Agenda

1. Welcome
2. HS2 skills & capability context
3. Thought Leader: Gil Howarth, NSARE
4. Back to the Future: Year 2026 exercise
5. Close
Scale of the opportunity

- HS2 job numbers predicted to be more than 22,000 within 5 years from now
- Maximum of 50,000 concurrent jobs predicted in late 2020s

Source: Albion Economics June 2013 report for Greengauge 21
Phase 1 – Jobs profile

Source: Albion Economics June 2013 report for Greengauge 21
Construction

Phase 1: Construction Jobs

- Stations, Structures & Tunnelling: 60%
- Permanent Way: 8%
- Signalling & Telecoms: 2%
- Electrification & Plant: 1%
- Project Mgt: 3%
- Other: 26%

Source: Albion Economics June 2013 report for Greengauge 21
A national project

330 mile construction project

Multiple sites, concurrent working

Use of off site manufacture

UK wide supply chain opportunities
Skills opportunities

Do you believe there is a skills shortage in the construction industry?

- YES: 82.26%
- NO: 12.47%
- DON'T KNOW: 5.27%

Source: CIOB, SKILLS IN THE UK CONSTRUCTION INDUSTRY 2013
New skills, different behaviours

Do you believe that the construction workforce will have the required skills for BIM?

- **YES**: 25.06%
- **NO**: 58.59%
- **DON’T KNOW**: 16.36%

Source: CIOB, SKILLS IN THE UK CONSTRUCTION INDUSTRY 2013
Skills opportunities

• Develop an industry that attracts and retains a diverse group of multi-talented people and which becomes a sector of choice for young people

  Government’s industrial strategy for construction
Skills & Employment - Strategic Theme

Working with our suppliers, we will build a skilled workforce that fuels further economic growth across the UK.

On time, on budget…

Securing the appropriate workers, skills, goods and services is vital to the successful delivery of HS2
HS2 Sustainability Policy

Sustainability policy

HS2’s purpose is to create a world-class high-speed rail network to support sustainable growth in the UK. It is a major opportunity to provide greater choice in the way we travel to help deliver a sustainable transport system for the UK.

Our vision is of a high-speed railway network which changes the mode of choice for inter-city journeys, reinvigorates the rail network, supports the economy, creates jobs, reduces carbon emissions and provides reliable travel in a changing climate throughout the 21st century and beyond.

This policy sets out HS2 Ltd’s commitment to be an exemplar project. Building this network will inevitably cause some local effects on communities, the natural and the built environment. We will strive to limit the negative impacts through design, mitigation and by challenging industry standards and we will look for environmental enhancement and benefits.

Through this policy we aim to support the following Government goals:

- Create a step change improvement in transport links between regional centres and from them to London.
- Enable more equal distribution of opportunity, connect communities and encourage regeneration.
- Stimulate sustainable economic growth through increased capacity and shorter journey times between key cities.
- Support British engineering, create opportunities and develop skills in the UK.
- Deliver lower carbon long-distance travel.
- Maximize integration of HS2 with existing UK and international transport networks.
- Encourage wellbeing and protect the environment.

What we will do

We will promote high speed rail and balance community, environmental and economic issues. We have identified key themes as a focus for our work to:

- Growth and regeneration • Support sustainable economic development and the local agenda for regeneration.
- Environmental change • Seek to avoid significant adverse effects on communities, business and the natural and built environment. Minimise impacts where they occur and deliver enhancements to the natural environment.
- Skills and employment • Improve skills, jobs, education and the economy through our investment along the length of the route. Act as a driver for improvements in the sustainability of the engineering and construction sector. Promote diversity, openness and fairness.
- Climate change • Minimise the carbon footprint of HS2 as far as practicable and deliver low carbon long-distance journeys that are supported by low carbon energy.
- Resilience • Build a network which is resilient for the long term and seek to minimise the combined effect of the project and climate change on the environment.
- Resources and waste • Source and make efficient use of sustainable materials, maximise the proportion of material diverted from landfill and reduce waste.
- Integrated transport • Engage with stakeholders to create seamless transport links with other modes and ensure accessibility for all.

