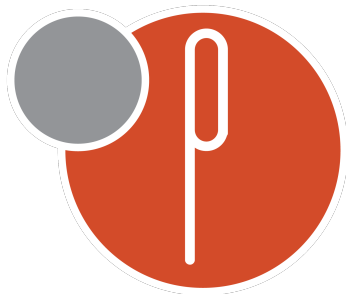


Preconditioning for Success™

Health & Safety Lessons

from London 2012 Olympic Build

Lawrence Waterman OBE
CChC Construction Week,
Santiago, Chile
May 2018



Park Health and Safety Partnership



Construction Learns from Itself

- Previous Projects
- Major and Specialist Companies Sharing
- **Best Practice and Avoiding Repeating Mistakes**

Channel Tunnel



Boston Big Dig



Heathrow Terminal 5











Scale

- US\$ 12 billion
- Estimated 100 million working hours
- 50,000 workers churned through, 12,500 peak

Large complex, contaminated site, July 2005









Over 90% of materials re-used, much on site, or recycled

260 Hectare site



Powerlines Undergrounding – 4 shafts, 13km of tunnels





Remediation – cleaning half of the 2m tonnes of soil moved



Utilities – $\frac{2}{3}$ of spend on civil engineering



Basketball – Some of the 300,000 temporary seats



Velodrome



Aquatics





Broxbourne White Water Canoe Centre



Athletes' Village



East Village



The Orbit





Presentation – Key Focus

- Leadership
- Front-line Supervisors
- Workforce Engagement
- Health
- Reward and Recognition



Old Model

- **Previously (and correctly)**
 - Policies, Procedures, Work Methods, Training, Enforcement
 - Assumes that managers (and H&S advisors) know everything
 - Assumes that everything is planned, no surprises
 - Assumes that we can get people to behave like robots
- **But**
 - Enforcers aren't productive
 - Only some are driving improvements
 - **Who wants to be a robot?**



New Model

- **As before**
 - Policies, Procedures, Work Methods, Training
 - Consequence Management (positive and negative)
- **In addition**
 - Engage and consult to procedures etc. are better
 - Achieve ownership of safe working practices
 - Reduce enforcement
 - Increase reward, recognition, sharing best practice
 - Convert H&S advisors to “critical friends” from compliance monitors



Regulation and Regulator

- Health and Safety Executive (HSE)
- Distance – proper relationship
- Letter, Notice (Improvement, Prohibition) and Prosecution
- Critical Friend
- Presentation to Board, Leadership Meetings, Inspections,
- Support and Challenge





Presentation – Key Focus

- Regulator
- Leadership



London 2012 Predicted Safety Performance

- 3 deaths during c 100m hours worked
- 75 life-changing injuries



Who is responsible ?

- A construction company loses money on a project
- A client is very unhappy that the building is not ready on time ...
- A bridge is inspected, a major structural problem causes closure ...
- Several tenders are lost, the banks begin to question the future ...



Who is responsible ?

- A construction company loses money on a project
- A client is very unhappy that the building is not ready on time ...
- A bridge is inspected, a major structural problem causes closure ...
- Several tenders are lost, the banks begin to question the future ...
- **When such things go wrong, does the Board call in the workers?**



London 2012 Actual Health and Safety Performance

- 0 deaths during c 85m hours worked pre-Games
- 0 during Games and post-Games 15m hours worked

- 1 - 2 life-changing injuries
- 1 case of occupational disease



ODA Standards



Leaders owned Health & Safety – Public Commitments



- **Issue a Health & Safety Standard or equivalent**
Crossrail, Hinckley, Battersea, Tideway, Lower Thames Crossing, ...

