraftwerke AG and BKW FMB Energie AG

The text in this brochure is consistent with the introductions of the individual reports of the application documents.

Only the complete application documents in German are valid for statements of position.

Table of Contents

4 **Introduction**

5 **Purpose and Main Features of the Nuclear Power Plant**

6 **Safety Analysis Report**
6 Subject of the Report
6 Site Characteristics
8 Radiation Protection
8 Staffing and Organisational Information

9 **Security Report**
9 Subject of the Report
9 Requirements Relative to Plant Security
9 Site Characteristics
9 Staffing, Organisational and Administrative Information

11 **Environmental Impact Assessment (EIA) Report**
11 Subject of the Report
11 Project Description
12 Construction Phase
12 Impacts during the Construction and Operation Phases
14 Summary of Measures
15 Overall Assessment

16 **Report on Compatibility with Land Use Planning**
16 Subject of the Report
16 Location and Perimeter
16 Project Description
17 Impact on Land Use and Landscape
18 Impacts on Residential Areas and Business Development
18 Compatibility with Planning Instruments at the Federal Level
18 Compatibility with Planning Instruments at the Cantonal and Regional Level
18 Compatibility with Planning Instruments at the Communal Level
19 Information and Coordination Status

20 **Decommissioning Concept**

21 **Verification of Radioactive Waste Disposal**

Introduction

In order to be able to continue meeting their responsibilities for the energy supply of Switzerland and for climate protection, the Nordostschweizerische Kraftwerke AG (NOK) and the Centralschweizerische Kraftwerke AG (CKW) together with BKW FMB Energie AG (BKW), have entered into a partnership whose goal is the timely planning and construction of the replacement nuclear power plants of Beznau (EKKB) and Mühleberg (EKKM).

The applicant, the plant construction and operation company "Ersatz Kernkraftwerk Beznau AG" headquartered in Baden in the Canton of Aargau, is a joint subsidiary of NOK, CKW and BKW.

The existing Nordostschweizerische Kraftwerke AG (NOK) nuclear power plant at the Beznau site, KKB 1 and 2, is to be replaced in the long term. Power supply contracts from abroad will also be phased out. In order to timely provide the replacement capacity for guaranteed security of national supply, the construction of a replacement nuclear power plant at the Beznau site (EKKB) is intended.

A General Licence must be obtained from the Federal Council of Switzerland, in accordance with Art. 12 of the Nuclear Energy Act (KEG; SR 732.1) for the construction and operation of a nuclear power plant. Initiation of the general license application is carried out pursuant to Art. 42 of the Nuclear Energy Act by submission of an application accompanied by the required documents. This encompasses the following reports pursuant to Art. 23 of the Nuclear Energy Ordinance (KEV; SR 732.11):

- Safety Analysis Report
- Security Report
- Environmental Impact Assessment Report
- Report on Compatibility with Land Use Planning
- Decommissioning Concept
- Verification of Radioactive Waste Disposal.

The applicant's partners have long-standing experience in the design, construction and operation of nuclear power plants. Since the 1970s, the existing KKB 1 and 2 nuclear power plants and KKM have demonstrated very good safety and operational characteristics. They have been continuously upgraded in order to keep up with state of the art trends.

The documents prepared for the general license application were prepared, reviewed and approved for submission in conformance with a quality assurance programme. External auditing provided assurance that the quality process was in line with the pre-defined requirements.

Purpose and Main Features of the Nuclear Power Plant

The purpose of the plant is the use of nuclear energy to generate electricity, including the handling of nuclear materials and the conditioning and interim storage of radioactive waste from the plant itself or from other Swiss nuclear power plants. An optional goal is the provision of process or district heating.

The approximate layout of a generic power plant, including the type and size of the main buildings, is indicated on the detailed maps in the documents provided with the application. Intermediate storage facilities for spent fuels, as well as buildings for processing and intermediate storage of low- and intermediate-level waste are also planned. A photomontage gives an idea of what the nuclear power plant could look like.

A light water reactor having a net electrical power of 1 450 MW, with a tolerance of about plus/minus 20 %, is planned as the replacement nuclear power plant. The electric grid has enough capacity to accommodate the power that will be generated. The planned cooling system is a closed cooling circuit with a hybrid cooling tower that works with forced wet/dry cooling. This makes it possible to largely avoid a visible plume and substantially reduce the height of the cooling tower.

