



WASCON CONFERENCE 2012

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

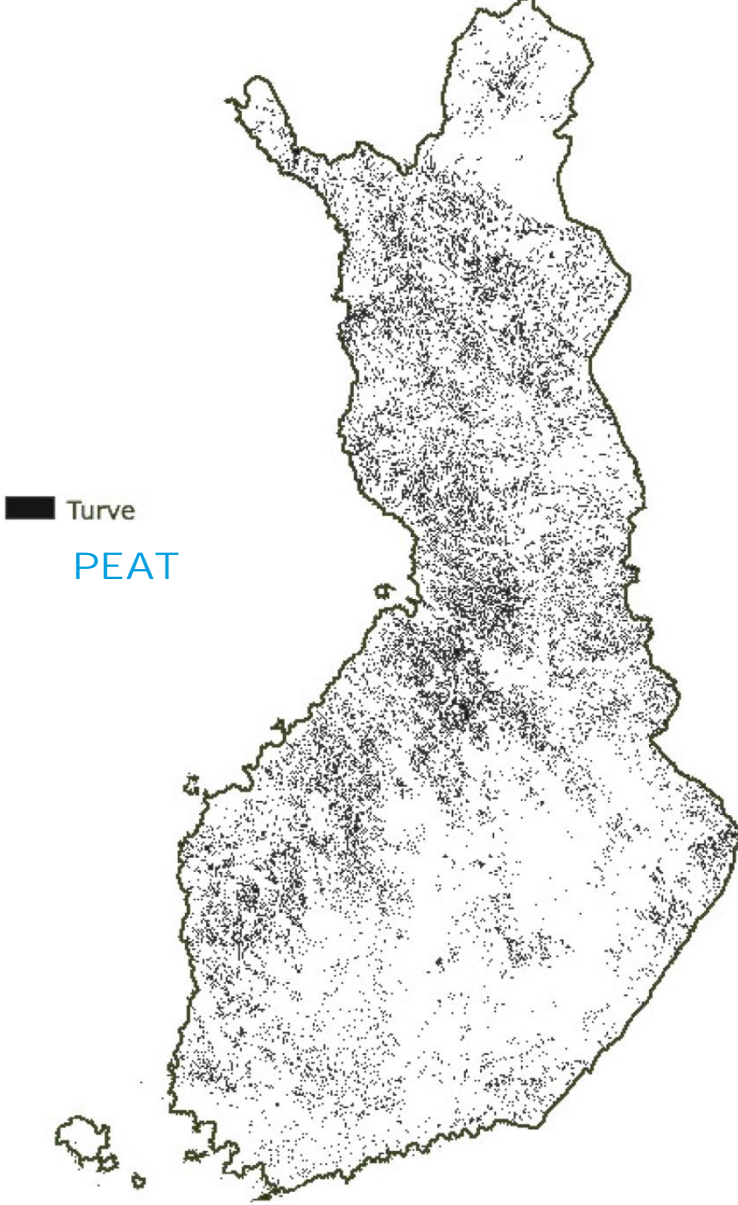
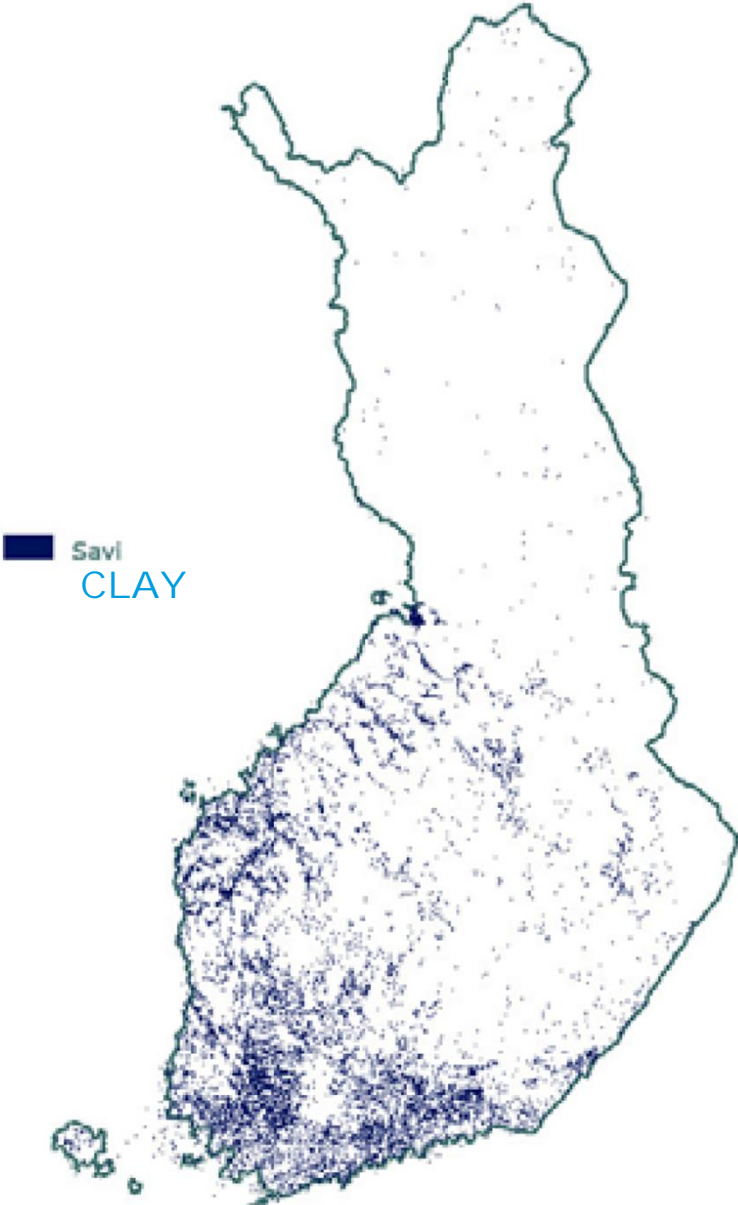
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ABSOLLS PROJECT IN A NUTSHELL

