

A4.3. Summary of the on-line international stakeholder workshop (M2.1)

November 12th, 2014, 13-15 hrs (Central European Time)

Target group (as defined in the project plan): Project partners and SNOWMAN community – European level. Attention paid to involvement of the golden quadrant: knowledge, regulators, business, community/society (invitees in appendix A).

Objectives of the workshop:

In this workshop, we will present the work carried out within Balance 4P at three case study sites (Rotterdam harbor in the Netherlands, Alvat-site in Belgium, Fixfabriken in Göteborg, Sweden) to *integrate urban planning and soil issues*, and a suggested framework for how this integration can be carried out in general. We would like to have the stakeholders' reflections on the work in the case studies as well as on the suggested framework. Next to that, we would like stakeholders to exchange with each other which problems and knowledge gaps are experienced in daily practice and which solutions there are.

Main objectives are:

- 1) to test interim outcomes of project and identify common grounds between cases (shared problems and knowledge gaps). We want stakeholders to become ambassadors of the project results.
- 2) to get feedback on the work in the different cases (and possibly on the holistic approach as well),
- 3) for the case-holders: to exchange and learn from each other.

The Balance4P project

The overall goal of Balance4P is to deliver an approach that supports sustainable urban renewal through the development of contaminated land and underused sites (brownfields) with a strong focus **on integrating urban planning and soil issues**. In the Balance4P project we focus on the three Ps of sustainability (people planet and profit) and a fourth P, the process/project (web-site: <http://www.chalmers.se/en/projects/Pages/Balance-4P.aspx>)

The specific project objectives are aimed at three important parts that are integrated in the suggested approach:

- application and assessment of methods for *design of urban renewal / land redevelopment strategies* for brownfields that embrace the case-specific opportunities and challenges;
- *sustainability assessment* of alternative land redevelopment strategies to evaluate and compare the ecological, economic and social impacts of land use change and remedial technologies;
- development of *a practice* for redevelopment of contaminated land in rules and regulations to enable implementations.

Planned agenda of on-line workshop

time	what	who
13:00	People entering the webinar	
13:00-13:10	Short intro on the use of webinar	Linda Maring (Deltares)
13:10-13:30	Welcome and introduction Balance4P	Jenny Norrman (Chalmers university)
13:30 – 14:10	Presentations and reflections from cases	Balance 4P-partners and case holders from Swedish, Dutch and Belgium case <ul style="list-style-type: none"> • Hanna Kaplan (Goteborg) • Kees de Vette / Ignace van Campenhout (Rotterdam) • Bert van Goidsenhoven (OVAM)
14:10 - 14:30	Presentations of the suggested framework	Fransje Hooimeijer (TU Delft)
14:30-14:55	Discussion on framework, main challenges and gaps	All
14:55-15:00	Wrap up	Jenny Norrman

The online webinar software of gotomeeting was chosen to organize this meeting.

Directly after the webinar a short online survey was send in which the stakeholders could leave their reaction. This survey was open until November 21.

List of invitees

Name	organisation
Jenny Norrman	Chalmers
Steven Broekx	VITO
Fransje Hooimeijer	TU Delft
Linda Maring	Deltares
Ignace van Campenhout	Gemeente Rotterdam
Carel Andriessen	Ontwikkelbureau M4H
Kees de Vette	Gemeente Rotterdam
Joost Martens	Gemeente Rotterdam
Simon Moolenaar	Snowman
Rolf Gerritsen	Provincie Brabant
Jan Frank Mars	RWS Soil+
Hanna Kaplan	Municipality of Göteborg – urban planning office
Christian Carlsson	Municipality of Göteborg – Real Estate office
Elisabeth Forsberg	Scatola (HSB/Balder)
Christian Schiötz	Municipality of Göteborg – Real Estate office
Maria Lissvall	Municipality of Göteborg – urban planning office
Josefine Trägårdh	Municipality of Göteborg – Recycling and water
Andris Vilumson	Municipality of Göteborg – Real Estate office
Mats Sandin	County Administration Västra Götaland
Rita Garcao	MSc-student Chalmers CEE
Yevheniya Volchko	Chalmers CEE
Mats Ivarsson	Enveco
Jaan-Henrik Kain	Chalmers Arch.
Lars Rosén	Chalmers CEE
Paul Bardos	R3 Environmental

Gabriella Olshammar	Göteborg University
Malin Norin	NCC
Anna Malmros	County Administration Västra Götaland
Yvonne Andersson-Sköld	COWI

Invitees were asked to forward this invitation to potential interested parties!

22 people joined the webinar. The presentations are available in the final chapter of this appendix: "Presentations".

