ECONOMIC PERSPECTIVES OF BROWNFIELD DEVELOPMENT

An Integrated Approach – Case Study Stuttgart, Germany

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1. Introduction
2. Appraisal of Brownfields
3. Integrated and Area-oriented Approach
4. Case Study Stuttgart, Germany
5. Conclusion

1. INTRODUCTION

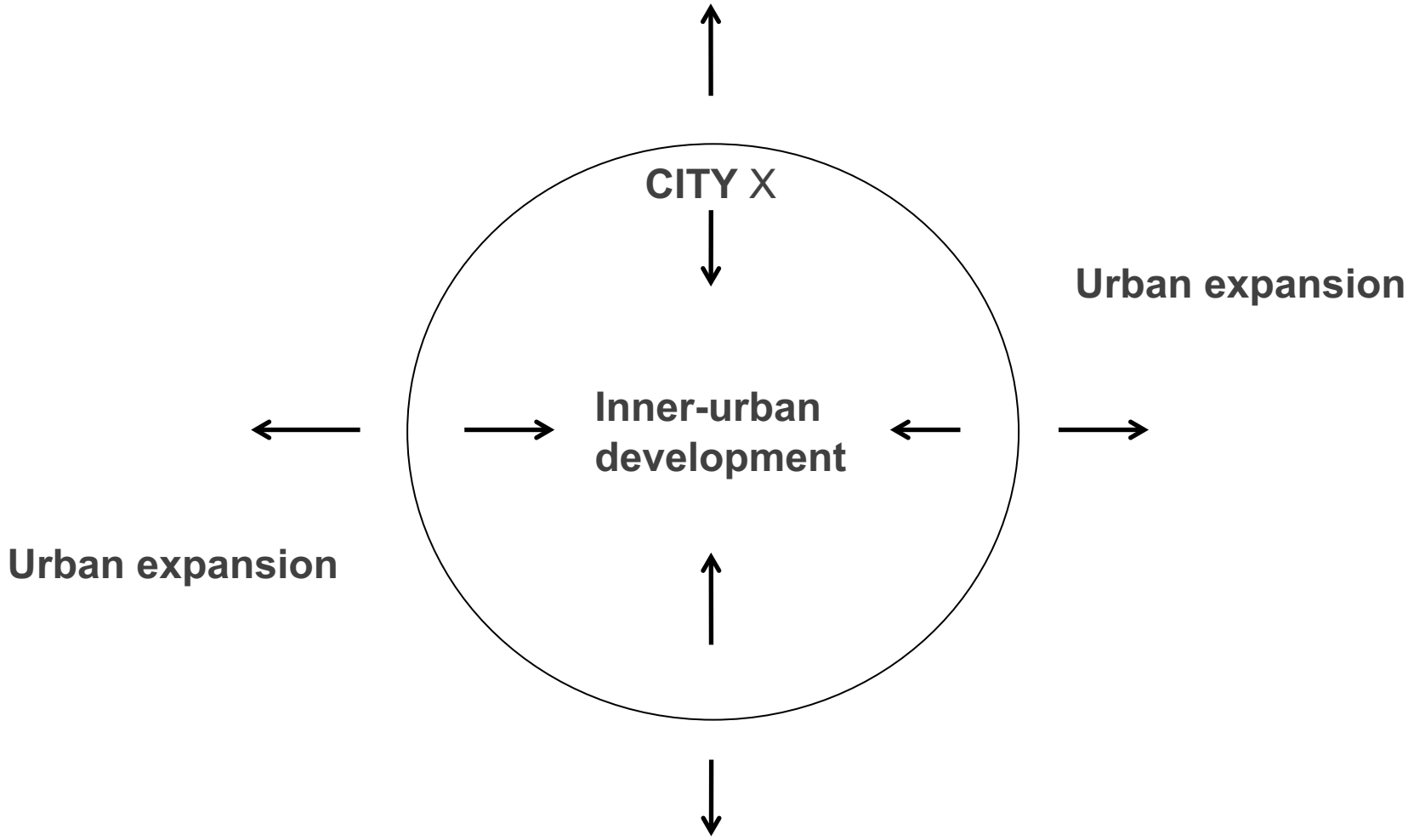
Sustainable Brownfield Development

1. Introduction

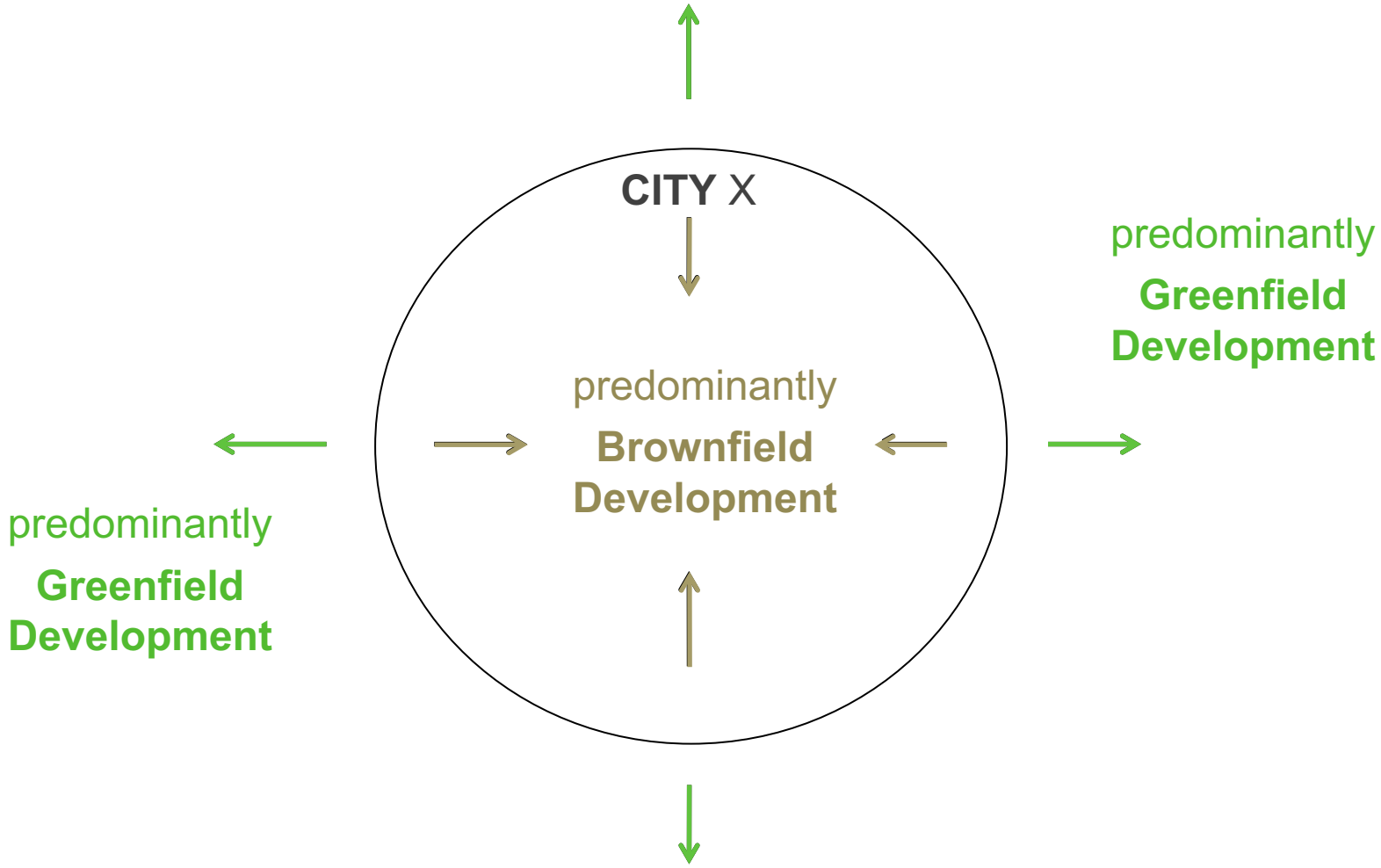
Content + Objective

Understanding of actions and effects of **integrated approaches** in **urban planning** and **inner-urban development** from the perspectives of **municipalities** with focus on the **economic aspects** to attract **private investment**.

Urban Development



Urban Development



Definition of Term

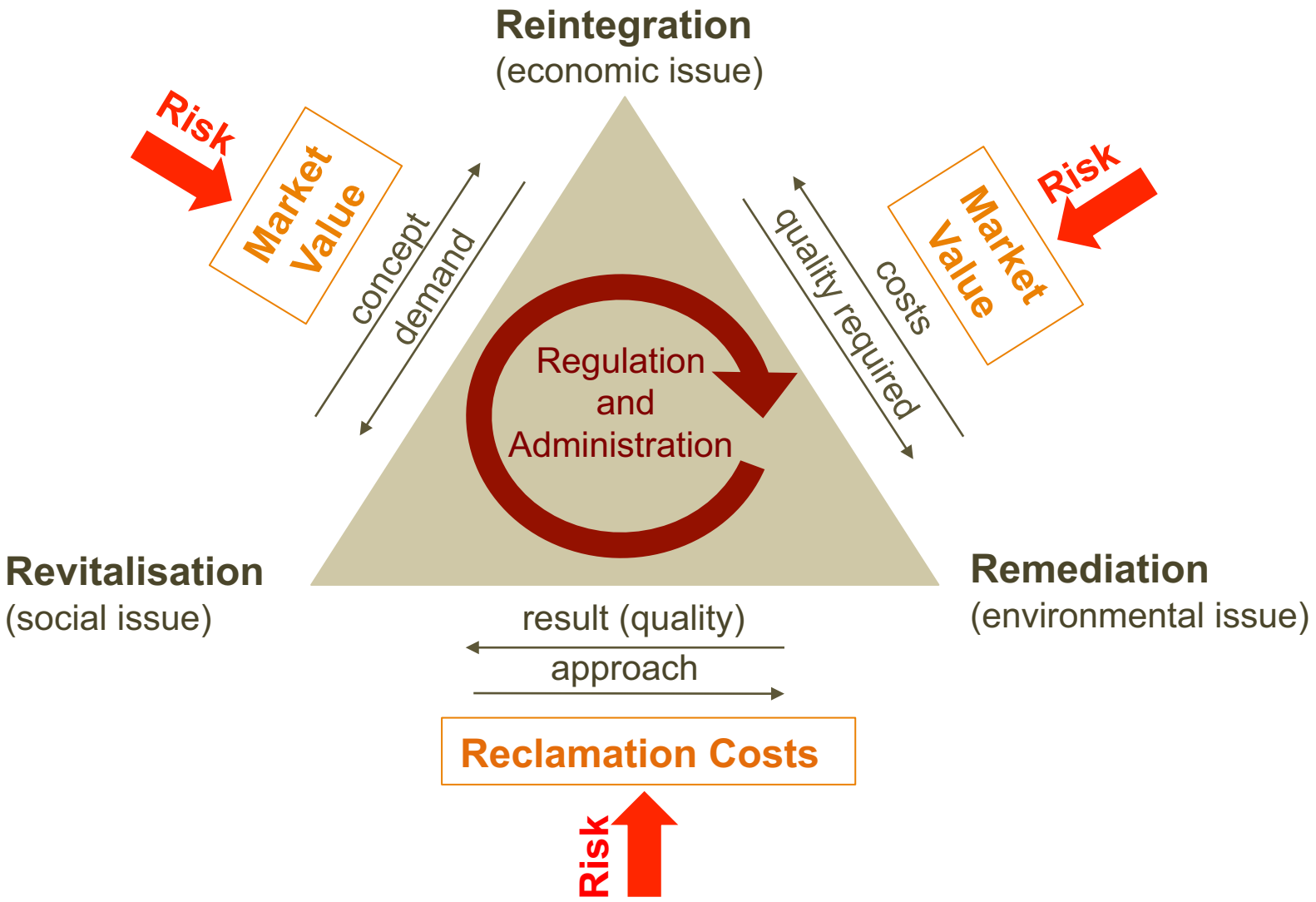
No common European Definition for Brownfield