- **Consider how the Standard will be used**
 - ✓ Procurement
 - ✓ Mobilisation
 - ✓ Leadership
 - ✓ Assurance



The Challenge

‘Our vision is to go beyond eliminating preventable illnesses, injuries, business losses and environmental harm... it extends to enhancing the well-being of all involved in the project work’





Leadership and Worker Engagement

- Key to safety performance
- Leadership from the top
- Harnesses power of the whole team
- Motivates all the workers

Structure and Strategy

- Many ways of achieving worker engagement



Safety, Health, Environment Leadership Team (SHELT)



London 2012 SHELT

**“I belong to the team that will create
the healthiest, safest and greenest
Olympic and Paralympic Games”**



London 2012 Leadership Team Charter

Charter for SHELTS and for each Project Leadership Team

- Vision
- Commitments
- Way of working of the leadership
- Immediate aims and initiatives
- Personal behaviours



London 2012 Leadership Team Initiatives

- Supervisor Training
- Clear, consistent communications
- Daily Activity Briefings (DABs)
- Near Miss Reporting – suggestions, unsafe conditions
- High Potential Learning Events (HPLEs)
- Safety Tours
- General – sharing and communicating



Presentation – Key Focus

- Regulator
- Leadership
- Front-line Supervisors



Leadership

- SHE Leadership Team - SHELТ
- Black Hat (Supervisor) Conventions
- Black Hat Training
- In Chile – White Hats!!





Olympic Park Supervisor Graduates

Successful Graduates of the Supervising Behavioural Practice course

February 2010



Supervisors as Leaders

- Communication
- Motivation
- “Contract”
 - Supervisor responsibilities
 - Management commitment
- Course written by safety practitioners and professional trainers – delivered by trainers



Supervisor Development in Chile

- Supervisor training course pilot
- Over 10 companies, 30+ sites
- Programme with 1,500 workers
- Communications Skills
- Daily Briefings
- Global best practice





Standards and Communications

- Keep Standards simple, easy to communicate
- Pictures are easier to understand than text
- Flow charts illustrate processes, provide a map
- Involve communications / marketing professionals
- Help supervisors by making requirements clear, simple
- Focus on **what good looks like**



Common Standards and Visual Standards

Occupational Health Standard

Joiners

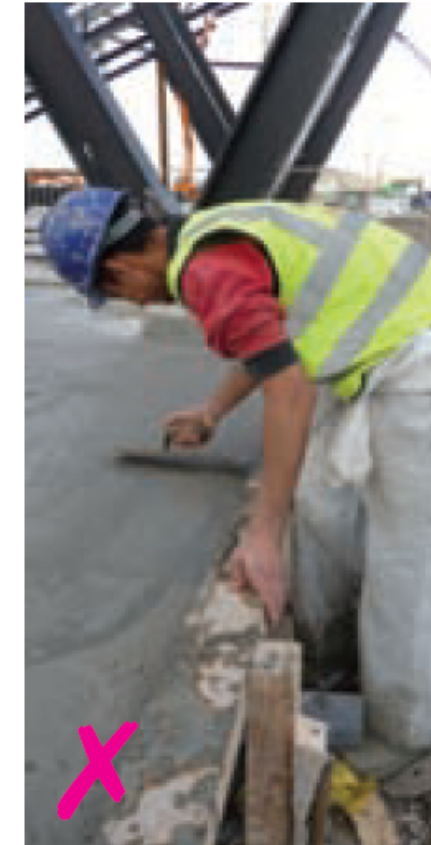
1. Key Hazards

- Carpentry and Joinery operations have intrinsic risks of exposure to inhalable wood dusts which must be sufficiently controlled. Wood dust can be broadly differentiated into softwood and hardwood. Soft wood is classified as a respiratory sensitiser, hardwood is classified as a lung carcinogen. These classifications require exposure to be reduced as low as reasonably practicable
- Engineered wood products such as MDF should be treated as a mixture of hard and softwood dusts which, due to manufacturing processes should be a higher risk material due to increased levels of dust produced
- Certain timber treatment products and wood resins can cause dermatitis

