



Overview of Landfilling in Ireland

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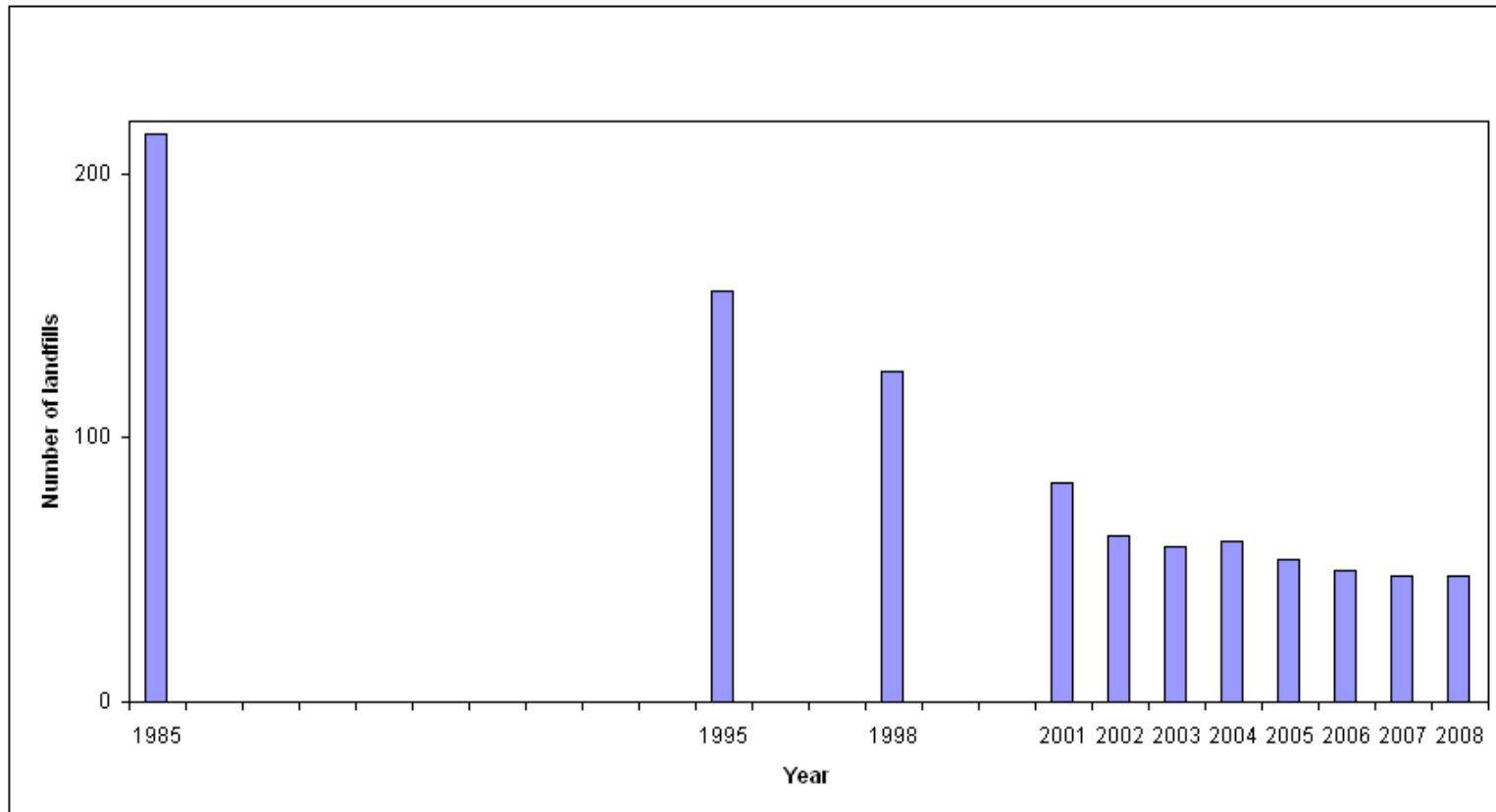
Waste Workshop October 2009

