

Wir schaffen Wissen – heute für morgen

Paul Scherrer Institut

SwissFEL – A Case Study for Public Participation

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- **vibrations and shaking**
distant from traffic routes, low immission from building sites or intensive cultivation
- **highest beam stability**
 - maximum temperature stability in a tunnel
 - only minor temperature variations on site (stable micro climate)
- **high stability of operation temperature**
sufficient usable ground water in the vicinity
- **location close to the scientific and technical infrastructures of PSI**
- **extensions/additions**
should be possible

SwissFEL: evaluation of possible sites

Variante	Topographie	Geologie	Hydrologie	Grundwasser	Erschütterungen	Störung PSI Anlagen während Bau	Störung durch fremde Bautätigkeit	Störung durch Bewirtschaftungen	Ausbaubarkeit	Investitionen
Aare										
Quer										
Strasse/HTZ										
Berg										
Hanglage										
mitten im Wald										
Priorhölzliweg										





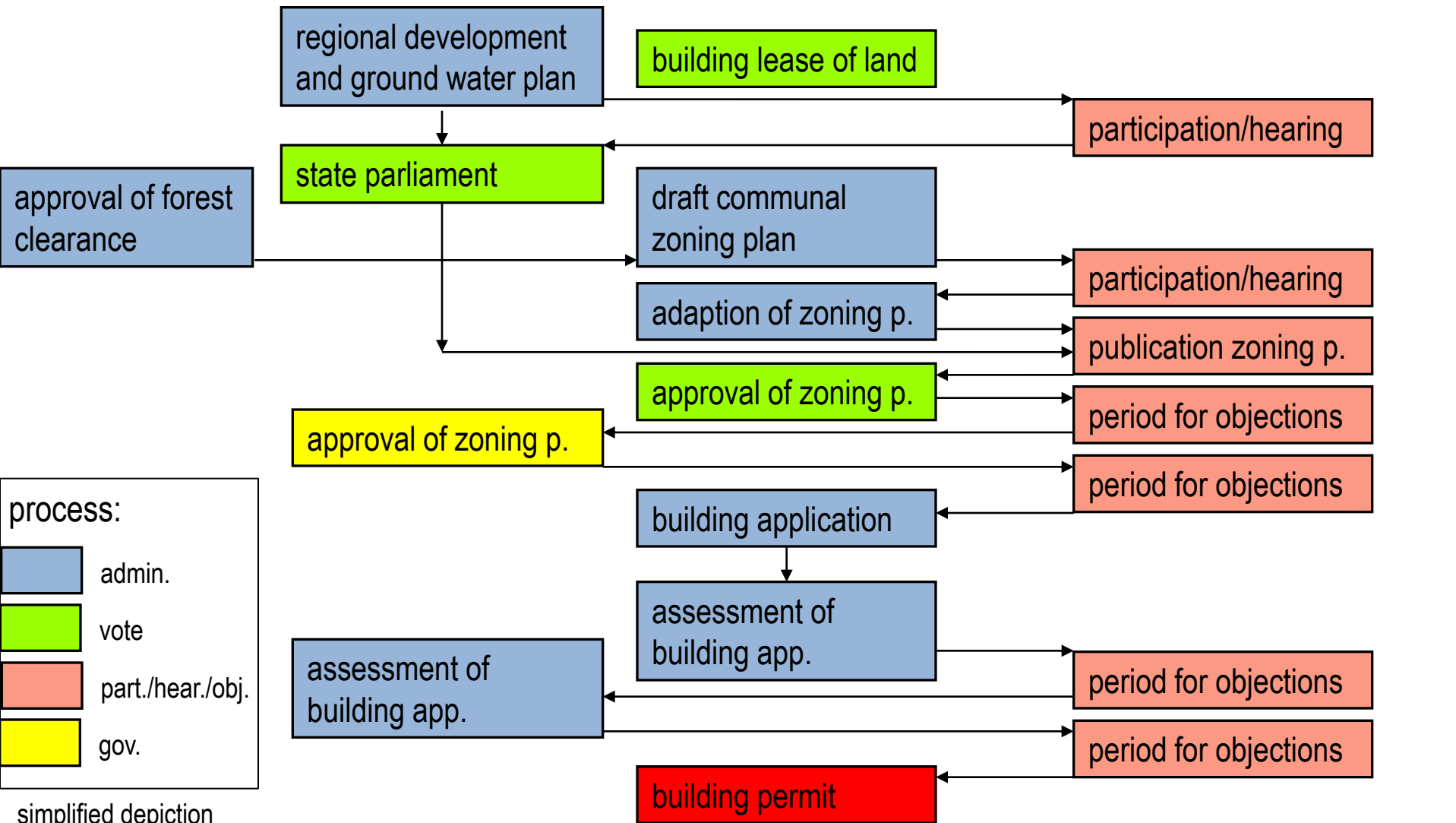
building legislation: approval mechanism

