

# Our Approach to the Implementation of Safety-Distance Requirements in Rheinfelden, Baden, Germany

Rheinfelden  
Baden



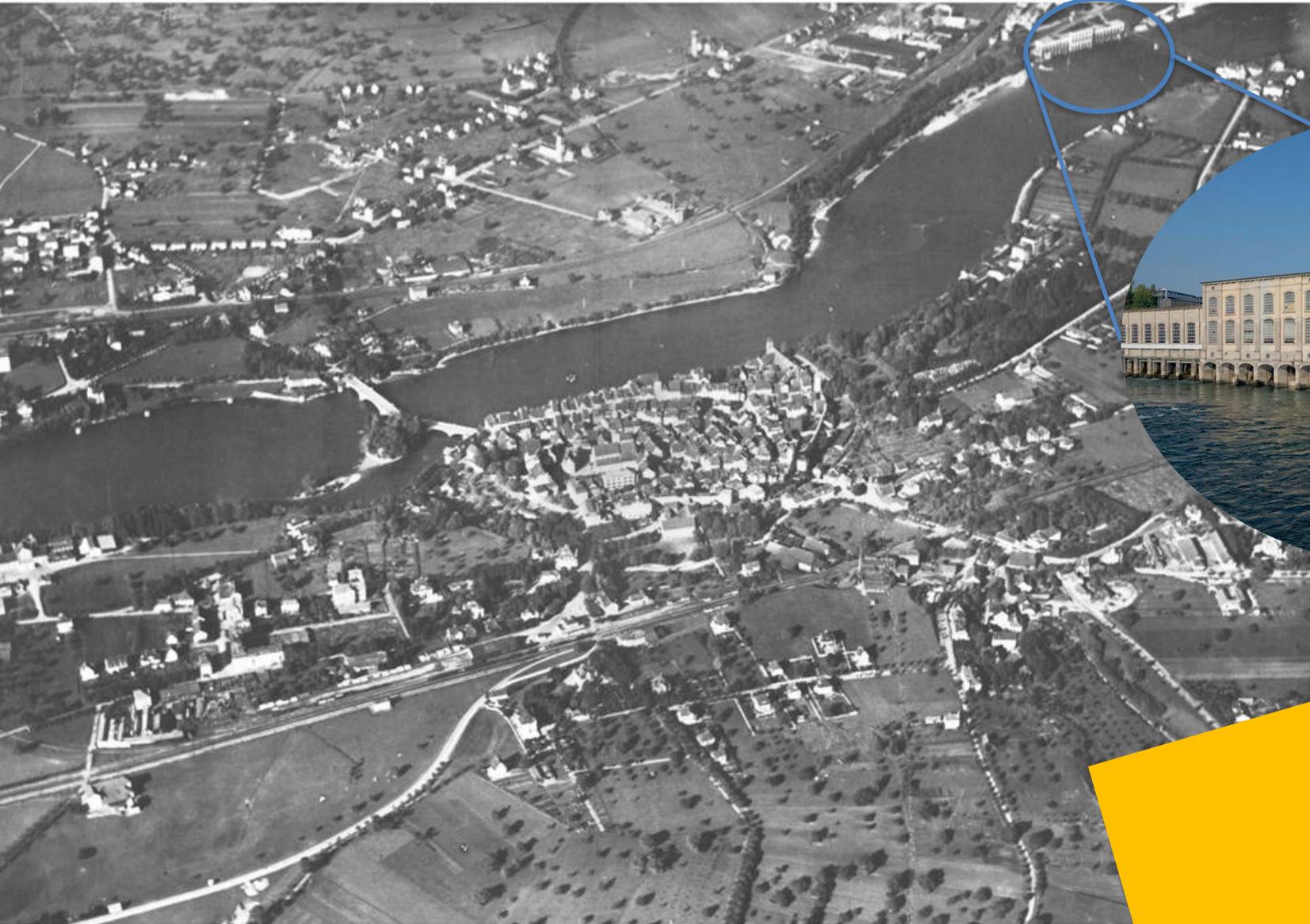
***Decision-making processes and  
the challenges of cross-boundary  
land-use planning***

***Klaus Eberhardt  
Mayor of Rheinfelden (Baden)***



Baden-Württemberg  
REGIERUNGSPRÄSIDIUM FREIBURG





Historical  
development





Overview of  
Rheinfelden (Baden)