Outline of Presentation

- Some Background to landfilling in Ireland
- Progress made in last 10-15 years
- Challenges
 - On hand (including odour)
 - Future

Background

- Reduction from over 200 landfills open in mid-1980s to 44 in 2009
- 44 landfills comprised of 28 MSW; 4 Inert; 2 Mono; 10 IPPC



Background

- Pre Waste Management Act
 - Few Regulatory Controls & Little Strategic Planning
 - Poor Design and Operational Standards for Facilities
 - Minimal Expenditure & Low Technology to Conserve Costs
 - About 90% of BMW to Landfill

Standards at MSW landfills 1995-1997



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MSW - 3.4 Mtonnes in 2007

~ 63.5% to
Landfill



~ 36.5% to Recovery

Current situation

- EU average for MSW to landfill is 42%
- 28 operational MSW landfills - 23 LA & 5 private
- 5 private landfills accept about 1/3 of the waste tonnage
- Remaining capacity estimated at 23.10^6 tonnes
- At current landfill rate, approx 10 years capacity remaining
- Smaller number of larger landfills, more private sector involvement in MSW sector, major improvement in standards

Progress

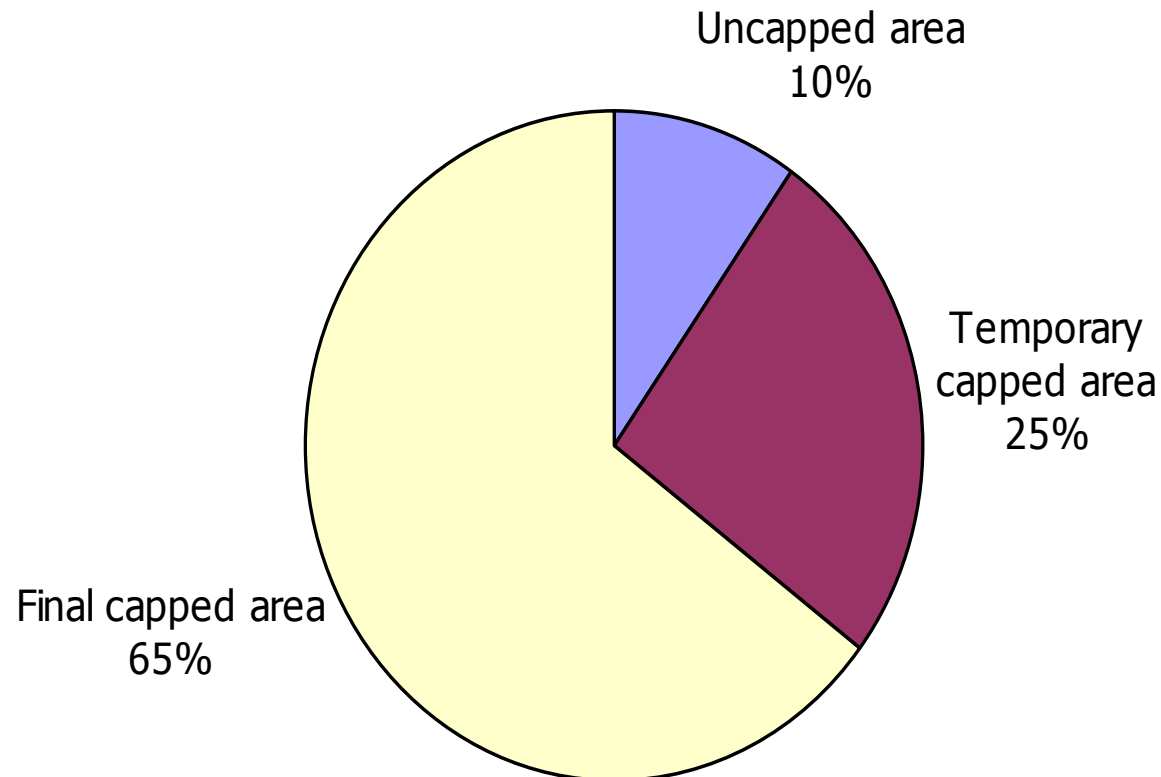
Indicator	1995-1997	2009
Number of open MSW landfills	95	28
	%	
Records kept of waste accepted	71	100
Weighbridge operating	10	100
Landfilling in lined cells	26	100
With leachate collection	33	100
Using daily cover	30	100
Collecting & treating landfill gas	15	100
Monitoring surface water	42	100
Monitoring groundwater	19	100
Monitoring leachate	29	100
Monitoring landfill gas	7	100

