Gasworks Remediation

Planning for the future
Introduction to National Grid Property

Helping to regenerate Britain’s towns and cities.
National Grid Property – Who we are and what we do

National Grid Property provides expert strategic advice on and effective management of property issues on behalf of National Grid.

- Over 500 clean up projects.
- Over £205 million invested
- 1,500 acres of land reclaimed - since January 1996.

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National Grid's property portfolio comprises some 1680 properties and land holdings on 645 sites throughout the UK.

The property consists of offices, depots, houses and land, which are used for National Grid's business operations, let to third parties, or surplus to requirements.

National Grid Property manage a large portfolio of sites which include gasworks and associated parcels of land

We work with developers, local authorities, independent experts and regulators to devise and implement strategic clean up programmes for brownfield sites.

Since January 1996 we have embarked upon more than 500 clean up projects. This has required an investment of over £205 million, resulting in over 1,500 acres of land reclaimed and returned to beneficial use.

National Grid has introduced a best practice safety initiative for local communities and contractors, which educates adults and children alike on the dangers of construction sites and road safety.
On 24 August 1986, the privatisation process started when the assets of the British Gas Corporation were transferred to British Gas plc, then owned entirely by the Government. In November 1986, shares in British Gas plc were offered for sale on the stockmarket and trading in British Gas shares commenced on 8th December 1986. During the 1989/90 financial year British Gas plc re-organised into three separate business units - Gas Business in Great Britain, Exploration and Production and Global Gas. By 1991 the 12 regions had been re-organised into 91 districts covering the whole of Britain. The Gas Business in Great Britain underwent further restructuring in 1994 when five Business Units were established:

- Transco, responsible for transporting and storage of gas;
- Public Gas Supply, the domestic market; Business Gas, for supplies over 2,500 therms p.a.; Service; and Retail;

**Merger with Transco**

In October 2002, National Grid Group merged with Lattice Group plc, owner of Transco – the UK gas distribution business (Lattice demerged from BG Group in 2000). National Grid Group changed its name to National Grid Transco plc.

In 2004, National Grid Transco agreed to sell four of its regional gas distribution networks. The total cash consideration was £5.8 billion. NGT kept ownership of other four distribution networks, which comprise almost half of Great Britain’s gas distribution network.

In 2005, National Grid Transco was renamed National Grid plc. On 26 July 2005 National Grid Company was renamed National Grid Electricity Transmission plc and on 10 October 2005 Transco was renamed National Grid Gas plc.
Company changes

- Sale of Gas Distribution Networks
  - ‘Transco’ sold 4 gas distribution networks on 1st June 2005

<table>
<thead>
<tr>
<th>Name of DN</th>
<th>Purchaser</th>
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<tbody>
<tr>
<td>South</td>
<td>Southern Gas Networks Limited</td>
</tr>
<tr>
<td>Wales and West</td>
<td>Wales and West Utilities Limited</td>
</tr>
<tr>
<td>North of England</td>
<td>Northern Gas Networks Limited</td>
</tr>
<tr>
<td>Scotland</td>
<td>Scotland Gas Networks Limited</td>
</tr>
</tbody>
</table>

- National Grid Name Change:
  - 27th July 2005
    - National Grid Transco became National Grid plc
  - 10th October 2005
    - SecondSite Property Holdings Ltd became National Grid Property Holdings Ltd

- No change in company registration number
- Completed to enable National Grid to work as ‘one company’
Risk prioritisation –
National Grid Property’s approach

There are currently 1375 parcels of land in the UK for which we evaluate and manage risk.

Therefore we have to run a prioritisation process.

This is based on preliminary evaluation of the number and nature and severity of potential pollutant linkages on a site.

Re-evaluated regularly throughout the year based on incoming information.

Decisions are also based on local authority planning zones and potential developments so that we can maximise potential income from the sale or lease of a remediated site.
Proscot pr provide community relations and media engagement services to National Grid Property. We have worked with the property team for almost 12 years – I have worked on projects throughout Scotland and North West England for the Past 10 years.
National Grid’s commitment to community relations

Aim to be industry leader in public engagement and consultation
Transparency and integrity in communications with stakeholder audiences
Seek to keep all those affected informed with proactive approach
Consistency in approach to community relations activity across all sites
Community relations

Creation of bespoke resident and stakeholder databases
Identifying key neighbours and representatives
Proactively identifying potential issues/impact
Providing information to neighbours
Site visits for regulators and community representatives
Attending community meetings to outline activities
Providing a help line number with calls directed to site specific project team member
Seeking opportunities to engage with Schools
Dealing with enquiries

