



11.9.2014

ABSOILS - SUSTAINABLE METHODS AND PROCESSES TO CONVERT ABANDONED LOW-QUALITY SOILS INTO CONSTRUCTION MATERIALS. 1.9.2010 – 31.12.2014

LIFE+ 2009 DEMONSTRATION PROJECT
LIFE09 ENV/FI/575

RAMBOLL



D.Sc. (Tech.) Pentti Lahtinen
pentti.lahtinen@ramboll.fi

ABSOILS PROJECT IN A NUTSHELL

- Start: September 2010/ end: December 2014
- Co-ordinated by Ramboll Finland
- Project partners: Biomaa/Lemminkäinen and Rudus
- Supported by the Finnish Ministry of the Environment and the Uusimaa cities - Helsinki, Espoo and Vantaa
- Co-financed by the EU LIFE+ Environmental Policy & Governance programme (LIFE09 ENV/FI/000575)



LIFE09 ENV/FI/575 ABSOILS

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Lemminkäinen

Rudus

BACKGROUND



- Finnish infrastructure is under rapid development
- Estimated annual amount of redundant soils - 20 – 30 million tonnes
- The Uusimaa region - annually generated redundant soils (mostly clays)- 4 million tonnes per year
- City of Helsinki - annually generates about 0,6 million m3 of excavated soils. Poor quality soils traditionally landfilled - about 70% of this amount.
- A typical problem – shortage of available deposit sites in the cities



AIMS

- To address the challenges of the European policies and legislation concerning waste
- To promote waste recovery and sustainable recycling with a focus on life-cycle thinking and the development of recycling markets
- To tackle the challenges related to the redundant soils and their conversion into useful earth construction materials



OBJECTIVES



- To provide technical, environmental and methodological data and information on materials, materials mixtures and additives, storage, treatment and transports of materials as well as the diverse stages of construction
- Piloting action to demonstrate the practical implementation of four challenging types of civil-engineering applications in full-scale pilots based on the use of redundant soft soils: e.g. flood barriers, noise barriers, supporting banks and landscape construction.
- To create and demonstrate a Model for Sustainable Regional Material Service System (RMSS) for the Uusimaa region. The RMSS will direct the use of regionally produced and generated materials and aggregates to the short-term and long-term infrastructure construction projects with the assistance of practical logistics and Internet operated database.

PILOT APPLICATIONS



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YMPÄRISTÖMINISTERIO
MILJÖMINISTERIET
MINISTRY OF THE ENVIRONMENT



BIOMAA



Helsingin kaupunki



Rudus

VANTAAN KAUPUNKI
VANDA STAD

- Flood barriers
 - ✓ Dog Park in Espoo (2012/2013)
 - ✓ Pirttiranta in Vantaa (2012)
 - Noise barriers
 - Jätkäsaari 3 in Helsinki (2014)
 - Supporting banks
 - ✓ Arcada 2 in Helsinki (2011)
 - ✓ Dog Park in Espoo (2012/2013)
 - Honkasuo in Helsinki (2014)
 - Landscape construction
 - ✓ Jätkäsaari I and II in Helsinki (2011/2012/ 2013)
- ✓ Dog Park in Espoo (2012/2013)