Safety Analysis Report

Subject of the Report

The content of the safety analysis report essentially follows the requirements of Article 23 of the Nuclear Energy Ordinance. An important goal of this Safety Analysis Report is to evaluate the site from the standpoint of its suitability for the construction and operation of a nuclear power plant.

Site Characteristics

Geography and Population Distribution
The geographical conditions, population distribution and land use show no specific features that are unfavourable for the siting of a nuclear power plant. Preparation and implementation of emergency response measures in accordance with the applicable ordinances (Emergency Protection Ordinance and VEOR) are feasible.

There are no industrial plants in the vicinity of the site that present a hazard for the nuclear power plant. The same applies to use of roads or railway lines.

The site is easily accessible for the construction and operation phases. Based on the redundant and spatially separated access routes, access to the site is unlikely to be completely blocked due to either industrial or natural hazards. The site is therefore suitable both during normal operation as well as in the event of an emergency.

The site lies at a sufficient distance from airports. The calculated frequency of an airplane or helicopter crash is low and does not challenge either the present or future suitability of the site. The design requirements for the nuclear power plant will take into account both the impact and consequences of an airplane crash such as kerosine fire and wreckage missiles.

Meteorology and Climate
The site meteorological conditions have been well documented and evaluated. The climate corresponds to typical central European conditions at a low altitude and is, in principle, suitable for the construction and operation of a nuclear power plant. The extreme values of the site air temperatures and humidity do not provide any unusual conditions for the design.

The site design related parameters caused by wind, precipitation and snow lie in the range of usual values for the design of buildings and structures. Likewise for the frequency and/or intensity of climate induced events such as lightning strike, wind gusts and tornadoes.

Due to the valley situation in the central part of Switzerland, there exists some risk of icing of components which are to be cooled by the outside air. Provision will be made for this condition at the time of plant design. These conditions do not challenge the suitability of the site. The effects of climate change were evaluated and will be considered in deriving plant design parameters.

Hydrology
The fluctuations of river water temperatures and levels lie within the standard range for mid-

European conditions. Low water can occur in winter and in summer. This fact was taken into account in the choice of the main cooling system and will later be taken into consideration during design of the facilities. These conditions do not challenge the suitability of the site.

Possible flooding hazard as a result of dam breaks and as a consequence of a 10 000-year flood was analysed. During the latter event the island will be flooded. Flood protection measures, measures for elevation of the land and for protection of the buildings and structures will be taken into consideration during design of the facilities. Potential flooding due to high water does not challenge site suitability.

Geology and Seismology
Geology, building ground and seismic hazards could be reliably assessed by means of a well founded database in addition to the PEGASOS seismic hazard study. Favourable ground properties and bearing capacity demonstrate the suitability of the site. Based on the existing seismic hazard results, there is no reason to expect difficulties relative to the mitigation of earthquake induced accidents or compliance with the corresponding safety criteria. The site is deemed suitable.

All safety related buildings and equipment will be designed to withstand the possible effects of a safe shutdown earthquake event and against possible after-effects and resulting events.

Grid Connections
The site is centrally located in the Swiss high voltage grid. Because of the grid topology, an additional output of 1 450 MW with a tolerance of about plus / minus 20 % is possible. Connection capacity and reliability of the existing grid as well as the corresponding substations, with separate 380 kV and 220 kV voltage levels, will allow for reliable operation of the nuclear power plant.

Overall Assessment of Site Suitability
Site suitability is demonstrated by the following favourable site characteristics:
- stable weather conditions
- sufficient water for cooling purposes
- abundant ground water resources
- good access to high voltage grid, roads and railways
- stable geological formations and favourable building ground
- zone of low seismicity for Switzerland
- close vicinity is sparsely settled, mostly covered in forest or used for farming
- no industrial plants in the environs that represent a hazard
- good security characteristics.

Hazards from events identified by the required site evaluations do not challenge site suitability. In accordance with the state of the art in science and technology, these hazards can be mitigated by the plant design and by organisational or other measures. The measures will be defined in the scope of the construction license process.

Radiation Protection

The safety analysis report exclusively addresses exposure by ionising radiation.

Information concerning the anticipated radiation exposure in the vicinity of the plant, during normal operation and in the case of anticipated operational occurrencies was presented in conformance with Article 23 of the Nuclear Energy Ordinance. All threshold values, limits and reference values will be complied with. It is expected that exposure to radiation in the site vicinity will be comparable to that of existing, modern plants in Switzerland.

