

**FREE!**

# Hi-VIZ

**EVERYONE GETS HOME SAFE EVERY DAY!**

# Doing it Right Doing it Safe

## Why safety and quality go hand in hand at London Bridge

There are many reasons why defective work occurs, such as design, bad planning, poor management and communication, change, lack of training and time pressures. Often similar issues that cause accidents.

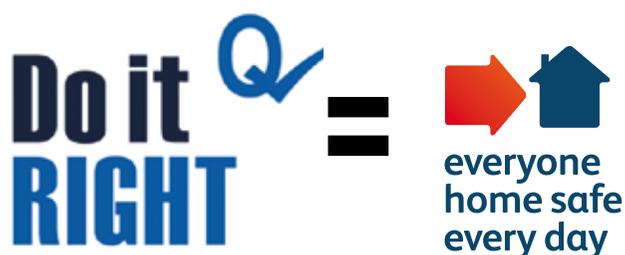
When teams of competent people plan their works properly, consider all the risks, communicate and implement control measures effectively they tend to carry out the work safely. More often than not, these

are the teams that also carry out their works to the right quality. So when work isn't planned well, and the safety and quality risks aren't considered and controlled, incidents and defects are more likely to occur.

"While I accept this is not a certainty, if a team of people perform well on safety they are more likely to perform well on all other parts of their works, i.e. to programme and to quality"

Mark Howard – Delivery Director.

**Continued on page 4...**



# Long Trains and Short Platforms

## Network Rail team go the extra (90metres)

Article by Liam Farrell, Network Rail

Since mid-2016, the Outer Areas team have been working on designing and planning two platform extensions in rural Cambridgeshire. Platforms are being extended at Shepreth and Foxton stations to allow 8-car Class 700 trains to call at these stations, and subsequently all stations on the Great Northern network between King's Cross and Cambridge.

Design work began in early 2016, before the design programme was accelerated in June 2016 so that construction could begin in February 2017. If this deadline had been missed, valuable and hard fought for track access time would have been lost and significantly

affected the schedule, meaning passengers would have had to wait longer for the new trains to arrive.

The design work is being carried out by main contractor VolkerFitzpatrick, in conjunction with Mott McDonald and Walker Construction. Due to this extremely tight deadline, the GRIP 4 and GRIP 5 designs have been developed concurrently, with progressive design reviews taking place on a weekly basis to make sure that the civils designs were ready for the February deadline, requiring Network Rail teams to work in much closer collaboration than usual with external design teams.

At both stations, only the platform for Cambridge-bound trains is being extended, with the existing platforms almost doubling in length at both stations. Currently

both Shepreth and Foxton stations only accommodate four car trains. When complete, extensions of around 85 metres will allow 8-car Class 700 trains to call at each station.

It is a bespoke peculiarity that only one platform is required to be extended at each station, relating to the local infrastructure in the area. As the trains are fitted with Selective Door Operation (SDO), platform extensions are not actually required to allow the new trains to call at the stations.

However, at both locations, level crossings are immediately adjacent to the London end of the stations. If the Cambridge-bound platforms were not extended, the new trains would straddle these level crossings while calling at Shepreth and Foxton, causing unacceptable levels of disruption to the residents of these villages.

The acceleration of the programme was not the only challenge encountered by the project team before construction work could begin; just four weeks before work began another spanner was thrown into the works when the entire project team from principal contractor VolkerFitzpatrick was completely changed.

Construction work began on 19 February, with a main compound being setup by VolkerFitzpatrick and subcontractor Walker Construction adjacent to Shepreth station. This caused some disruption to villagers and a business located next to the station as the area now being used as a compound was being used previously as an unofficial car park. However, effective and early liaisons with both the local councils and the business

meant that the site could be set up without incident.

The first three possessions, comprising a total of 79 hours, took place over the first three weekends of the programme. This time was effectively and efficiently used to complete the crucial foundation work, despite extremely bad weather at times, with all piling which required a line blockage completed ahead of time. The rest of the work so far has taken place in normal working hours and has allowed all pile cropping to be completed, as well as blinding and installing of steel cages and shuttering.

