



Restoring. Protecting. Informing.

The Avenue Project

Dr George
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emda



1



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Site History



- Hunloke and Avenue Collieries
- Iron and Lime Works
- Coking Plant and Chemical Works
 - 98 hectare site
 - Operational 1956 – 1992
 - State of the Art Facility
 - Employed 800 staff
 - Major licensed waste facility
 - Operations Cease 1992
 - Plant falls into disrepair
 - Legacy: one of most contaminated sites in western Europe
 - Classified as Contaminated Land under Part IIA
 - **emda ownership in 1999 from English Partnerships**



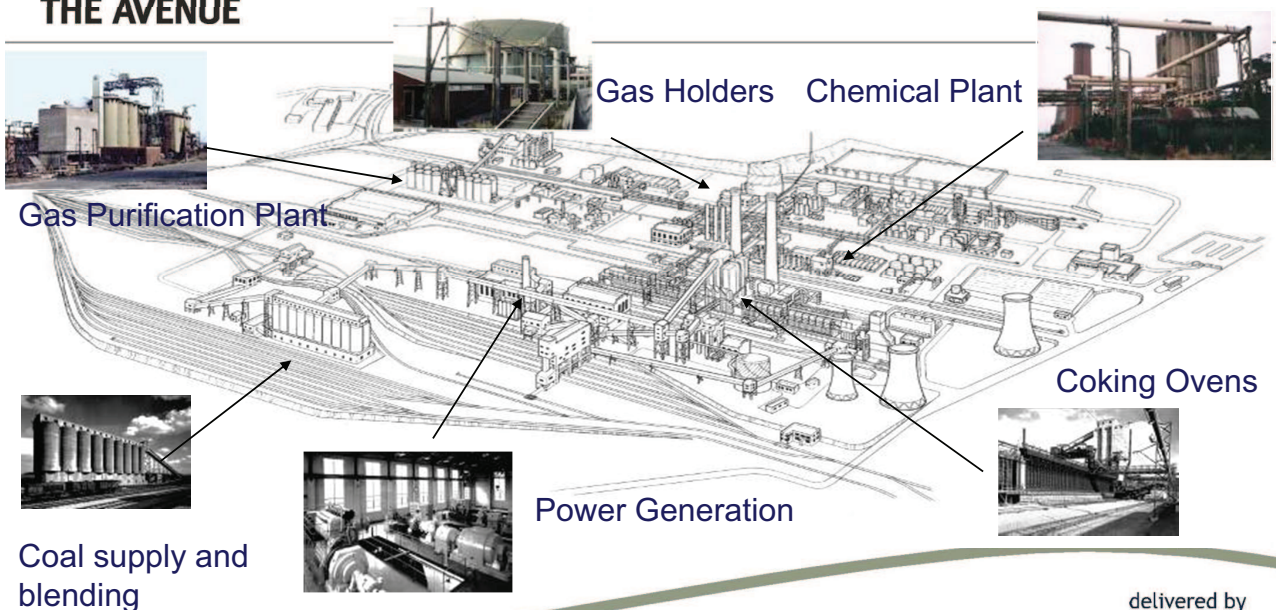
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Schematic Site Layout



3



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The Liability Owner Role

Site transferred to English Partnerships in December 1996

–Objective to bring the site back into productive use

Site transferred to emda April 1999

–Initial Funding from EP's National Coalfield Programme

Health and safety liabilities

Environmental liabilities

Hazardous derelict chemical plant

Gross contamination

The site drivers were statutory requirements not economic regeneration

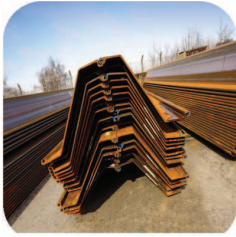
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Objectives



Key Objectives

- Remove environmental blight
- Bring the site into beneficial use (commercially, community, ecology)
- Clean exit strategy for emda (no liabilities in perpetuity)
- Value for Money
- Cost Certainty

How to Achieve?