Excellent business location



Sustainable energy source



Attractive shopping areas



Quiet residential streets



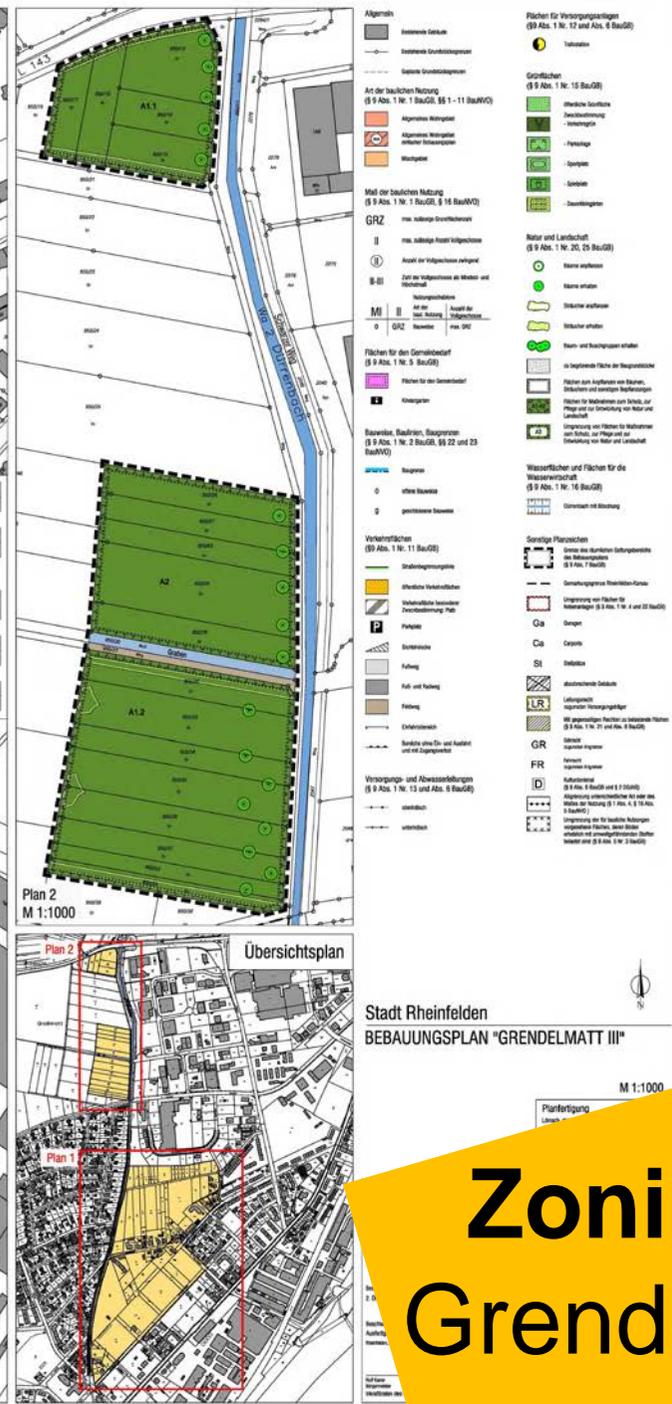
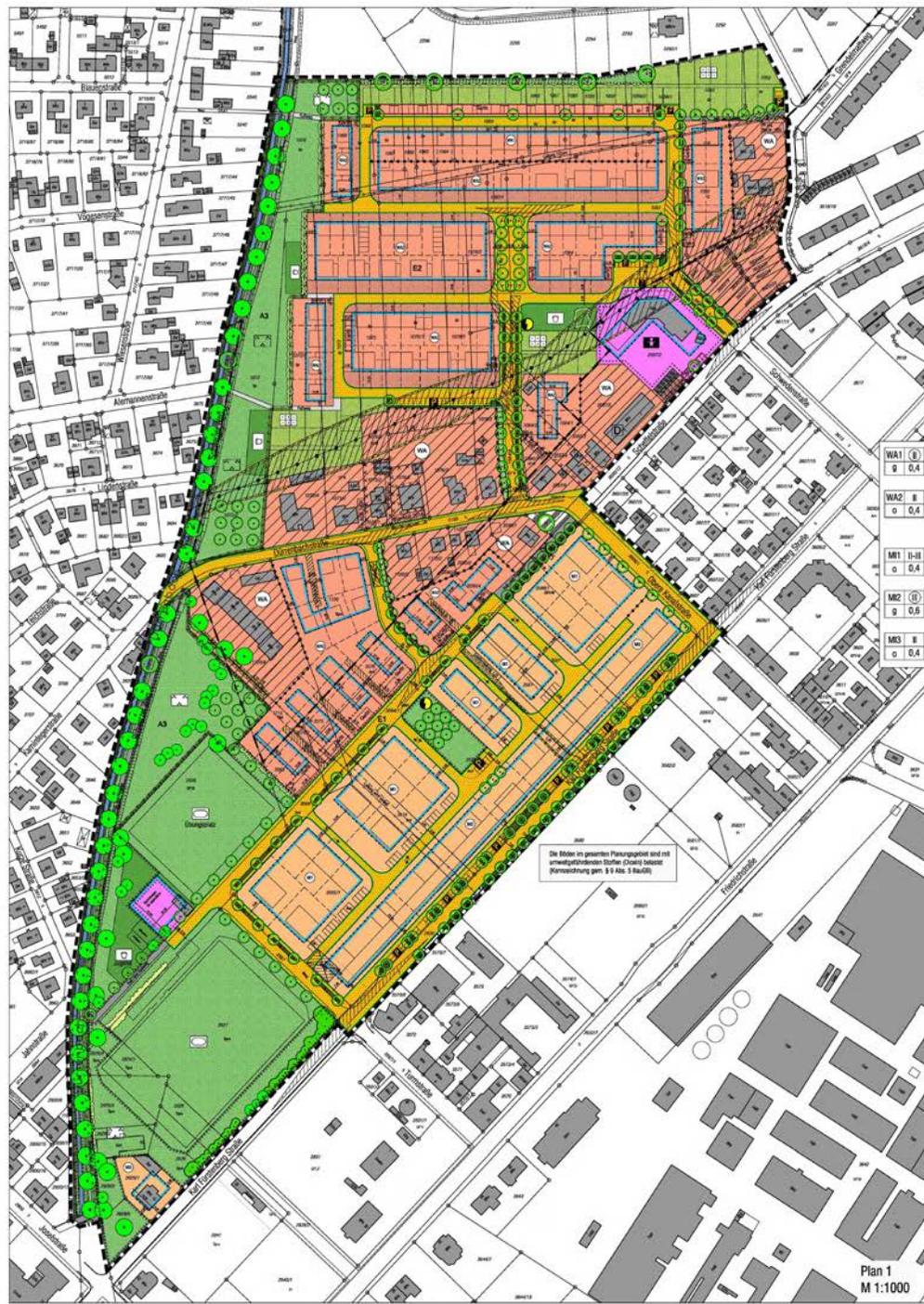
Scenic surroundings for recreation and relaxation



