

Odour Control Theory and Practice: Wastewater Treatment Plants

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Case History

Odours at Swords Wastewater Treatment Plant



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History

- 1927 – 2 Imhoff settlement tanks – 400 people
- 1965 – Oxidation ditch – 1,100 people
- 1981 – Conventional Activated Sludge Plant – 22,500 people
- Odours
- 2000 – 2004 – upgrade to 60,000 PE
 - Design and Build contract
 - Conventional Activated Sludge Plant
 - Sludge Treatment – Class A
 - SCADA
 - Odour Control Measures



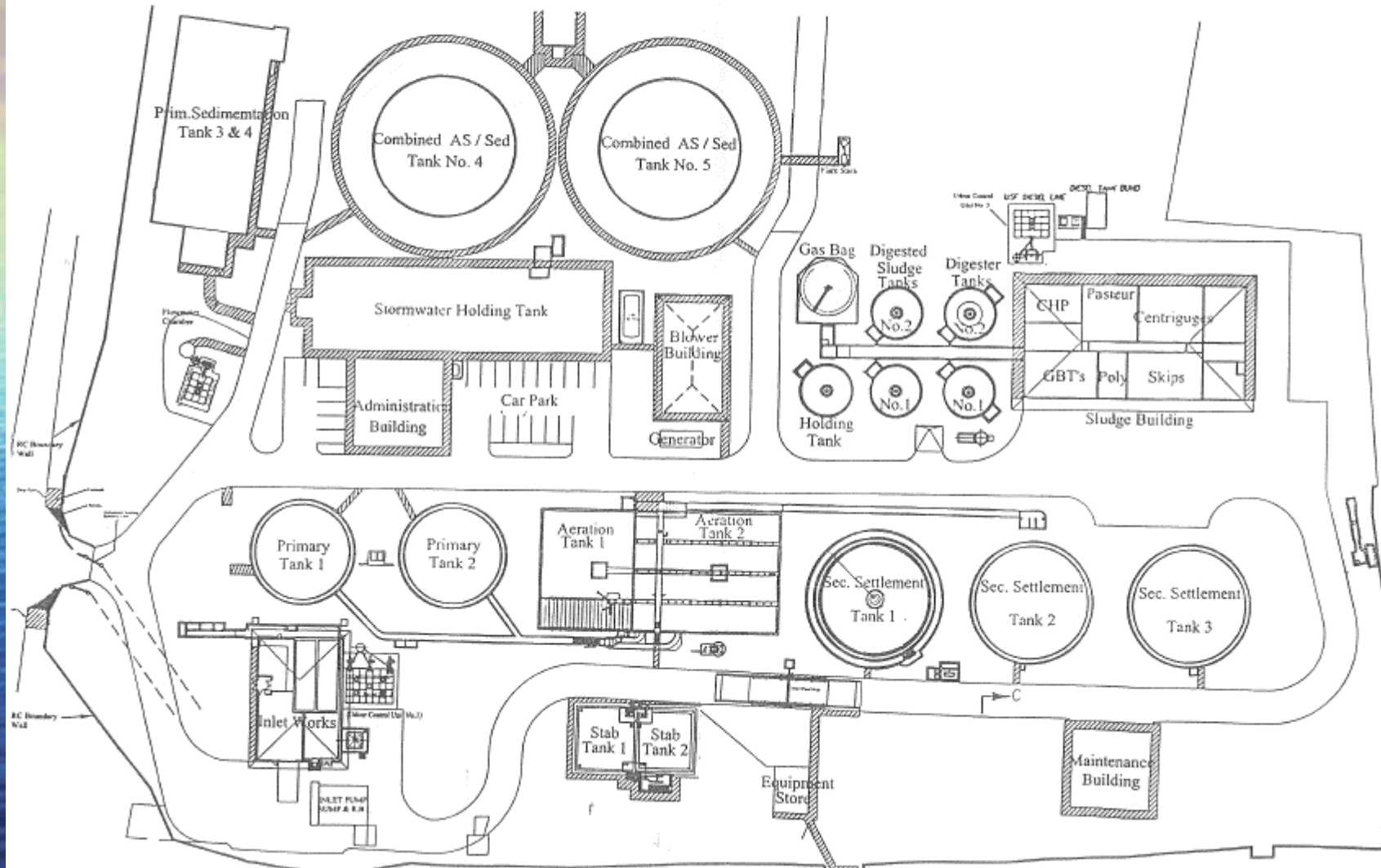
Odour Control Measures

- Cover odourous processes & extract air
- Air blown through odour control units (biofilters)
- 4m x 4m x 4m box of mussel shells
- Neutral smelling air out the other end
- 3 odour control units on the site