- Remediation design in partnership with the Environment Agency
- End Use determined by Economic Appraisal and Stakeholder Consultation
- Appropriate Exit Strategy through Warranties and land transfer to the Land Trust
- VFM through exacting Project and Cost Management

5



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Forming a Delivery Partnership

3 Government Departments

Department of Communities and Local Government
Dti
HM Treasury

3 Government Organisations

emda (until 2012)
English Partnerships now Homes and Communities Agency (HCA)
The Land Restoration Trust

3 Local Government Organisations

North-East Derbyshire District Council
Chesterfield District Council
Derbyshire County Council

4 Regulators

Environment Agency (Controlled Waters)
North-East Derbyshire District Council (Environmental Health)
Natural England (Ecology)
Primary Health Care Trust

1 Charity

Derbyshire Wildlife Trust
The Community

14 Partners and the Community

Plus 6 consultants and 3 contractors

6





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Key Areas to Address



The Key Aspects of concern

- 'Controlled Waters' pollution
- River Rother
- Human Health risks



Principle Areas - Order of priority:

- River Rother
- Lagoon 2
- Waste Tip
- Lagoon 4
- Sewers/drains/sumps on the site

7



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How to Tackle the Site: Problem or Opportunity?



- Direct development by *emda*
- Transparency required due to site history
- Sustainable solution
- Promote best practice
- Stakeholder involvement
- Maximising outcomes
 - Economic regeneration
 - Public amenity
 - Habitat creation
 - Flood defence
 - Technology demonstration



8



Identifying the Challenge



1999 – emda Create Project Team

1999 – 2004: Investigations, Drain Down & Demolition

2003 Economic Appraisal

Design and Tender Process: Jan 2004 – April 2006



- Rigorous Pre-qualification Process – Get the right contractors
- 2 Stage Selective Tender – Early Contractor Involvement
- NEC Option C Form of Contract - High Cost Certainty, Non-adversarial through partnership, Incentivisation

Stage 2 Timeline



• **April 2006 – December 2006**

- Site Investigations
- Bio-Remediation Trials

• **January – May 2007**

- Temporary Works Design and finalisation of contractors' approach
- Public Consultation
- Preparation and submission of Planning Application



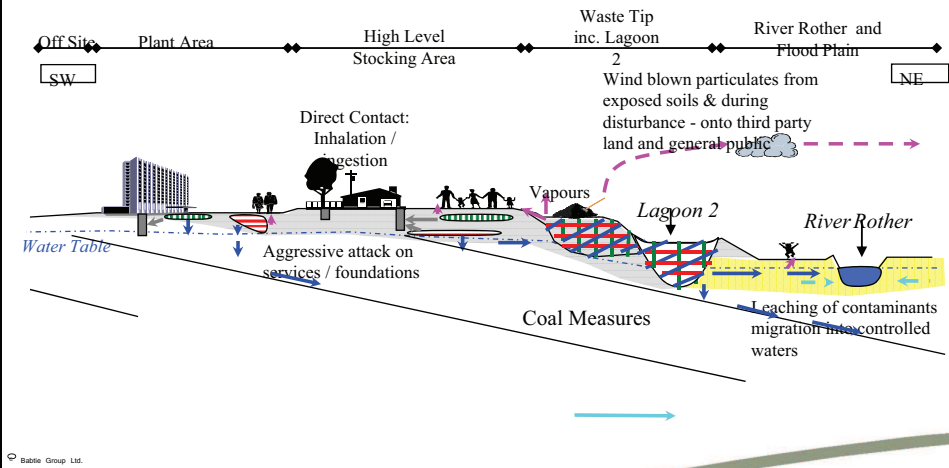
• **June 2007 to September 2008 – Value Engineering & Project Review**

- Value Engineering of permanent design and contractors proposals
- Driven by need to achieve/check Value For Money (accountable to public purse)
- Process and costs scrutinised by external 3rd Parties

• **November 2007** - Planning Permission received for remediation and landscaping

• **October 2008 – May 2009** – Pricing/Tender Process

DIAGRAMMATIC CONCEPTUAL MODEL BASED ON AN END USE OF RESIDENTIAL AREAS AND LIGHT INDUSTRIAL / AMENITIES USE



Legend

Source	
	Metal Contamination
	Organic Contamination
	Inorganic Contamination

Pathway	
	Leachables
	Human Health
	Structures / Services

Groundwater	
	Made Ground
	Alluvium
	Coal Measures

Flow	
	Direction of Shallow Groundwater
	Direction of Deep Groundwater

1b

Client	East Midlands Development Agency
Project	The Avenue Colliery Waste
Issue	Figure 10.1 Diagrammatic Conceptual Model
Author	SST
Checked by	SST
Approved by	SST