Industry

# Zoning plan Grendelmatt III





# Zoning plan Grendelmatt III





## The industrial site is:

- an 'establishment' as defined by the German Hazardous Incident Ordinance,
- an industrial establishment under the Seveso Directive, and
- a 'hazardous activity' under the UNECE Convention on the Transboundary Effects of Industrial Accidents, which means "any activity in which one or more hazardous substances are present or may be present in quantities at or in excess of the threshold quantities listed in Annex I hereto, and which is capable of causing transboundary effects."





**Urban development in line with the Seveso III Directive**  
2 sites = 1 'establishment' as per Section 3, definition 5a  
of the German Federal Immission Control Act

**Industrial sites  
in Rheinfelden:  
Evonik**





**Urban development in line with the Seveso III Directive**  
1 additional 'establishment' within the Evonik north site

**Industrial sites**  
in Rheinfelden:  
**RheinPerChemie**





High purity chlorosilanes



Glass fibres

**Evonik**



Chlorosilanes



Metallic silicon  
(96–97%)

HCl

Pyrogenic silicic acids



Filler materials

Hydrogen peroxide, sodium percarbonate



Environmental protection, detergents

Supply network for  
HCl, chlorosilanes and H<sub>2</sub>

Organosilanes



Anti-graffiti, building protection



**RheinPerChemie**

Electrolytic and chemical manufacture  
of ammonium and sodium persulphates  
(Radical formers for polymerization processes,  
oxidizing agents)

**Industrial sites  
in Rheinfelden:  
Manufacture of a  
range of products**



	<b>Classification under the Hazardous Incident Ordinance</b>	<b>Major potential hazards</b>
Evonik	Threshold quantity as per Column 5 of Annex 1 of the Ordinance exceeded for a range of substances/substance categories, e.g. highly toxic, toxic, oxidizing, environmentally hazardous, highly flammable substances or those reacting violently with water*	Release of <ul style="list-style-type: none"> <li>• Pressurized liquid ammonia</li> <li>• Hydrochloric acid gas from the hydrolysis of chlorosilanes</li> </ul>
Rhein-PerChemie	Threshold quantity as per Column 5 of Annex 1 of the Ordinance exceeded for toxic and oxidizing substances (NH <sub>3</sub> , persulphates)*	

The regional administrative authority in **Freiburg** is responsible for the approval and monitoring procedures for nearly all matters relating to environmental protection and occupational health and safety at the Rheinfelden industrial sites.

\*Classification under the UNECE Industrial Accidents Convention – Annex I

**Industrial sites  
in Rheinfelden:  
hazardous substances  
and potential risks**



Extensive incident response facilities as per Section 3 (3) of the Hazardous Incident Ordinance



Incident prevention measures, in some cases even more stringent than the latest safety standards (> Licensing procedure)



Implementation of the general operator obligations, additional obligations with safety report, contingency planning, information brochure, etc.