		Minimum Standard	Good Practice	Best Practice
Respiratory	Engineering Controls	Tools are fitted with dust collection bags which are regularly emptied	Tools are fitted with integral extraction units attached to HEPA filtering vacuum cleaners	All cutting is performed in dedicated areas, suitably enclosed with extraction fitted at the point of cutting and attached to HEPA filtering extraction unit
	PPE	All respirators have been face fit tested and masks are replaced daily	All respirators have been face fit tested and masks are replaced daily Exposure monitoring verifies PF required	All respirators have been face fit tested and masks are replaced daily Exposure monitoring verifies masks needed for comfort only as exposure is below WEL
	Working Practice	Cutting is performed by in defined locations throughout the site. Dusts are vacuumed up regularly throughout a shift by operatives	Cutting is restricted to dedicated work benches. The workforce tasked with cutting operations is regularly rotated. Cleaning is performed by dedicated teams using vacuum cleaners and wearing face fit tested disposable P2 respirators	Cutting is restricted to suitably enclosed work benches. The workforce tasked with cutting operations is routinely rotated throughout a shift. Cleaning is performed by dedicated teams using vacuum cleaners and wearing face fit tested half face P3 respirators
	Workforce Monitoring	Work force is subject to lung function tests prior to work commencing and repeated annually	Work force is subject to lung function tests prior to work commencing and repeated 6 monthly. Airborne monitoring indicates exposure to below the WEL	Work force is subject to lung function tests prior to work commencing and repeated 3 monthly. Airborne monitoring indicates exposure to below half of the WEL
Noise	Engineering Controls	Noisy activities are physically separated away from the rest of the workforce	Areas are designated as noisy areas and are fenced off using noise screens	Noisy activities are restricted to dedicated booths fitted with acoustic protection which have been evaluated using frequency band analysis.
	PPE	Hearing Protection has been selected based on predicted sound level output of noise sources and manufacturers SNR rating	Hearing Protection has been selected based on actual sound level readings and manufacturers SNR rating	Hearing protection has been selected using frequency band analysis and the HSE hearing protection calculator tool
	Working Practice	Use of noise producing equipment is physically separated from the rest of the workforce. Constant noise producing equipment such as generators are positioned away from the rest of the workforce	Workforce performing noisy tasks are regularly rotated to reduce daily noise dose	Workforce performing noisy tasks are routinely rotated to reduce daily noise dose
	Workforce Monitoring	Workforce exposed to over 85dB daily noise dose is subject to audiometric tests prior to work commencing and repeated annually	Workforce exposed to over 85dB daily noise dose is subject to audiometric tests prior to work commencing and repeated 6 monthly. Noise monitoring and HSE noise calculators indicates individuals daily noise dose on risk assessments	Workforce exposed to over 80dB daily noise dose is subject to audiometric tests prior to work commencing and repeated 3 monthly. Noise monitoring and HSE noise calculators indicates individuals daily noise dose on risk assessments

Olympic Park Visual Standard on: Working with concrete

Page 6



Key points:

- Wet concrete causes severe burns and dermatitis
- Use personal protective equipment
- Follow good hygiene practice
- Prevent contact with skin





Presentation – Key Focus

- Regulator
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- Workforce Engagement



Worker Engagement

Every opportunity

- ☺ Induction
- ☺ Daily Activity Briefings
- ☺ “You said, we did” boards
- ☺ Posters, newsletters, safety tours
- ☺ Behavioural safety programmes







Presentation – Key Focus

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Vision



Chilean Chamber of Construction commitment to health

- Mutual established
- Hospitals
- Services – prevention, treatment, rehabilitation



Health as an Investment – not just a Cost

Independent evaluation of London 2012 programme

- prevented ill health, promoted well-being
- **directly saved money**
- contributed to ONE TEAM for delivery (time, money, quality)



Practical health programme

The 3 Ws

- Health of the **worker** – pre-start health check, medicals, access
- Healthy **workplaces** – occupational (industrial) hygiene support on site
- **Wellbeing** – campaigns and programmes



Engaging through a Well-being Programme

- Well-being as a mode of engagement
- Health, Safety and Well-being Integrated
- Workers care about their health
- Managers need help
- Most done without clinical, medical input
- Health like safety