Results of survey

The survey was created on "SurveyMonkey" and the link was distributed via the chat and via e-mail by the end of the workshop. Ten respondents filled out the questionnaire completely or partly, of those, 4 specified that they were from the subsurface sector, and 2 from the surface sector (4 did not specify this). There were 3 respondents who specified they were from Sweden, 1 from Belgium and 2 from the Netherlands (4 did not specify this). Below, a more detailed summary of the responses is given but the overall impression is that the participants of the workshop were positive towards the holistic approach, but experienced it as rather abstract. Further, they found several of the different tools and methods presented useful.

Q1. Do you see a potential for using the suggested holistic planning process framework in the (re)development sector?

Seven respondents gave "yes" as an answer, two did not respond, and 1 gave "partly" as an answer. One replied that it has a potential not only for brownfield redevelopment but also for later phases (asset management).

Q2. What constraints do you foresee in using the suggested framework?

Several answers mention similar aspects such as it requires new knowledge, mentality, and practice. One replied that local rules may be a constraint, and one respondent missed concrete examples.

Q3. Is the suggested framework coherent with the planning practice in your country?

Two respondents gave "yes" as an answer, but several answered "partly". One stated that theoretically yes, but we need more people to practice the new approach.

Q4. What would you add to the framework to make it more applicable in planning practice?

One respondent replied "What I have seen today in the example of Sweden: integrating the social parameters in the evaluation scheme is very interesting. That is what makes the local government tick; that's how to grab the attention of the local administration and to make them aware of how important the subsurface is." Another replied that an "underground scan" should be added. But several respondents were could not give an answer here or stated that they were uncertain.

Q5. What would you leave out from the framework to make it more applicable in planning practice?

One respondent replied "We saw that some methods of evaluating sustainability are better suited for certain parts of the planning process. The methods within the framework could come with recommendations about when and how they are most useful. I can't say I see that any specific part

should be left out.” Another replied that it depends on scale and typology. However, most respondents did not give an answer here, or stated that they were uncertain.

Case studies

Q6. Did the presented case studies help you to better understand the suggested holistic planning process framework?

Several respondents replied “yes” to this question, and two “partly”. One of these stated that a step-by-step approach would be better.

Q7. Did you gain any valuable information from the presented case studies?

Here, several replied yes, and stated e.g. “that it is possible to implement in one own's project, that it is applicable to different kinds of cases, and that a lot of valuable information was presented”. Some replied “partly”, one mentioned that the Alvat site was interesting and easy to follow, another that the social impact analysis was interesting and that it was nice to see that others had applied the SEES method.

Methods/tools

Q8. Which of the mentioned methods and tools (e.g. Stakeholder analysis (SA), SEES, ESS-mapping and valuation, Sustainability assessments of remediation (MCA-tools), Social impact assessment (SIA)) do you believe could be applicable and beneficial in integrating subsurface aspects into the planning process?

The following were given by respondents: The combination of them; SA + SEES + SIA; SEES + MCA-tools + SIA; SA + SEES + ESS-mapping and valuation + SIA + add U-scan (underground scan); SA + SEES + Brownfield tools (BR2tool, Brownfield navigator, Brownfield Opportunity Matrix) + ESS-mapping and valuation + MCA-tools; SA.

Presentations

INTRO JENNY NORRMAN (CHALMERS UNIVERSITY)

Welcome!

Balance 4P international stakeholder on-line workshop
 Wednesday November 12, 13-15 hrs CET
<https://www3.gotomeeting.com/join/414011070>

International stakeholder workshop, November 12, 2014

Mute

Attendees

Chat

International stakeholder workshop, November 12, 2014

Today's programme

time	what	who
13:00	People entering the webinar	
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13:30 – 14:10	Presentations and reflections from cases	<i>Balance 4P-partners:</i> Linda Maring, Steven Broeckx (VITO) and Jenny Norrman <i>Case holders:</i> Kees de Vette (municipality Rotterdam), Bert van Goidsenhoven (OVAM) and Hanna Kaplan (municipality Göteborg)
14:10 - 14:30	Presentation of the suggested framework	Fransje Hooimeijer (TU Delft)
14:30-14:55	Discussion on suggested framework, main challenges, gaps	All
14:55-15:00	Wrap up	Jenny Norrman
After webinar	Feedback in questionnaire:	All participants https://www.surveymonkey.com/s/DMZGSKG

International stakeholder workshop, November 12, 2014

Objectives of on-line workshop

- to inform on and to test interim outcomes of project and identify common grounds between cases (shared problems and knowledge gaps)
- to get feedback on the work in the different cases
- to get feedback on the suggested framework
- case-holders to learn from each other

PLEASE help us by filling in questionnaire!!
<https://www.surveymonkey.com/s/DMZGSKG>

International stakeholder workshop, November 12, 2014

Balance 4P:

Balancing decisions for urban brownfield regeneration – people, planet, profit and processes