**Industrial sites  
in Rheinfelden:**

**Existing built  
environment and  
implementation  
of the Hazardous  
Incident Ordinance**



		'Safety distances'
1996 2000	Seveso II Directive Implementation of Section 12 in German law	'Appropriate safety distance'
2003/2004	Adelberg development plan: homes to be at a distance of 100 m from Evonik; bringing the town closer to the Rhine; Freiburg specifies appropriate safety distance.	750 m (NH <sub>3</sub> ; derived from disaster control scenario)  200 m (HCl from hydrolysis of chlorosilanes; derived from disaster control scenario)
Since 2004	Heightened awareness of the issues in the town; in addition to land-use planning procedures, building applications pursuant to Section 34 of the Federal Building Code are always submitted; Freiburg specifies the consultation radius.	



**Application of Section 50 of the Federal Immission Control Act**

**Progress of Implementation in Rheinfelden**



		'Safety distances'
2005	<p>Adelberg development plan: submission of a meteorological appraisal and other factors prompt a re-evaluation of the appropriate safety distance by Freiburg.</p> <p>'Safety distance list' (SFK-TAA-GS1) drafted by federal ministries</p>	<p>Appropriate safety distance: <b>450 m</b> (NH<sub>3</sub>; disaster control scenario/ average dispersion situation)</p>
2006	<p>Adelberg development plan: the town annuls plans within the 450 m radius.</p> <p>Citizen's information event on Section 50 issues presented jointly by the town and the Freiburg regional administration</p>	
2007	<p>Rheinfelden hydropower project: the areas around the industrial sites to be upgraded as social and cultural amenities Freiburg specifies the minimum safety distance; after some discussion the project is rejected.</p>	<p>Appropriate safety distance: <b>450 m</b> (ammonia)</p>
2012	<p>Plethora of position statements by Freiburg on building applications/development plans within the consultation radius (9 in the first half-year); backlog in decision-making for many individual cases</p> <p>&gt;&gt;&gt; Joint discussions between town, Freiburg and Evonik Freiburg's proposal: a location assessment</p>	<p>Consultation: <b>600–800 m</b> Appropriate safety distance: <b>450 m</b> (NH<sub>3</sub>)</p>

**Application of Section 50 of the  
Federal Immission Control Act**

**Progress of  
Implementation in  
Rheinfelden**



		'Safety distances'
2010–2012	<p>Grendelmatt III development plan</p> <p>26.02.2010: Effective date of the development plan</p> <p>01.07.2010: Evonik's application for judicial review by the administrative court of Baden-Württemberg</p> <p>11.12.2012: Rheinfelden (Baden) town council passes a resolution to amend the Grendelmatt III development plan.</p>	
2013	<p>Location assessment to determine appropriate safety distances as recommended by the KAS-18 guidance document: mandated by the town and Evonik, with technical support from Freiburg.</p> <p><u>Objective:</u> Systematic examination of the industrial sites to identify potential hazards as per Section 50 of the Federal Immission Control Act, with evaluation of scenarios under status quo conditions as a basis for subsequent planning considerations</p>	
2012–2014	Amendment of the land-use plan	<p>Appropriate safety distance:</p> <p><b>450 m</b> (ammonia)</p>
2015	<p>Submission of the assessment by TÜV Nord:</p> <p>The convention for substances reacting with water in the KAS-32 guidance document published in 2015 (50% hydrolysis) means that this potential hazard dictates the required safety distance (previously only about 200 m).</p>	<p>Appropriate safety distance:</p> <p><b>400–450 m</b> (NH<sub>3</sub>), <b>600–850 m</b> (substances reacting with water)</p>



		'Safety distances'
<p>2015</p>	<p>Submission of the location assessment by TÜV Nord:</p> <p>In view of the site conditions and the factors precluding hazardous incidents and limiting their impact, the scenario tends to err on the safe side.</p> <p>Commentary on graded limitations of use for areas near to the industrial sites and further away from them (zoning of the protection requirements within the specified safety distance)</p> 	<p>Appropriate safety distance:</p> <p>400–450 m (NH<sub>3</sub>), 600–850 m (substances reacting with water)</p>
<p>2015/2016</p>	<p>Creating and approving the Rheinfelden urban development plan and the guidelines for building approval procedures</p>	