How we will deliver this

To deliver our vision we will embed sustainability in our business at each phase of the project through:

- A clear plan • Setting goals relevant to the stage of the project from design, through development, construction, operation, maintenance and renewal which stimulate innovation and ensure enhancements are protected for the long term. Our plan and this policy will be reviewed annually.
- Robust processes • Ensuring sustainability is integrated into our culture, procedures and processes. This will include the development of Sustainable Design and Delivery Principles as part of a process to enable us to balance the sometimes competing elements of sustainability and to understand whole life cost.
- Procurement • Ensuring sustainability is integral to our procurement processes and is applied to our entire supply chain.
- Innovation • Promoting sustainable construction practices, continually focusing ideas and technologies for improving sustainability.
- Engagement and reporting • Engaging in dialogue about the project and working with local communities, key stakeholders and our supply chain. Openly reporting our progress in delivering the commitments we make on sustainability regularly and sharing what we learn.

HS2 is determined to ensure sustainability is embedded in the DNA of this project and that it is integrated into all of our work.

Promote diversity, openness and fairness.
Strategic targets

• Ensure the availability of the right workforce at the right time with the right skills and behaviours

• Create opportunities for local, disadvantaged and underrepresented people and companies to benefit from the investment in HS2
Evidence base and engagement

• Labour and skills needs forecasting and gap analysis

• Embed learning from other major projects

• Partnership and dialogue with other Govt departments, SSC’s, industry bodies, employers, education sector and LA’s

• Early supply chain engagement
Next steps

- Continuing dialogue and engagement
- Feed the output from today’s session into our strategy development
- HS2 Skills & Capability event 2014
- Email us at skills@HS2.org.uk
Thought leadership

Gil Howarth

• Chief Executive, National Skills Academy for Railway Engineering

• Chairman of the Network of the 19 National Skills Academies
Video to be embedded

- http://www.youtube.com/watch?v=m7RoWVMLciQ
Supporting HS2!

Gil Howarth
5th November

Developed by the industry for the industry
About me……..

1974 – 1989  BNFL Project Manager/Director
1989 – 1992  BR Project Director, CTRL - HS1
1992 – 1993  Union Railways MD
1993 – 1998  Railtrack Director, MPD
1998 – 2010  The Howarth Group CEO
    •  Benaim
    •  Mace
    •  Franklin + Andrews
    •  Alfred McAlpine

2010 to date  NSARE CEO
Why NSARE?

Recognition of the need for a pan-industry recruitment, training & skills strategy

• Forecasting the skills challenges in the short & medium term
• Transforming the competency of the workforce
• Improving the quality of the training provision
• Promoting the industry in Schools, Colleges & Universities

History

2008  Founded by Pete Waterman & Gil Howarth with Andrew Adonis’ support
2009  DfT/Industry Funded Research
2010  Government Endorsement
2011  Incorporation & ‘Open for Business’
2013  279 Member organisations and growing
Safety competencies are important **BUT** should be a component of an individual’s portfolio of competencies.

### Academic Qualification vs. Apprenticeship Framework

<table>
<thead>
<tr>
<th>NQF Level</th>
<th>Academic Qualification</th>
<th>Professional Engineering Institutions</th>
<th>Apprenticeship Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>PhD</td>
<td>CEng</td>
<td>Higher</td>
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<tr>
<td>7</td>
<td>MSc, MEng</td>
<td>IEng</td>
<td>Advanced</td>
</tr>
<tr>
<td>6</td>
<td>BSc, BEng (Hons)</td>
<td>Eng Tech</td>
<td>Intermediate</td>
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<tr>
<td>5</td>
<td>Found. Degree HND</td>
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<td>4</td>
<td>HNC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>A Level Adv. Diploma</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>GCSE Diploma</td>
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</table>

Increasing recognition that behaviours, including Leadership & Management, are critical to success.
## Forecasting the Skills Challenge

### Current Workforce Numbers (Railway Engineering)

<table>
<thead>
<tr>
<th>Type of Activity</th>
<th>Number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track</td>
<td>55,500</td>
</tr>
<tr>
<td>Signalling &amp; Telecommunications</td>
<td>12,000</td>
</tr>
<tr>
<td>Electrification &amp; Plant</td>
<td>3,500</td>
</tr>
<tr>
<td>Other Non-Specific</td>
<td>15,500</td>
</tr>
<tr>
<td><strong>Total Infrastructure</strong></td>
<td><strong>86,500</strong></td>
</tr>
<tr>
<td><strong>Traction &amp; Rolling Stock</strong></td>
<td><strong>13,500</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100,000</strong></td>
</tr>
<tr>
<td>% Level 4+ (Engineers &amp; Technicians)</td>
<td>18%</td>
</tr>
<tr>
<td>% Female</td>
<td>4%</td>
</tr>
</tbody>
</table>
Future Programme – Spend by Client