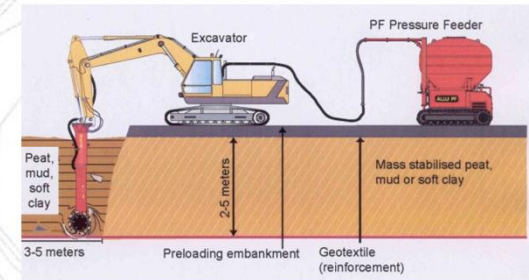
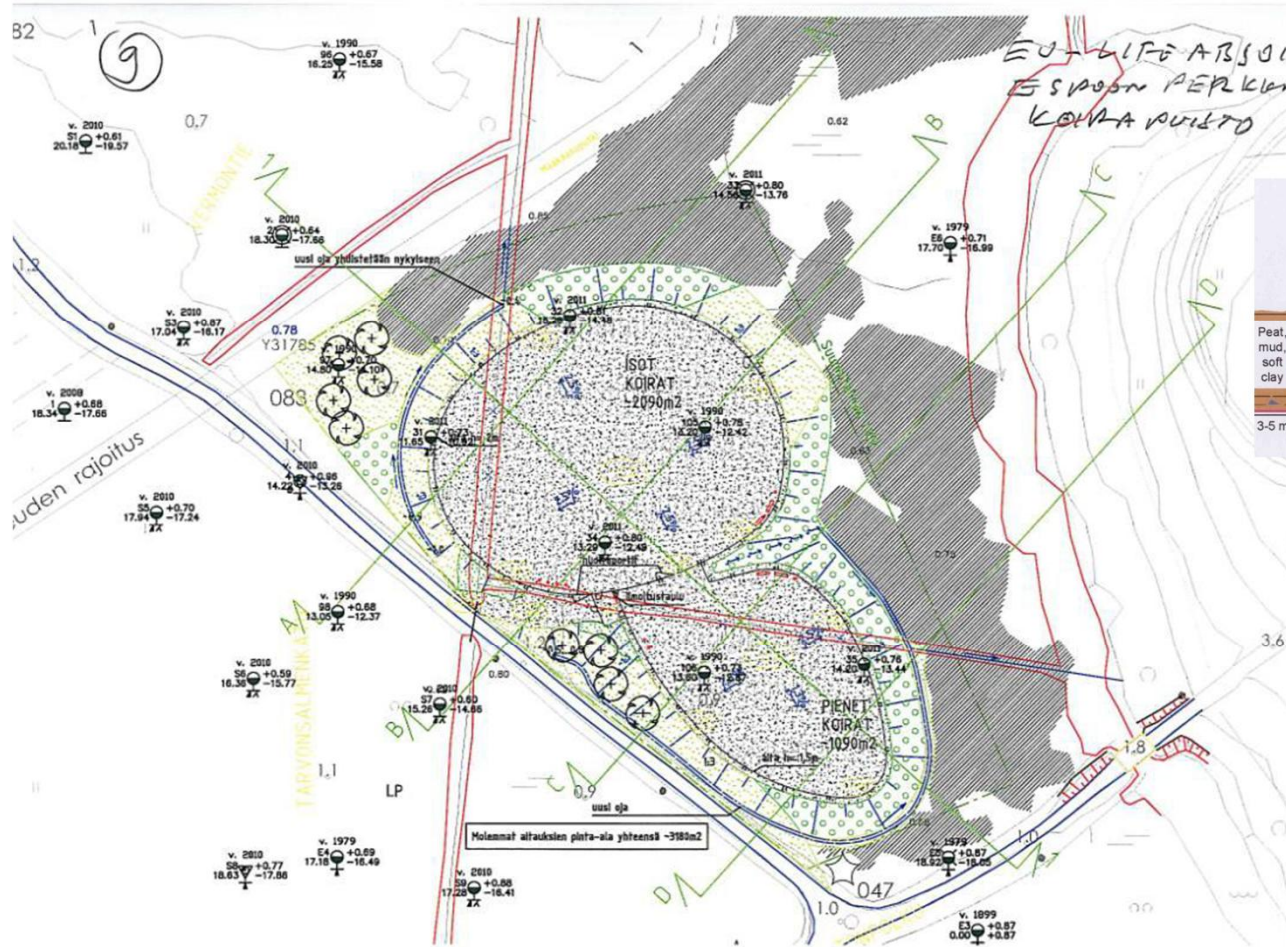


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ARCADA 2, KYLÄSAARI, HELSINKI 2011