Chalmers, CEE + Arch.: J Norrman, J-H Kain, Y Volchko, L Rosén
Deltares: L Maring & S van der Meulen
TU Delft, Dept of Urbanism: F Hooimeijer
VITO: S Broeckx, A Beames, K Touchant
Enveco EEC: M Ivarsson, **r3 Environmental:** P. Bardos
 + several students, e.g. S Kok, R Garcao

International stakeholder workshop, November 12, 2014

Balance 4P: Balancing decisions for urban brownfield regeneration – people, planet, profit and processes

- **Partners:** Deltares (NL), TU Delft (NL), VITO (B), Chalmers (SE, co-ord.)
- **Subcontractors Chalmers:** Enveco Environmental Economic Consultancy (SE), R3 Environmental (UK)
- **Funders:** SNOWMAN network: Formas (SE), SKB (NL), OVAM (B)
 The municipality of Rotterdam, in-kind contribution from Deltares, TU Delft, VITO, municipality of Göteborg

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Background to B4P

- Redevelopment of urban brownfield sites and renewal of existing urban areas
- Subsurface conditions
- Sustainable remediation & redevelopment
- Sustainable urban development
- Two sectors: subsurface engineering & urban planning and design

Need for holistic approach!

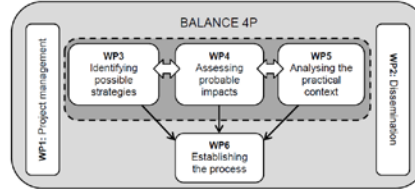
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Balance 4P outline

Aim: a holistic approach that supports sustainable urban renewal through the redevelopment of contaminated land and underused sites (brownfields).

Support knowledge exchange between sectors



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Case studies (WP 3 + 4)

- Merwevierhaven, Rotterdam city harbour – Rotterdam municipality
- Alvat – Buggenhout municipality
- Fixfabriken area – Göteborg municipality



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Structure for knowledge exchange

STEP	METHOD/TOOL	OUTPUT
Stakeholder analysis	E.g. Crosby method	List of stakeholders and their influence
Generation of redevelopment alternative(s)	Stakeholder consultation: E.g. SEES workshop	Redevelopment strategies (based on sub-surface conditions)
Assessment(s) of alternatives (People, Planet, Profit)	SIA, ESS, CO ₂ calculator, CBA, SRT, SCORE	Corresponding assessment results

WHO?

HOW?

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Structure for knowledge exchange

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Planning/design

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Structure for knowledge exchange

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Assessment(s) of alternatives (People, Planet, Profit)	SIA, ESS, CO ₂ calculator, CBA, SRT, SCORE	Corresponding assessment results

Engineering/decision support

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The practice (WP 5)

- Inventory and description of planning systems
- Planning regulations with regard to subsurface
- Comparison of the systems
- Aiming for conclusions on :
 - Differences and overlaps between systems
 - Moments for knowledge exchange between sectors in the three systems

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Framework (WP 6)

- Integrating the different parts into a decision process framework: literature and previous knowledge, experiences from cases + study on planning systems
- Focus: knowledge exchange, WHO and HOW (depending on phase)
- First outline presented today – needs to be detailed

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Case studies overview

	M4H - Rotterdam	Alvat - Buggenhout	Fixfabriken - Göteborg
Driver	Urban renewal	Contamination	Urban renewal
Landowners	Municipality + several large companies	Private (bankrupt) company	Municipality + large private developer + small private landowners
Phase	Vision-building	Contaminated soil management & Plan development	Compilation of a detailed plan

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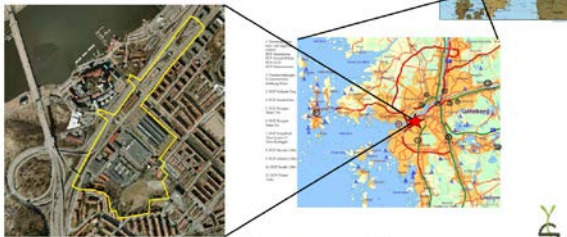
CASE STUDY PRESENTATIONS + REFLECTIONS FROM CASE HOLDERS

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CASE STUDY GÖTEBORG, JENNY NORRMAN (CHALMERS UNIVERSITY) & REFLECTION FROM HANNA KAPLAN (MUNICIPALITY OF GÖTEBORG)

Fixfabriken – Göteborg, Sweden



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Fixfabriken - overview

- **Driver:** land-use change (urban renewal)
- **Landowners:** municipality + large private developer + small private landowners
- **Phase:** compilation of a detailed plan

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Urban planning challenges

Areas of national interest: cultural history, transportation (roads, seaways), energy distribution (natural gas)

Archaeology

Cultural history

Geotechnics, soil pollution

Noise

Risk management (heavy transports)