**Track Spend By Client (CP5 Only)**
- **£6.2bn**
- TFL/Crossrail 20%
- Light Rail 3%
- Network Rail 77%

**S&T Spend by Client (CP5 Only)**
- **£4.8bn**
- TFL/Crossrail 39%
- Network Rail 54%
- Light Rail 7%

**E&P Spend by Client (CP5 Only)**
- **£4.3bn**
- TFL/Crossrail 15%
- Light Rail 6%
- Network Rail 79%

**T&RS Spend By Client (CP5 Only)**
- **£9.3bn**
- DfT/RoSCOs 45%
- TFL/Crossrail 49%
- Light Rail 4%
- Network Rail 2%
Workforce Geography

Track Resources - Geographical Distribution

S&T Resources - Geographical Distribution

E&P Resources - Geographical Distribution

T&RS Resources - Geographical Distribution
Workforce Age Profile

**Age Profile - Track**

- Age Bands: <25, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60+
- Numbers included: 0, 2000, 4000, 6000, 8000, 10000

**Age Profile - S&T**

- Age Bands: <25, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60+
- Numbers included: 0, 500, 1500, 2500

**Age Profile - E&P**

- Age Bands: <25, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60+
- Numbers included: 0, 100, 200, 300, 400, 500, 600, 800

**Age Profile - T&RS**

- Age Bands: <25, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60+
- Numbers included: 0, 1000, 2000, 3000
Recruitment: Numbers by Discipline

New People Required - Next 5 Years

- **Track**
  - Technician/Engineer (Retirement Age 60): 1000
  - Artisan (Retirement Age 60): 2000
  - Technician/Engineer (Retirement Age 65): 1500
  - Artisan (Retirement Age 65): 1500

- **S&T**
  - Technician/Engineer (Retirement Age 60): 1800
  - Artisan (Retirement Age 60): 2500
  - Technician/Engineer (Retirement Age 65): 2000
  - Artisan (Retirement Age 65): 2300

- **E&P**
  - Technician/Engineer (Retirement Age 60): 1500
  - Artisan (Retirement Age 60): 2000
  - Technician/Engineer (Retirement Age 65): 1500
  - Artisan (Retirement Age 65): 1500

- **T&RS**
  - Technician/Engineer (Retirement Age 60): 3200
  - Artisan (Retirement Age 60): 6800
  - Technician/Engineer (Retirement Age 65): 2400
  - Artisan (Retirement Age 65): 5210
Comparison with Current Workforce

New People Required in Next 5 Years as % of Current Workforce

- **Track**
- **S&T**
- **E&P**
- **T&R**

- Orange: Retirement Age 65
- Blue: Retirement Age 60
National Training Academy for T&RS

Collaboration between Siemens Plc, NSARE Ltd and Government

National ‘hub’ at Northampton, ‘spokes’ around the country

Government invests 50% in return for 50% of training capacity to be made available to industry through NSARE

Cost: Up to £7m

Programme:
- December 2013 Final Agreement with BIS
- January 2014 Design & Build Contract placed
- March 2015 ‘Open for Business’
Rail Roundtable

Jointly hosted by
Vince Cable and Patrick McLoughlin

6th November 2012:
NSARE Skills Forecasting outputs presented

4th June 2013:
‘Rail Supply Chain Forum’ - NSARE a ‘permanent member’

January 2014:
‘National Training Strategy’
NSARE Footprint

Railway Engineering skills are paramount

Increasing ‘encouragement’ for NSARE to expand footprint – ‘Rail Technical Strategy’

Extend to other job roles impacted by new technology e.g. ERTMS
Skills Forecasting - Strategic

Collaboration with RSSB to identify longer term skills needed to deliver Rail Technical Strategy:

- Impact of ERTMS
- Electrification; strategic resources
- Support to DfT on franchising programme

HS2 in conjunction with CITB, Experian & WLC (University of Dundee) for completion in January 2014
High Speed 2 Skills Forecasting

Forecasting Study and Gap Analysis

Key deliverable:

To create a labour and skills forecasting model for HS2 and to undertake detailed analysis from the outputs of the model