PILOT APPLICATION 2012: PERKKA DOG PARK, ESPOO

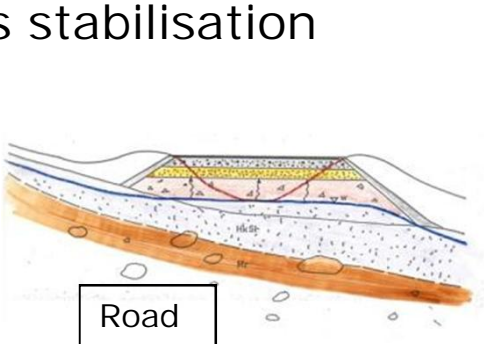


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CASE MR2, VUOSAARI

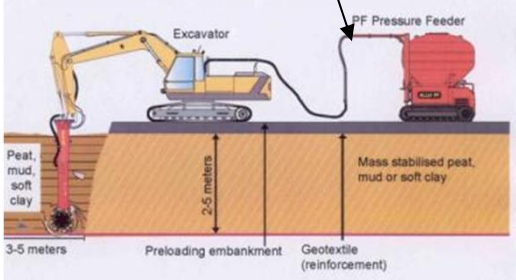


- Economical reason for using deep and mass stabilisation



Noise wall

Residue material	
Excavated material	soft clay below the road
94.000	57.000



Amount	Mass exchange	Stabilisation commercial binders A	Stabilisation by-product binders B	Save A	Save B
m ³	€	€	€	€	€
150.000	4.240.000	2.400.000	1.740.000	1.840.000	2.500.000



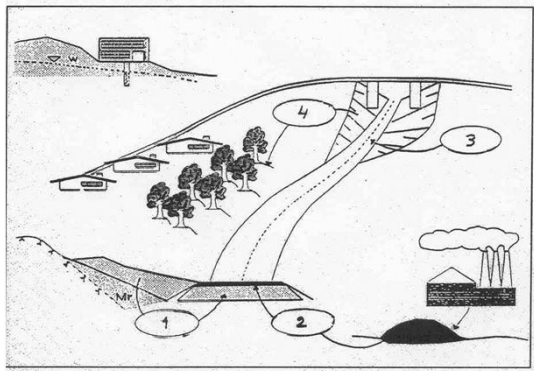
UTILISATION OF INDUSTRIAL BY-PRODUCTS



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POSSIBILITIES

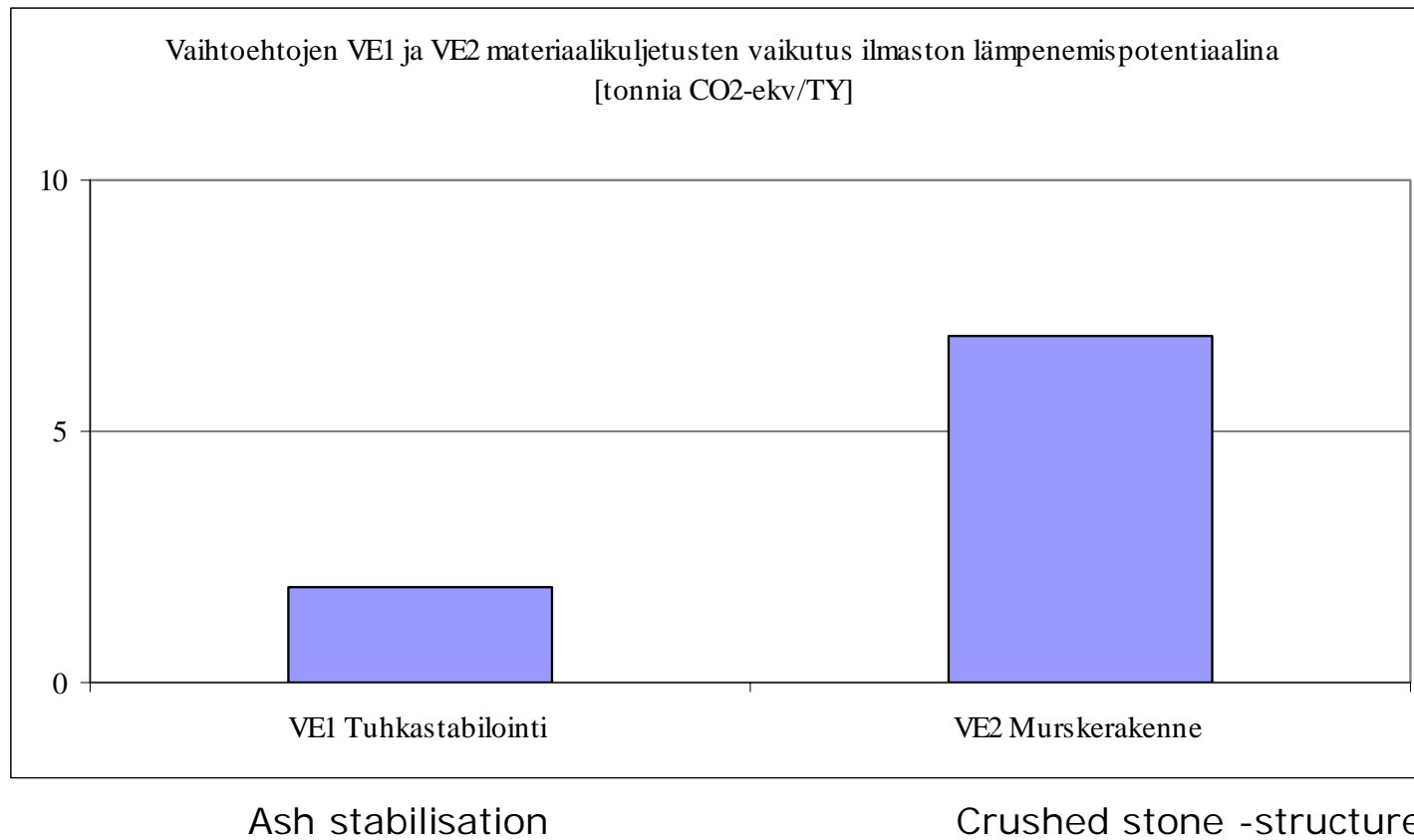
- TO SAVE NATURAL RESOURCES
- TO DECREASE THE CONTAMINATION RISK OF IMPORTANT GROUND WATER AREAS
- TO DECREASE THE PRESSURE TO BUILD NEW LANDFILLS FOR INDUSTRIAL WASTES
- TO DECREASE TRANSPORT AND NEED OF ENERGY
- TO DECREASE ENVIRONMENTAL IMPACTS
- TO DECREASE THE EMISSION TO AIR (CO_2)
- ECONOMIC EFFICIENCY



