



ROYAL HASKONING

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IHS INSTITUTE FOR HOUSING AND URBAN DEVELOPMENT STUDIES
DELOITTE&TOUCHE CENTRAL EUROPE

ANNEX 3.1:

INVENTORY OF LANDFILLS

27 April 2007



Feasibility Study Pirot
Final Report

Municipal Infrastructure Agency Support Programme
An EU-funded project managed by the European Agency for Reconstruction
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Visits

On Oct. 25 & 26 2006 the municipalities of:

- Pirot,
- Dimitrovgrad
- Bela Palanka
- Babušnica

have been visited. Discussions were held with the PUC directors and their staff. Their landfill sites have been inspected.

In addition the site for the new sanitary landfill has been visited.

Main findings

- All landfill sites are in fact uncontrolled dump sites without any basic environmental protection facility;
- Non of the sites are legal / have permissions although reported was that informal permissions were given or a municipal permission is present (Babusnica)
- Problems do exist regarding fires and smell. The fires were reported to be lit by people living nearby. At Babušnica landfill part of it was on fire during our visit. Leachate problems were not reported due to lack of any measurements or whatsoever. However in Dimitrovgrad leachate might be the cause for contaminating the drinking water well;
- Non-compliance with environmental legislation;
- Illegal dumping frequently occurs due to lack of permanent surveillance;
- Only Pirot has developed a plan for closure its dumpsite. No plans are developed regarding the closing of the others dump sites soon as the new regional sanitary landfill of Pirot opens;
- Limited separate collection of PET bottles started three months ago in all four municipalities. A private firm (A+) agreed to place collection cages and empty them every two weeks. The firm however has not yet come to collect the PET.

In the following pages detail findings is given of the municipalities, their waste collection system and their landfill.



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Pirot

General

Population	64,000 (of which 21,000 rural)
PUC's main activity	waste collection & disposal, cemetery , parks, market, repair & maintenance shop
Population served by PUC	48,000 (75%)
Waste collection vehicles	4 compactor trucks, 1 tractor, 2 tractors for large waste streams
Containers	560 x 1.1 m ³ containers (see photo below with basket for PET deposition in background)



Separate collection of waste	<p>Only PET (since 3 months in place), to be dumped in baskets placed along the city roads (see photo above). PUC Pirot has contract with private company A+ for buying the PET. Agreed price: 5 Din/kg PET (income for PUC)</p> <p>Private company A+ up to now failed to collect the PET with the consequence that the PET is temporary stored on premises of PUC. Incidental separate collection at source of Gypsies (mainly metals)</p>
Recycling	No concrete plan
Waste tariffs	<p>Household: 2.24 + VAT Din/m²/month</p> <p>Business:</p> <ul style="list-style-type: none">• Stores up to 100 m²: 12.86 + VAT Din/m²/month• Non-stores up to 100 m²: 6.44 + VAT Din/m²/month• Over 100 m²: 5.11 + VAT Din/m²/month
Landfill (dumpsite) Kozarica	Situated some few hundred m after TIGAR factory some 50 from E80 highway Pirot – Nis. Close to river



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View from entry road



On top of landfill



Opened	1990 From 1980 till 1990 waste was dumped next to the TIGAR factory. This area is now covered with 0.8 m soil and re-cultivated (in use as agricultural land)
Closed (or supposed to be)	When opening new regional landfill. It is (informally) agreed that the site can be used until 2008.
Size (approx.)	Approx. 4 ha height: approx. 12 m Volume dumped: 450,000 m ³
Waste amount	62,000 m ³ <i>including soil!!</i> (2005) (1 m ³ approx. 0.3 ton)
Type of wastes	48.000 m ³ municipal waste. Remainder is industrial waste (mainly from the TIGAR tire factory, soil and some slaughter waste.
Compacting of waste	No
Covering	Daily, layer of soil
Equipment on site	Bulldozer (permanent)
Reported problems with:	
• Leachate	River 50 m distance. Leachate will flow to this river. Yearly groundwater monitoring. No reporting of groundwater contamination due to leachate infiltration



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- Fires

Average 1 x 3 years. No gas ventilation in place. No explosion reported
Gas ventilation was required in the design, but not constructed. Instead more soil is applied.
- Smell