Lining

- All landfilling of MSW being carried out in lined cells; Kinsale Rd. closed as of July 2009
- Approx. 150Ha of lining installed at MSW landfills

Capping

Total area of open MSW landfills in 2008 was 255Ha



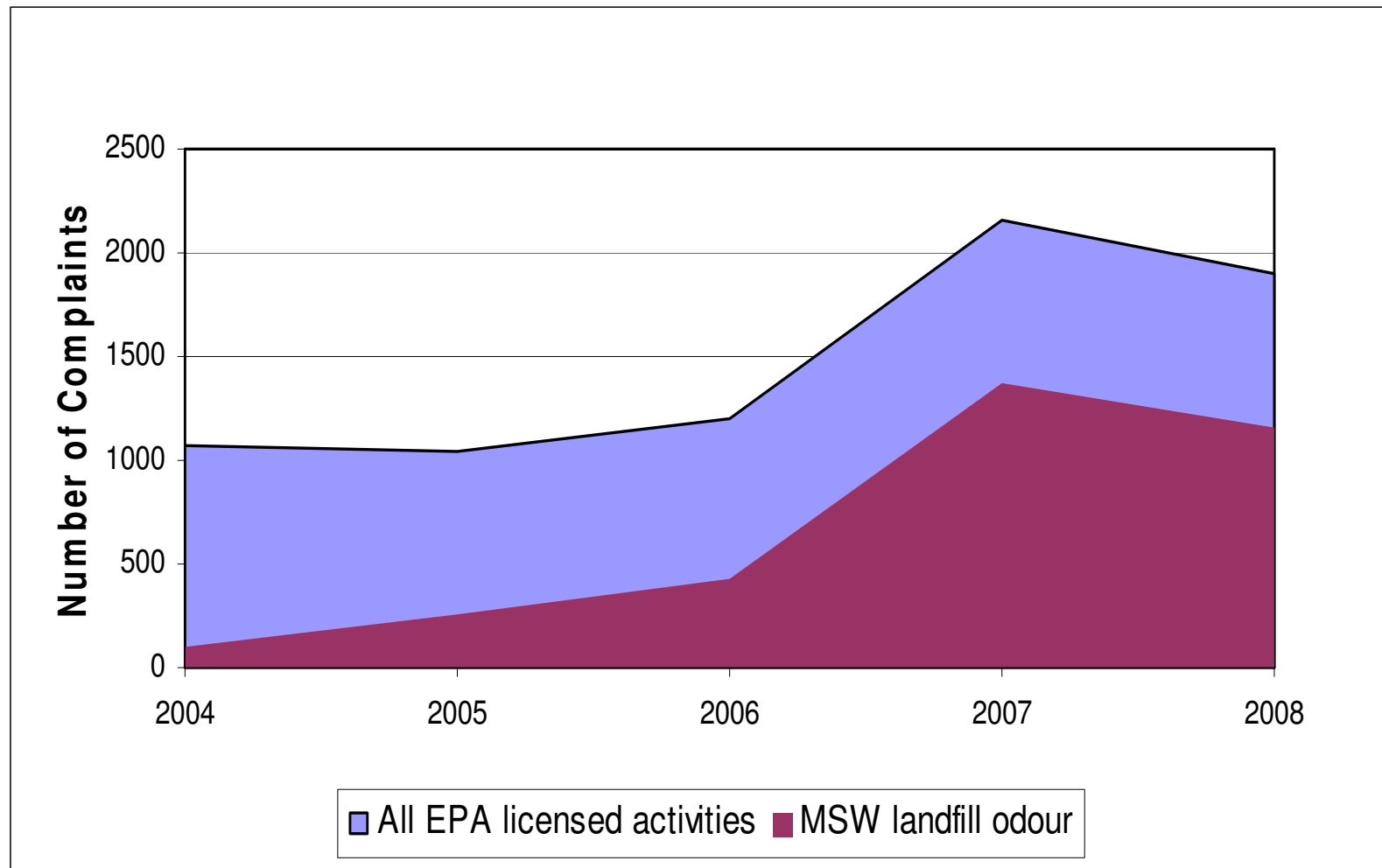
Leachate Management

- Approximately 1 million cubic meters from open MSW landfills in 2008
- Approximately 0.4 million cubic meters from closed MSW landfills
- 99% tankered or via sewer to 46 UWWTPs