Sable Group Ltd
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Aston Lane
Sable, Manchester
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Project Overview – Sense of Scale



- **The work includes:**
- 2,000,000m3 of earthworks
- 250,000 m3 of complex sorting on waste tip material
- 50,000 m3 of soil washing
- 75,000m3 of material to be treated by bioremediation
- 300,000 m3 of material to be treated by thermal desorption
- 250,000 m3 of soil manufacture
- Construction of a water treatment plant
- Relocation of approx. 10,000 newts, 100 snakes, 500 water voles
- Provision of on & off site air quality monitoring stations.
- To discharge legal obligations by removal of source contamination, cleaning up the River Rother and the shallow groundwater and allowing the construction of;
- 28 hectares of residential led mixed use development (subject to planning)
- a flood alleviation scheme
- sports pitches
- 65 hectares of nature reserve

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How to Treat the Material?

Remediation Trials



Needed to find how to treat the material to prove alternative to landfill

Lagoon slurry a major problem

- 40 trials carried out
- 29 trials reported

Technologies trialled were:

1. Bioremediation
2. Thermal desorption
3. Soil stabilisation
4. Soils washing

Risk Assessment

Initial generic assessment of quantities following characterisation

~ 2,700,000 m³

Site specific risk assessment revised quantity to

~ 600,000m³

78% reduction in remedial effort

Contaminants: Benzene, BenzoApyrene, Phenols, Cyanide, Thiocyanate, Ammonia, Arsenic, Nickel, Cadmium, Chromium, Mercury



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Partnership Working - The Next Step

- Complex project nature required early contractor involvement
- Bespoke Early Contractor Involvement (ECI) contract

- Preferred contractor appointed May 2006
- VSD Avenue – Joint Venture
 - DEC (DEME Group)
 - Volker Stevin (Volker Vessels Group)
 - Sita Remediation (Suez Group)

15



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Working in Partnership to Deliver Sustainable Solutions

Derivation of remediation options

- Avenue remediation options derived by partnership working.
- Technologies used focus on contamination removal but minimum treatment

Remediation technologies to be used

- Selective excavation
- Complex sorting
- Soil washing
- Bio-remediation
- Thermal desorption

16





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The Criteria

- **Controlled water contamination**
- issues to address
- Improving river standard
- Protecting shallow ground water

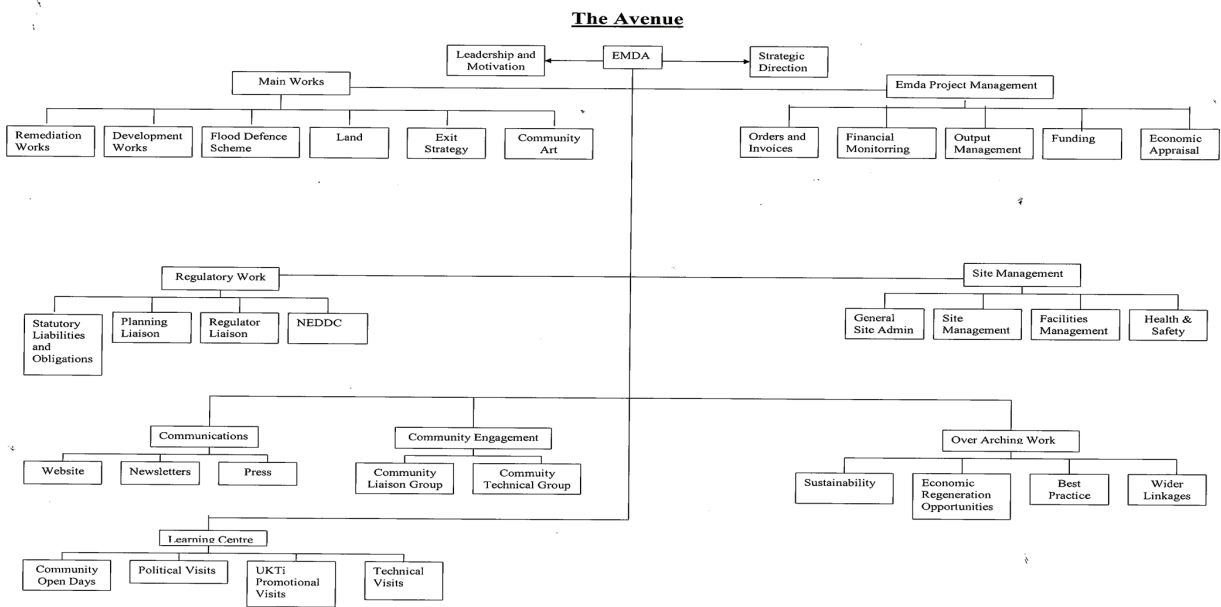
- **Human Health issues to address**
- Site to be suitable for full
- public access
- Sports Pitches
- Residential development
- with gardens (800 houses)