federal

state (Aargovia)

community (Würenlingen)

public/organisations



target: acceptance of a self-contained and ecological project

- presentations for local community (with questions and answers)
- many discussion with communal government concerning building lease and communal zoning plan
- participations/hearings of the public and organisation
- hearing of state commission

- Working Group Forest

- forest clearing area (temporary and permanent)
- site development (incl. public paths)
- disturbance of recreation area
- ecology (flora, fauna), crossing of game animal
- forestry and logging
- balanced material usage
- technical and operational feasibility
- cost
- chances for approval

members:



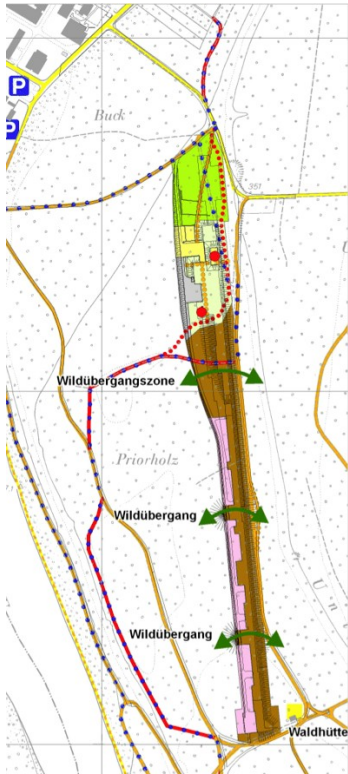
SwissFEL: impact on recreation/**flora**/**fauna**

status quo:

forestry with dense net of paths, fitness course, forest cabin

timber poor on species

closed forest with doe, fox and boar



project:

few adaptations of net of paths

maintenance traffic separated from recreation traffic

dam and diverse vegetation increases attractiveness

coverage of building not accessible to separate humans from animals

diverse pioneer and herb vegetation

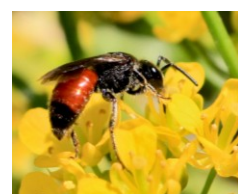
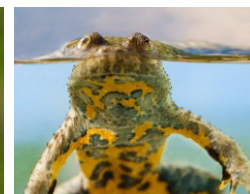
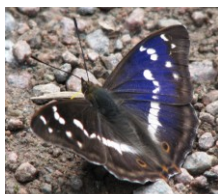
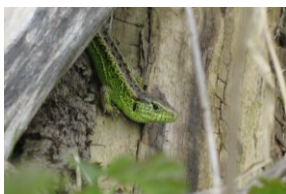
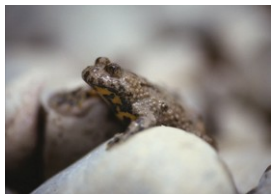
fodder and flowered plants for butterflies etc.