Since the replacement nuclear power plant will be erected in the direct vicinity of the existing nuclear power plant, both plants can be radiologically considered together as one radiation source on one site with one single source-related recommended dose value. Should there be different operating organisations for the two plants on the site, these must come to a contractual arrangement. The limits stipulated by the regulatory authority will be observed.

As part of the construction license application, radiological accident analyses pursuant to Art. 8 KEV and Art. 94e of the Radiation Protection Ordinance will be conducted in order to demonstrate compliance with all relevant radiological limits for accident conditions.

Staffing and Organisational Information

The important staffing and organisational principles including planned measures for the various phases of the project were outlined. These include the evaluation of the feasibility of emergency protection measures. The actual programme for their implementation will be drafted within the framework of the construction license application. In addition, a quality management programme for the project design and construction phases will be prepared, submitted and implemented (Article 24, para 2 of the KEV).

Human and Organisational Factors, which include Human Factors Engineering (HFE) and Organisational Factors Engineering (OFE), will be integrally considered from the very beginning. For the Construction and Operation Licenses of a nuclear power plant, the socio-technical system is evaluated as a whole, in addition to the technical system.

Human, technical and organisational interaction will be integrated so that the project and operation processes continue smoothly and on schedule and the regulatory requirements for nuclear safety are met. Workforce training and deployment will be organised in such a way that the project can be implemented with technical and methodological proficiency.

Security Report

Subject of the Report

The content of the security report essentially follows the requirements of Article 23 of the Nuclear Energy Ordinance. The security report is mainly concerned with the Beznau replacement nuclear power plant and its site.

Requirements Relative to Plant Security

The principles for use of nuclear energy are provided in Art. 4 of the Nuclear Energy Act (KEG). Human beings and the environment are to be protected from the hazards of radiation. Precautions have to be taken particularly during normal operation as well as in the event of an accident.

Accordingly, security measures in compliance with Art. 5 Para 3 of the Nuclear Energy Act are put in place to prevent interference with nuclear power plant security and nuclear materials as well as theft of nuclear materials.

The protection of nuclear power plants and nuclear materials against sabotage, violent interference or theft is based on a multi-layered security concept. The latter, depending on the risk, includes structural, technical, organisational, personnel and administrative measures (Article 9, Para 3 of the KEV). As a result, the security related technical protection measures should ensure reactivity control, cooling of fuel assemblies and confinement of radioactive materials. The principles relative to safety zones and barriers as well as protection of the plant, core materials and radioactive waste are established in Attachment 2 of the KEV.

Site Characteristics

The site is characterised by the following:

- good boundary conditions in terms of plant security as a consequence of the island location and resulting limited access
- low population density in the surrounding area which is mostly covered by forest or used for farming
- no industrial plants in the environs that represent a hazard
- good access to high voltage grid, roads and railways
- sufficient water for cooling purposes
- stable geological formations and favourable building ground
- zone of low seismicity for Switzerland.

Staffing, Organisational and Administrative Information

The basic requirements of the security organisation will be defined within the framework of the construction license application.

Important components of the organisation are the company guard force and the security officer.

During construction of EKKB, measures will be taken to avoid negative impacts on the security of the other operating nuclear power plant units at the site.

Environmental Impact Assessment (EIA) Report

Subject of the Report

In the first step of the EIA main investigation, the foreseeable construction and operational impacts of the Beznau replacement nuclear power plant (EKKB) project on the environment were investigated and evaluated as to their environmental impact.

Project Description

EKKB will be a modern light water reactor nuclear power plant generating electrical power of 1 450 MW with a tolerance of about plus / minus 20 %.

The EKKB cooling system plays a decisive role relative to the impact of the project on the environment. It is for this reason that great importance was attached to the aspect of minimizing the environmental impact as part of the overall evaluation of the different systems (inclusion of environmental protection measures in the project). The applicant therefore decided to require cooling of the plant by means of a closed cooling circuit with a hybrid cooling tower.

In the closed cooling circuit the cooling water is cooled by evaporation and by direct transfer of heat to the air circulating in the tower. In the cooling water inlet structure for the cooling system roughly 5 m^3/s of river water is taken from the headrace channel of the hydraulic power plant and fed into the cooling water system. Approximately 1.1 m^3/s of it evaporates and roughly 3.9 m^3/s is released back into the Aare River via the cooling water outlet structure downstream of the hydraulic power plant.