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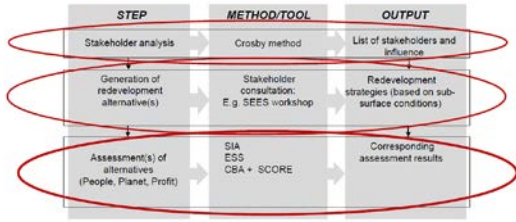
Case study work - overview

- Student workshop subsurface issues in urban design + student project work
- Stakeholder analysis (quick-scan)
- Stakeholder workshop 1: SEES – System Exploration Environment & Subsurface
- Identification of alternative redevelopment strategies
- Sustainability assessment of strategies:
 - SCORE
 - Mapping of changes in ESS
 - Social impact assessment
- Stakeholder workshop 2: Presentation and discussion of results of assessments of alternative redevelopment strategies

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Balance 4P input



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Stakeholder workshop 1: SEES

- Date: 2014-05-26
- Objectives:
 - to apply and evaluate the SEES approach on a Swedish case
 - to deliver input on subsurface issues to the ongoing work in the Fixfabriken area
 - to discuss strategies to analyse further in the Balance 4P research project
- Participants:
 - surface and subsurface experts (but some missing), researchers
- Feedback:
 - the competencies that met during the workshop otherwise seldom get the chance to sit together and discuss
 - high potential for use of the SEES-tool in other projects

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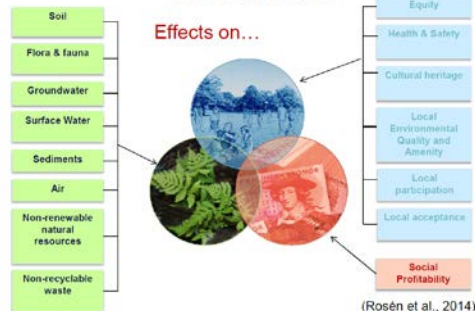
Analysis of strategies in Fixfabriken

- Identification 5 redevelopment strategies (land use and remediation strategy, but also urban design ideas)
- Sustainability assessments:
 - SCORE: combines a cost-benefit analysis (CBA) and a qualitative evaluation of ecological and social effects
Focus: primarily remediation strategies (R Garcao, J Norman, Y Volchko, R Anderson)
 - Semi-quantitative mapping of changes in Ecosystem Services (ESS)
Focus: primarily land use (Mats Ivarsson, Envenco)
 - Qualitative Social Impact Analysis (SIA)
Focus: primarily land use and urban design

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SCORE – Sustainable Choice Of Remediation

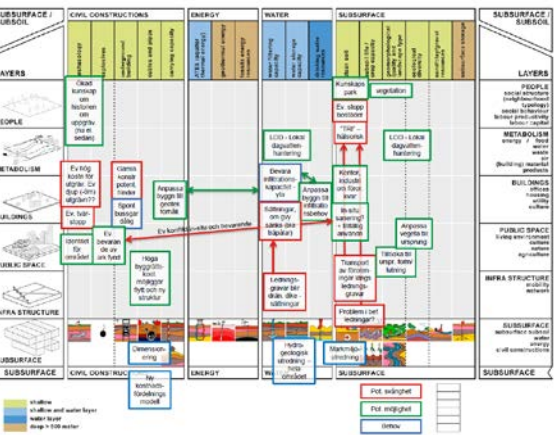


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Student workshop, April 23-25, 2014

- Dutch urban design students and Swedish engineering students
- Urban designs with sub-surface in focus
- Presentations to municipality & developer



5 redevelopment strategies



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Mapping changes in Urban Ecosystem Services (Baggethun et al. 2013)

Ecosystem service	Effects in parts of the Fixfabriken area and areas off-site (AOS)								
	Fixfab. factory	AOS	Bus garage	AOS	Tram hall	AOS	Ri-i Gatan B	AOS	Adjacent areas
Air quality regulation	1	0	0	0	0	0	0	0	0
Climate regulation (local urban climate)	1	0	0	0	0	0	0	0	0
Noise reduction	1	0	0	0	0	0	0	0	0
Water purification and waste treatment	1	0	0	0	0	0	0	0	0
Aesthetic values	0	0	0	0	0	0	0	0	0
Cultural heritage values	2	0	0	0	0	0	0	0	0
Recreation and ecotourism	0	0	0	0	0	0	0	0	0
Total change	1	0	0	0	0	0	0	0	0

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Mapping changes in Soil Ecosystem Services (*Fimvers M.A. 2008*)