- Start: September 2010/ end: December 2014
- Co-ordinated by Ramboll Finland
- Project partners: Biomaa 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)



CLAY AND PEAT AREAS IN FINLAND



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

RAMBOLL



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 APPLICATION 2011/1: ARCADA 2, KYLÄSAARI, HELSINKI



ARCADA 2, KYLÄSAARI, HELSINKI 2011

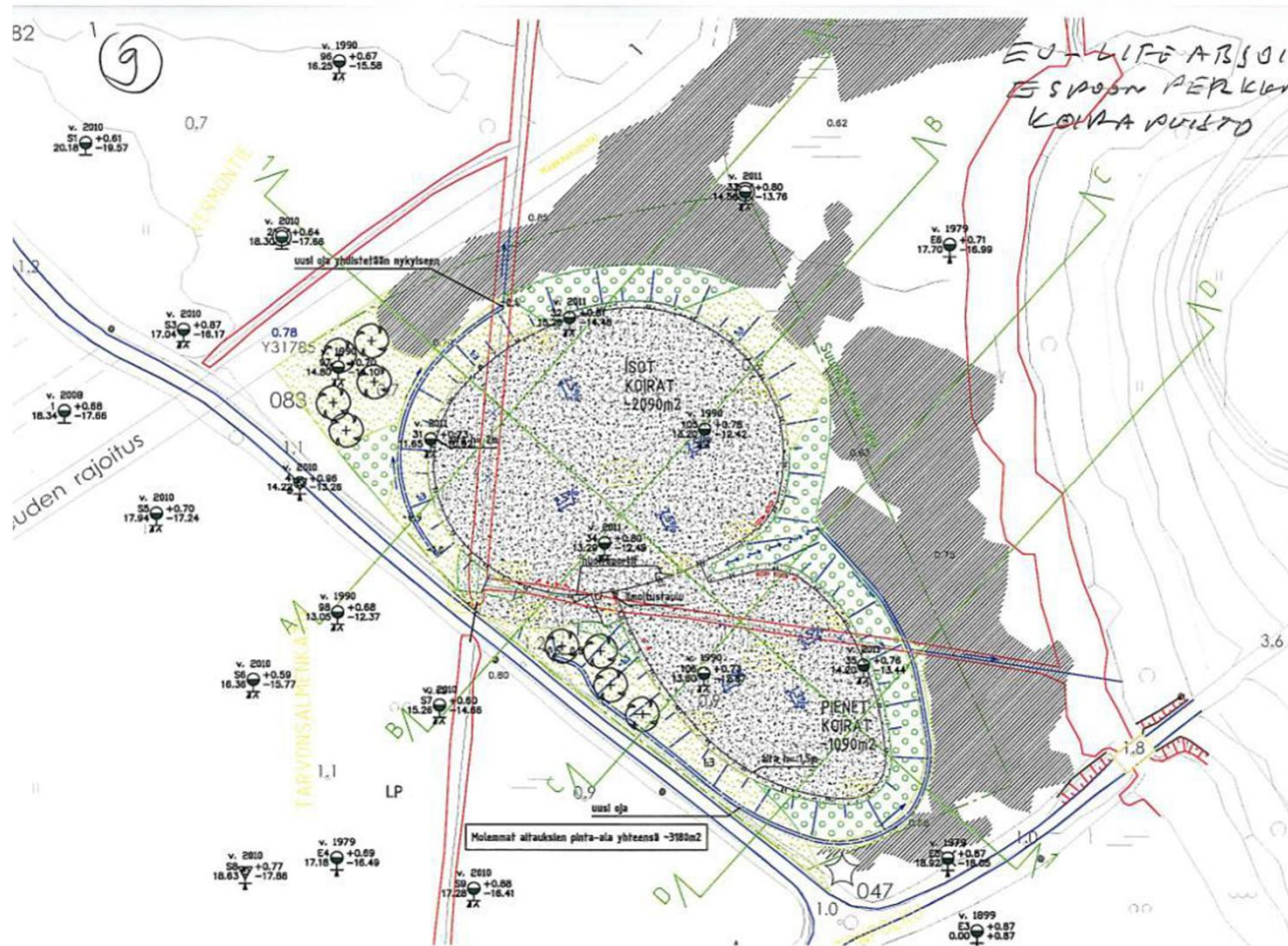
- The Arcada 2 area is built on sea by filling. The clay reaches to -15...-25 level from the surface of the sea. The old fillings were made mainly from aggregate material floating on top of the clay
- To decrease the load and lateral expansion the heavy fillings have been replaced with light weight soil up to level-5. The light weight soil constitutes of stabilised abandoned clay. Also areas where contaminated soil have been removed are filled now with stabilised clay
- Clay materials have been brought from adjacent construction sites where the utilisation is not possible.
- The previous aggregate filling material has been utilised for other construction