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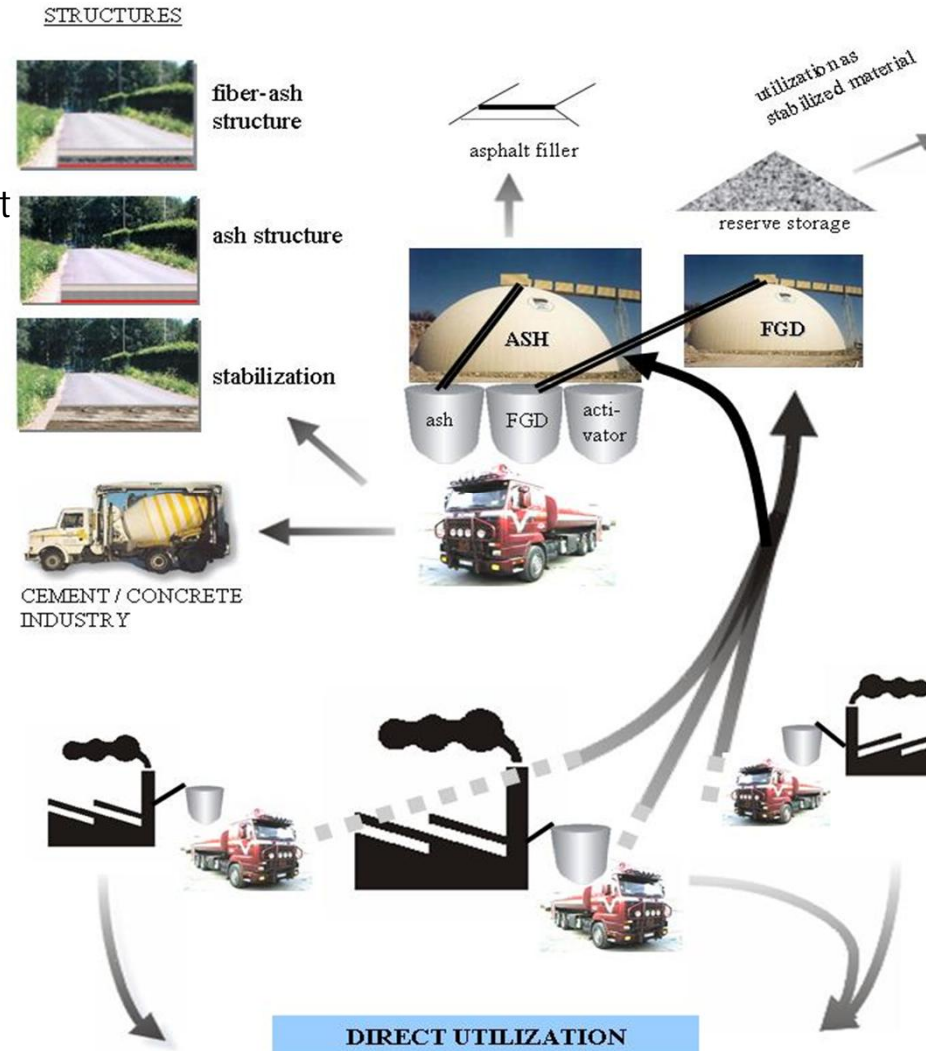
EFFECT OF THE TRANSPORTATION OF THE MATERIALS AS CLIMATE WARMING POTENTIAL [T (CO₂-EKV)/ROAD-KM]