Consortium

CITB
Experian
NSARE
Whole Life Consulting (WLC) – University of Dundee

Timescales

Interim report: November
Final report: end January 2014
High Speed 2 Skills Forecasting

Detailed Deliverables

• A labour forecasting model and tool, capable of regular updating by the HS2 team

• The sourcing of the data necessary to develop the tool

• An economic and labour market assessment of the local and national environment and the way in which they might impinge on HS2’s strategy

• Guidance on potential training solutions to support new entrants and workforce development

• An interim and final report and reports designed for specific audiences
Training Accreditation

RTAS: Contract (Concession) with Network Rail for accreditation of ‘Sentinel’ related training

All training organisations to be accredited
Every trainer and assessor to be accredited

The main objective is to drive up quality!

~90 companies and ~350 individuals registered with NSARE
## Training Accreditation

### The Railway Training & Assessment Accreditation Scheme (RTAS) Baseline Inspection Results

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Total</th>
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<td>1 (O)</td>
<td>2</td>
<td>3</td>
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<td>2 (G)</td>
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<td>10</td>
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<td>53</td>
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<tr>
<td>3 (S)</td>
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<td>21</td>
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<td>4 (I)</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>16</td>
<td>7</td>
<td>82</td>
</tr>
</tbody>
</table>

### Expand scheme:
- All technical training
- FE Colleges – 30 interested

### Up-Skill Trainers:
- ‘Train the Trainer’
Railway Engineering Training Academy

National Network of ‘Centres of Excellence’
- Network Rail
- London Underground
- Crossrail
- Private Sector
- FE Colleges & Universities

Directory produced:
50+ ‘significant facilities’ and 50+ smaller

Current Initiatives:
- NTA for T&RS
- ERTMS
- Newcastle College
- Electrification

Action: Prepare Strategy Paper with NR, TfL, Crossrail, TOCs, RIA etc.
‘Skills Backbone’ IT Platform

Supply

- Organisations
- Trainers & Assessors
- Course Directory
- Training and Assessment Content

Demand

- Central Processor
- National Database
- Common Reference Library
  (Job Roles, Qualifications etc.)

Accredited Training

- SkillsID
  - Employee Record
  - CPD / Career Planning
  - Skills Forecasting

Access via Web Portal

Mobile Access
SkillsID – What is it?

Industry wide national competence database

Online record of an individual’s skills, competencies, qualifications

Accessible by employer (sponsor) and individual – promotes ownership of self development

Updated by employer (sponsor) and NSARE accredited training providers – verified records
Industry Promotion

Recent upsurge in recognition of need to promote the Rail Industry: willingness to collaborate in light of stiff competition from Nuclear, Aerospace, Utilities etc.

All interested organisations consulted:
- RDG
- NR, TfL, Crossrail & HS2
- ATOC, TOCs & FOCs
- RIA, RSSB & RRUKA
- IMechE & IRSE (and other PEIs)
- ‘Women in Rail’ & Young Railway Professionals

Opportunities include
- ‘The Skills Show’ 16 to 18 November 2013
- ‘Big Bang’ 13 to 16 March 2014
- University Technical Colleges

Agreed:
- NSARE to facilitate Steering Group & co-ordinate implementation
- Implementation by individual organisations and collective e.g. ‘Big Bang’
- YRP members to be ‘front-line’ Ambassadors
- Industry funding & Programme Management resource required
Schools Initiative
Supporting HS2!

Developed by the industry for the industry
It’s 2026

- Construction of Phase 1 is complete and the new line has recently opened to passengers.
- The project was delivered on-time, on-budget, with a safety record that outperformed the construction and rail industry’s norms by a significant margin.

- From a skills & capability perspective, the project was a huge success meeting or exceeding all expectations for:
  - Employment of Local Labour
  - Previously Workless Employment
  - Workforce Diversity
  - Workforce Training
  - Industrial Relations
  - Graduate Employment
  - Pre-employment Training
  - Apprenticeships
  - Opportunities for SME’s
  - Educational Engagement

- The Government has cited HS2 as a ‘game-changer,’ a project which, more than any other, has responded to the Industrial Strategy and succeeded in improving the image and capability of the UK construction industry.
How did we do it?

• What were the critical success factors?

• What changes were made to enable success?

• How role did the client play in enabling success?
Thank you

Please get in touch: skills@hs2.org.uk