Ecosystem service	Effects in parts of the Fimfabriken area and areas off site (AOS)									
	Fixfab factory	AOS	Bus garage	AOS	Tram hall	AOS	E-Gate	AOS	Adjacent areas	
Water purification and soil contaminant reduction	1	1	1	1	1	1	1	1	1	1
Carbon Sequestration	1	1	1	1	1	1	1	1	1	1
Regulation of greenhouse gasses	1	1	1	1	1	1	1	1	1	1
Flood regulation	1	1	1	1	1	1	1	1	1	1
Remediation of soil contaminated by diffuse airborne pollution	1	1	1	1	1	1	1	1	1	1
Total change change	+1	-1	+1	-1	+1	-1	+1	-1	+1	-1



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Social Impact Analysis (SIA)



(City of Göteborg, 2014)

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Workshop 2: Results from assessments

- Date: 2014-10-13
- Objective:
 - to present the assessment methods and the results of the assessments
 - to discuss the assessment methods with regard to practical use and applicability
- Participants: surface and subsurface experts, researchers
- Reflections:
 - Qualitative and semi-quantitative methods are more relevant in this stage (development of detailed plan)
 - Structured comparison of alternatives seems useful

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What feedback and experiences did the Fimfabriken case work give us (so far)?

- The focus of Balance 4P is relevant (!) - procedures differs greatly
 - Challenge of bringing in detailed analyses into early phases: communication and use of results, data availability
 - Qualitative (or semi-quantitative) analyses seems very applicable in early stages
 - Complex systems, all aspects cannot be covered in one type of analysis
 - Direct communication more efficient than documents, but expert knowledge must be delivered in the right form at the right moment.
- Other reflections
- Challenge to transfer achieved knowledge from one phase to the following when the regulatory systems (and actors) changes

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CASE STUDY ROTTERDAM, LINDA MARING (DELTAES) & REFLECTION OF KEES DE VETTE & IGNACE VAN CAMPENHOUT (MUNICIPALITY OF ROTTERDAM)



MERWEVIERHAVENS

ROTTERDAM, THE NETHERLANDS



Merwevierhaven (M4H) - overview

- Driver: urban renewal
- Landowners: municipality + several private companies
- Phase: Vision-building

Merwevierhaven (M4H) - overview

Transformation
Mixed use housing and businesses: pioneers, clean tech medical & food, creative industry

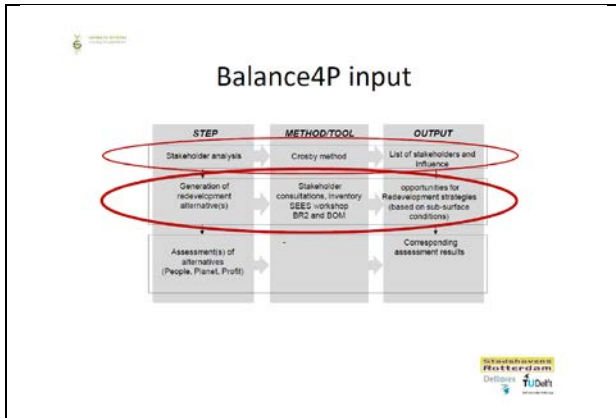
Question to B4P:

- What are innovative possibilities for the subsurface in relation with the aboveground redevelopment?
- How can we use subsurface in the development strategy?



Case study work - overview

- Stakeholder analysis (quick-scan & for workshops)
- Stakeholder workshop 1: SEES - System Exploration Environment & Subsurface
- Stakeholder workshop 2: zoom in EON, gasworks, Ferro/Eneco strategies for:
 - contamination,
 - civil structures,
 - energy
- Stakeholder workshop 3: (Vierhavenblok) to be planned
- Final product: boundary condition from subsurface for redevelopments (focus on data & information, organic development, technical boundary conditions, adaptation strategy, tipping points)
- Student workshops and projects
 - SEES
 - Aqua-Terra Urban Design projects
- Tool inventory and application (Brownfield Remit/Response (BR2) tool and Brownfield Opportunity Matrix)



M4H workshop 1 – subsurface inventory

Subsurface themes:

- Civil constructions:
- Archeology (old dyke)
- Cultural historical value (some buildings)
- Structures in subsurface (cellars, fundaments, quay walls)
- UXO (?)
- Cables and pipes (many)

Energy

- ATEs (potentially, no systems yet)
- Geothermal energy (potentially, interesting)
- Gas/oil (not economically interesting)
- Use temperature from harbour activities

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M4H workshop 1 – subsurface inventory

Water

- Groundwater (contamination, no drinking water)
- Mixed seepage / infiltration (tidal)