**Application of Section 50 of the  
Federal Immission Control Act  
Progress of  
Implementation  
in Rheinfelden**





# Producing an urban development plan in line with the Seveso III Directive



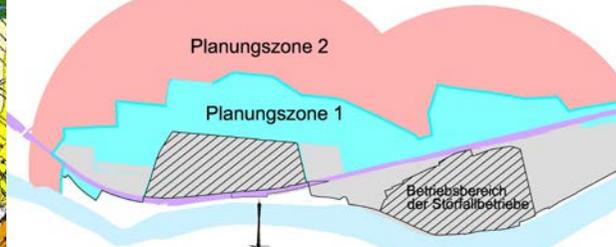
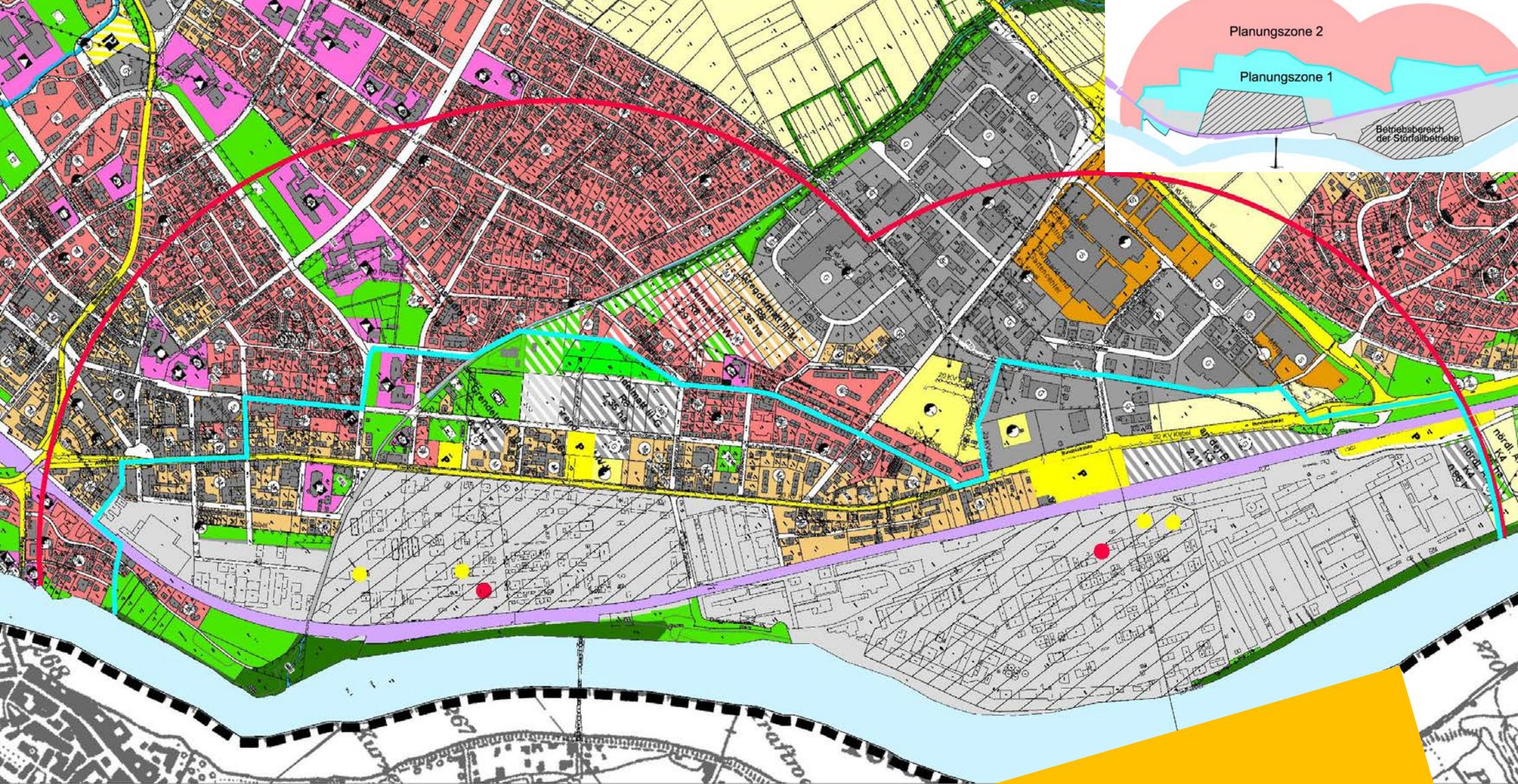
1. In the event of a ‘beyond-design accident’, the risk in the vicinity of installations where a hazardous incident could occur must not be increased by land-use planning (and its implementation).
2. An appropriate safety distance must remain between installations where a hazardous incident could occur and new facilities that qualify for protection.