open areas alternating with hedges, groves and solitary oaks

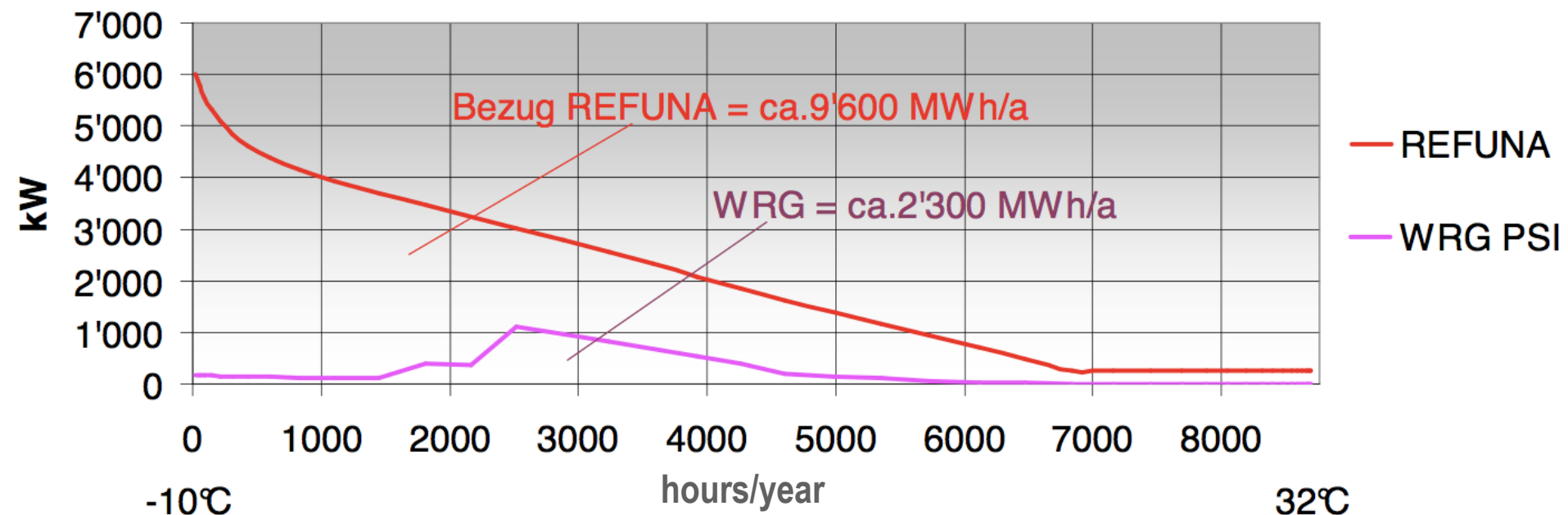
graded skirt of wood

biotopes and network nodes for butterflies, wild bees, reptiles, amphibians

ponds, heaps of stones, rootstocks etc.