CABERNET (Concerted Action on Brownfield and Economic Regeneration Network) **defines Brownfields as sites which:**

- have been affected by the former uses of the site and surrounding land
- are derelict or underused
- are mainly in developed urban areas
- require intervention to bring them back to beneficial use
- may have real or perceived contamination problems

Source: CABERNET, 2006, p. 23

Economics of Sustainable Brownfield Development



Conceptual Overview

Objective

Sustainable Reintegration of former small CHC contaminated Brownfields into the economic market cycle

Policies

Remediation
Reduction of reclamation cost

Revitalization
Increase of market value

Institution
Improvement of administrative processes

Risk
Minimization of Market oriented risk reduction

Measures

Integrated Approach (urban level)
Area-oriented Approach (urban level)

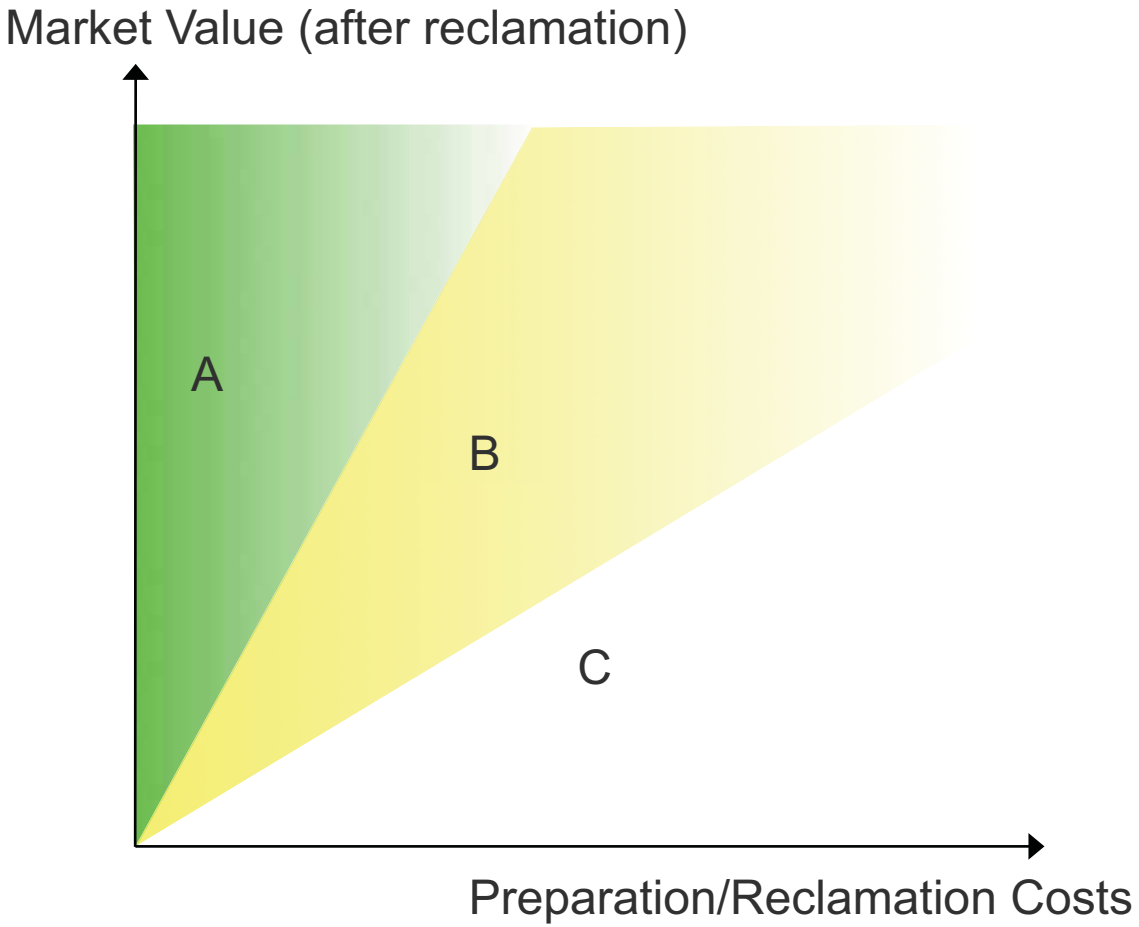
Integrated Approach (project level)
Area-oriented Approach (project level)

2. APPRAISAL OF BROWNFIELDS

An Economic Perspective

The Conceptual Model: A-B-C Model

Categorization of Marketability of Brownfield sites



Category A:
Self Developing Sites
Privat Driven Projects

Category B:
Potential Development Sites
Public-Private Partnership

Category C:
Public Driven Projects

Source: CABERNET, 2006, p. 44

2. Appraisal of Brownfields

Assessment Scheme

Assessment of Marketability of Brownfield Development Scenarios

Group of Criteria	Criteria	Scenario 1	Scenario 2	Scenario 3
Regulation and Administration (BauGB, 1999), (City Chlor (a), 2011)	Influence of policies with preference for inner-urban development			
	Organisation			
	Communication			
Market Value (WertV, 1988)	Status of development			
	Form and extend of structural use			
	Value influencing rights and burdens			
	Legal status of fees and cessions			
	Standby time for structural or other utilizations			
	Composition and character of the land property			
	Location			
Reclamation Costs (difu, 2006)	Demolition			
	Remediation and Disposal (including costs for future observations)			
Risk ((REFINA, 2011))	Stigma and marketing risk			
	Risk of investment			
	Risk of usability			
	Risk of utilization			
Sum				

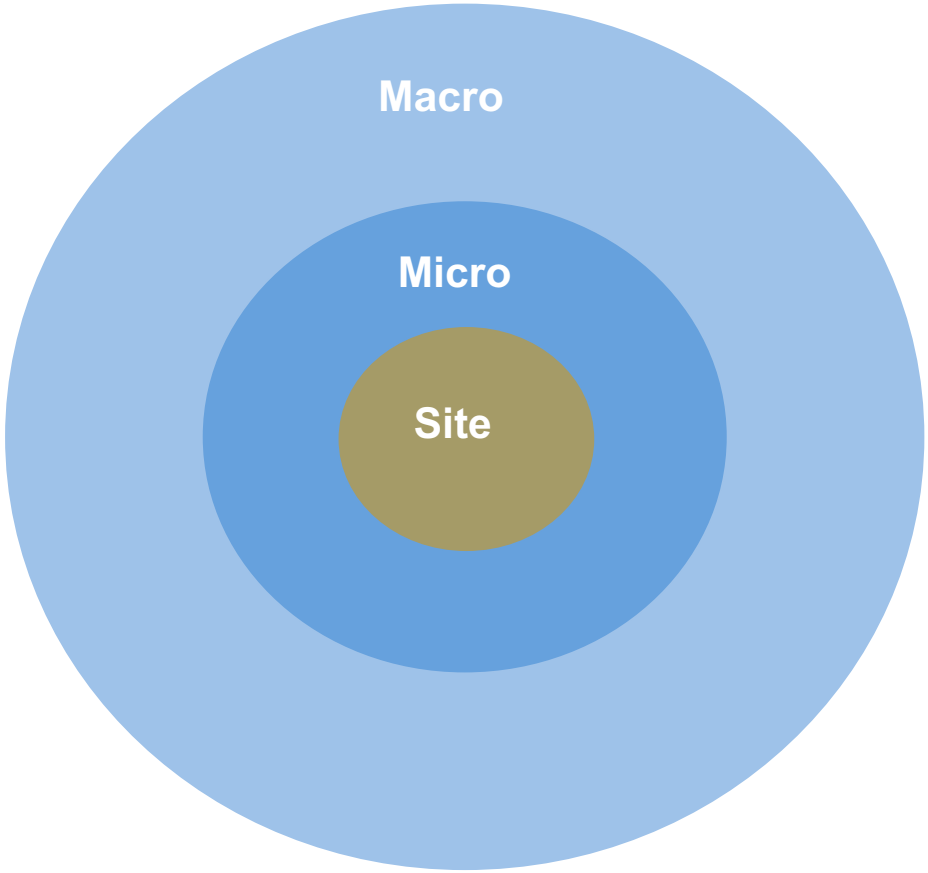
4. CITY CHLOR MEASURES

Integrated Approach

Area-Oriented Approach

4. Integrated and Area-Oriented Approach

Definition



Integrated approach:

Combination of all relevant aspects

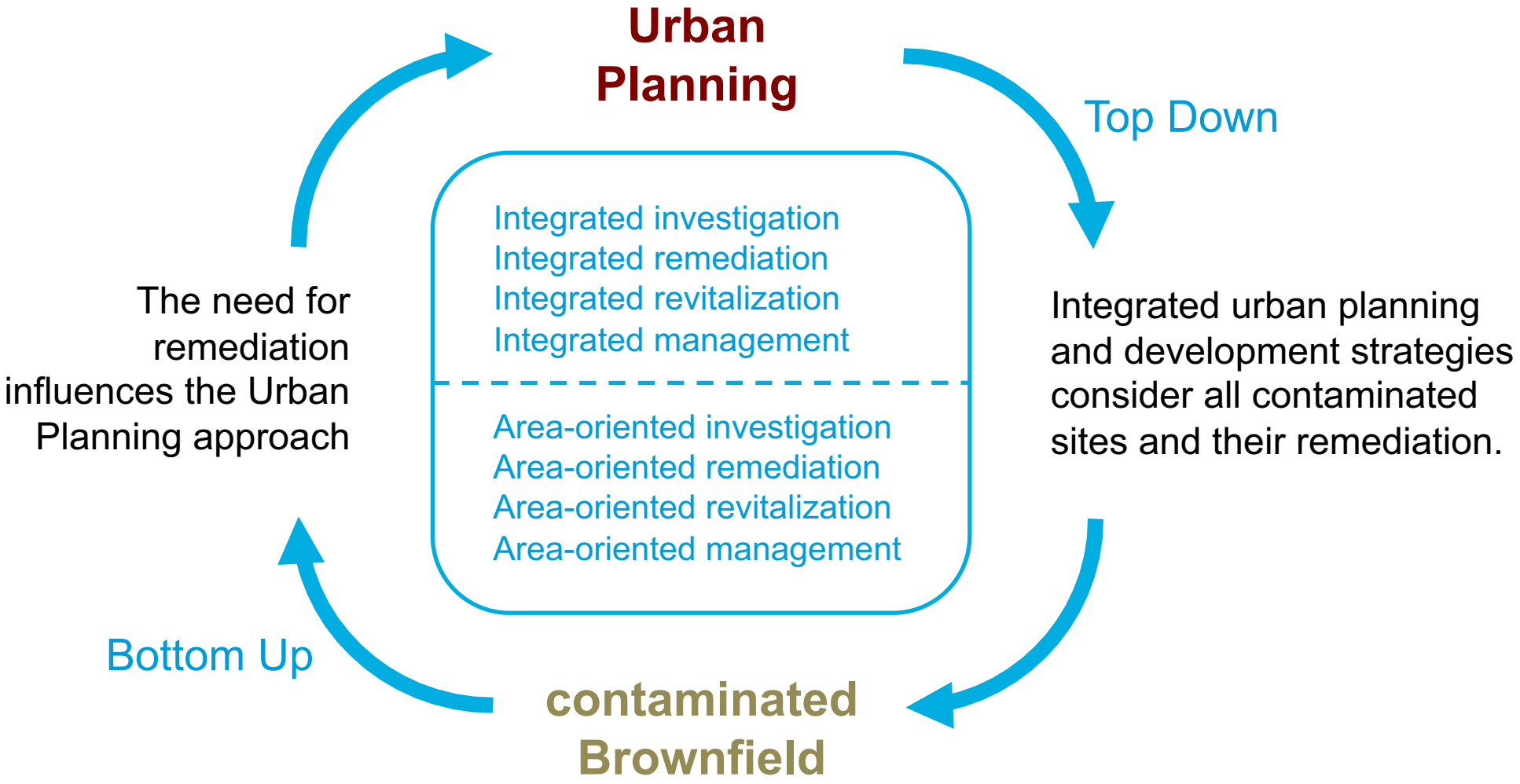
- Urban Planning and Development
- Environmental Engineering
- Organisation and Communication
- Socio-economic aspects

Area-oriented approach:

- Remediation of large urban areas instead of case-by-case procedure
- All contaminated Brownfields embedded in urban planning and development

4. Integrated and Area-Oriented Approach

Perspectives of Brownfield Development - Workflow



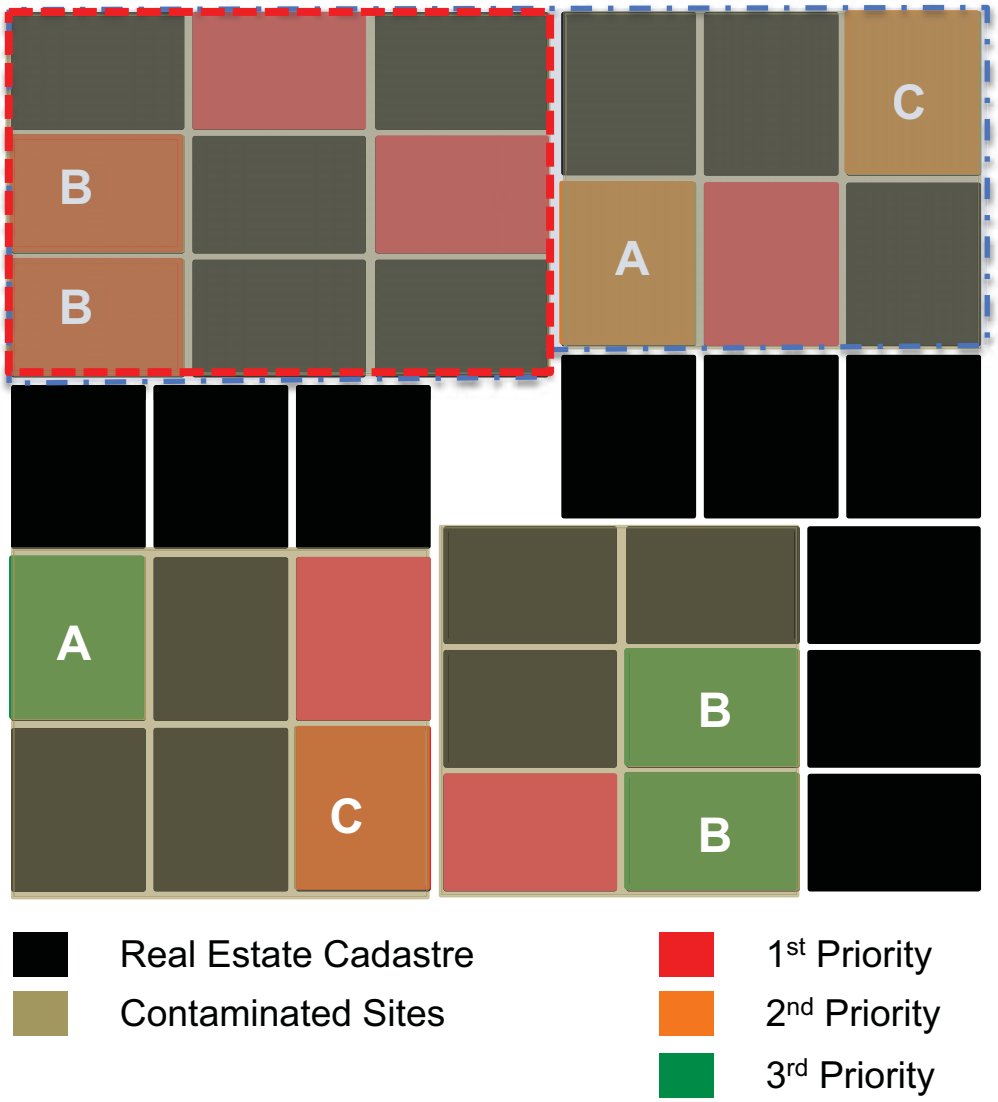
Actions of Integrated and Area-oriented Approach

	Urban level (Macro level)	Project level	
		(Micro level)	Site
Urban planning and urban development (Revitalization)	Consideration of all Brownfield sites for inner-urban development Integrated and Area-oriented specific site-related development strategy for the micro level	Integrated and Area-oriented development concept for the Brownfield site Remediation concept integrated into the construction process	
Environmental engineering (Remediation)	Survey of contaminated Brownfields an categorization of contaminations (criteria: contamination, possible uses, cost estimates), Prioritisation	Integrated and Area-oriented investigation of soil, groundwater and indoor air pollution and its sources Integrated and Area-oriented remediation of Hot Spots considering all exposure pathways	
Organisation and communication (Management)	Integrated and Area-oriented initiation of Brownfield development procedure, eventually purchase of neighbouring properties	Integrated and Area-oriented communication and coordination of Brownfield development	
Economic aspects (Reintegration)	Improvement of administrative processes (Interdisciplinary project groups, project manager, area manager), Increase of market value (upgrade of micro level around Brownfield site), Reduction of risks (coordinated, streamlined, transparent administrative processes)	Reduction of risks (integrated and area-oriented investigation of contaminants) Increase of Market Value (extension of development site) Reduction of reclamation costs (hot spot remediation) Reduction of reclamation costs (integrated remediation and construction process)	

