

Pilot 4

Pre-demolition activities



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The logo for Lund Hagem Architects is a simple rectangular box containing the text "LUND HAGEM" on the top line and "ARCHITECTS" on the bottom line, both in a sans-serif font.

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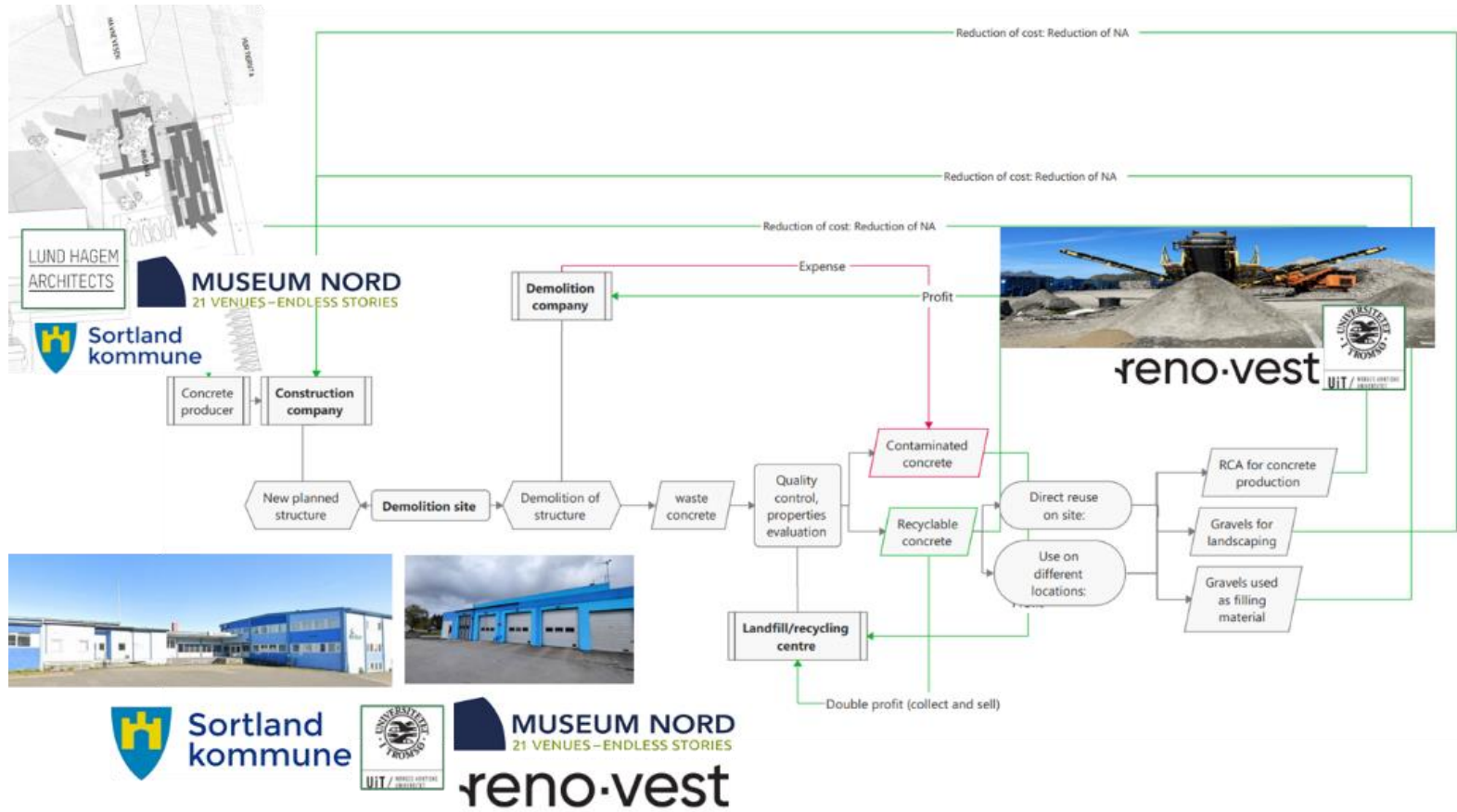


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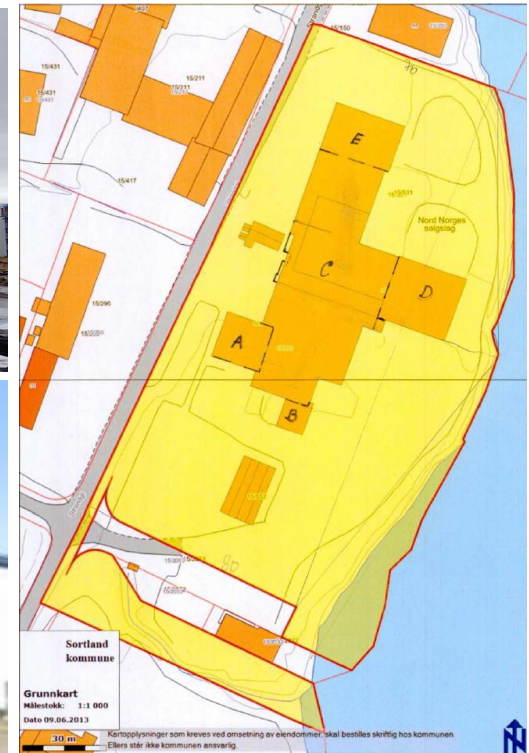