existing heat recovery at PSI

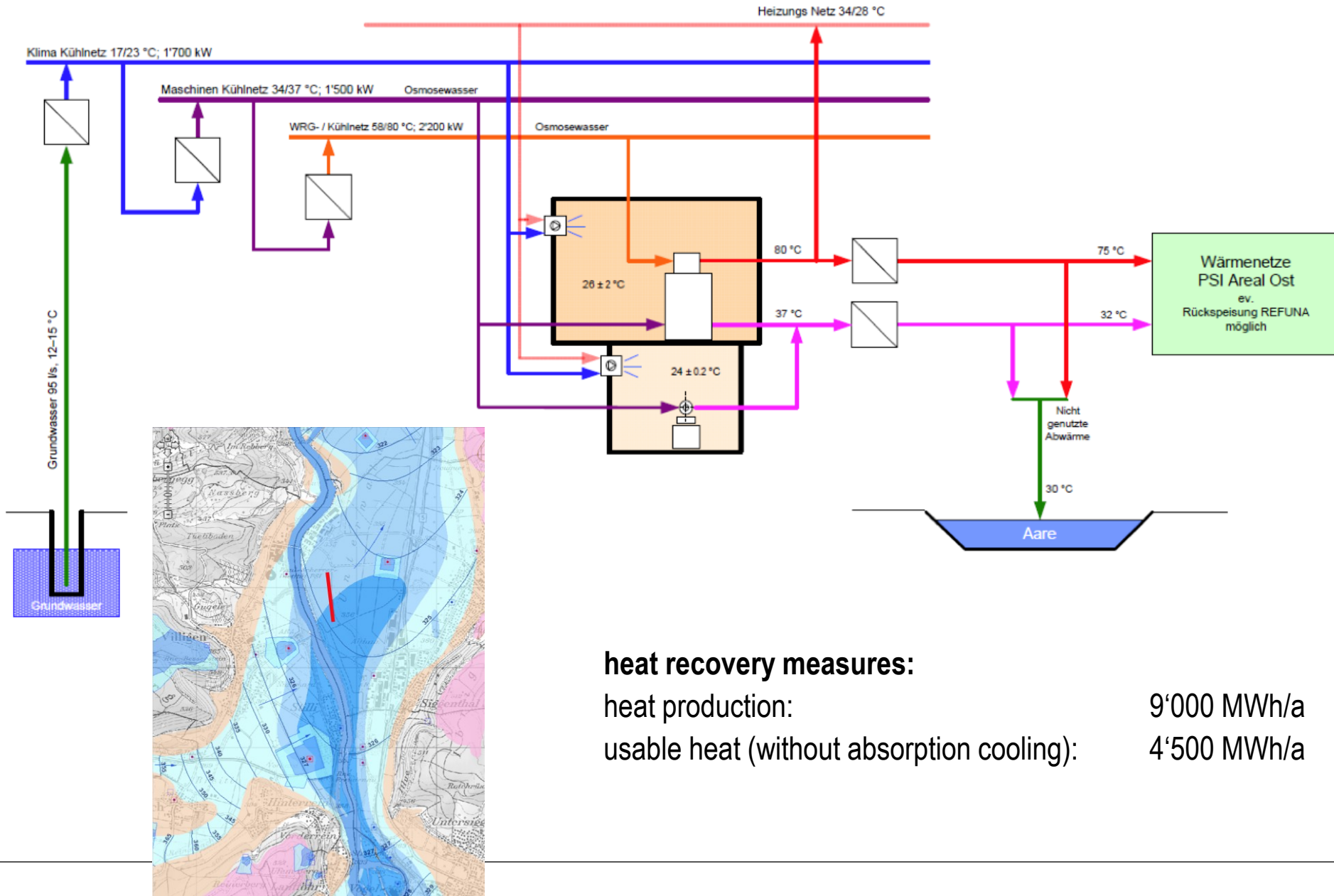


max. electrical power: 21 MW
 electrical energy: 120'000 MWh/a

heat sink: Aare river (max. 1'000 l/s @ 30°C)
 eff.: 600l/s + 95 l/s for SwissFEL



SwissFEL: improved energy efficiency



heat recovery measures:

heat production:

9'000 MWh/a

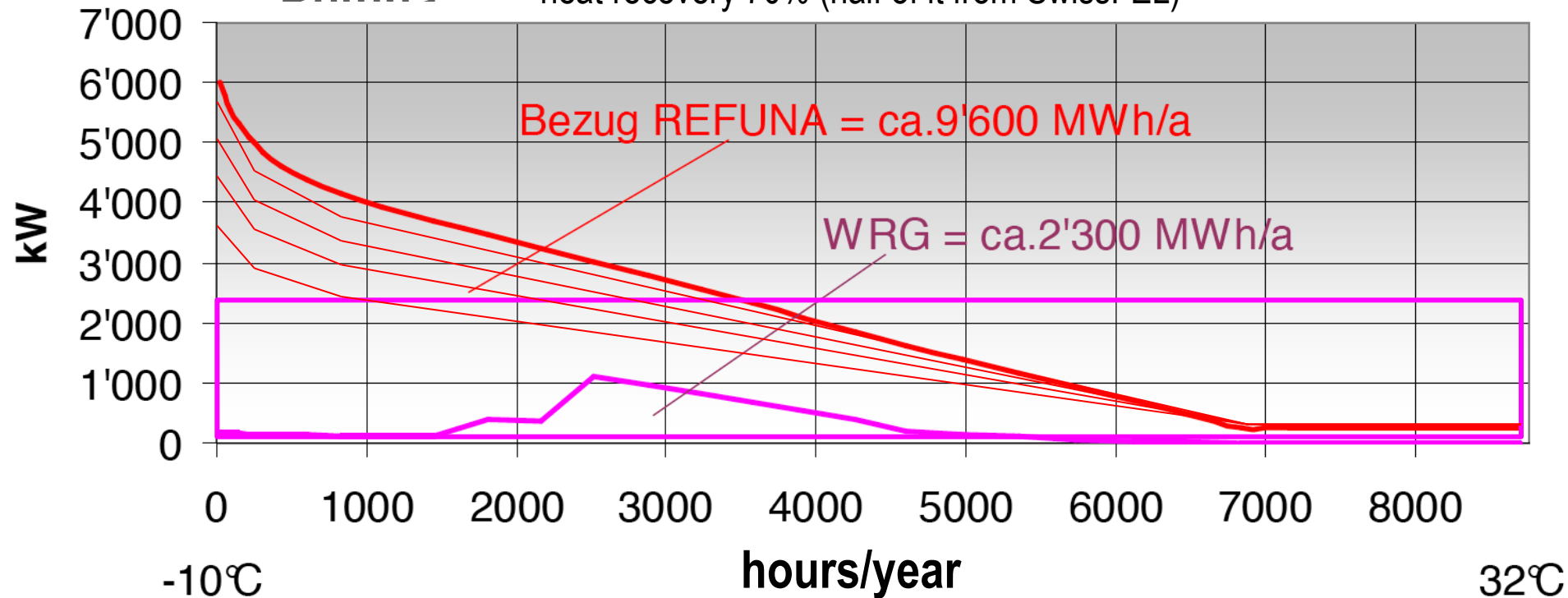
usable heat (without absorption cooling):