4. Integrated and Area-Oriented Approach

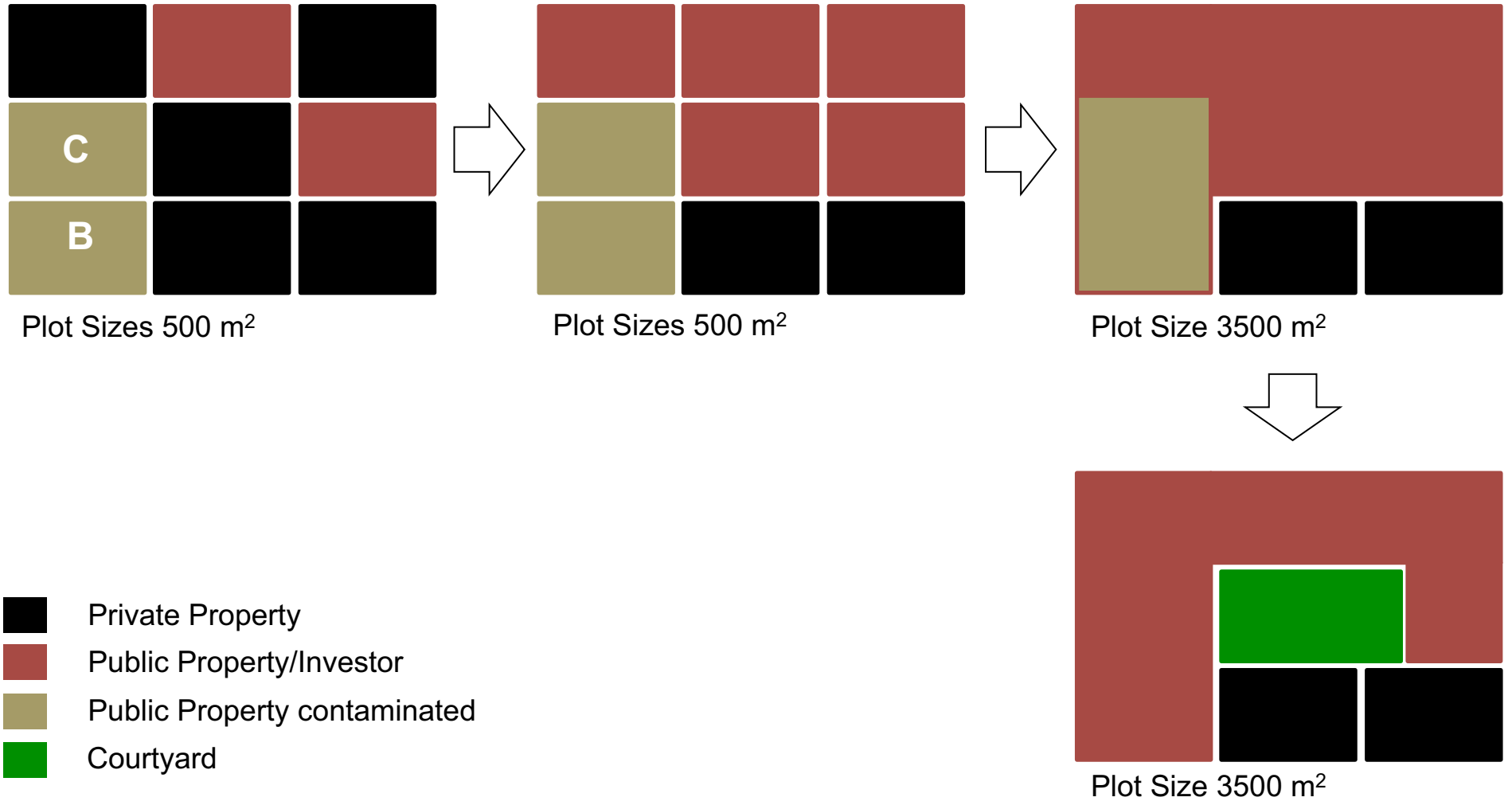
Integrated Urban Planning with Area-Oriented Approach - Urban Level (Top down)

Data Acquisition and Evaluation	
Public Property	
Brownfields	Bought by Public (contaminated)
Priorisation	Priority of Remediation
Categorization	A, B, C
Clustering	Reasonable Areas for Areas-oriented Approach
Renewal Area	
Project Level	



4. Integrated and Area-Oriented Approach

Area-Oriented Approach – Project Level (Bottom up)



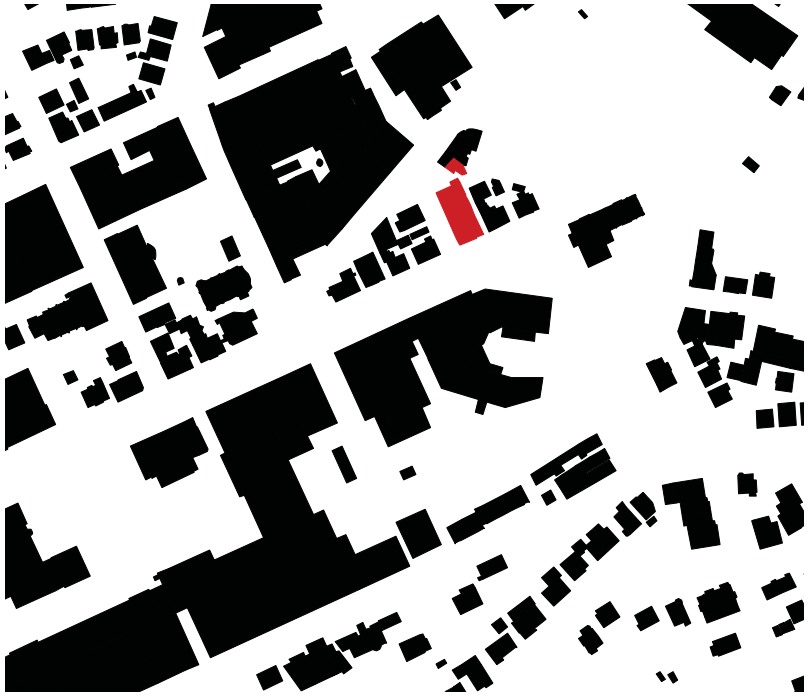
5. CASE STUDY

Stuttgarter Strasse 10, Stuttgart-Feuerbach, Germany

Why Stuttgarter Strasse 10

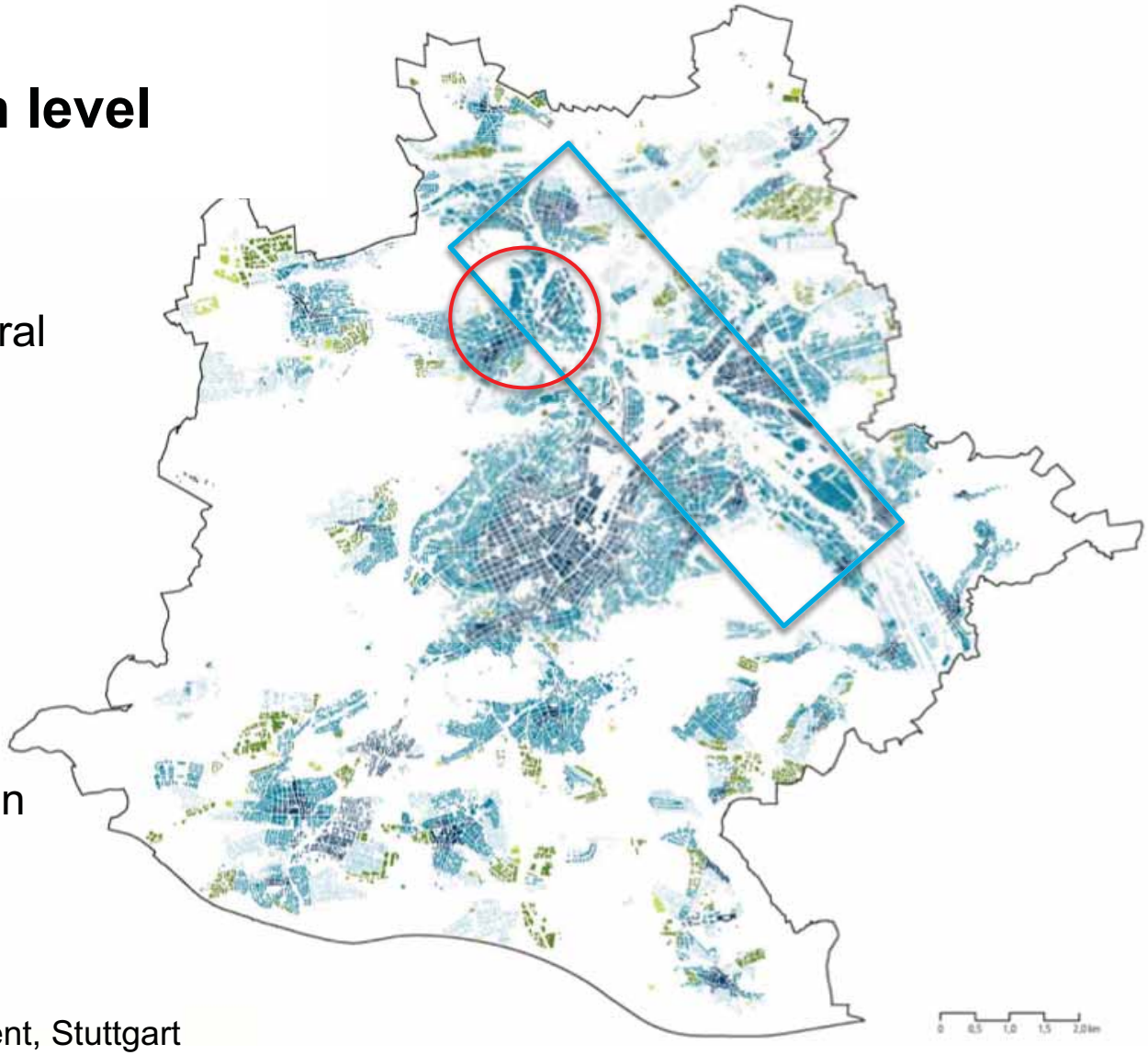
Pilot Site Boundary Conditions

- Inner-urban site densely built up
- Small site (ca. 700m^2)
- VOC contaminated
- Highly polluted soil and groundwater
- Polluter known but cannot hold liable
- Public property
- Difficult geology
- Source zones partly beneath existing buildings



Case Study Area – Urban level

- Feuerbach affected by structural change
- Population Growth 2,6% (Stuttgart 0,2%)
- Policy: Priority for Inner-urban development, Reduction of traffic, short ways
- Priority Area: Designated for Urban Development and Urban Renewal