Follow up local concerns
Encourage resident feedback
Brief project team on impact of activities locally
Proactively address pre-identified issues
Encourage best practice, share successes and lessons learned
Respond quickly and effectively to all enquiries
How Do We Deal With Contaminated Land
Outline

Site Introduction;
  ▪ General Site History;
  ▪ National Grid Design Brief / Objective;
  ▪ Key Improvement Areas – Phase 1 – 3;
  ▪ Improvement Scheme Development / Outline;
  ▪ Remediation Programme.
Located in the Provanmill Area of Glasgow the site comprises a derelict site (21.9 hectares owned by National Grid) and operational site (14.6 hectares operated by Scotia Gas Networks – SGN)

The site is bounded to the north by disused land, to the south by light industrial units, to the west by residential housing and to the east by the M8 and M80 Motorways

Topography of the site demonstrates a fall from west to east in the order of approximately 27 m and is a prominent feature of the site.

To address this gradient contractors will form ‘platforms’ at three levels to facilitate future use of the area.
General Site History

- 1904 – Provan Gasworks formal inauguration
- 1905 – Chemical Works established, Further development of main Gasworks (purifier house, retort house, coke stores, railway)
- 1912 – Initial development of site tip (later referred to as Spent Oxide Tip)
- 1935 – Expansion of Chemical Works and main Gasworks to include tar storage tanks, railway sidings, purifiers, retort house, scrubbers, condensers

To manage water run off from the site and lessen impact on molinder burn
- 1940 – 1967 – Further site expansion / redevelopment;
- 1968 1979 – Demolition of Chemical Works and Gasworks areas initiated with expansion of site tip area.
- 1996 – Motorway construction clay spread across former coal storage area.
- 2003 – Some interim site remediation undertaken adjacent GH3
Retort house
This contained the retorts in which coal was heated to generate the gas. The crude gas passed on to the condenser. The residue left in the retort was coke.

Purifier
This removed hydrogen sulfide from the gas by passing it over trays containing moist ferric oxide. The gas then passed on to the gasholder.
Brief / Objective

- Identify Statutory Risks
- Obtain approval and permissions from Regulators
- Prepare for Light Industrial/Commercial use

- Improvement strategy based on mitigation of identified Statutory Risks (Water Environment / Human Health)
- Site improvement based on identified “Light Commercial / Industrial” end use.
- Regulatory (SEPA/GCC) scheme approval to include planning permission approvals.
Phase 1
Key Improvement Area

- The site tip was established to the south of the chemical works in 1912.

- Further site tip development was seen in 1947 with the expansion to include tipping of variable materials including spent oxide.

- The site tip was seen to extend from the south east of the chemical works with engineered slopes in excess of 7m high at the eastern end.
Phase 2
Key Improvement Area

- The chemical works area was established to the north and north-east of the derelict site in 1904.
- The chemical works area was developed and expanded up until 1967 after which time a programme of demolition and decommissioning was completed between 1968 and 1979.
# Key Improvement Areas

<table>
<thead>
<tr>
<th>Area</th>
<th>Volume to be excavated (m³)</th>
<th>Treatment / Disposal Options</th>
<th>Likely Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former Purifier Area</td>
<td>25,000</td>
<td>As above.</td>
<td>&lt; 6 months</td>
</tr>
<tr>
<td>Former Lime Kiln Area</td>
<td>20,000</td>
<td>As above.</td>
<td>3 months</td>
</tr>
<tr>
<td>Former Retort Area</td>
<td>20,000</td>
<td>As above.</td>
<td>3 months</td>
</tr>
<tr>
<td>Naptha Area 2</td>
<td>10,000</td>
<td>Excavate, stockpile, validate.</td>
<td>&lt; 3 months</td>
</tr>
<tr>
<td>Naptha Stage II Area</td>
<td>10,000</td>
<td>Excavate, stockpile, validate.</td>
<td>&lt; 3 months</td>
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National Grid has a framework agreement with industry experts to undertake a range of surveys and assessments to support the design team in the planning the remediation works for each of their sites.
Sorting and Screening of materials

- All excavated materials will be sorted and screened
- Suitable materials will be re-used to reinstate the site to a standard fit for future uses.

Visually uncontaminated – e.g. bricks, stone, cobbles/sets, clean soils etc.

Site recovered – National Grid is committed to reducing the amount of material it sends to land fill and as part of its environmental targets reuses clean /non harmful materials on site wherever safe and possible to do so.