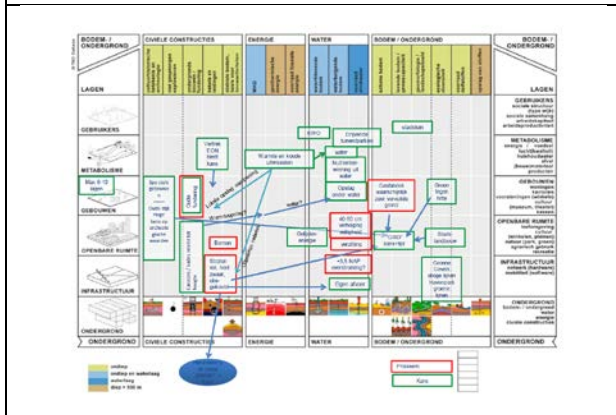
Soil

- Contamination
- Elevation 5-3,5 m +NAP
- Ecology (potentially interesting area, sandy soils, quay walls)

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M4H workshop 1

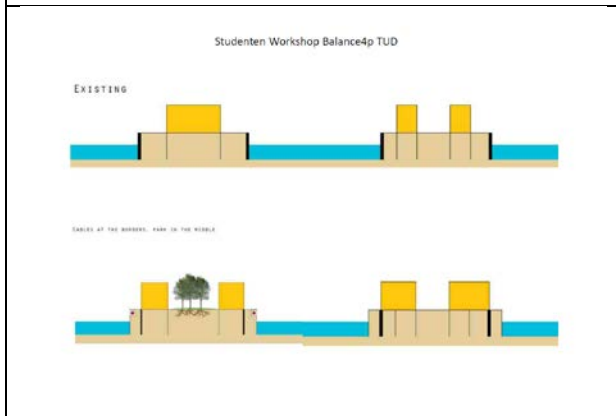
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M4H workshop 2 – idea book

- Accessibility and connectivity
- Climate change mitigation and adaptation
- Efficient use of space
- Green cities
- Human well-being and health
- Resource efficiency
- Strong and viable societies
- Sustainable energy
- Sustainable food production

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Groene steden
Gezondheid en leefbaarheid

Drijvende rietmoerassen hangende structuren

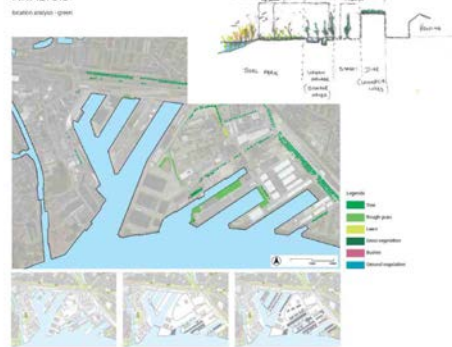
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Student work
Sanne Mooij



ANALYSIS

Student TUD Sebastiaan Huls



M4H workshop 3 – boundary conditions

Vierhavenblok: to be planned

- Final product: boundary condition from subsurface for redevelopments
- focus on data & information (Strategis),
- organic development,
- technical boundary conditions,
- adaptation strategy, tipping points)



What feedback and experiences did M4H case work give us (so far)?

- The focus of Balance 4P is revelant!
- The focus on subsurface showed new opportunities for stakeholders
- For the first time, our subsurface information, is widespread been used in combination with redevelopment of areas in Rotterdam...and gives better plans (students)
- Complex systems, all aspects cannot be covered in one type of analysis
- Direct communication more efficient than documents, but expert knowledge must be delivered in the right form at the right moment
- It's important to have all information from municipality and private companies



CASE STUDY ALVAT, BERT VAN GOIDSENHOVEN (OVAM) & STEVEN BROEKX (VITO)



Towards a transition in soil remediation
Balance 4P workshop

Bert Van Goidsenhoven
12.11.2014

Who is OVAM?

- The Public Waste Agency of Flanders
- Regional authority responsible for
 - Sustainable management of waste and materials
 - Prevention of soil pollution and carrying out of soil remediation
- Soil legislation since 1995
 - Protection of buyers of possibly contaminated land
 - Obligations linked to transfer of land
 - In case of non-compliance or "innocent owner" : remediation "ex-officio"



Snowman network

- Partnership of European institutions working on sustainable soil
- Started in 2003 as ERA-net project
- Independent network since 2009
- Common research agenda
 - Joint research calls
 - 4th call



Bert Van Goidsenhoven

12.11.2014



Bert Van Goidsenhoven

12.11.2014



Alvat site

- Former industrial site (4 ha)
 - cleaning of barrels + landfill
 - active form 60ies till 1995 (bankruptcy)
- Heavily polluted with a.o. mineral oil, solvents and heavy metals
- Remediation is urgent due to impact on environment
- Community of Buggenhout (15.000 inhabitants)
- Company is obligated to remediate but insolvent
- OVAM acts ex-officio



7

Dert Van Goolenheere

12.11.2014



Protocol for curators

- Launched in 2008
- Pre-financing of exploratory soil survey
- Acquisition of sites for 1 €
 - Cost of remediation > value of site after remediation
 - No interest of private parties
- 9 sites are bought, 8 under evaluation
- OVAM will clean the site + sell to highest bidder
 - Sustainability of the future development of the site?