The hybrid cooling tower is made up of a dry and a wet section. There are fans in both the wet and dry areas. The fans in the wet section ensure a continuous air flow through the cooling tower, enabling a substantially reduced construction height as compared to a natural draught cooling tower. The fans in the dry section mix dry, ambient air with humid, saturated air. The development of visible vapour plumes will be greatly reduced thanks to the hybrid cooling tower. Any possible secondary condensation of water vapour will be hardly distinguishable from the usual cloud formations at high altitude.

Since 1983, REFUNA has operated a regional district heating network in the lower Aare valley which is primarily fed by thermal energy from KKB. The supply of thermal energy from KKB is currently 150 GWh per year. It contributes to the substitution of fossil fuels and thus to the reduction of Switzerland's CO_2-emissions.

A supply of thermal energy from EKKB to the REFUNA district heating network is foreseen. If necessary, larger amounts of thermal energy can be provided from EKKB in the event of increased demand.

Construction Phase

At the beginning of the planning phase, a conflict plan was drawn up (Attachment 2.5-1 of the Environmental Impact Assessment Report), which, based on the zoning plan, the requirements on nature conservation, current afforestation as well as the exploitation of ground water, schematically shows which zones are suitable for the EKKB project site and/or which areas, if necessary, can be used temporarily for the construction phase. The zones which the project (construction and operation) must not impact are listed in the conflict plan as being the entire left bank zone of the Aare, the right bank of the Aare along the island of Beznau as well as the central area of the wildlife corridor through the woodland.

Due to limited space on the island, EKKB construction requires up to 46 ha for temporary installations such as storage and assembly areas or housing for the construction phase. During the planning process, the project engineer will optimise the construction procedure, work site logistics and materials management, so that the effective need for temporary surface area is reduced to a minimum.

Where practical and possible, material can be transported via the railway track which branches from the Turgi–Koblenz railway line south of Döttingen and leads to the island. The route of this industrial railway track leading to the island will be extended from the Stüdlihau industrial zone to a work site access line, without modification of the existing line. Construction of the Beznau replacement nuclear power plant and the presence of heavy plant components on the island require the construction of a new bridge across the headrace channel of the Beznau hydraulic power plant.

Impacts during the Construction and Operation Phases

Air Quality and Microclimate

The applicant will take the necessary measures to minimise air quality impacts during the construction phase (optimisation of recycling, transport using conveyor belt or railway, close landfill and supply locations, etc.). The estimated impact of the operation phase relative to air pollutants (NO_x, PM10) is classified as insignificant.

The EKKB hybrid cooling tower generates a significantly reduced visible plume compared with natural-draught wet cooling towers. The microclimate effects due to shadowing and reduced sunshine are for the most part prevented. The water saturation level of the air close to the ground level increases by less than 5%, even in unfavourable weather conditions.

Noise and Vibrations

Noise emissions during the construction phase will be reduced to the legally permitted level by taking appropriate measures in line with regulatory guidelines for work site noise (reduction of noise at the source, limited time periods for noisy work, optimisation of the transport operations, briefing of the affected population, etc.). Therefore no excessive noise disturbance is to be expected during the construction phase.

Noise emission may be limited during the operational phase using noise protection measures, subject to compliance with the emission limits of the Noise Protection Ordinance (OPB).

Localised effects from vibrations and sound transmitted through the ground must however be expected during the construction phase.

Ground Water
The project perimeter is located above the aquifer in a Category A water protection area.

The ground water conditions in the lower Aare valley are well known and extensively documented thanks to the numerous studies carried out in the framework of intensive public and private use and the ground water protection, as well as the activities of NOK in the Beznau area.

The different activities and uses have not had any significant negative effect on the ground water resources in either a quantitative or qualitative manner. As far as the quality and the temperatures of the ground water are concerned, only those areas in the vicinity of the Aare River are affected by the close hydraulic interaction between the river and the ground water.

If EKKB has the potential to reduce the flow capacity of the aquifer by more than 10 %, the project engineer will introduce compensatory measures such as the use of more permeable material or culverts filled with coarse gravel in order to improve the flow characteristics and therefore comply with the statutory provisions.

Surface Water and Fishing
The EKKB project featuring the selected closed cooling circuit, is a clear improvement for the Aare River compared to the current situation (operation of KKB 1 and 2). The heat transfer to the Aare River will be significantly reduced with respect to the current situation (by 98 %). The currently planned EKKB project , with the suggested measures, can be categorised as environmentally sustainable.