Odour Control Measures

- **Odour Control Unit 1:** inlet building (screens, grit chamber, skips), primary settlement tanks, primary sludge sump/pump chamber, anaerobic zone of aeration tank, sludge holding/stabilisation tank
- **Odour Control Unit 2:** primary settlement tanks, primary sludge sump/pump chamber, storm water holding tank
- **Odour Control Unit 3:** sludge processing building, sludge holding tanks (and buffer tank), centrate sump and pump chamber

*Swords Wastewater Treatment Plant
10/04/2007*







Quantum Leap

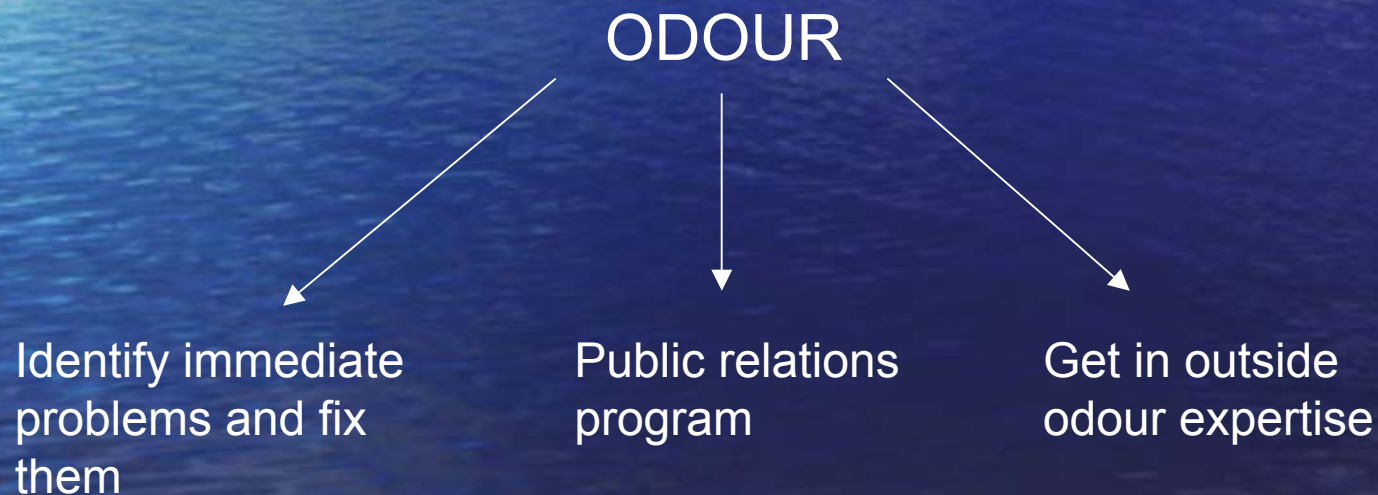
- 4th March 2004: Upgraded plant handed over to Fingal
- Enormous Improvements:
 - Odour releases
 - No. of Complaints
- Some residual complaints

Bad News in Early 2005

- January – April 2005: 50 odour complaints
- Media interest
- Councillors – questions/motions
- Hot topic
- Something has gone wrong

Action

- Meetings held internally to deal with the issue
- 3 prong approach



Prong 1 - Identify immediate problems

- Blocked sludge transfer pipes
- OCU pipes blocked or damaged
- Sludge stream problems
- Awareness raised with operational staff
 - Closed door policy
 - Appropriate times – cleaning and maintenance
- Tackled problems during 2005, some still outstanding

Prong 2 - Public Relations

- Liaison group
- Open days
- Fliers
- Invited people to make direct contact with plant
- Invited local press for interviews and photographs
- Special Meetings with Councillors

Prong 3 - Outside expertise

- 3 companies invited to talk to us
- OMI Ltd selected late 2005
- Brief: Overview of odour matters at the plant and provide recommendations
- Detailed investigation in 2006
 - Sources of odour
 - Dispersion model
 - Health of existing OCU's