Basis:  
Article 13  
**Seveso III Directive**  
Section 50  
Federal Immission  
Control Act



Assigned degree of protection	Planned use
<b>None</b>	<p>Projects not falling under the Seveso III Directive</p> <ul style="list-style-type: none"> <li>• Commercial premises not open to the public</li> <li>• Office buildings not open to the public</li> <li>• New residential buildings that do not, however, qualify as a new residential <b>area</b> (assumed to be up to 6 residential units), in built-up areas, e.g. building on a vacant plot or in a second row</li> <li>• Alterations / extensions to existing residential buildings (e.g. dormer windows, loft conversions)</li> <li>• Parking facilities</li> <li>• Routes of minor significance, such as the planned new footbridge over the Rhine</li> </ul>
<b>Low</b>	<ul style="list-style-type: none"> <li>• Buildings used by the public   business and administration offices   buildings and facilities open to the public</li> <li>• Guest accommodation (hotels)</li> <li>• Residential areas</li> </ul>
<b>Medium</b>	<ul style="list-style-type: none"> <li>• Schools and children's nurseries</li> <li>• Care homes and day centres for seniors</li> <li>• Sports grounds</li> <li>• (Open-air events)</li> </ul>
<b>High</b>	<p>'Vulnerable' planned facilities with a very large catchment area (beyond the town itself) and dimensions, such as (new) hospitals and similar large institutions and recreation areas</p>





Legende zur Darstellung im Flächennutzungsplan

	ZSAC-REINHEITSLINIE
	AT DER DANKEN-NABLAG
	Wohnfläche
	Gewerbliche Bauflächen
	Gewerbliche Bauflächen
	Grünflächen
	Vollgrünflächen
	Stadtwaldflächen
	Freizeitanlagen
	Öffentliche Grünflächen
	Betriebsbereich des Seveso III (Störfallbetriebe)
	Planungsbereich

	Grünflächen
	Sportplatz
	Spielplatz
	Badeplatz, Freibad
	Friedhof
	Parkanlage
	Kleingärten
	Tennisplatz

	Grünflächen
	Sportplatz
	Spielplatz
	Badeplatz, Freibad
	Friedhof
	Parkanlage
	Kleingärten
	Tennisplatz

**Legende**

- Bedeutsame Anlagen für mit wasserreagierenden Siliziumchlorverbindungen
- Anlagen für potentielle Ammoniakfreisetzung
- Äußere Abgrenzung Planungszone 2 (Störfallradius für mit wasserreagierenden Siliziumchlorverbindungen)
- Äußere Abgrenzung Planungszone 1
- Betriebsbereich der Störfallbetriebe

**Urban development plan**  
In line with the  
**Seveso III Directive**

# Urban development plan in line with the Seveso III Directive



Land-use plan



Plan in line with the  
Seveso III Directive

**Changes  
in the planning**



# Urban development plan in line with the Seveso III Directive

	Planning zone 1	Planning zone 2
<b>Residential areas</b>	Residential areas with 20 accommodation units (as lower limit) generally possible	Residential areas with 40 accommodation units (as lower limit) generally possible
<b>Schools and children's nurseries, care facilities for senior citizens</b>	No new build  No extension of existing facilities that would increase the number of people particularly in need of protection	No new build  Extension of existing facilities generally possible

**Evaluation  
of  
individual  
projects**



# Urban development plan in line with the Seveso III Directive

	Planning zone 1	Planning zone 2
<b>Buildings used by the public / Buildings and facilities open to the public</b>	<p>The establishment of retail shops, service businesses, offices and restaurants—and the extension of existing ones—in the town centre shopping area is generally possible provided that the character of that area is retained.</p> <p>In the case of retail outlets with large floor areas, places of public assembly or other facilities where a large number of people may congregate: examination of the <u>special</u> individual case is essential.</p>	
		<p>On the Schildgasse commercial estate: location of retail outlets with large floor areas on a scale as per the land-use plan</p>

**Evaluation  
of  
individual  
projects**



# Urban development plan in line with the Seveso III Directive

	Planning zone 1	Planning zone 2
Guest accommodation	New guest accommodation with up to 10 beds generally possible	New hotels with up to 100 beds generally possible  Extension of an existing hotel to more than 100 beds: examination of this <u>special individual case</u> essential