Forest and Farming
In its natural state, the zone that was studied is principally dominated by woodruff beech forests and by alluvial plain forests along the Aare River. In certain locations oak woods can be found.

The project requires a permanently cleared area of 400 m^2 and a temporary cleared area of no more than 46 ha in a heavily wooded zone. Pursuant to Article 5 of the Forestry Code, the pre-condition for the authorisation of clear cutting is met: the project is dependent on this cleared site for the construction phase. Alternative sites are farther away and are not considered on the basis of landscape protection, ground water protection (require crossing the Aare), greater use of the wild animal corridors or crossing of the SBB railway lines. The chosen option, which concentrates everything on a single site, makes it possible to minimise transport; this leads to reduced burden on the surrounding communities.

The forestry aspect will be further examined in the EIA Level 2. The permanent clearings will be detailed there and the necessary replacement and compensatory measures further defined.

The EKKB Plant will occupy very little agricultural land during the operational phase. Farming will be only marginally affected according to the current project status.

Wildlife and Hunting
The temporary work sites in connection with the EKKB construction phase influence the wild animal corridor and/or cause habitat loss for various species such as deer, wild boar and pine marten. The temporary negative effects will however be reduced using a series of measures. After the construction phase, the temporarily used zone will be restored as a forest habitat. Even without the planned construction, the wild animal corridor could not be optimally used by the wild animals. The planned measures will substantially and sustainably improve the situation.

Habitats, Fauna and Flora
The project area lies in the middle of a comparatively unspoilt area with large forested areas. Near the water there are also flood plain habitats and extensive cultivated land. The qualitative and quantitative impact caused during the construction phase to the habitat composed in part of valuable flora and fauna, will be compensated by appropriate planning and temporary and permanent replacement measures. As part of the ecological compensation, measures for improvement will be proposed across a wide area, stretching from the Klingnau dam to the confluence of the Aare with the Reuss and Limmat rivers.

Landscape, Cultural Assets and Leisure
Thanks to the selected hybrid cooling tower cooling system EKKB will hardly affect the landscape in the area of the island of Beznau, compared to the other large buildings in the lower Aare valley. The project will be still hardly noticeable from distances over 5 km, even from elevated viewpoints. Cultural assets are in no way affected.

Accident Prevention
It is assumed from the experience at KKW Leibstadt that the storage and use of certain chemicals will result in exceedance of quantity thresholds according to the Hazardous Incidents Ordinance (HIO), and therefore a brief report (HIO Article 5) will be prepared.

Summary of Measures

The planned measures will be integrated into the project and will determine the manner in which certain work will be executed or the manner in which certain (temporarily used) areas will be restored once the work is completed. The applicant will use a precautionary approach in order to limit as early as possible the environmental impacts to the extent that is technically, and operationally, feasible as well as economically acceptable.

These measures are complemented by replacement measures that will be implemented nearby, independent of the project. These should balance out losses that occur due to EKKB. Such losses can only be roughly estimated at the present stage of project planning. Suggestions for ecological replacement measures are presented in annexes 4.13-10 and 4.13-11 of the Environmental Impact Assessment Report.

The ecological compensation will provide renatured locations in intensively worked areas both within and outside of residential areas. The ecological compensation in the Canton of Aargau is linked to specific procedures such as the construction license application procedure. Suggestions for ecological compensation are presented in Annexes 4.13-12 and 4.13-13 of the Environmental Impact Assessment Report.

Overall Assessment

Replacement of the existing KKB with EKKB was examined relative to the impacts on the environment during both the construction and operation phases. It should be pointed out that the project planning status and level of detail of EKKB complies with the provisions of the Nuclear Energy Act for the General License Application.

According to the experts, the results may be interpreted within the scope of this EIA Level 1, to mean that the statutory requirements, with consideration of the project integrated measures, the identified potential for replacement measures and the ecological compensation proposals, can be met completely.

In the framework of EIA Level 2 priority will be given to the construction phase. On completion of the appropriate project planning and the building design, the verification and optimisation of building logistics and the transport systems with their resulting impacts on different environmental areas will be primary concerns. Furthermore, an hydraulic analysis must demonstrate that the essential EKKB structures, which are built into the groundwater, reduce the flow capacity of the aquifer by less than 10 %, taking into account the compensation measures.