IMPROVEMENT AND LOGISTICS OF THE MATERIALS

- Management and improvement
- Storing
- Transportation

A LOGISTIC SYSTEM FOR ASHES IN ROAD CONSTRUCTION



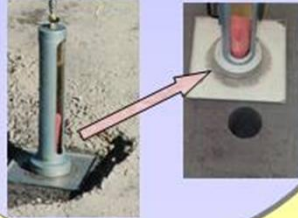
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DEVELOPMENT OF RECYCLING TECHNOLOGY

CONTRACTOR

END-USER, CLIENT

QUALITY ASSURANCE



APPLICATIONS, STRUCTURES



SUSTAINABLE DEVELOPMENT

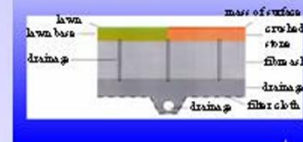
- saving of non-renewable natural resources
- saving of costs and energy

EQUIPMENT, WORK METHODS



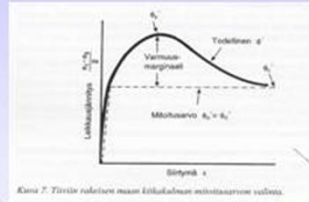
MATERIALS

A basic field structure based on industrial by-products



MANUFACTURER OF EQUIPMENT

DIMENSIONING AND DESIGN



R & D LABORATORY

CONSULTANT

DISSEMINATION

- Project webpage:
http://projektit.ramboll.fi/life/absoils/index_eng.htm
- DVD presentation (the end of the project)
- European Guidelines on the methods of converting abandoned soils into useful construction materials (the end of the project)
- Conference papers
- International Workshop in Finland in 2014



A screenshot of the ABSOILS project website. The header features logos for the European Union (LIFE09 ENV/FI/000575), Ramboll, Biomaa, and Ru. Below these are logos for the Finnish Ministry of the Environment (Ympäristöministerio / Miljöministeriet), Espoo ESB, Helsingin kaupunki, and Vanta Vanda. The main content area has the title 'ABSOILS - LIFE09 ENV/FI/000575 Sustainable Methods and Processes to Convert Abandoned Low-Quality Soils into Construction Materials'. A paragraph of text describes the project as a LIFE+ initiative for converting soft clays into construction materials, supported by Biomaa, Rudus, Ramboll Finland, and the Finnish Ministry of the Environment. A small image shows a yellow excavator working on a construction site. On the right side, there is a navigation menu with links: Home, Background and objectives, Project Partners, Pilot applications, Contact, News, Project deliverables, and Project Bank. At the bottom right, there is a small green checkmark icon and the text 'Trusted sites | Protected Mode: Off'.

ARTICLES ON ABSOILS/ INTERNATIONAL CONFERENCES

9-12.5.2012	NGM – Nordic Geotechnical Meeting in Copenhagen. Denmark	31.5-1.6.2012	12 th Baltic Sea Geotechnical Conference 2012 in Rostock, Germany
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31.5-1.6.2012	WASCON – 8 th International Conference on the Environmental and Technical Implications of Construction with Alternative Materials in Gothenburg (Sweden)
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26-28.8.2013	XXVIII International Baltic Road Conference in Vilnius, Lithuania
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6-8.11.2013	8th International SedNet conference, Lisbon, Portugal
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10-11 April 2014 South Baltic Conference on Dredged Materials in Dike Construction, Rostock, Germany



THANK YOU!



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