- 1% to 2 private facilities or treated on-site and discharged
- Very little on-site treatment - mainly air stripping of methane
- Most Inert and IPPC landfills do not collect leachate

Challenges on hand

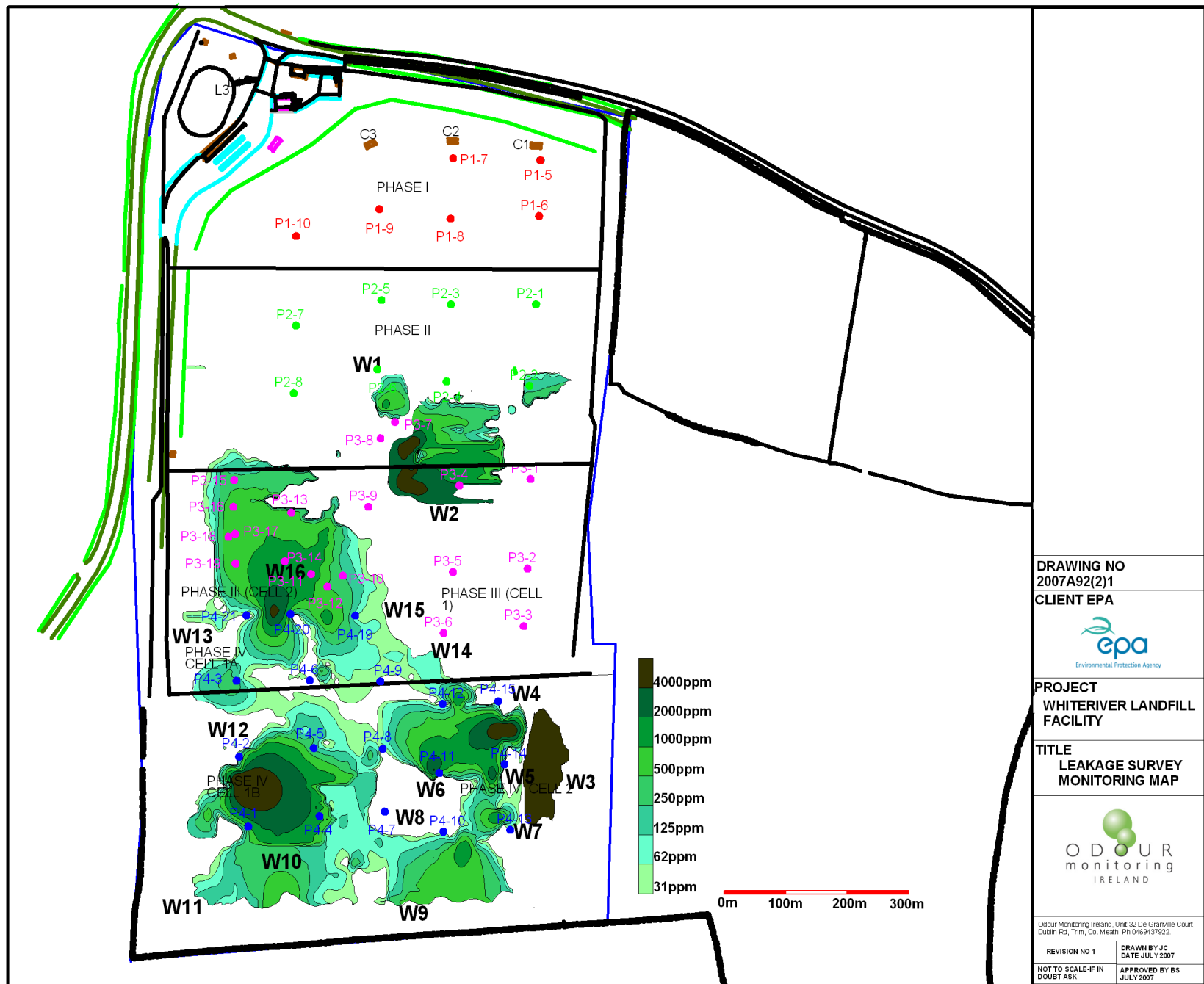
- Leachate
 - Failure to maintain leachate head $<1\text{m}$ above basal liner
 - Failure at some sites to provide leachate infrastructure
- Landfill Gas
 - Inadequate flare capacity
 - Failure to provide and operate gas infrastructure
 - Odour