Priority Area for inner-urban development, Stuttgart

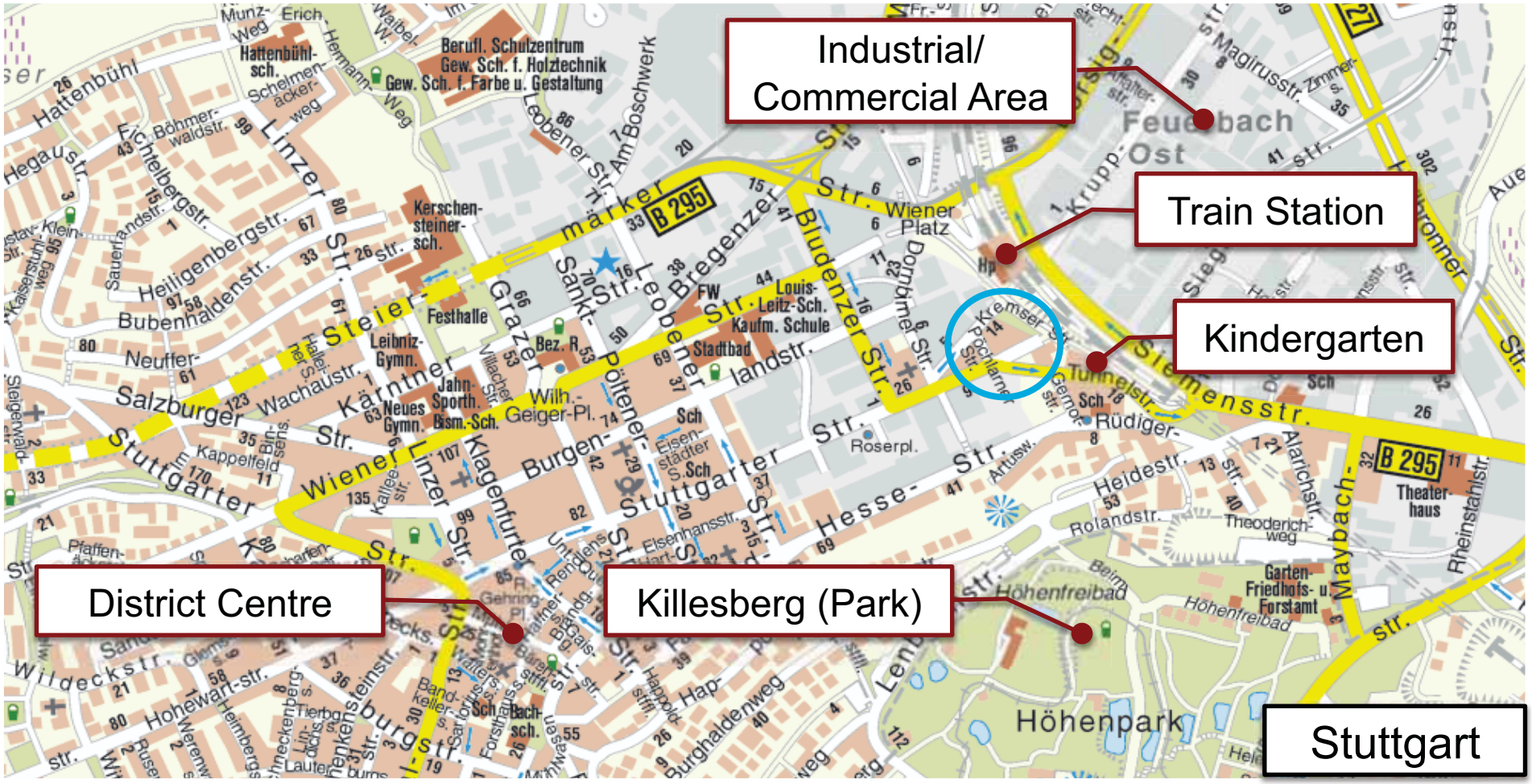
Feuerbach

Source: LHS Stuttgart (b), 2004, p. 16
LHS Stuttgart (a), 2003, p. 140

5. Case Study Stuttgart

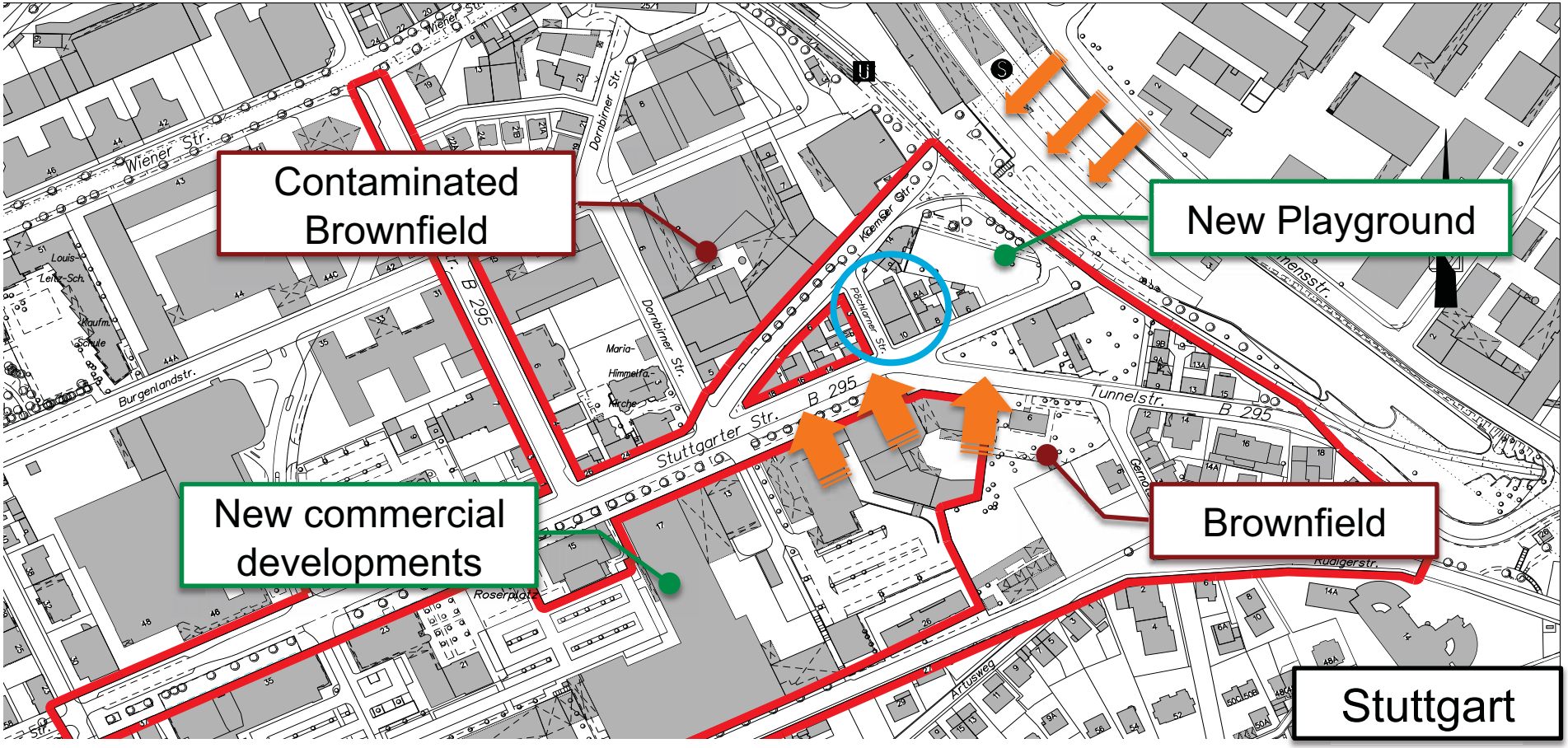
Case Study Area – Project level (Micro level)

Criteria: Accessibility, centrality



Case Study Area – Project level (Micro level)

Criteria: Environmental quality and emissions

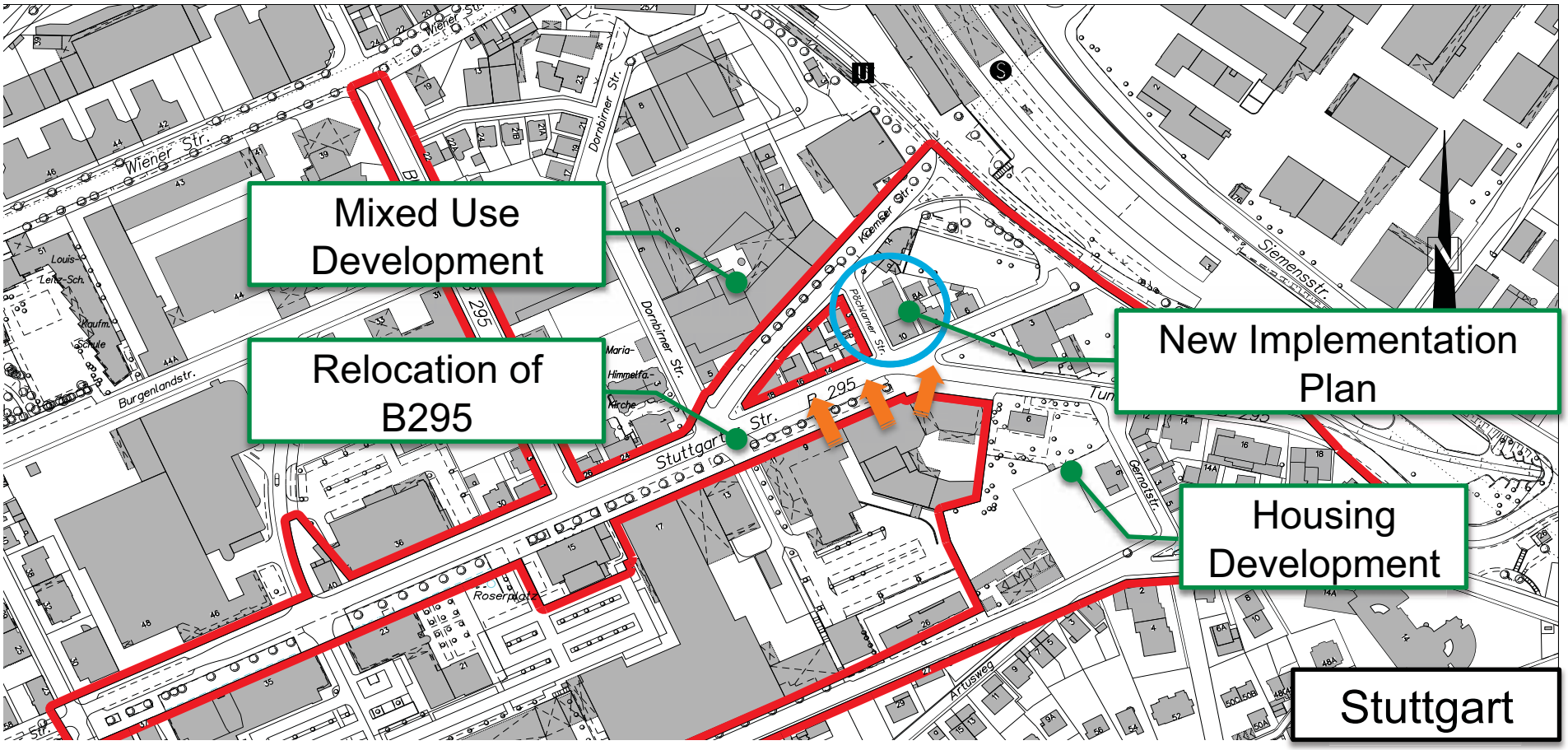


Urban Renewal Area

Source: (LHS Stuttgart (e), 2008)