7

Dert Van Goolenheere

12.11.2014



Soil remediation in transition

- Soil remediation can be no goal by itself
- Embed in spatial development
- Towards a merge of environment and spatial planning
- Territorial Development Programs (T.OP)
 - New instrument in urban planning
 - "Brings relevant stakeholders together to develop realisations on short and mid-term starting from joint goals"

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T.OP "Nother Border"

- Area north of Brussels: dynamic and complex area
- T.OP has to lead to cohesion and help to face demographic and economical challenges
- Stakeholders: all parties (public and private) with an interest in the area (85 km²)
- Process with 4 workshops lead by experts
 - Soil pollution and soil remediation: important aspect!
- Output: proposals for the political levels
 - How to translate to local level?



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Questions for Balance4P

- How to evaluate sustainable development?
 - Site level
 - Local to regional level
- Soil remediation as a part of the development
- How to integrate this in the rules and regulations?

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**TOGETHER WE
MAKE TOMORROW
MORE BEAUTIFUL**



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Public Waste Agency
of Flanders
Stationsstraat 110
B-2800 Mechelen

Alvat: Study area and former business activities



- Black field of 4.6 ha: market-based redevelopment very difficult without significant intervention of public authorities
- Former activities: container reconditioning services and production of containers
- Contamination with BTEX, VOCs, mineral oil, heavy metals, PCB and PAH
 - storage/use of oil products and solvents (suspicious zones)
- Landfill: containers (filled with thinners), plastic waste, paint residue



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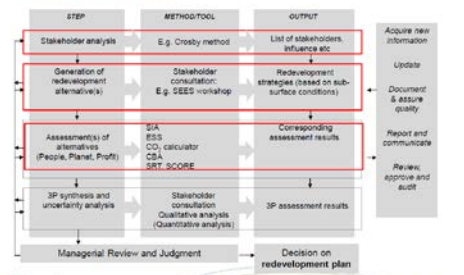


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Phase: Initiation



Specific tools

- Common practice Flanders, Belgium:
 - Stakeholder analysis
 - Risk assessment: S-Risk
 - Sustainability assessment potential remediation technologies: OVAM MCA
- Further Research:
 - SEES
 - Economic assessment
 - Ecosystem services
 - Biodiversity check
 - Social impacts

Risk assessment: S-RISK



<https://www.s-risk.be/>

Remediation for groundwater required in zone A and B for all land uses. Risk of spreading to river
Land use will not affect the choice of the feasible remediation techniques, but it can have an impact on the duration of the remediation.

Potential remediation technologies



- Site was partly remediated by OVAM in 2010 (landfill excavation). Goal was to move from blackfield to brownfield.
- Remaining pollution: rough estimation of the remaining cost of the remediation by a soil expert in the past on 1,5 million euro.
- Soil remediation suggested: excavation with drainage for the unsaturated source zones, groundwater remediation with multi-phase extraction system, deep groundwater contamination is governed by deepwells or a barrier.
- Updated data required on pollution levels.

Stakeholder analysis

- Curator (ownership after bankruptcy Alvat nv)
- Buggenhout municipality
- Province of East-Flanders
- Waterwegen en Zeekanaal (waterway authority, right of first refusal on the site)
- Dendermonde
- Development agency of the province of East-Flanders (POM Oost-VL)
- Agentschap ondernemen (brownfieldconvenant)
- Santerra → requested a "brownfield covenant" in the past, potential buyer, redeveloper
- OVAM
- PMV (study regarding black field remediation)

Stakeholder views on future destination/reuse

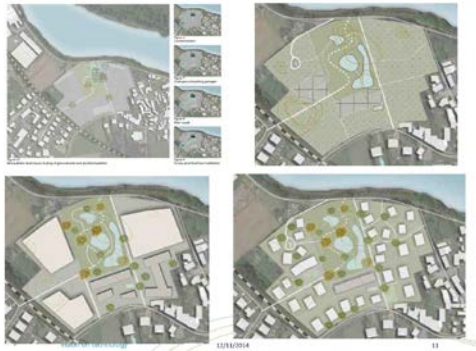
- zoning map: destination coloured as industrial area
- Waterwegen en Zeekanaal: water bound industry
- Municipality: mix of recreation and housing – in accordance with the municipal structure plan of 2005
- Ongoing redevelopment adjacent industrial site into a water bound business park by the province of East Flanders, together with the city of Dendermonde, the POM East Flanders (Development agency of the province of East-Flanders) and "Waterwegen en Zeekanaal"
- Potential compromises: "soft" industry, companies with a local historical tradition. Creating a good view on how transportation issues will be solved.