Yes, complaints, depending on wind direction
- Fenced

Partly
- Surveillance

During the day
- Permanent closure plan present

Yes. Plan has been worked out. Covering with 50 cm soil and re-cultivation



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Dimitrovgrad

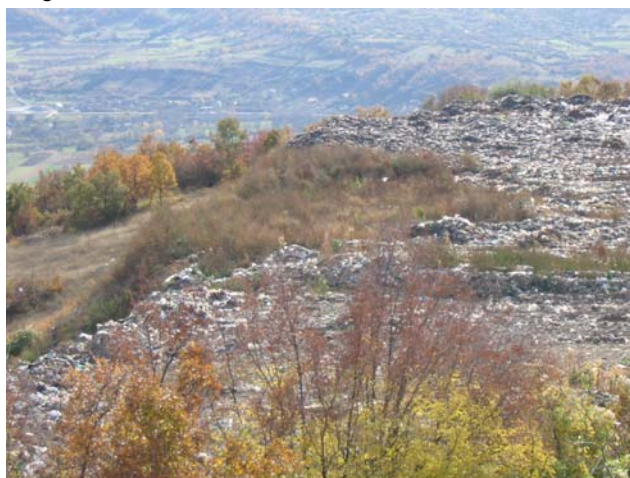
General

Population	11,600 (municipality)
PUC's main activity	Water supply, waste collection & disposal, cemetery , parks, market, repair & maintenance shop
Population served by PUC	90% of city population (some 7,000 people)
Waste collection vehicles	2 compactor trucks
Separate collection of waste	<p>Only PET (since 3 months in place), to be dumped in baskets (20 pcs.) placed along the city roads. The population responds well on the PET collection. PUC Dimitrovgrad has the same agreement as PUC Pirot with the private company A+ for buying the PET. Agreed price: 5 Din/kg PET (income for PUC)</p> <p>As in Pirot A+ so far failed to collect the PET with the consequence that the PET is temporary stored on premises of PUC. PUC is negotiating with another company for the PET intake.</p> <p>Discussions are ongoing with a local collector of aluminium cans.</p>
Recycling	A working group has worked out plans for plastic, paper/cardboard collection. No time table for implementation.
Waste tariffs	<p>Households:</p> <ul style="list-style-type: none">• 1.34 + VAT Din/m²/month (build area)• 0.26 + VAT Din/m²/month (non-build area) <p>Offices:</p> <ul style="list-style-type: none">• 3.28 + VAT Din/m²/month (non-build area) <p>Industry: no tariff as there is no industry in Dimitrovgrad</p> <p>Invoice is together with the water bill.</p>

Landfill (dumpsite)

Outside Dimitrovgrad in hills near road & railway border crossing with Bulgaria

Steep slope of Dimitrovgrad landfill
(in background border with Bulgaria)





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Entrance of Dimitrovgrad landfill
(fence, sign, guard present)



Opened	More than 30 years ago
Closed (or supposed to be)	As the new regional sanitary landfill in Pirot opens
Size (approx.)	2.5 ha Height: (in valley, steep slope → see photo). There might be a danger over sliding down part of landfill
Waste amount	Approx. 24,000 m ³
Type of wastes	Municipal waste. Section is reserved for slaughter waste. Needles are collected in sealed bags and cast in concrete.
Compacting of waste	No
Covering	Two times a month, layer of soil
Equipment on site	Bulldozer for covering with soil, only twice a month available
Reported problems with:	
• Leachate	Soil consists of CaCO ₃ . Wells for potable water is downhill (Dimitrovgrad water supply). Leachate might also flow toward the drinking water wells. (The pumped up water is polluted, however here is no direct link the landfill) No drainage system around site present
• Fires	Often, reported to be lit by Gypsies who are recovering copper from wires by burning them. No gas ventilation wells present
• Smell	No complaints reported (no nearby habitants)
Fenced	Yes
Surveillance	Day time
Permanent closure plan present	Yes, soil covering with re-cultivation



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Bela Palanka

General

Population	14,000
PUC's main activity	Water supply, waste collection & disposal, cemetery , parks, market, repair & maintenance shop
Population served by PUC	8,400 people served (city). Plans present to serve three other larger settlements
Waste collection vehicles	2 compressor trucks. One in bad shape. A two new trucks are urgently needed
containers	103 x 1.1 m ³ containers (100 extra containers are necessary)
Separate collection of waste	28 baskets for PET collection placed in city (10 more necessary) Same contract and problems with A+ as in Pirot and Dimitrovgrad Gypsies from Pirot do some recycling (metal)
Recycling	Not present, no plans in development
Waste tariffs	Households: <ul style="list-style-type: none">• 4.10 + VAT Din/m²/month (build area) Business premises: <ul style="list-style-type: none">• 4.74 + VAT Din/m²/month (build area) Shops, restaurants, etc.: <ul style="list-style-type: none">• 10.80 + VAT Din/m²/month (build area)