Norwegian Pilot 4



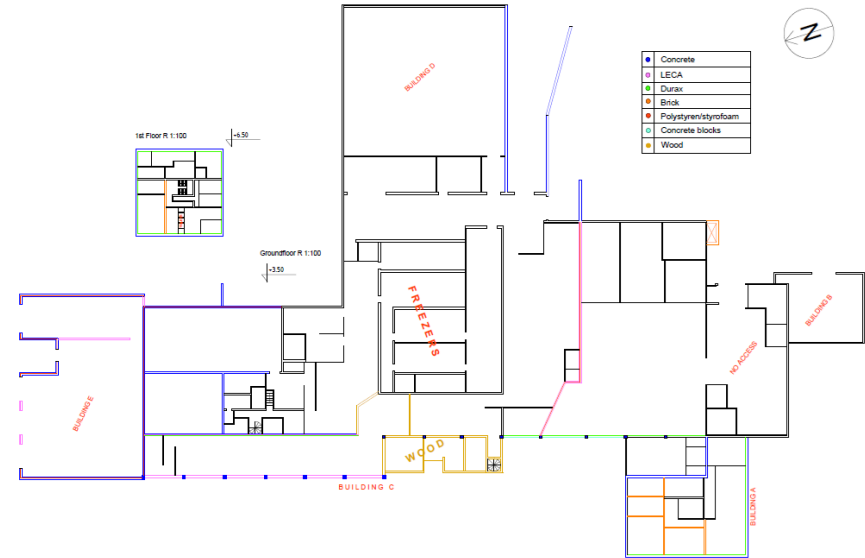
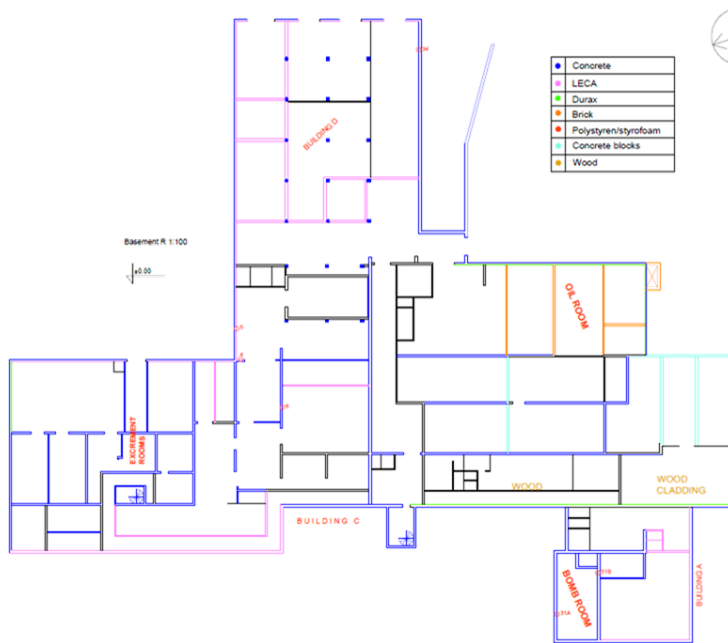
Pre-demolition activities

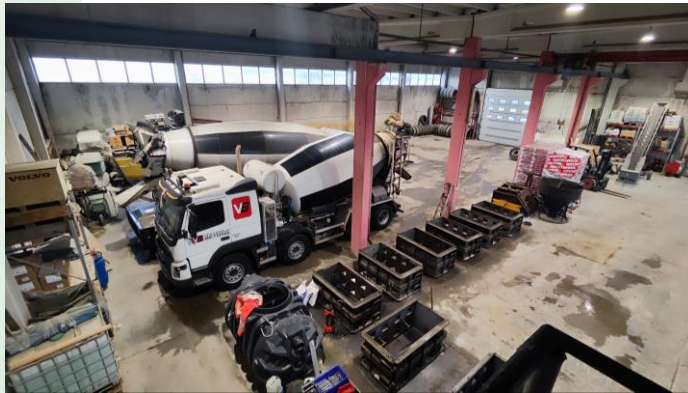
Nortura building – Old slaughterhouse in Sortland is built in 1960, and remodeled in 1982/1998, with surface area of 7300 m²



Pre-demolition activities

- Collection of existing documentation, visual inspection, and environmental mapping
- Geometry and material mapping of the Nortura building





Pre-demolition activities

- Rough estimation - total volume of the demolition waste of 8760 m³, (3550 m³ of concrete)
- Detailed estimation - total volume of uncontaminated concrete of 717 m³