Case Study Area – Project level (Micro level)

Criteria: Planned development activities



Urban Renewal Area

Source: (LHS Stuttgart (e), 2008)

Case Study Area – Project level (Site level)

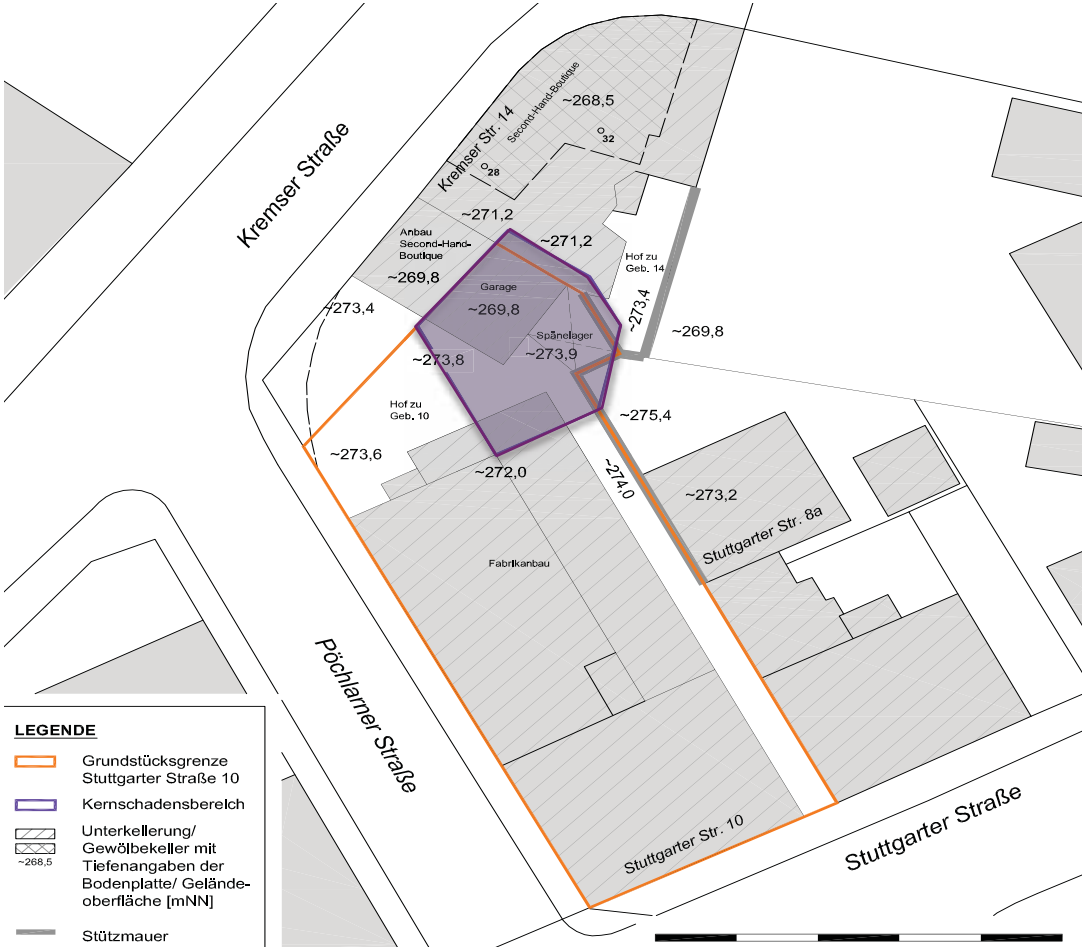
History:

- Office buildings (1888)
- Factory building (1955)
- Metal production (1946-76)
- Public property since 1990
- Detection of contaminations (1991)
- Soil vapour extraction (1993-94)
- Pump & Treat (1994-2010)
- Urban renewal (2000-2011)
- Detailed investigation (2008-2009)
- Pilot Site City Chlor (2009)
- Remediation plan (2011)
- Pilot Remediation (2013)

22 years

Case Study Area – Project level (Site level)

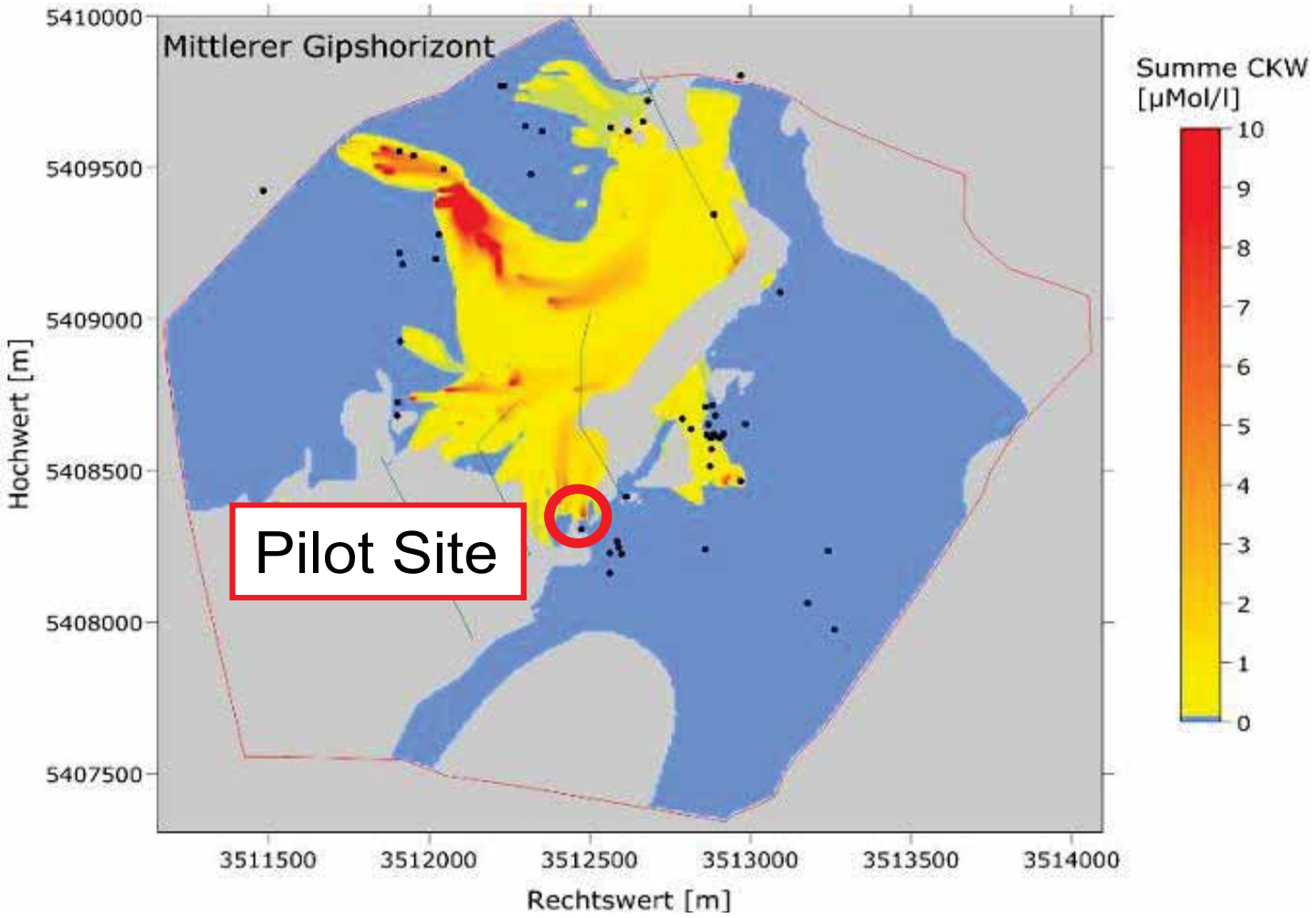
Localisation of Contaminations



Source: Arcadis, 2011

Case Study Area – Project level (Site level)

Plume



CHCs at site

- Mostly 1,1,1-trichloroethane (TCA)
- Secondarily trichloroethylene (TCE) and perchloroethylene (PCE)

Source: Magic

Appraisal of Marketability

Land Market Value Calculation

A-site: earnings > costs
B-site: earnings = costs
C-site: earnings < costs

FMW = (UVW + F) – (GK + AK +SL + P + K)

	Market Value (UVW) [€]	Funding (F) [€]	Purchase Price (GK) [€]	Reclamation Cost (AK) [€]		Land Market Value (FMW) [€]
				Investigation	Remediation	
Case 1	500,000	0	0	250,000	530,000	-280,000
Case 2	500,000	0	0	250,000	1,000,000	-750,000

→ C-site: earnings < costs

Source: difu, 2006, p. 56; Arcadis, 2011, p. 65

Appraisal of Marketability

Land Market Value Calculation

A-site: earnings > costs
B-site: earnings = costs
C-site: earnings < costs

Without funding earnings are far below the reclamation costs.

FMW = (UVW + F) – (GK + AK + SL + P + K)

In order to reduce costs for the public in general either the market value has to be increased or the reclamation costs have to be decreased or a combination of both.