4'500 MWh/a

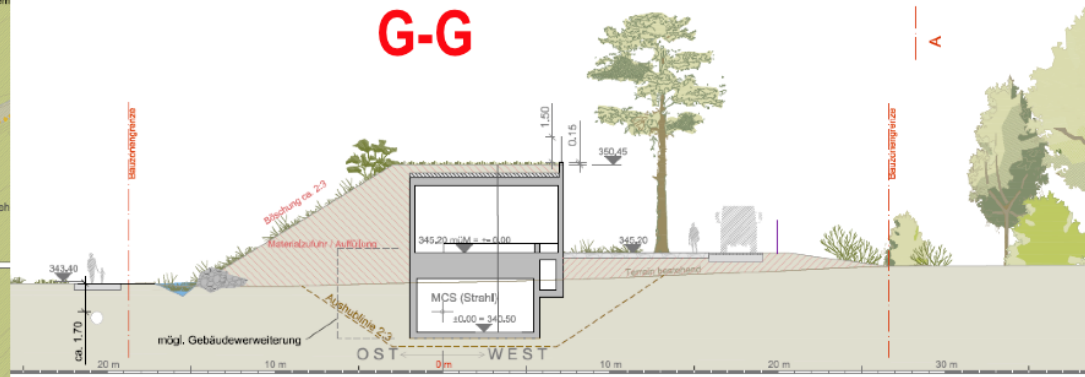
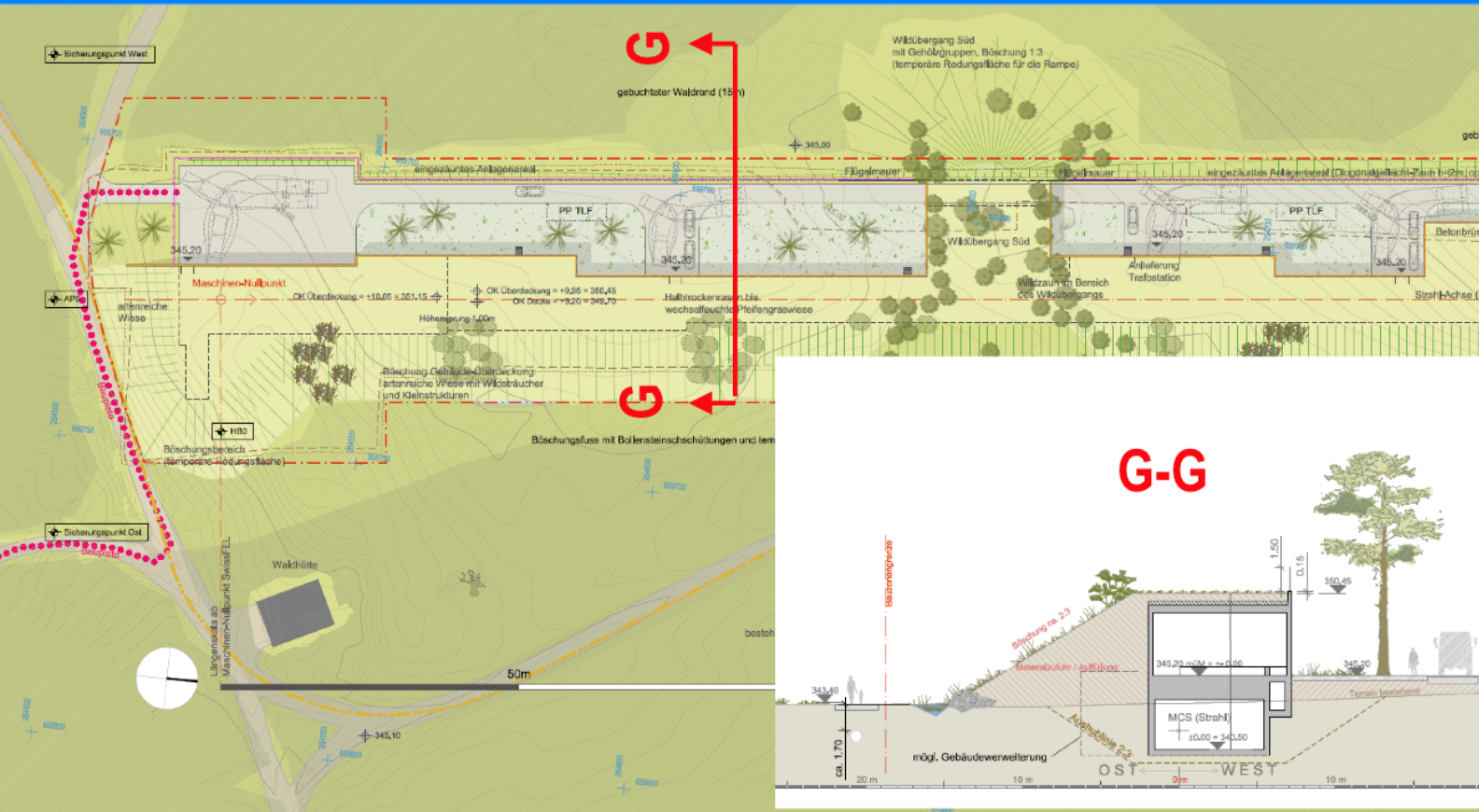
Defining