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Reward and Recognition

- H&S is about inspections, audits and listing non-compliances
- Behavioural safety – 4+ positive feedbacks for every negative
- Leaders need to change their behaviour to get change below
 - *The best behaviour you can expect from your subordinates is the worst behaviour that you display to them*
– Sandhurst Military Academy officer training





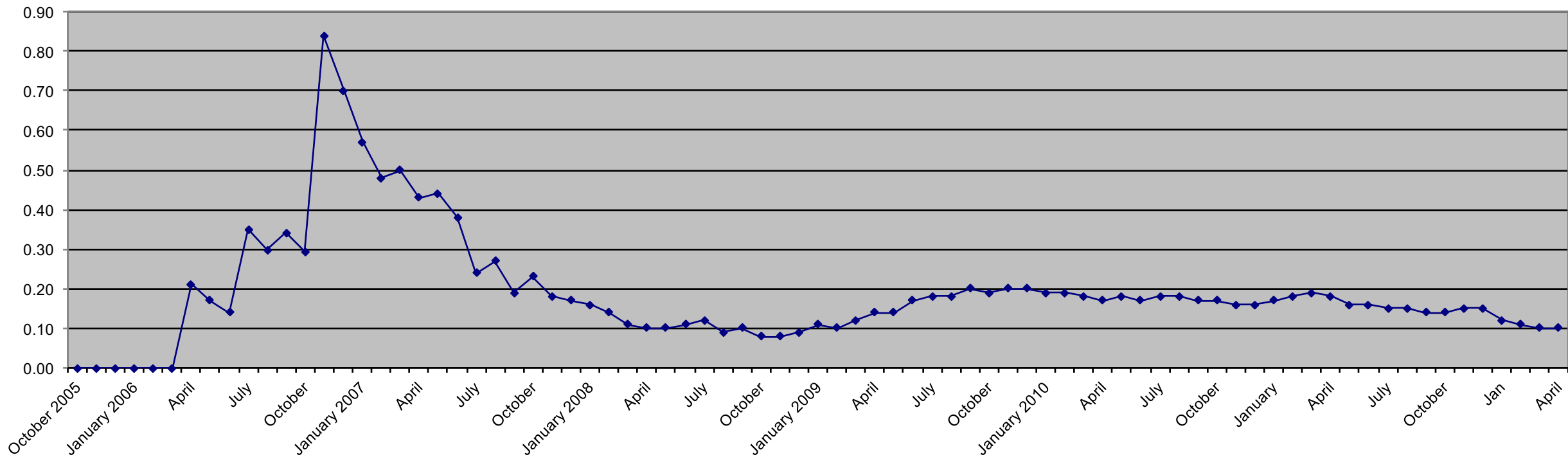




Accident Frequency Rate (AFR) London 2012

October 2005 – April 2012 (AFR 0.15, 1 yr 0.10)

AFR October 2005 – April 2012





A military view

“It was quite clear to me that health and safety was not an annoying millstone hung around middle management’s neck, but was the enabling theme on which the project senior leadership team could found the bedrock of operational efficiency leading to completion under budget and ahead of schedule – and all achieved with no fatalities.”

**General the Lord Dannatt
Chief of the General Staff**

*Capita Symonds Annual H&S lecture, Sept 2012
Commenting on London 2012 construction*