- Site recovered materials will be re-used to reconstruct the excavated areas.
- Visually uncontaminated site recovered materials will be tested and if they are suitable for the site’s proposed end use: light industrial / commercial.
- Recovered materials re-use criteria targets will reflect the requirement to ensure no significant future impacts to human health, ground or surface waters at the site following remedial operations.
Off-site Disposal

- All stockpiled materials will be sampled prior to off-site disposal
- All samples will be analysed against the full Landfill Waste Acceptance Criteria (WAC)
- WAC analysis results will be used to determine the final disposal location of materials
- Currently materials are being taken to Avondale near Polmont
- Vehicles exit via Blochairn Road to access the motorway without adding to traffic in the town.
Validation Reporting

Following completion of remedial works National Grid’s environmental consultants Celtic will produce detailed validation documentation (report/programme of works/as-built drawings etc).

- The report will include:
  - Volume of excavated materials;
  - Area of excavated materials;
  - End use criteria values;
  - Volume of materials for off-site disposal;
  - Volume of materials for re-use based on site criteria;
  - Validation Analysis reports – QA/QC Data;
  - Stockpile area construction specifications;
  - Individual remedial area reinstatement construction specifications.

This is to ensure that any future purchaser/developer has all the information needed/required available.
Remediation Programme

- Works are being undertaken by I&H Brown – National Grid’s term Contractor in Scotland.
- Works programme expected to run between January 2011 and February 2012.
- On-going liaison with NG Sales and Letting to ensure works enable NG to obtain best value when offered for sale.
Sharing Best Practice at Provan Gasworks

• In an exercise to share knowledge and best practice National Grid hosted a series of open events at Provan Gasworks.
• During four events over two days, we engaged with around 40 invited guests from SEPA, Scottish Local Authorities and other public sector organisations with an interest in brownfield land remediation.
• Each event included a presentation followed by a site visit.
• Feedback shows that these events were well received and proved to be of interest and assistance to the attendees.
Local History and Heritage
The aim of the remediation is to address the residue of historic industrial use and bring the site back to a suitable condition that will enable it to be put back to beneficial use in the future.
In summer of 2006, we excavated, screened and crushed material at Dundee to provide a suitable feedstock for treatment by thermal desorption. This process, still new to the UK, was successfully completed in 2007. The project extended to encompass Leven Gasworks in the first UK realisation of the Cluster Site concept. All of the 38,000m$^3$ of contaminated material was re-used on site.

The scheme won an Environmental Sustainability Commendation in the Saltire Society Civil Engineering Awards 2008.

The treatment plant was equipped with a newly designed and manufactured off-gas treatment unit including two wet scrubbers and two activated carbon vessels which enabled the treatment process to meet the stringent emission limits of the EU Waste Incineration Directive.

Emissions were constantly monitored, logged and reported to SEPA during the course of the remedial operation.
National Grid used thermal desorption to treat 21,000t of contaminated soils at the former Dundee Gasworks site.

The contaminants treated consisted of PAH, TPH, Phenol, BTEX and cyanide, which were typically reduced by over 99% of starting concentrations.
Challenges

Small sites in Constricted areas

Close to residential and businesses
Often close to town centres

Traffic access/egress

Important to establish relationships with neighbours and local regulators

What options are available for treating the contaminated materials rather than dig n dump ??
Why remediate?

Future uses are limited but often these sites are in areas close to residential areas that despite security measures may be accessed by those determined enough.

If there is an identified risk to health or potential development plans in the area then National Grid has a policy of addressing the contamination as part of its environmental improvement programme.
Buckie 2005

Over 5,000m$^3$ of material required excavation and off-site disposal. Of this, over 1,000m$^3$ was classified as hazardous, with the nearest suitable landfill 350 miles away.

Despite the remote location of Buckie the local fishing harbour was just 0.5 miles away.

We used this to our advantage and identified that the most cost effective solution was to use sea vessels to transport material to a UK quayside disposal facility (landfill site).

Barges were used providing work for local businesses

An onsite testing lab was set up to assist in assessing the materials providing instant analysis results allowing on the spot waste classification.
Solutions

Treating soils in situ can be difficult and expensive, particularly on small or constricted sites.

was implemented under the Contaminated Land : Applications in Real Environments (CL:AIRE) Code of Practice

The project involved the remediation of four former gasworks site under a single contract and provided savings of over 30%

Partington in Manchester, is the UK’s first multiple site ‘hub and cluster’ approach enabled movement of all material to be audited and to meet the requirements of multiple regulators.

After several phases of assessment, four sites were selected to form the ‘cluster’, with Partington as both the hub site where the Soil Treatment Centre was established and a remediation site with the associated ‘cluster’ sites at Prescot, Runcorn and Warrington.

