

**Good Practice in Selective Collection in Heritage City Centres**

Nº.	Section	Description
0.	<b>Title of the practice</b>	<i>BIR Nett - Bergen underground waste system</i>
1.	<b>Photograph</b>	
2.	<b>Proposers</b>	Municipality of Bergen, Waste Management company BIR AS
3.	<b>Contacts</b>	BIR Nett AS Terje Strøm <a href="mailto:terje.strom@bir.no">terje.strom@bir.no</a> phone +47 957 26 290 BIR AS Toralf Igesund <a href="mailto:toralf.igesund@bir.no">toralf.igesund@bir.no</a> phone +47 915 68 613
4.	<b>Useful links</b>	<a href="http://bir.no">http://bir.no</a> <a href="http://bir.no/bossnett/startsiden.aspx">http://bir.no/bossnett/startsiden.aspx</a> <a href="http://bir.no/bossnett/Documents/Bossnett_engelsk_brosjyre.pdf">http://bir.no/bossnett/Documents/Bossnett_engelsk_brosjyre.pdf</a> <a href="https://www.youtube.com/watch?v=djN372nDy2Q&amp;feature=youtu.be">https://www.youtube.com/watch?v=djN372nDy2Q&amp;feature=youtu.be</a>
5.	<b>Start date</b>	First pipe in trench in 2008, officially opened Oct. 2015, construction ongoing
6.	<b>Activities' state of the art</b>	Bergen inner centre is divided in three areas: Blue: opened Oct 2015, still expanding Green: will open 2018 Red : not yet decided

7.	<b>Location</b>	Bergen, second largest city of Norway. Medieval inner city with large portion of wooden houses. Fire hazard. Limited area for traffic, parking, waste bins & containers. Attractive tourist locations.
8.	<b>Inhabitants in the area</b>	
<b>9. Description of the practice</b>		
<p><u>Origin:</u></p> <p><i>Innovation within the waste management industry</i></p> <p>The city of Bergen is one of the first in the world to build an underground pipe system to collect waste from the entire city center. The city center covers several square kilometers, more than twelve thousand households and a network of pipes that exceeds 7,5 kilometers after construction is completed. A project of this magnitude requires innovational and experimental technology.</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p><u>Development and Timescale:</u></p> <p>2008: Bergen city council decided: all future waste collection in the medieval city centre should shift from bins and containers, to underground pipes.</p> <p>2015: official opening of BIR Nett – the underground waste collection system.</p> <p>2017: the network is expanding and work is ongoing for many years to come</p> <p><u>Actors involved:</u></p> <p>BIR Nett AS, a fully owned subsidiary of BIR AS, is implementing the project in close collaboration with a consultant working for the municipality of Bergen. Municipal departments such as civil engineering department, water &amp; sewage department, the parks commission, building authorities, the public health department and representatives from city hall have all been consecutively involved within this urban development project. It is crucial to collaborate with the other municipal departments, such as the water &amp; sewage department and district heating department as they are also interested in renewing and</p>		

	<p>extending their existing underground pipes and cables.</p> <p>Customers have to use an ID-key chip to access their allocated inlet. The inlets are multifunctional, i.e. both customers from private households (shopping bags), business customers (100l bags) and passers-by can use three different hatches.</p> <p><u>Legal framework:</u></p> <p>Underground collection systems for waste are not legally defined as infrastructure in Norway. BIR is lobbying for a modernisation of the relevant laws.</p> <p>Household fee: covers a large part of investment, and all 9 municipalities in BIR take part in this.</p> <p>Commercial waste: can volunteer to use the system, and will cover rest of the investment</p> <p><u>Financial framework:</u> (activities´ cost, activities´ revenues (if any), model/s of financing used)</p> <p>The estimated construction cost for the underground waste collection system is NOK1.239.860.000.</p> <p>These costs include the development of the pipe system, costs for all inlets and the construction of two waste collection stations.</p> <p><u>Use degree: (%) or number of users (if possible):</u></p> <p>As of May 2017, 3897 private households have been connected to 124 inlets for residual waste and 83 inlets for paper, beverage carton and plastic as well as one special inlet for cardboard. In addition, there are 15 business customers that have been connected to the underground waste collection system. BIR registers approximately 1000 inlet openings each day. This number will increase, as even more customers are being connected to the new system.</p>
<p><b>10. Results</b></p>	
	<p><u>Proven results (through indicators):</u></p> <p>In areas with the new system in place, the old waste bins and containers have been removed, giving the inhabitants of Bergen more space, better hygiene and lowered risk for fire. In addition</p> <p>The new system has had very few technical problems since being put into operation. At the same time, it has contributed to a higher level of recycling amongst the residents living in the city center.</p> <p>Two main reasons: Better availability for recycling, and integrated pay-as-you-throw fee.</p> <p><u>Possible success factors:</u></p> <p>Bold political decision in 2008: all waste handling down town shall underground</p> <p>Underground waste system is constructed together with other infrastructure: district heating, rehabilitation of Water/waste water, cable infrastructure</p>

		<p>Pay-as-you-throw fee integrated in system with ID-registration</p> <p>High quality system with no down-time, good-looking inlets, with higher service-level results in satisfied customers.</p> <p><u>Main difficulties encountered:</u></p> <p>Establish good cooperation with all infrastructure bodies, the “Digging club”</p> <p>Since Bergen has a medieval city centre, it was often uncertain what would be found in the ground when construction of the underground waste system began. Both the natural geography of Bergen as well as the already existing infrastructure can at times be challenging.</p>
11.	<b>Main lessons learnt from the practice</b>	<p>Bergen city centre has narrow roads and limited space for waste storage, Many wooden houses (firehazard) Recycling was limited before introducing the underground waste system with integrated PAYT-fee.</p> <p>Installing underground pipe system is only possible with good cooperation with other infrastructure utilities.</p> <p>Collecting household- and commercial waste together is possible with ID-tracking</p>
12.	<b>Additional information</b>	<p><a href="http://bir.no">http://bir.no</a></p> <p><a href="http://bir.no/bossnett/startsiden.aspx">http://bir.no/bossnett/startsiden.aspx</a></p> <p><a href="http://bir.no/bossnett/Documents/Bossnett_engelsk_brosjyre.pdf">http://bir.no/bossnett/Documents/Bossnett_engelsk_brosjyre.pdf</a></p> <p><a href="https://www.youtube.com/watch?v=djN372nDy2Q&amp;feature=youtu.be">https://www.youtube.com/watch?v=djN372nDy2Q&amp;feature=youtu.be</a></p>