	Market Value (UVW) [€]	Funding (F) [€]	Purchase Price (P) [€]	Reclamation Cost (GK + AK + SL + K) [€]		Land Market Value (FMW) [€]
				Investigation	Remediation	
Case 1	500,000	0	0	250,000	530,000	-280,000
Case 2	500,000	0	0	250,000	1,000,000	-750,000

→ C-site: earnings < costs

Source: difu, 2006, p. 56; Arcadis, 2011, p. 65

Potential for Development?

Appraisal of Case Study Area and Pilot Site

SWOT Analysis

to understand
which,
where,
who and
how actions have to be applied to improve marketability of the Pilot Site

5. Case Study Stuttgart

STRENGTHS			
INTERNAL ORIGINS	Urban Level	Project Level	
	Macro level	Micro level	Site
Reintegration (Location)	Attractive location for housing and commerce Location for culture (theatre, schools, community centre)	High centrality High accessibility (PuT and PrT) Mixed use area High densities Good public infrastructure Recreation (Killesberg) nearby Key location between train station and Killesberg Existing developments in neighbourhood (Schoch Areal, Krempel Areal), Planning available Green corridor train station – Killesberg	Regular cut Small site (no internal circulation costs) With two sites adjacent to street (no structural disturbance) High current built density GRZ ~0.65, GFZ ~1.5
Revitalization (Urban Planning)	Neighbourhood "Bahnhof Feuerbach" part of focus points for inner-urban development (MV),	located in Urban Priority Area (SVG) Part of Urban Renewal Area (Feuerbach 3) Right of first refusal "Bahnhof Feuerbach" in focus of urban development Decision for new Implementation Plan Small scale neighbouring plots in public property	Public property (development can be guided)
Remediation (Quality of land)		Polluted groundwater plumes are determined Neighbouring hot spots [illegible] and costs are estimated	Hot spots are localized Existing remedial investigation report with [illegible] remediation
Management (Politics, Organisation, Communication)	Existing policies for attracting inhabitants and to supply housing, Existing policies supporting inner-urban development Availability of data and data management systems, NBS, "vacant lot" cadastre	Installed Brownfield Management for development of neighbouring Schoch Areal and new planning procedures applied (IPG, "cooperative planning process" during REFINA project)	

WEAKNESSES			
INTERNAL ORIGINS	Urban Level	Project Level	
	Macro level	Micro level	Site
Reintegration (Location)		Connection for MIV from Stuttgart centre suboptimal. Unattractive train station square and post office building Unattractive facades of neighbouring buildings Vacant sites on both sides Noise from light rail and B295	Rented till 2013 Mainly interim uses like storage Low GRZ (0.4) Small plot (730 m2)
Revitalization (Urban Planning)	Pilot Site is not considered in Urban Planning strategies *Contaminations are not actively considered in* [illegible]	Fund of Urban Renewal Area "Feuerbach 3" already exhausted *Small scale neighbouring plots*	Buildings old Buildings have to be refurbished (partly *contaminated*)
Remediation (Quality of land)		Highly contaminated neighbouring site (Schoch Areal) Contaminations partly beneath neighbouring building	Highly contaminated (soil and groundwater) High estimated remediation costs, Lacking space for efficient remediation procedure
Management (Politics, Organisation, Communication)	No interdisciplinary routine procedure for Brownfield development	Site-by-site Brownfield development	No development concept or strategy for Pilot Site

"STRENGTHS"

reflect the internal aspects, which contribute positively on the marketability of the Pilot Site.

"WEAKNESSES"

reflect the aspects, which hamper the marketability of the Pilot Site.

5. Case Study Stuttgart

OPPORTUNITIES

EXTERNAL ORIGINS	Urban Level – Macro level	Project Level – Micro level	Project Level – Site
Reintegration (Location)	Expected population growth of 2,6% (among the highest outside the inner-city). More workplaces than inhabitants. Structural change increases possibility for urban upgrade on the micro level	New Implementation Plan with adequate higher densities. Upgrade of urban neighbourhood considering historical context. Qualitative architecture. Calming of B295	Qualified urban density. Increase of GRZ. Increase of GFZ. New building construction as a barrier against noise. Mixed use with preference on housing
Revitalization (Urban Planning)	Structural change increases possibility for urban development. Integrated and area-oriented development concept considering Schoch Areal, station square, Pilot Site and [illegible]	Integrated development (comprehensive concept for Pilot Site and neighbourhood). Realignment of neighbouring small scale plots. Area-oriented development of neighbouring sites. Sustainable developments. Experimental approaches	Provision of qualitative housing. Sustainable developments. Experimental approaches
Remediation (Quality of land)	Structural change increases possibility for (area oriented) remediation	Improvement of and environmental quality. Area-oriented remediation	Remediation of site. Reduction of remediation costs with integrated development concept (remediation and construction)
Management (Politics, Organisation, Communication)		Search for political support (positive development creates reputation). Application of [illegible] interdisciplinary procedure (consideration of Pilot Site and neighbouring plots). Active communication with owner and investor	Active communication and coordination (owner, tenant, investor, Joint building ventures)

THREATS

EXTERNAL ORIGINS	Urban Level – Macro level	Project Level – Micro level	Project Level – Site
Reintegration (Location)	Structural change causes Brownfields with risk for urban decline	No demand. No investor	No demand. No investor. Low architectural quality
Revitalization (Urban Planning)	No integrated and area-oriented development concept for the Pilot Site and its neighbouring Brownfields.	Owner does not want to sell. Low quality architecture. Remaining contaminations impede private investments. No integrated urban development concept (Pilot Site + neighbouring developments)	No development concept
Remediation (Quality of land)		Area-oriented remediation is not applied. Long term Pump & Treat procedure	Low remediation result (contamination could not be cleaned up adequately). No integrated remediation procedure. High remediation costs
Management (Politics, Organisation, Communication)		No political and public support. No interdisciplinary development procedures	No active communication and coordination

"OPPORTUNITIES"

reflect the external aspects, which contribute positively on the marketability of the Pilot Site.

"THREATS"

reflect the external aspects, which hamper the marketability of the Pilot Site.

Development Strategy

derived from the SWOT Analysis

The development strategy should

- boost existing strengths
- eliminate weaknesses
- implement opportunities
- mitigate threats on the urban and project level.

The development strategy

considers actions of the Integrated and Area-oriented Approach

→ to increase the marketability

→ by improving the administrative processes, increasing the market value, reducing reclamation costs and risks.

Potential Analysis

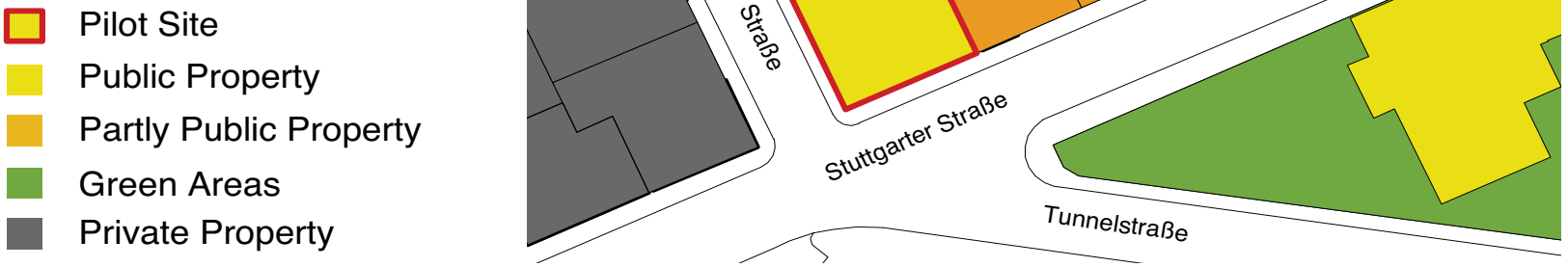
identifies the possibilities of the site for a successful implementation of the development strategy

According to the development strategy the Pilot Site is analysed to check the possibility for:

- Application of area-oriented development
- Setting of higher qualified densities
- Implementation of mixed use with focus on qualitative housing
- Implementation of structural solutions to reduce impacts due to noise emissions
- Integration in existing development process (Schoch Areal, Krempel Areal)

Potential Analysis

Application of Area-oriented Approach



Source: based on SIAS, processed by author

Scenario Planning

Investigation of present benefits and bottlenecks.

Scenario 1 (Base Scenario):

No action; Continuation with Pump and Treat

Scenario 2:

Application of Integrated Approach

Scenario 3:

Application of Integrated and Area-Oriented Approach

5. Case Study Stuttgart

Scenarios are performed according to:

- Measure applied for development (Integrated approach, Area-oriented Approach)
- Involved actors (Public, Owner, Investor, Tenant)
- Plot size (sqm)
- GRZ, GFZ (sqm)
- Projected Design
- Actions conducted
- Effects on the Marketability and Reintegration

SCENARIO 1

Description:
The site is not cleaned up but groundwater is continuously treated with Pump & Treat. The site shall be sold.

Applied Measure: None

Actors: Public

Plot Size: 730 m²		**GRZ**	**GFZ**	**Area**	**Floor Space**
	Current law	0,40	1,20	292,00	876,00
	Status	0,64	1,50	467,20	1095,00

Projected Design: None
Existing buildings:
Office and residential building built 1888, 2-stories
Factory building built in 1957, 1-2 stories

Actions:

Fields of Actions	Urban Level (Macro level)	Project Level (Micro level)	(Site)
Revitalization	Site was bought by public in 1991 due to planned urban development activities In 2000 included in urban renewal area Feuerbach 3	None	Planed and funded refurbishment could not be conducted due to existing tenant
Remediation	None	None	Pump & Treat safeguarding groundwater quality
Management	Initiation of Brownfield development process	None	In 2008 attempt to sell the property to the tenant.