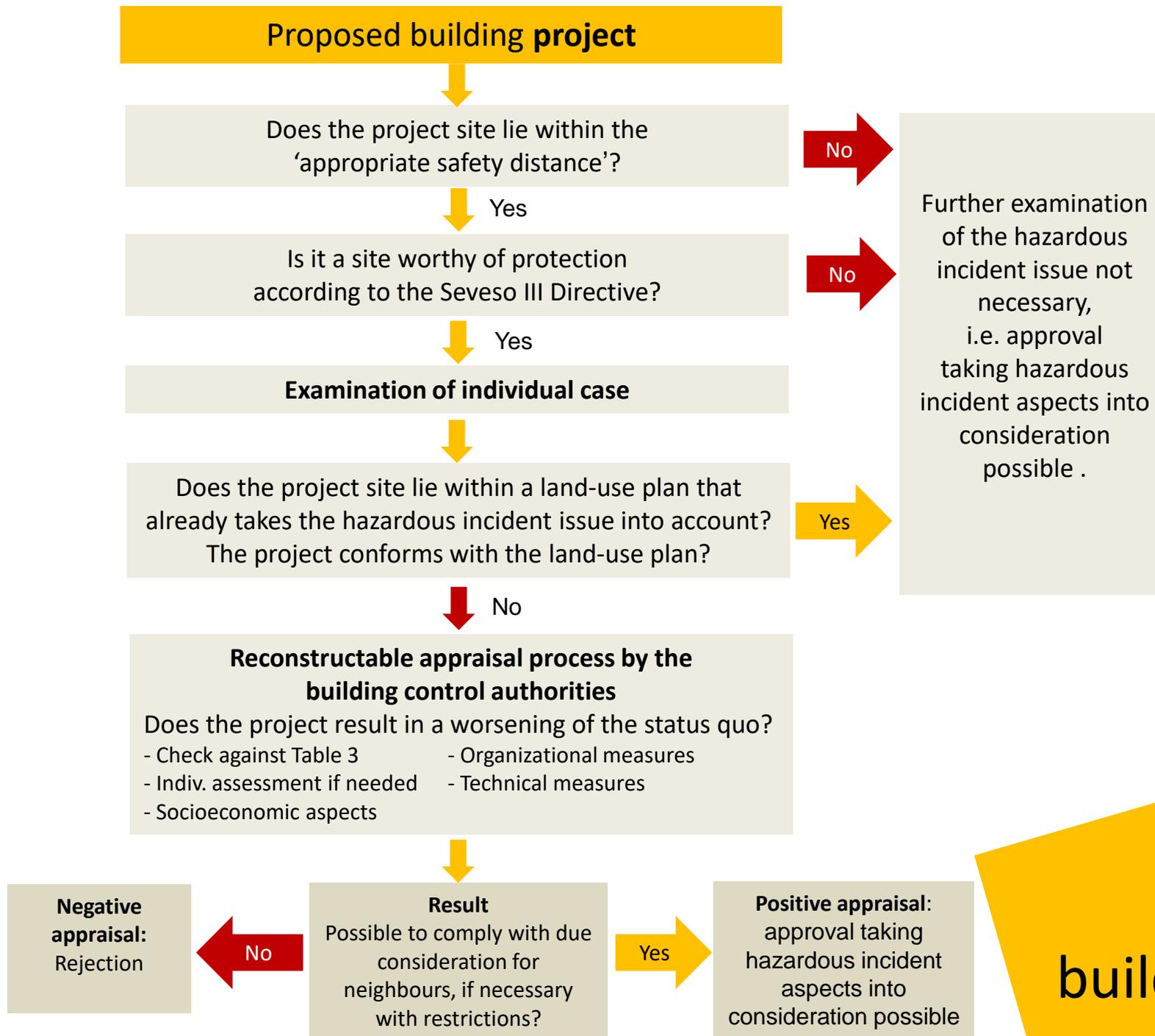
**Evaluation  
of  
individual  
projects**



- New residential buildings that do not, however, qualify as a new residential area (up to 6 residential units), in built-up areas, e.g. building on a vacant plot
- Alterations / extensions to existing residential buildings (e.g. dormer windows, loft conversions)
- Commercial premises not open to the public
- Office buildings not open to the public
- Parking facilities
- Routes of minor significance, such as the planned new footbridge over the Rhine