Report on Compatibility with Land Use Planning

Subject of the Report

The urban impact of replacement of the existing nuclear power plant (NPP) in Beznau is comprehensively described in the report concerning compatibility with land use planning. The report points out the results of the land use planning investigations and the resulting framework conditions for the spatial integration of construction and operation of the plant with the regional infrastructure. The construction and operation of the nuclear power plant, the planned plant annexes, surface accessibility and integration in the existing power grid with substations and power lines are taken into consideration therein.

Location and Perimeter

The future site of EKKB is planned to be in the northern part of the Beznau island, in the immediate vicinity of the existing nuclear power plant. The quality of Beznau as a NPP site was examined within the framework of the project. The site exhibits the following basic advantages for EKKB:

- existing power plant site
- suitable perimeter
- good access and connection to high voltage grid, roads and railways
- sufficient water for cooling purposes
- abundant groundwater resources
- stable geological formations and favourable building ground
- seismically quiet zone
- good property security characteristics
- REFUNA as district heating customer at the site
- vicinity sparsely settled, mostly covered in forest or used for farming
- no industrial plants in the environs that represent a hazard
- qualified work force in the regional labour market
- good acceptance by the site municipality as well as the surrounding municipalities.

Project Description

The planned nuclear power plant will be a modern light water reactor with electrical output of 1 450 MW with a tolerance of roughly plus/minus 20 %. The exact reactor type (boiling water or pressurized water reactor) will be defined in the construction license application in accordance with the Nuclear Energy Ordinance (Art. 24 KEV). Therefore the report is based on a generic reactor description covering both reactor types. This also includes the facilities and buildings outside of the power plant zone, such as substations, river and groundwater intake and outfall structures, fire-extinguishing and industrial water reservoirs, meteorological masts and monitoring facilities as well as access roads and railway connections.

Temporary surface area (approx. 46 ha) is required for the construction phase close to the permanent surface areas of the new plant site which is on the Beznau island (approx. 17 ha). In addition, the following modifications of the infrastructure within the project zone are foreseen:

- the relocation or temporary shut-down of the Unterwald ground water well will be examined.
- the existing industrial railway tracks must be extended and upgraded in order to also be used as a construction access road for material transport.
- heavy plant components require the construction of a new bridge over the headrace channel.
- EKKB will be connected to the existing infrastructure for the communal supply systems (electricity, water, waste water). Temporary capacity expansion will be required during the construction phase. No significant capacity expansion will be required during the operational phase.

Materials management and transport logistics during the construction phase have urban planning relevance in that the zoning plans of adjacent municipalities impose stricter threshold limits resulting from noise sensitivity levels. Noise emissions and air pollution will be reduced to a minimum based on appropriate measures and concepts (for example, transport by railway, conveyor belt, optimisation of transport routes, reduction of noise at the source, specific hours for noisy work, briefing of the affected population, etc.).

Impact on Land Use and Landscape

The current ground use will be permanently affected by the operational area and the EKKB access area and temporarily affected by the construction site installation and logistics. The forest and wild animal corridor will be affected.

In addition to the Aargau Tafeljura and the Aare landscape near Klingnau, two features of national importance, the village and castle of Böttstein, form a townscape worthy of protection. All lie in the direct vicinity of the project. At the same time, the lower Aare valley's landscape is already touched by residential settlements, industrial installations, research facilities and transport infrastructure. An evaluation of the landscape showed only a relatively small permanent change in the landscape-aesthetic assessment qualities as a consequence of essentially just the replacement of the existing nuclear power plant. Additional, mostly visual, adverse effects due to EKKB during the space- and time-intensive construction phase will be reduced by a variety of project-integrated measures (for example in the area of "view protection").

Impacts on Residential Areas and Business Development

Impacts on residential areas as well as local and regional business development are minimal in the long-term. The area is characterised by:

- low population growth
- high acceptance at the site and in the region
- constant long-term influence on the labour market as a result of replacement of the existing power plant. Temporary increase in demand during construction
- constant, long-term influence on economic development, increased temporarily during the construction period.

Compatibility with Planning Instruments at the Federal Level

The EKKB project is perfectly compatible with all of the federal sectoral plans (e.g. crop rotation plan), concepts (e.g. sports facilities) and inventories (e.g. biotope inventories). Only relative to the "transmission lines" sectoral plan will a more in-depth investigation be necessary, because the renovation of the Beznau substation will require changes to transmission lines. The "Swiss landscape concept" sets the basic goals for the ecological enhancement of the landscape and landscape features, which are to be taken into consideration in the more in-depth planning of the plant and the transmission lines.