Wall		1	25x250cm	LECA	11.75			7.34375
Building A								
Element	Code	Quantity	Dimensions	Material	Length [m]	Concrete volume [m3]	Concrete mass [t]	LEKA volume [m3]
Stairs+Landing	SB1	1		concrete		2.85		
Walls (bombroom)	WB22-WB28	1	25x250cm	concrete	45.25	28.28125	67.875	
Walls		1	15x250cm	LECA	8			3
					Total:	205.8603	494.0646792	72.50
Groundfloor								
Building A								
Element	Code	Quantity	Dimensions	Material	Length [m]	Concrete volume [m3]	Concrete mass [t]	LEKA volume [m3]
Stairs+Landing	SG1	1		concrete		2.85	6.84	
Floor	FGA	1	0.3x12x11.5m	concrete		41.4	99.36	
Building C								
Wall	WG1	1	25x500	concrete	4.75	5.9375	14.25	
Wall		1	15x250cm	LECA	18.25			6.84375
Floor	FC	1	t=30cm	concrete		334.74375	803.385	
Beam	BG1	1	35x50cm	concrete	6.25	1.09375	2.625	
Partition wall	PWG1	1	15x150cm	concrete	17.1	3.8475	9.234	
Building D								
Floor	FGD	1	0.3x15x17m	concrete		76.5	183.6	

Pre-demolition activities

- 5 concrete cores were extracted from different areas of the structure
- Compressive strength test according to EN 12504-1:2019
- Average strength from Schmidt hammer = 47 MPa (st.dev. 4.9 MPa)

Core #	Density [g/cm ³]	Compressive strength [MPa]	Concrete class	Comments
1	2.289	43.63	C30/37	-
2	2.293	41.69	C30/37	-
3	2.34	42.74	C30/37	Three rebars visible
4	2.25	57.78	C45/55	-
5	2.314	91.45	C70/85	One rebar visible
6	2.266	87.15	C70/85	Two cavities from missing rebars
7	2.31	17.14	-*	Five visible rebars and a cavity
8	2.309	19.87	-*	Three visible rebars
9	2.232	26.56	-*	Two rebars inside
10	2.224	28.14	-*	Three visible rebars

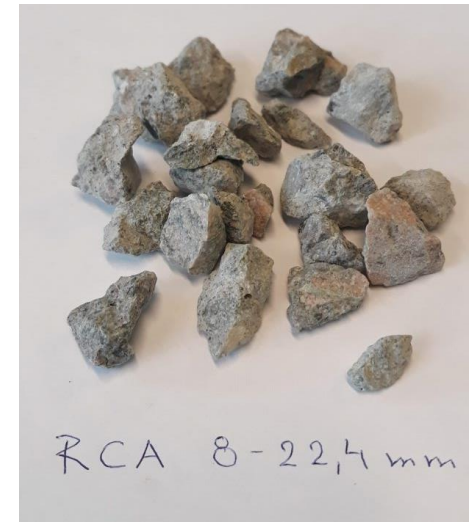
* rebars found in the core sample, it is not representative result of concrete quality.



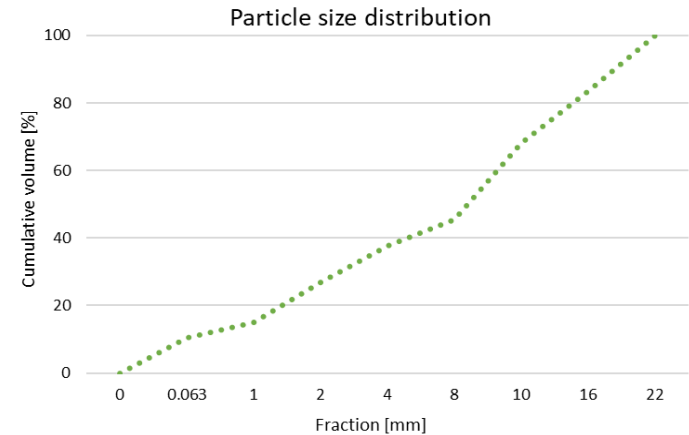
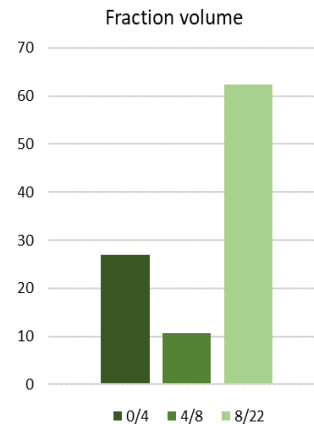
Production of RCA

Initial tests

- Cores were processed in a jaw crusher into RCA and tested for density, water absorption, particle size distribution by sieving method, and shape index according to NS-EN 12620.



Sieve size [mm]	Saturated surface dried particle density [g/cm ³]	Water absorption [%]	Shape index [-]	
0/4	2.202	10.59	-	-
4/8	2.045	6.79	52.17	SI40
8/16	2.154	7.29	47.32	SI55
16/22	2.10	6.71	29.83	SI55



Conclusion

- Detailed assessment showed the need for selective demolition due to many different materials in the building.
- Tested concrete cores showed high quality for RCA production, with strength ranging from 35-90 MPa.

Our post from the Sortland visit can be found on

https://uit.no/research/detea/newsarchive#modal_838572

https://uit.no/research/detea/newsarchive#modal_830622