Each of the sites had an incumbent engineering consultant managing the remediation strategy and design for the site.

We developed a Materials Management Plan to track material movement and treatment with over 49,500m³ being excavated and 30,000m³ was re-used which represented 70% of the treatable material. This challenging project was delivered within the agreed budget and programme.
One of the key aims of National Grid Property is to return redundant sites to beneficial use – so what happens to these sites once they have been remediated.
Granton Gas Works - Edinburgh
A reminder of what used to be here

110 acre (44.5ha) operational gaswork site zoned for industrial use in 1996 with three gasholders and above-ground pipework
The clean up

The difference at Granton was that much of the site was still being used by SGN and pipework needed to be decommissioned before remediation could begin. Establishing a good working relationship with the onsite team was essential to enable both parties to complete their works.
This is the site following an extensive remediation (2000 – 2001) which addressed soil contamination - the results of the gas production and processing. Decommissioning existing above-ground infrastructure and incorporation of replacement below-ground infrastructure into masterplan.

The two tall holders were demolished in 2002 and 2004 respectively –
The first building to be constructed was the SGN HQ a bespoke building offered via lease to Centrica.
Scottish Gas Headquarters, one of the largest customer contact centres in Scotland, convincing the company to consider a purpose built space here at The Forthquarter was a massive achievement as it ensured that the 500 staff from Inchcolm House remained in Granton rather than moving out of the area and created an in the region of 1000 additional jobs in the area.
Edinburgh Telford College invested £70m in a 300,000 sq ft state of the art campus catering for 20,000 students and 600 staff.
17 acres available for residential development
2000 residential dwellings planned
First residential planning applications were approved in 2005

751 units already completed and occupied with another 136 currently under construction

That equates to somewhere in the region of 1000 new residents who are transforming The Forthquarter and helping to merge the regeneration area into the established and vibrant community of North Edinburgh.
Wm Morrisons Supermarkets plc, one of the country’s leading retailers began Phase One development of a 9.5 acre local centre at the gateway to The Forthquarter. The 82,500sq ft Morrisons food store features a Market Street, customer café and petrol station,
The Forthquarter Park

a £2m investment by National Grid created 8 hectares of landscaped open space with boardwalks and water features

The first public park to be created in Edinburgh for over 100 years runs through the whole development providing an attractive leisure and recreational facility and is home to a wide range of local wildlife.

Although a managed facility - the park was officially opened to the public in 2010 – the space provides a wonderful setting for events and activities including the annual Granton Community Gala
This is where we are in 2011 – a dramatic change but there is still a long way to go.

With over 14 hectares developed to date National Grid has another 13 hectares for rolling release before this ambitious project is completed.
A further 13 hectares remains to be developed – National Grid’s original timescale to achieve their vision for this site has been affected by the changing economic conditions as has everyone else but we continually review the proposed masterplan and have market experts such as my colleague John Brown advising of opportunities and of potential cul de sacs.
National Grid’s appeal to Scottish Government to demolish the last remaining holder is expected to be heard early November.

Retaining and maintaining the listed holder would cost between 6 and 16 million depending on which reports on engineering costs ongoing security and fluctuating land values.

Options available include imposing a compulsory purchase order on CEC so that they then take on the liabilities.

This still effectively reduces any development potential for plots 5 10 and 9

The proposed primary school on plot 7 is already in doubt due to a review of requirements in the area.

This represents a big loss to National Grid
National Grid is looking to improve the park to encourage community use and work with local experts to help us do this wherever possible and we are currently working with students for Telford to design signage for the park.

With FNP and Active Schools to host summer events – tomorrow and september.

Our factoring managers CBRE are speaking to Apiary project with regard to the potential to keep bees in the wooded copse area of the park and with landscape contractors to introduce a wildflower area.
National Grid works alongside SGN at many of its sites here in Scotland.

Currently active sites include Provan and Coatbridge
Working together to ensure the successful remediation of non operational sites can be beneficial for both parties, with remediation works often helping to identify routes of non required and ‘dead’ services that can enable records to be updated and in some cases reveals services that were thought to be dead but that are still live.

Some

Facilitating site visits and familiarisation opportunities such as this one to help the industry understand what National Grid Property is working to achieve.
Questions?
Questions

- You can submit project specific questions by email to: ngp.comms@proscot-pr.co.uk

- Telephone 0131 468 7067

- Write to:
  National Grid
  Provan Remediation Project Communications Team
  Catchpell House
  Carpet Lane
  Leith
  Edinburgh
  EH6 6SP