Complaints 2004 - 2008



Odours– EPA Response

- 2004-2009 - 9 prosecutions for LFG management & 4 for odour
- Odour assessment procedure & use of site agents
- Auditing/inspection of LFG systems including surface VOC emissions monitoring
- New conditions in landfill template: e.g. odour management plans; condensate management; field balancing; timing of cover & capping; surface VOC monitoring/limits & odour management plan



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PROJECT
WHITERIVER LANDFILL
FACILITY

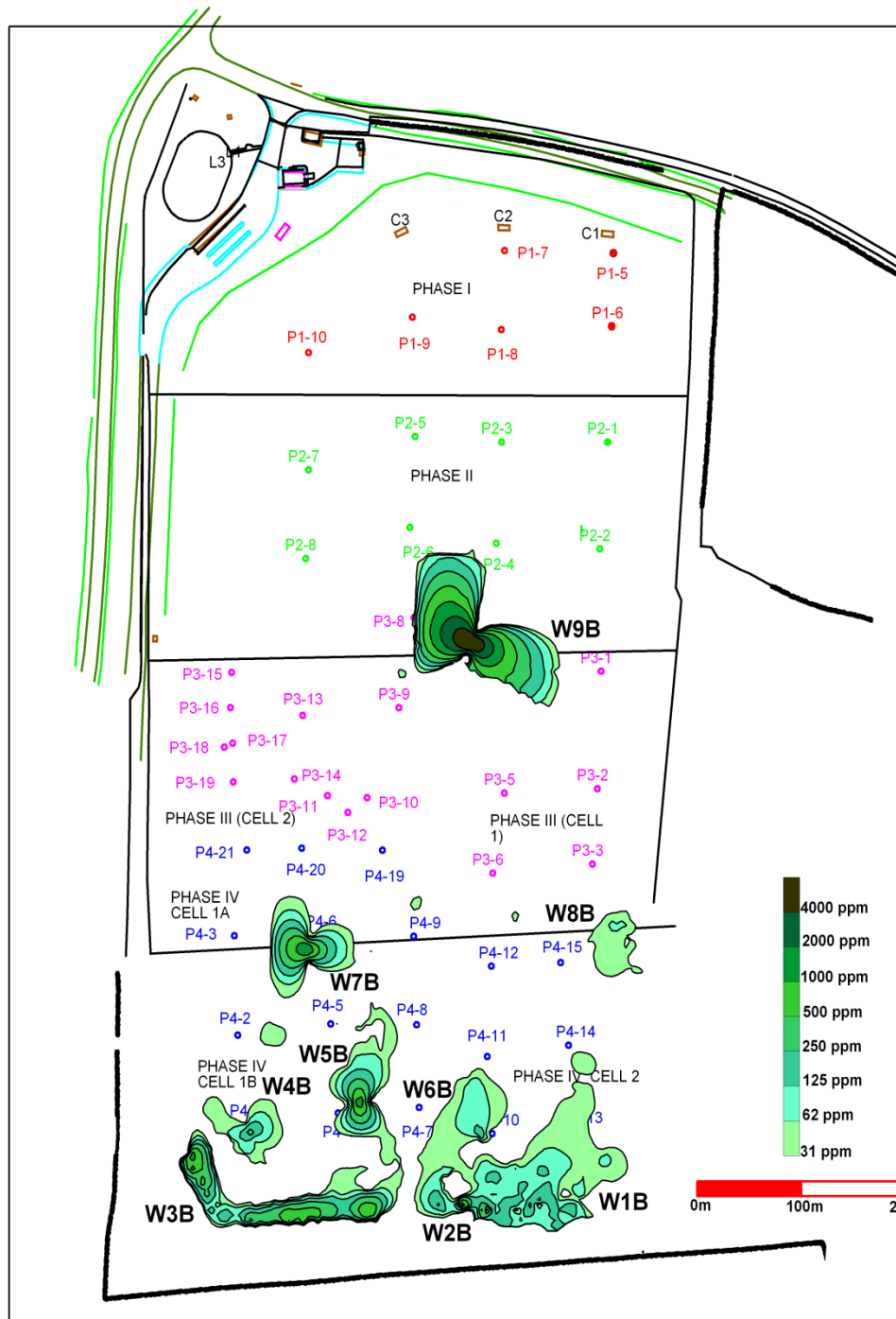
TITLE
LEAKAGE SURVEY
MONITORING MAP



Odour Monitoring Ireland, Unit 35 De Granville Court,
Dunlin Rd, Trim, Co. Meath, Ph 0454657222

REVISION NO 1
DATE JULY 2007

NOT TO SCALE - IF IN
DOUBT ASK
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JULY 2007



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PROJECT
WHITERIVER LANDFILL
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TITLE
LEAKAGE SURVEY
MONITORING MAP



Odour Monitoring Ireland, Unit 32 De Granville Court,
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DATE SEPT 2007

**NOT TO SCALE-IF IN
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Main Findings in 2009 surveys

- Most common source of high surface emissions
 - Flanked Areas
 - Leachate side slope risers
 - Gas abstraction problems – density of wells; inadequate sealing around wells
 - Cover material application (type and depth)
- 10 sites improved from last year; 6 more or less the same
- Still a deficit, although not as bad, at sites in knowledge of how maintenance of the gas management system is to be carried out

Landfill Gas Utilisation

- Currently 9 landfills have 20 engines with 30MW capacity
- All MSW landfills with >1 million tonnes generating electricity in 2009; No landfills <1 million tonnes generating electricity
- 200,000tonnes = EA indicative benchmark for viability
- 17 MSW landfills > 200,000 tonnes & another 15 > 500,000 tonnes – not generating electricity
- Age of waste; CH₄ content of gas; grid access
- SEI estimates 80MW to be accessible in 2010
- Underutilisation of landfill gas as energy source?

Historical Landfills

- Regulation of historic unlicensed landfills
 - 344 sites across the country
 - 23% high risk, 34% moderate and 43% low risk
 - Site investigations to be completed and remediation plans put in place
 - Pilot project underway
 - Sites to be authorised by the Agency

Future challenges

- Diversion of BMW from landfill
- Minimising Odour Impact from landfills
- Dealing with Historic Landfills
- Closure & aftercare
- Hazardous Waste Landfill