Effects on the Reintegration:		**Marketability**
Revitalization	Brownfield development is unlikely	None
Remediation	Long-term procedure; 20 years are estimated	None
	Estimated remediation costs: 30,000 €/year	None
	Result of remediation not clear	None
Management	Interim rental till 2013	None

5. Case Study Stuttgart

SCENARIO 2

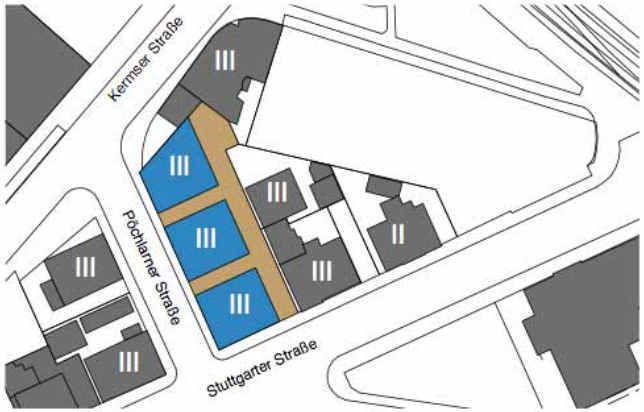
Description:

The investigation of contaminants is carried out through the municipality. The site shall be developed together with the private sector. The currently valid building law (Baustaffel 3) is confronted with the current status and possible maximum densities.

Applied Measure: Integrated Approach

Actors: Public → Tenant, Investor

Plot Size: 730 m²		**GRZ**	**GFZ**	**Area**	**Floor Space**
	Current law	0,40	1,20	292,00	876,00
	Status	0,64	1,50	467,20	1095,00



Projected Design:

Mixed Use (60% housing, 40% commerce)

3-4 stories

GRZ	0.6
GFZ	1.85
Area	450 m²
Floor Space	1350 m²
Housing:	810 m²
Commerce:	540 m²

Actions of Integrated Approach:

Fields of Actions	Urban Level	Project Level	
	(Macro level)	(Micro level)	(Site)
Revitalization	Elaboration of specific site-related provident development strategy for neighbourhood on micro level and site (Upgrade, GRZ, GFZ, Traffic) → (MV)	Observation of neighbourhood and site for upgrade and integrated development strategy → (MV)	
			Elaboration of integrated development concept (remediation integrated in development process) → (RC)
Remediation	Preparation of categorized (contaminations, possible uses, remediation costs) and prioritized (risk situation) data → (MV, RC, R)	Integrated investigation of pollutions and its sources regarding soil, groundwater, indoor air → (R, RC)	Remediation of all exposure pathways → (R)
Management	Initiation of Brownfield development procedure	Communication and coordination of Brownfield development	

Effects on the Reintegration:		**Marketability**
Revitalization	Upgrade of neighbourhood (green areas, traffic reduction)	Increase of Market Value
	Consideration of Urban Development or Urban Renewal Areas (Funding for demolition)	Reduction of Reclamation Costs
	Integrated development concept for the site considering the environmental urban conditions on the micro level	Increase of Market Value
	Initiating development processes in the neighbourhood (Rising public awareness, Communication with investor, Marketing	Increase of Market Value
	Higher possible densities for the site (GRZ, GFZ)	Increase of Market Value
	Integrated remediation procedure (reduction of costs due to reduced risk for existing buildings, security measures, synergetic effects with e.g. cellar or underground parking, reduced amount of contaminated soil)	Reduction of Risks Reduction of Reclamation Costs
Remediation	Comprehensive data as a basis for successful communication with investor	Reduction of Risks
	Comprehensive data is basis for sustainable planning decisions	Reduction of Risks
	Clear determination of sources (less remediation work)	Reduction of Reclamation Costs
	Comprehensive clean up of contaminants	Reduction of Risks
Management	Active development process	Improvement of Administration
	Transparent, simplified and streamlined development process (authority – authority, authority – investor)	Improvement of Administration
	Application of Project Manager, Interdisciplinary Project Groups	Improvement of Administration

Bottlenecks	
	Remediation difficult due to narrow space Additional costs for assurance of neighbouring buildings Kermser Straße 14 and Stuttgarter Straße 8a during remediation and construction Additional Risks Remediation result limited due to existing contaminations beneath neighbouring building Kermser Straße 14 Application of innovative and cheaper method difficult due to danger for neighbouring building Kremser Straße 14 Unsatisfactory urban solution

Scenario 2: Bottlenecks

- Remediation difficult due to narrow space
- Additional costs for assurance of neighbouring buildings Kermser Straße 14 and Stuttgarter Straße 8a during remediation and construction
- Additional Risks
- Remediation result limited due to existing contaminations beneath neighbouring building Kermser Straße 14
- Application of innovative and cheaper method difficult due to danger for neighbouring building Kremser Straße 14
- Unsatisfactory urban solution

Bottlenecks are mainly related to:

- Difficulty to access and clean up hot spots
- Risks due to densely built up neighbourhood
- Risk wheather all contaminations can be cleaned up
- Unsatisfactory urban solution

5. Case Study Stuttgart

SCENARIO 3

Description:

Investigation of contaminants is carried out through the public. The site shall be developed together with the private sector. Remediation shall be integrated in the construction process. The currently valid building law (Baustaffel 3) is confronted with the current status and possible maximum densities. The remediation and development of S10 is carried out along with adjacent sites.

Applied Measure: Integrated Approach and Area-oriented Approach

Actors: Public → Owner, Tenant, Investor

Plot Size: 2466 m²

	GRZ	GFZ	Area	Floor Space
Current law	0,40	1,20	986,80	2959,20
Status	0,46	1,20	1134,40	2959,20

Projected Design:

Mixed Use (60% housing, 40% commerce)

3-4 stories

GRZ	0.6
GFZ	2.0
Area	1478 m²
Floor Space	4959 m²
Housing:	2975 m²
Commerce:	1984 m²

Actions of Integrated Approach and Area-oriented Approach

Fields of Actions	Urban Level (Macro level)	Project Level (Micro level) (Site)
Revitalization	Elaboration of area-oriented specific site-related provident development strategy for neighbourhood on micro level and site (Upgrade, GRZ, GFZ, Traffic) → (MV)	Observation of neighbourhood and site for upgrade and integrated and area-oriented development strategy → (MV) Elaboration of integrated and area-oriented development concept (remediation integrated in development process) → (RC)
Remediation	Preparation of categorized (contaminations, possible uses, remediation costs) and prioritized (risk situation) data → (MV, RC, R)	Integrated and area-oriented investigation of pollutions and its sources regarding soil, groundwater, indoor air → (R, RC) Area-oriented remediation of all exposure pathways → (R)
Management	Area-oriented initiation of Brownfield development procedure	Area-oriented communication and coordination of Brownfield development

Effects on the Reintegration (Policies):		Marketability
Revitalization	**Integrated Approach**	
	Upgrade of neighbourhood (green areas, traffic reduction)	Increase of Market Value
	Consideration of Urban Development or Urban Renewal Areas (Funding for demolition)	Reduction of Reclamation Costs
	Integrated development concept for the site considering the environmental urban conditions on the micro level	Increase of Market Value
	Initiating development processes in the neighbourhood (Rising public awareness, Communication with investor, Marketing	Increase of Market Value
	Higher possible densities for the site (GRZ, GFZ)	Increase of Market Value
	Integrated remediation procedure (reduction of costs due to reduced risk for existing buildings, security measures, synergetic effects with e.g. cellar or underground parking, reduced amount of contaminated soil)	Reduction of Risks Reduction of Reclamation Costs
	Area-oriented Approach	
	Area-oriented development site specific concept integrated in current development concepts in the neighbourhood	Increase of Market Value
	Area-oriented remediation procedure integrated in construction process (no constraints due to existing buildings, increased synergetic effect with e.g. cellar or underground parking, no security measures for neighbouring buildings	Reduction of reclamation costs
Remediation	**Integrated Approach**	
	Comprehensive data as a basis for successful communication with investor	Reduction of Risks
	Comprehensive data is basis for sustainable planning decisions	Reduction of Risks
	Clear determination of sources (less remediation work)	Reduction of Reclamation Costs
	Comprehensive clean up of contaminants	Reduction of Risks
	Area-oriented Approach	
	Area-oriented clean up of neighbouring hot spots and contaminations formerly existing beneath neighbouring buildings	Reduction of Risks
	Application of innovative, cheaper and more effective remediation methods	Reduction of reclamation costs and risks
Management	**Integrated Approach**	
	Active development process	Improvement of Administration
	Transparent, simplified and streamlined development process (authority – authority, authority – investor)	Improvement of Administration
	Application of Project Manager, Interdisciplinary Project Groups	Improvement of Administration
	Area-oriented Approach	
	Area-oriented development procedure integrated in current development activities in the neighbourhood	Improvement of Administration

5. Case Study Stuttgart

Evaluation

Group of Criteria	Criteria	Scenario 1	Scenario 2	Scenario 3
Regulation and Administration (BauGB, 1999), (City Chlor (a), 2011)	Influence of policies with preference for inner-urban development	0	1	1
	Organisation	-1	1	1
	Communication	-1	1	1
Market Value (WertV, 1988)	Status of development	-1	1	1
	Form and extend of structural use	-1	0	1
	Value influencing rights and burdens	0	0	0
	Legal status of fees and cessions	0	0	0
	Standby time for structural or other utilizations	-1-	1	1
	Composition and character of the land property	-1	0	1
	Location	0	1	1
Reclamation Costs (difu, 2006)	Demolition	-1	1[1]	1[1]
	Remediation and Disposal (including costs for future observations)	-1	0	1
Risk (REFINA, 2011)	Stigma and marketing risk	-1	0	1
	Risk of investment	-1	1	1
	Risk of usability	-1	1	1
	Risk of utilization	-1	0	1
Sum		**-12**	**9**	**14**

[1] It is assumed that demolition costs are fully or partly funded due to Urban Renewal Area

7. CONCLUSION

7. Conclusion

- Application of Integrated and Area-oriented Approach can increase Marketability

  → socio-economical benefit (Reduction of costs for the public, pushed developments)
- Complex contaminations still require public funding
- Complex planning tasks need comprehensive approaches
- Comprehensive data and adequate administrative structures are needed
- Comprehensive approaches most probably result in additional work
- Political support is of utmost importance → top down → management tool
- Subsequent funding for implementation of advanced administrative structures
- Interdisciplinary administrative procedures have to become routine procedures
- Appreciation and understanding of the opposite as key factor
- New job profiles are needed (e.g. Brownfield Manager)

7. Conclusion

“It is not the strongest of the species that survive, not the most intelligent, but the one most responsive to change.”

(Charles Darwin, scientist)

THANK YOU…

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