SEES

	ENVIRONMENT	ENERGY	PEOPLE	PROFIT	SUBSURFACE
ENVIRONMENT
ENERGY
PEOPLE
PROFIT
SUBSURFACE

Student work on potential redevelopment scenarios (Lena Niel, TU Delft)

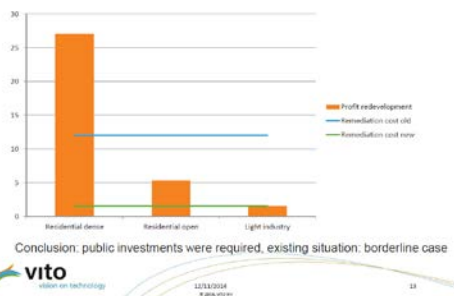




Assessment of alternatives: mapping



Assessment of alternatives: potential profit



Assessment of alternatives: OVAM MCA

Criteria	Weighting factor	Residential	Industry
Environmental aspects	33		
Legal remediation objectives soil	6.6	5	5
Legal remediation objectives groundwater	6.6	4	4
Total restrictions to environmental compartments	6.6	4	4
Direct emissions to environmental compartments	6.6	4	4
Duration of remediation & policy objectives	6.6	4	4
Regional/physical aspects	12		
Use of raw materials and recycled materials (carbon calculation)	4	4	4
Production of non-recyclable waste during remediation	4	4	4
Technical and social aspects	22		
Noise during remediation	5.5	4	4
Restrictions for land use after remediation	5.5	7	3
Damage caused by remediation works	5.5	5	5
Safety measures during remediation	5.5	5	5
Financial aspects	33		
Remediation costs	22	4	4
Cost of residual contamination	11	4	4
Total		1713	1737

Conclusion: impacts are not sufficiently different to let future destination depend on it.
http://www.ovam.be/sites/default/files/CO2_rekenmodel_versie_1-3-1-VL.xls

Assessment of alternatives: Ecosystem services

natuurwaardeverkenner www.natuurwaardeverkenner.be

- Sustainability of public investments: societal value of preserving open space elsewhere
- Comparison scenarios:
 - Required input/assumptions: surface of green area and type
 - main services – preserving green spaces in the centre or around buildings => added value for recreation, health
 - other services: open spaces with positive impacts on infiltration, carbon sequestration, air quality
 - Benefit: 20-60 k€/jaar

Assessment of alternatives: biodiversity

Biodiversiteitstoets www.biodiversiteitstoets.be (only in dutch)

Residential use scores best.

Depends heavily on assumptions:

- Sealing types
- Green shapes / vegetation

Strategies for improvement.

More fit for planning stage.

Assessment of alternatives: social impacts

Indicator Approach

- Objective: Get an indication of social impacts of alternative redevelopment options
- Based on indicators from existing literature in other fields
- Physically mappable features of the environment that contribute to human well-being

6 Key Indicator Categories:

- Accessibility and Mobility
- Community Health and Safety
- Human Capital
- Equity and Coherence
- Social Cohesion
- Urban Aesthetics

Method:

- GIS based spatial analysis
- 100x100m pixel resolution
- Land use and infrastructure layers
- Distance to / per individual
- Evaluation of redevelopment scenarios

Stakeholder feedback on tools

- Realism:
 - Message needs to be sufficiently simple to have impact
 - Existing legal frameworks/procedures (zoning plans, environmental impact assessments, nature areas, maps on water sensitive areas, ...) already capture a lot of the sustainability aspects.
- OVAM: potential interests in widening sustainability perspective from remediation technologies to redevelopment strategies
- Making the bridge between spatial and soil planning: brownfield covenant considered as an important tool, the importance of "individuals"

BALANCE4P FRAMEWORK, FRANSJE HOOIMEIJER (TUDELFT)

AVAILABLE ON http://prezi.com/geysrofzj2zn/?utm_campaign=share&utm_medium=copy

DISCUSSION & WRAP UP, JENNY NORRMAN (CHALMERS UNIVERSITY)

Discussion - reflections on:

- Do you see a potential for using the suggested holistic planning process framework in the (re)development sector?
- What constraints do you foresee in using the suggested framework?
- Is the suggested framework coherent with the planning practice in your country?
- What would you add to the framework to make it more applicable in planning practice?
- What would you leave out from the framework to make it more applicable in planning practice?
- Did you gain any valuable information from the presented case studies?
- Which of the mentioned methods and tools do you believe could be applicable and beneficial in integrating subsurface aspects into the planning process?

International stakeholder workshop, November 12, 2014



Acknowledgements

- Students
- Stakeholders
- Funders



International stakeholder workshop, November 12, 2014



WRAP UP

International stakeholder workshop, November 12, 2014



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International stakeholder workshop, November 12, 2014