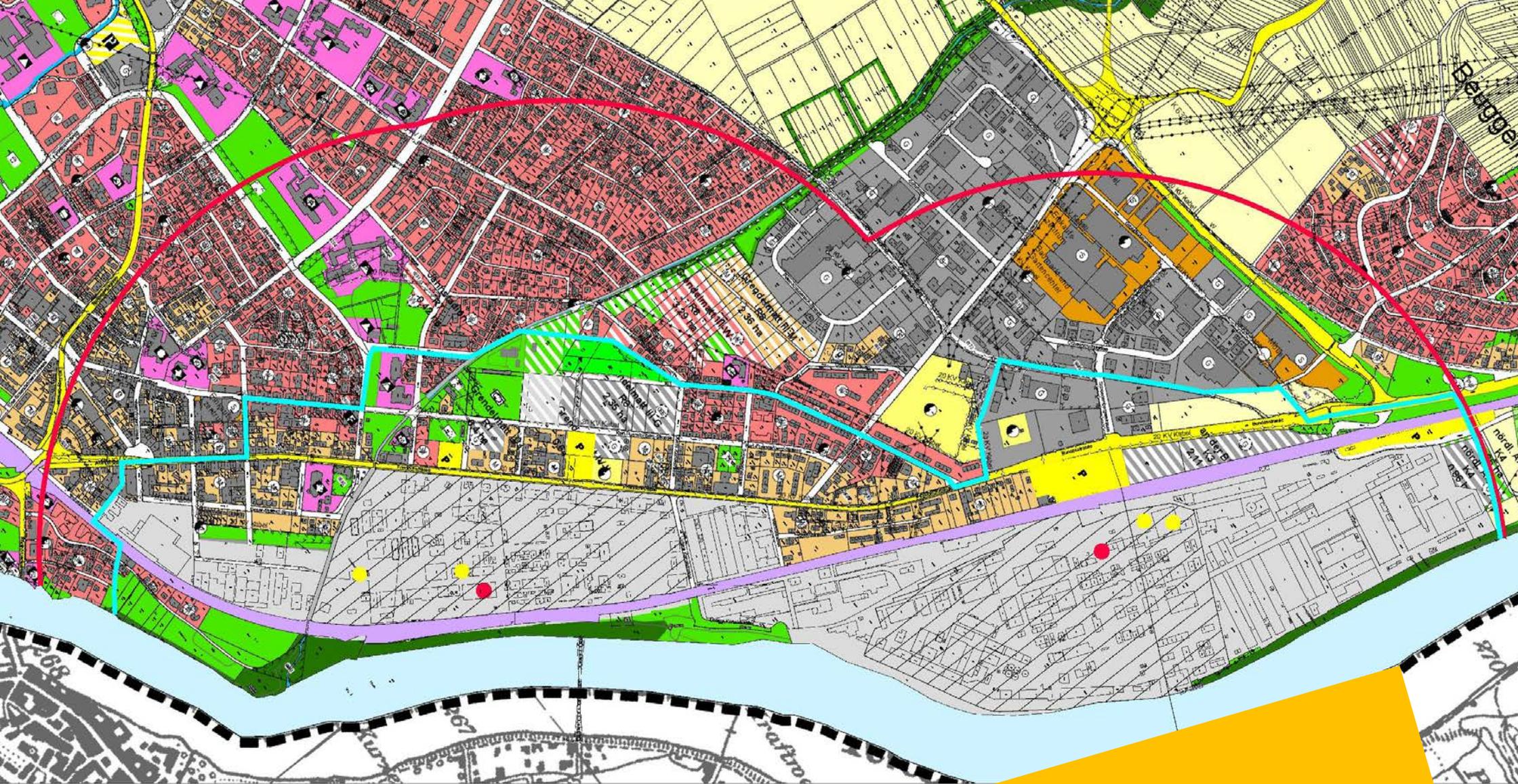
Individual  
projects not  
falling under the  
**Seveso III  
Directive**





# Flowchart for building approvals





Legende zur Darstellung im Flächennutzungsplan

Zeichensystem	Planung
	AT oder Bauland
	Wohnfläche
	Gewerbe- und Industrie
	Verkehrsflächen
	Freizeitanlagen
	Grünflächen
	Grünflächen für soziale Zwecke
	Grünflächen für gewerbliche Zwecke
	Grünflächen für soziale Zwecke
	Freizeitanlagen
	Kinderanlagen
	Altertumsdenkmäler
	Minerale

	Grünflächen
	Sportplatz
	Spielplatz
	Badeplatz, Freibad
	Friedhof
	Parkanlage
	Kinderanlagen
	Tennisplatz

	Bedeutungsvolle Anlagen für mit wasserreagierenden Siliziumchlorverbindungen
	Anlagen für potentielle Ammoniakfreisetzung
	Äußere Abgrenzung Planungszone 2 (Störfallradius für mit wasserreagierenden Siliziumtrichlorverbindungen)
	Äußere Abgrenzung Planungszone 1
	Betriebsbereich der Störfallbetriebe

Legende	
	Bedeutungsvolle Anlagen für mit wasserreagierenden Siliziumchlorverbindungen
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	Äußere Abgrenzung Planungszone 1
	Betriebsbereich der Störfallbetriebe

**Urban development plan**  
**in line with the**  
**Seveso III Directive**

# Urban development plan in line with the Seveso III Directive

## June 2015 – April 2016

Discussions, workshops, tie-in with Freiburg and Evonik

## May 2016

Introduction, urban dev. plan—drafting in the committees

## June 2016

Citizen's information event

## July 2016

Involvement of the public and the authorities

## September 2016

Review of representations  
Vote

## November 2016

Resolution as informal plan as per Section 1 (6) No. 11 of the Federal Building Code

## December 2016

Internal announcement

**Evaluation:** To date no negative events. Two major housing proposals were rejected at an early stage.



Rheinfelden  
Baden



**That's all for  
now, folks!**



Baden-Württemberg  
REGIERUNGSPRÄSIDIUM FREIBURG