PILOT APPLICATION 2/2011; JÄTKÄSAARI SEDIMENTS BASINS, HELSINKI

- Dredged sediments of Jätkäsaari were mass stabilised and utilised in the fillings of the adjacent park. The amount of the utilised dredged sediments was about 20 000 m³. The dredged sediments were mostly clay.
- In the second stage 2012 – about 80 000m³ of dredged sediments - planned to be stabilised and used as construction material in various locations around Helsinki



PILOT APPLICATION 2012: PERKKA DOG PARK, ESPOO



PERKKA DOG PARK, ESPOO 2012

- Target - a low-lying area near to the shore and susceptible to flooding. The ground level of the Dog Park area is intended to be raised from level +0.5...+0.9 to level +2...+2.5.
- Raising will be performed with stabilised redundant soil received from an adjacent construction site. The filling soils will be mass stabilised together with the subsoil. Binder - most probably a mixture of fly ash and cement
- Challenging construction site:
 - ❖ very soft and the thickness of the clay layer is about 12...14 m.
 - ❖ some municipal structures (gas pipe, street of pile plate) that must be taken into consideration during the works.
 - ❖ subsoil must be enforced with mass stabilisation to prevent the minimum risk of sliding surface failure and decrease the settlement of the soil to an acceptable rate.
- Surface area of the site - 5000 m².
- Thickness of the stabilisation - about 3 m and the volume is about 15 000 m³
(preliminary calculations)

IMPACT

- So far the ensured piloting actions (Arcada 2 and Jätkäsaari) have utilised 55 000 m³ of abandoned soils or sediments. Additionally, about 40 000 m³ of rock aggregate material recovered in the Arcada 2 pilot site by processing and reusing.
- Project pilots set examples to follow
- Involvement in the development of legislation – fly ash as a binder - environmental permit issue
- The problem communicated to the Ministry of Environment and the legislation change process has been started.
- One of the indirect impacts - a new strategy of the city of Helsinki for the utilisation of the redundant soils in the capital area.
- Media attention – general public

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 – Welcome All



ABSOILS - LIFE09 ENV/FI/000575
Sustainable Methods and Processes to Convert Abandoned Low-Quality Soils into Construction Materials

ABSOILS is a LIFE+ project which demonstrates conversion of abandoned and low-quality soils - such like soft clays - into construction materials. The ABSOILS project is carried out in co-operation among the beneficiaries: Biomaa, Rudus and Ramboll Finland. It is also supported by the Finnish Ministry of the Environment and the Uusimaa cities -

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