Compatibility with Planning Instruments at the Cantonal and Regional Level

The cantonal outline plan and various cantonal programmes, such as "Aargau Regional Development", "energieAARGAU", show that there is no conflict between the EKKB project and the cantonal goals and measures.

Compatibility with Planning Instruments at the Communal Level

There is currently no specific need for coordination with regard to communal land use planning. Compatibility with EKKB is given.

However, adequate attention must be given to the question of drinking water protection in the Unterwald area. Compatibility with the project may be assured either by moving the well or by temporary closure during the construction period. Corresponding preliminary investigations are in progress.

Information and Coordination Status

A project-specific communication concept was developed for the purpose of regularly informing the public, federal, cantonal and municipal authorities as well as neighbouring countries.

The current report shows from an urban development point of view that the major conditions are already fulfilled, given the existence of units 1 and 2 of the Beznau nuclear power plant and that on a whole, long-term changes will be balanced out by construction and decommissioning. Various factors will nonetheless have temporary regional repercussions during construction work. They must be accompanied by appropriate planning controls.

Decommissioning Concept

The concept for decommissioning is an integral part of the application documents for obtaining the general license.

Based on a description of the demands placed on those responsible for decommissioning according to Swiss law, the content of the decommissioning concept was outlined, and differentiated from the decommissioning plan, which must be submitted later with the construction license application and periodically updated during the course of operation. The decommissioning project, necessary at some time in the future for the dismantling of the plant, is also described. Furthermore, the differentiation of the decommissioning concept from the verification of disposal of incidental radioactive wastes is presented.

It is explained that – although alternatives cannot to be excluded in principle – decommissioning options that come into consideration in Switzerland for statutory reasons are primarily immediate dismantling or perhaps dismantling later following a period of safe enclosure.

The basic work to be performed in the decommissioning phase subsequent to a post-operational phase is presented, and the possibility of a stepwise decommissioning is considered; the goal here being the continued operation of waste disposal systems beyond the power plant's decommissioning. Upon completion of decommissioning, it will be demonstrated that the plant no longer represents a radiological hazard source and that the site can be further used without restrictions imposed by legislation governing nuclear energy.

Basic principles are presented, which will be applied at the time of future execution of decommissioning. On the one hand, these concern the organisation and personnel and, on the other hand, work optimisation, both with respect to quality and with regard to legislation concerning radiation protection, as well as securing funding.

Finally, the criteria are given for selection of the decommissioning option which will be provided later as part of the decommissioning plan. It is mentioned that customary international standards for the protection of human beings and the environment, which favour immediate dismantling as the decommissioning variant, will be taken into consideration at the time of selection.

It is thus shown that all of the statutory decommissioning-related requirements for the application for a general license for a nuclear power plant at the Beznau site are met.

Verification of Radioactive Waste Disposal

Verification of the capability of disposal of incidental radioactive waste is an integral part of the application documents for obtaining a general license.

Based on a description of the legal requirements, the work already performed in Switzerland by the parties responsible for waste disposal is presented and it is mentioned that mandatory proof of radioactive waste disposal is deemed to have been provided by acknowledgement of this work by the Swiss Federal Council. Additionally, it is shown that the financing of the disposal is secured by means of statutory regulations.

The disposal steps envisaged in the disposal concept for radioactive waste in Switzerland, i.e. conditioning, intermediate storage and deep geological repository, as well as the transport connected with these disposal steps, are explained with the corresponding statutory regulations and/or legal requirements. Furthermore, categorisation of radioactive waste and assignment of waste categories to the deep geological repository are dealt with. Likewise, the radioactive waste potentially caused by the planned replacement power plant is assigned to these waste categories. It is further mentioned that this waste is taken into consideration in the Swiss disposal programme. By means of the legally required periodic adjustment, changes in quantity or activity of radioactive wastes resulting from the detailed plant design are guaranteed to be taken into consideration early enough in the disposal concept.

It is demonstrated that with respect to their disposal-relevant properties, operational waste, spent fuel to be stored, possible additional reprocessing waste and decommissioning waste are not significantly different from those created by nuclear power plants currently being operated in Switzerland, and, therefore, the same applicable disposal steps can be used.

Therefore, all of the statutory decommissioning-related requirements for the application for a general license for a nuclear power plant at the Beznau site (EKKB) are met.