- **Other Issues**
- Ecology
- Flood defence
- Adjacent residential areas



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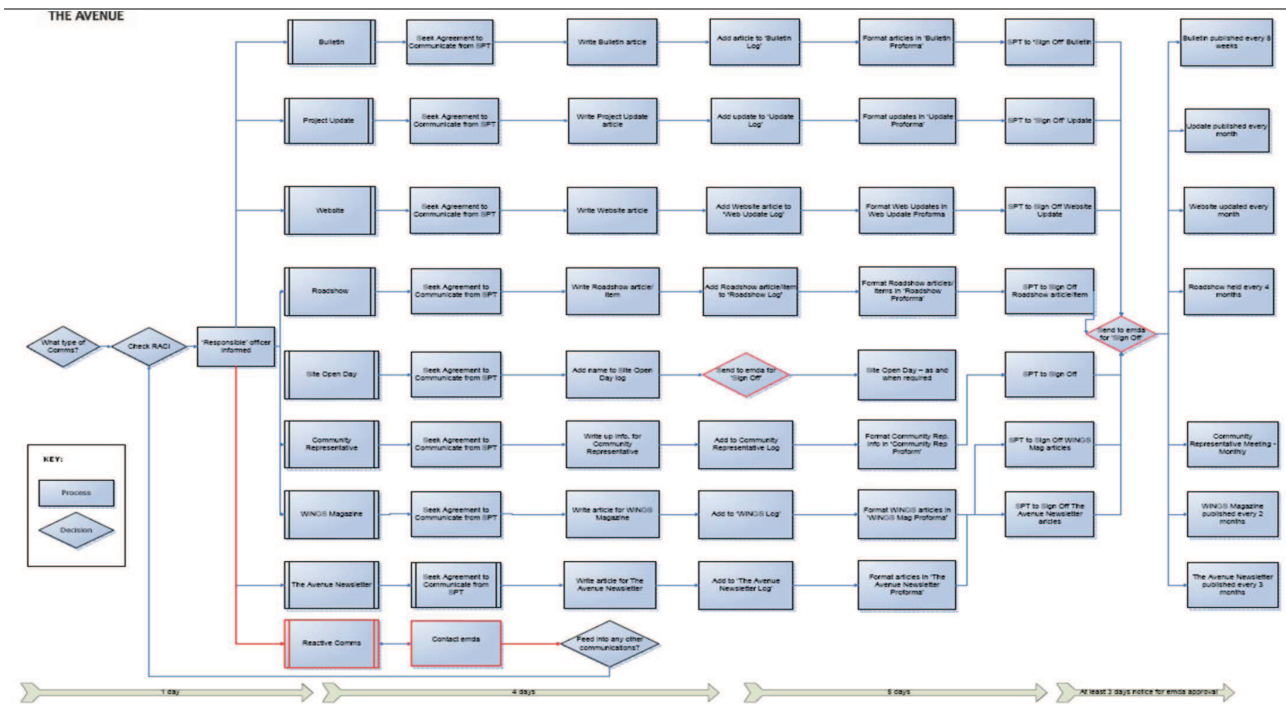
The Avenue Organisation Chart