Bezug REFUNA = ca. 9'600 MWh/a

WRG = ca. 2'300 MWh/a

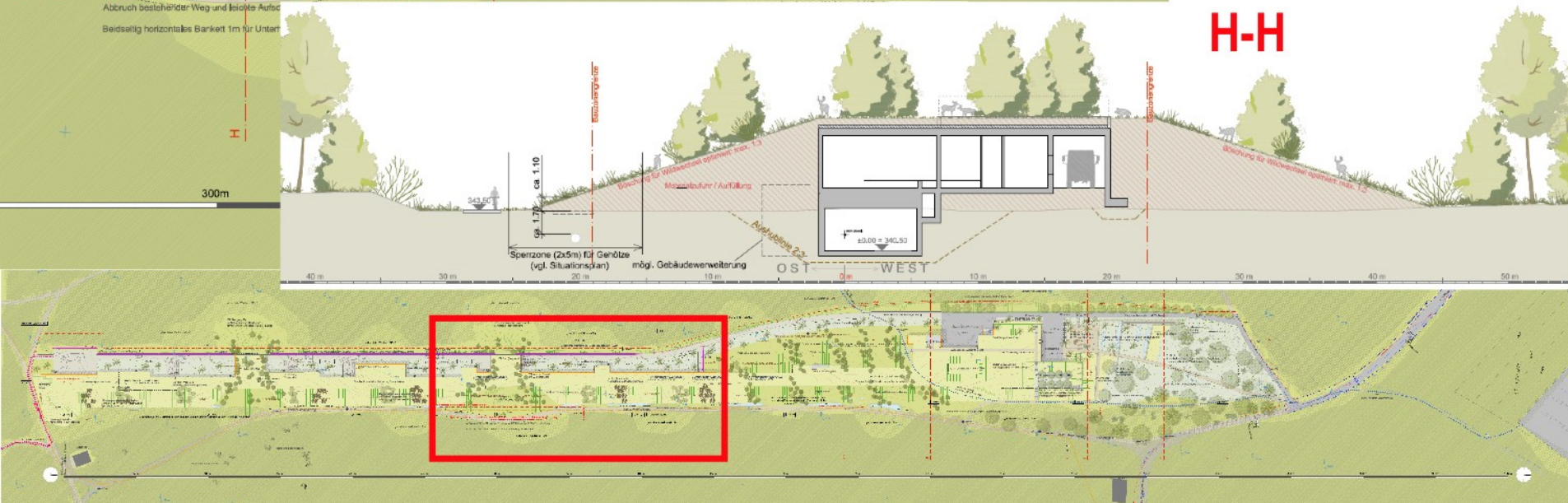


Heat Source	Buildings	Costs	Evaluation
PSI process heat (high temperature) and Refuna	ordinary maintenance and refurbishment program	3.6M	o investment costs + operation costs + sustainability + perception
process heat + Refuna > heating			



SwissFEL: view towards injector





SwissFEL: view of game animal crossing nord





The image displays three architectural drawings for the 'Waldpark' project:

- Top Drawing: Detailed Site Plan**
This plan shows the layout of the building and its integration into the landscape. Key features include:
 - Building Footprint:** A long, low structure with various sections, including a 'Hauptzugang' (main entrance) and a 'Pavillon / Bouleplatz'.
 - Landscaping:** Extensive green spaces with 'Halbtrockenrasen' (semi-dry grasslands), 'Artenreicher Trockenwiesensaum' (species-rich dry grassland edge), and 'Wiesenlichtung' (meadow clearing).
 - Infrastructure:** 'Eingasse: Asphalt mit Waldkirschen' (entrance road with black cherries), 'Zugangsweg Langsamverkehr' (slow traffic access path), and 'Neuführung Vita-Parcours' (new Vita-Parcours route).
 - Topography:** Elevation markers such as $\pm 0,00 = 340,50$ and $\pm 0,00 = 340,50$ are shown throughout the plan.
- Middle Drawing: Cross-section F-F**
This section shows the building's profile and its relationship to the terrain.
 - Building Structure:** A cross-section of the building showing internal spaces and a 'MCS (St.)' (mechanical room).
 - Terrain and Landscape:** The section shows the building sitting on a slope, with 'bestehendes Terrain' (existing terrain) and 'mügl. Gebäudeerweiterung' (possible building extension) indicated.
 - Dimensions and Levels:** Vertical dimensions like 8,00 and 1,70 are shown, along with elevation markers like $\pm 0,00 = 340,50$ and $\pm 0,00 = 340,50$.
- Bottom Drawing: Location Map**
This map shows the project's location within a larger context, with a red rectangle highlighting the specific area shown in the detailed site plan above.



building application	now
call for tenders (buildings)	now
ground water pumping trial	spring/summer 2012
building site preparation	2 nd half of 2012
forest clearance	winter 2012/13
ground breaking	April 2013
building shell finished	July 2014
installation of technical infrastructure	end 2013 – end of 2014
installation of accelerator and commissioning	2015/ 2016
start of routine operation	2017