Odour Plume – Existing Conditions

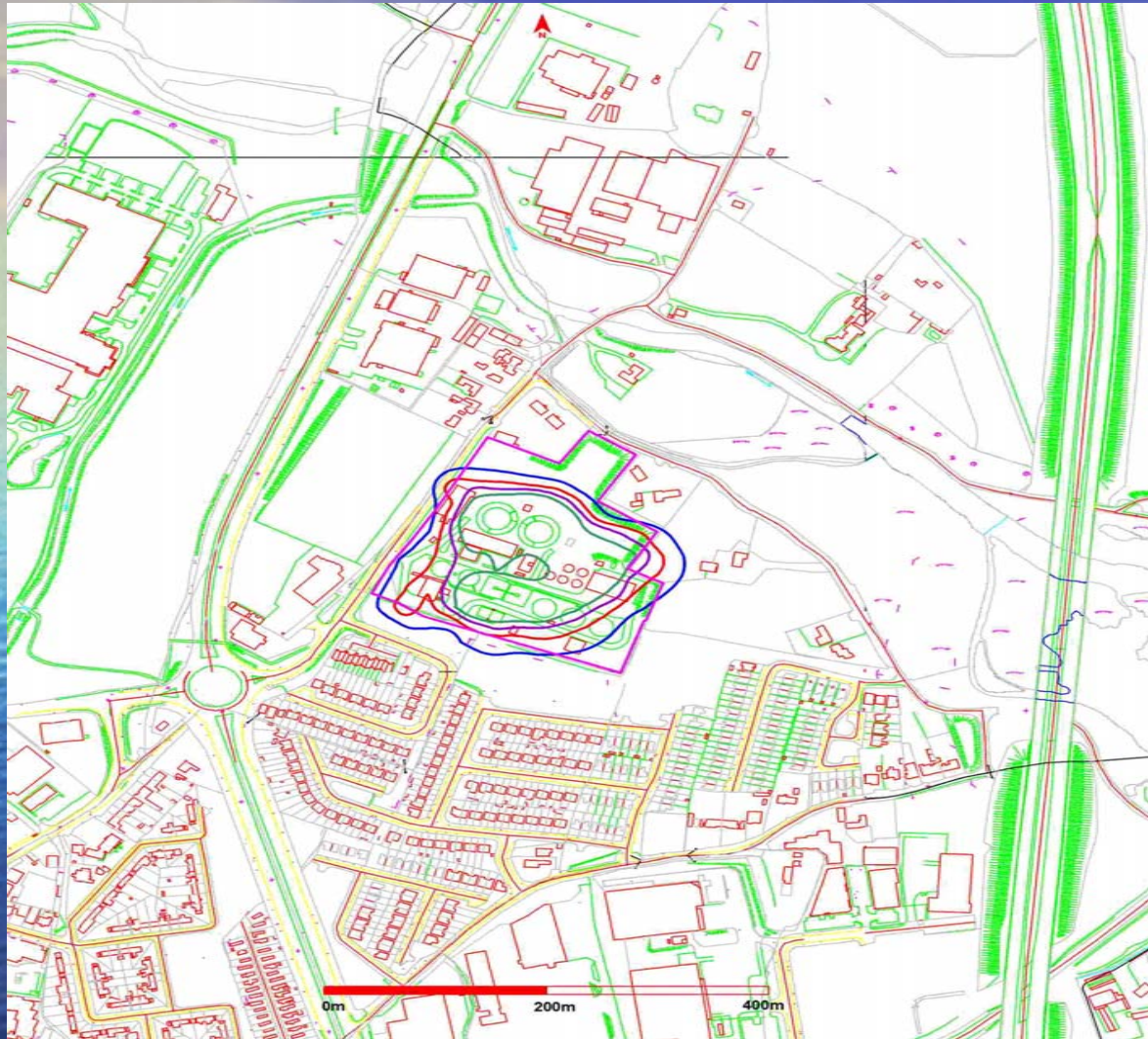


$\leq 1.50 \text{ OuE/m}^3$ at
the
98th (blue),
97th (red),
96th (purple)
95th (green)
percentile

Prong 3 - OMI Ltd Recommendations

- Upgrade OCUs
- Further enclose odour processes
- Sealing of enclosed processes
- Mobile OCU for plant maintenance
- Monitoring equipment – OCUs
- Fenceline H₂S monitoring
- Changes to management system

Odour Plume with OMI recommendations



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98th (blue),
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Odours Aug 05 – Mar 07

- Good performance
- 30 complaints
- Into the future