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Communications Process Map



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The Skills

Project managers
 Project planners
 Cost managers
 Economists
 Solicitors
 Master planners
 Development Planners
 Development Surveyors
 Quantity Surveyors
 Civil Engineers
 - Geotechnical
 - Environmental
 - Earthworks
 - Infrastructure
 - Structures
 Mechanical Engineers
 Electrical Engineers
 Process Engineers

Based in
 London
 Birmingham
 Glasgow
 Manchester
 Leeds
 Sheffield
 Bristol
 Leicester
 Nottingham
 Newcastle
 Gateshead
 Antwerp
 Rotterdam
 Chicago

Chemical Engineers
 Chemists
 Toxicologists
 Health and Safety Specialists
 Public Health experts
 Ecologists
 Noise consultants
 Air Quality consultants
 Public Relations Team
 Marketing
 Property/Agents/Surveyors
 Teachers
 Economic Regeneration Experts
 Computer Experts
 Risk Managers



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Option 3 - Full Site Clean-Up, Reclamation and Development

Creating a Sustainable Development

- Initial representations being made for LDF
- Full masterplan under development
- Other landowners being approached and MOU being developed emda/TW/CPL
- Lead consultant appointed – Scott Wilson
- Economic impact assessment underway



21

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The Exit Strategy

- The Site
- - 28 hectares of mixed use development
- - a flood alleviation scheme
- - 5 hectares of sports pitches
- - 65 hectares of nature reserve
- Flood Risk alleviation Dam
- Emda Require an Exit Strategy
- All non-development areas to be passed to LT with an in-perpetuity dowry
- Dam to pass to Environment Agency
- Delivery Partner - Derbyshire Wildlife Trust
- LT - Managing residual liabilities
- DWT managing the Site surface
- - Developing and maintaining the nature reserve
- - Using the work to train people with job skills,
- - Carrying out environmental education with local schools and groups

22

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Working in Partnership with all

Working with others to find a mutually acceptable solution

Partnership working is the project ethos.

This has led to a partnership solution to the challenges on the site

Involving the community in the process by

- Community liaison groups
- Consultation events
- Information Centre
- Newsletters
- Website

23



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Agency



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Programme

- Remediation: 2009 – 2014
- Master Plan: Single Option mid 2011
- End Use Planning Application: late-2011
- Developer appointment 2013

further info on

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24



Homes &
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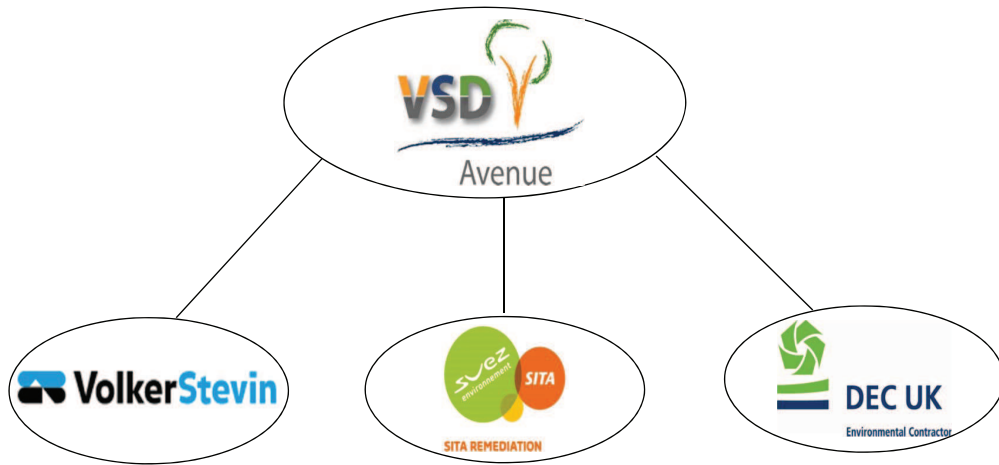
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Marcus Foweather
Joint Venture Project Director



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SITE CHALLENGES





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Hydrocarbon on the river



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Free product within cofferdam excavation





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Possible Thiocyanate within cofferdam excavation



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Example of below BoE sump