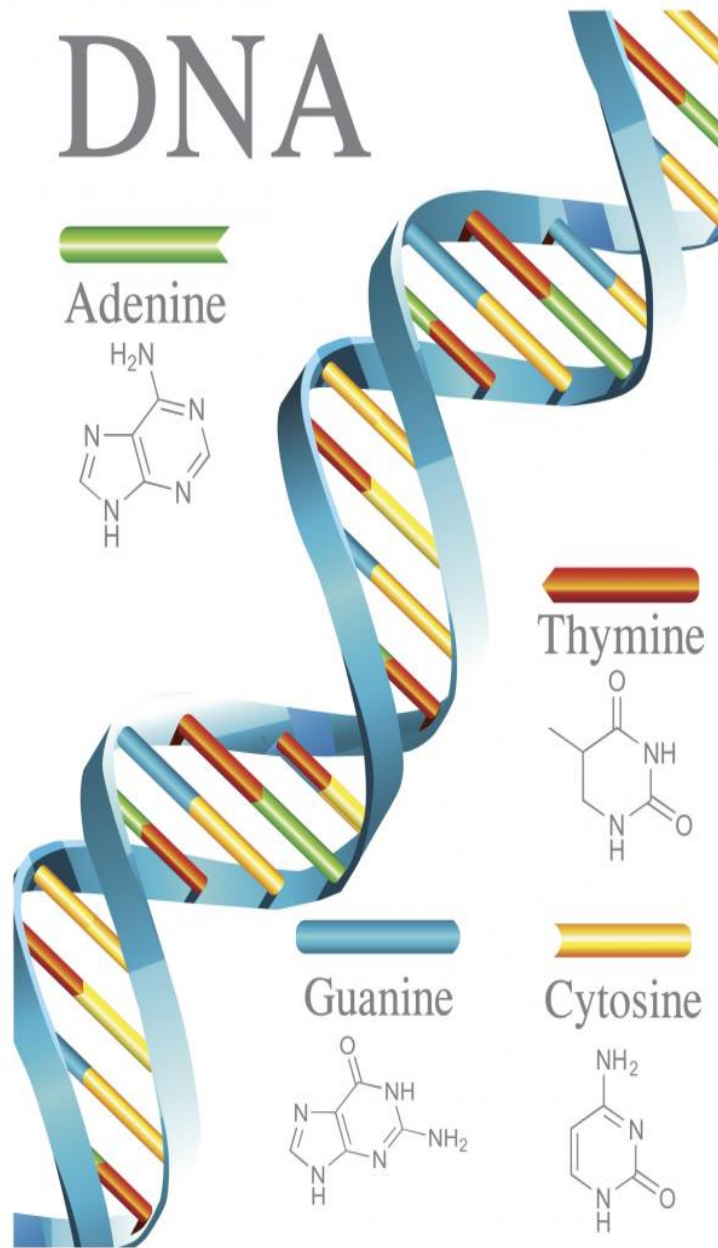


Preconditioning for Success™ – Baseline Research

- Leadership and Worker Involvement
- Occupational Health Provision
- Regulations
- Safety Culture
- Communication and Action
- Supply Chain Management
- Food Safety and Sustainability



DNA



What is the DNA of a successful
construction project
– to achieve a low accident rate and the
protection and enhancement of worker
health?



Preconditioning for Success™ – Meta-analysis

- Respect
- Trust
- Clarity
- Pre-emptive
- Challenge
- Consistency
- Collaborative
- Motivation
- Empowerment
- Communicative
- Open
- Fair
- Assured



Key Focus

- Regulator – our critical friend
- Leadership – the body follows the head
- Front-line Supervisors – leaders on site
- Workforce Engagement – involve the people
- Health – not just accident prevention
- Reward and Recognition – celebrate success

Queen Elizabeth Olympic Park



Crossrail



Thames
Tideway Tunnel



Creating a cleaner, healthier River Thames

The **HSSE** Standard



Tideway





- After the earthquakes 2010 / 2011
- Determination to raise H&S standards
- Willingness to learn from anyone / everywhere

CANTERBURY REBUILD SAFETY CHARTER



- aims to raise awareness
- address the stigma of poor mental health
- improve positive mental wellbeing throughout the UK construction industry





7 Golden Rules

- 1. **Take leadership – demonstrate commitment**
- 2. Identify hazards – control risks
- 3. Define targets – develop programmes
- 4. Ensure a safe and healthy system – be well-organised
- 5. Ensure H&S in machines, equipment and workplaces
- 6. Improve qualifications – develop competence
- 7. **Invest in people – motivate by participation**



Three Final Messages

- Health matters, well-being can drive improvements
- Engage your workforce or miss out on creativity and energy
- Be brave, be flexible – work is changing and H&S must change too



Thank you for listening!
Gracias por escuchar