Landfill (dumpsite)

Debeli Del site	In hills, approx 3 km from city, access road is steep and in poor condition No permit. Temporary municipal permission to land fill
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View from access road





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View from access road



Opened	Open from June 2005
Closed (or supposed to be)	Most likely as soon as the new regional landfill comes into operation
Size (approx.)	1 ha
Waste amount	4,500 m ³ /year
Type of wastes	Municipal waste, green waste and illegally dumped slaughter waste
Compacting of waste	No
Covering	Once a month, (soil provided by PUC)
Equipment on site	Bulldozer is rented once a month for covering (3,500 Din/hr)
Reported problems with:	
• Leachate	Geology is clay and marl No leachate problems reported
• Fires	Fires are lit (mainly by persons that illegally dump slaughter waste) No gas venting wells present.
• Smell	Yes, Complaints from one (illegal) neighbor
Fenced	Yes
Surveillance	During daytime
Permanent closure plan present	No



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Bela Palanka - CLOSED site -

Landfill (dumpsite), CLOSED Near highway Pirot - Nis
Mrtvi Sljunak

View from road
(still illegal dumping ongoing)



View from below
(covered with 0.5 m soil layer)



Opened	1980
Closed (or supposed to be)	2005, waste is still illegally dumped. Covered with 0.5 m soil layer, low wall will be constructed around the landfill in due course.
Size (approx.)	(area 3,870 m ²) Height: 15 – 20 m (in hole) Volume: m ³
Waste amount	Not known
Type of wastes	Household waste, including slaughter waste. No industrial waste
Compacting of waste	No
Covering	No.
Reported problems with:	
• Leachate	Not known (geology is CaCO ₃ and sediments (sand, marl, clay) No drainage system around site present
• Fires	Not reported No gas ventilation wells present



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- Smell Not anymore
- Fenced No
- Surveillance No
- Permanent closure plan present No after closure plan present



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Babušnica

General

Population	15,000 (urban and rural)
PUC's main activity	Water supply, waste collection & disposal, cemetery , parks, market, repair & maintenance shop
Population served by PUC	35% (some 5,000 inhabitants of only Babusnica) In study plans developed for increase of covering with 10 settlements, (5,000 people). No time schedule determined
Waste collection vehicles	2 compactor trucks 1 open truck for 5 m ³ containers
Separate collection of waste	10 baskets for PET collection placed in city Same contract and problems with A+ as in Pirot , Dimitrovgrad and Bela Palanka Gypsies from Pirot do some recycling, in particular the metals (see photo)
Recycling	Not present, no plans in development
Waste tariffs	Households: <ul style="list-style-type: none">• 1.51 + VAT Din/m²/month (build area)• 0.07 + VAT Din/m²/month (non-build area) Business premises: <ul style="list-style-type: none">• 3.97 + VAT Din/m²/month (build area)• 0.13 + VAT Din/m²/month (non-build area) Budget beneficiaries: <ul style="list-style-type: none">• 2.30 + VAT Din/m²/month (build area)• 0.11 + VAT Din/m²/month (non-build area)

Landfill (dumpsite)

Kruška

Situated 8 km from Babusnica along road to Pirot
Permit from municipality present

View from Babušnica - Pirot
road





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On landfill

In foreground: Gypsies staking
out valuable materials (mainly
metals)

In background: Compactor
truck of PUC Babusnica
unloading



Opened	1995
Closed (or supposed to be)	Most likely as soon as the new regional landfill comes into operation
Size (approx.)	50 are (0.5 ha) Height: approx. 4 m (relatively flat terrain) Volume: m ³ Negotiations are ongoing for land acquisition to expand the landfill (in order to be able to land fill the waste from the settlements)
Waste amount	Not known
Type of wastes	Municipal and green wastes + waste from the TIGAR tire factory (Babušnica department). No slaughter waste.
Compacting of waste	No
Covering	Once per 3 months. Private person is hired for this task.
Equipment on site	None
Reported problems with:	
• Leachate	Reported not to be a problem No drainage system around site present
• Fires	Yes. On average once a week. Supposed to be lit. During our visit part of the landfill was on fire. No gas ventilation wells present
• Smell	Not reported. Note: no habitants living within a range of 2 km.
Fenced	Partly (most of the fence was stolen) Sign and gate present
Surveillance	Yes, during working hours
Permanent closure plan present	No