One of the challenges faced by the team was plant breaking down. By looking ahead and looking at potential issues the team had Technicians on site as a contingency so that the issues were immediately remedied with no impact on the schedule.

Safety of all has been paramount throughout the project, with a strong emphasis placed on the life-saving rules during toolbox talks and site briefings, with specific site and task-based risks discussed. All site inspections have focused around risks with relevant lessons learnt implemented during the project to minimise the risk of accidents or incidents. Time2Talks and close call reporting have also been strongly encouraged and a number of both have been raised by members of the project team. Close calls have included those around plant movements, unloading of vehicle pallets, a potential undermining an OLE mast and the discovery of several grass snakes in the ballast at Shepreth. These and many others, enable the team to prevent accidents/incidents.



Preparatory work



Removing the ramp end



Piling rig in action at Foxton



View of site during second possession (25/26 February)



Reduced piling mat to expose completed piles and installation of temporary shuttering to prevent ballast entering the front piles



Steel formworks ready for the piling cap installation

# Permitting Work at London Bridge Station

New arrangements for contractors working within the station environment!



Article by Janey Bell, Project Manager (Interface), Network Rail

Following the successful entry into service of three new platforms and the new southern concourse at London Bridge in August last year, the volume of project works in operational areas increased dramatically. A new permit system was introduced for works in these operational areas to give greater assurance that operational risks were being considered and mitigated. The permit system has proved extremely successful in helping the project to manage works with an operational interface, but all works are still subject to NR MS07 procedures for controlling contractor access in the operational station. The MS07 procedure has, until now, been managed by station reception and has proved to be a drain on their resources, with management of all DOWL close out works on each shift being an impressive task.

Both the project and station teams have recognised that responsibility for management of these works should be transferred to the project in order to allow the station team to familiarise themselves with managing business as usual maintenance activities prior to project completion. From Monday 03 April project staff no longer report to station reception to sign in for works with an operational interface. The sign in / sign out procedure for all works in operational areas is now managed by the permit office on Holyrood St. The Sky Visitor system used by station reception has been installed in the permit office, giving station reception sight of all project work groups working in operational areas at any given time. Additionally, keys previously held by the project maintenance team have been transferred to the permit office, allowing the team to ensure that access control procedures for

any high risk rooms are followed correctly. Finally, the permit office team will be responsible for booking all planned fire isolations for project works. This allows the team to verify that isolations have been booked for all works which have the potential to affect the fire system, and that a fire watch is in place during all isolations to raise the alarm should a fire start.

All keys, access cards and fire isolations are logged in the Sky Visitor system, meaning the permit officer is automatically prompted to ensure that these have been returned or closed when the engineer or supervisor for the works goes to sign out. If the Sky Visitor entry is not closed after 12 hours the system will prompt the permit officer to contact the engineer or supervisor to determine the reason why. Any issues with project staff failing to close their permits and sign out at the end of the shift can then be tackled within the project team.

At the end of each shift the permit office submits an electronic MS07 appendix E form to station reception detailing a summary of all project works which have taken place. This enables the station to continue to ensure that the MS07 process is followed for all project works, while freeing up their time to focus on managing maintenance activities.

The permit office team now acts as the main point of contact with the station team for all project works, ensuring that the station are comfortable with all works in operational areas before they take place. This effective management of works in operational areas will assist the project team in making additional access agreements for DOWL closure works, which will in turn help to tackle all quality issues on the operational station.

## We have moved!

As of Monday 03 April project staff no longer report to station reception to sign in for blue topper works. The sign in / sign out procedure for all works will be managed by the permit office team on Holyrood St. NOTE: access for phase 1 retail fit out and project maintenance contractors will continue to be managed through station reception. Please report to the permit office on Holyrood St for all of the following:

- Signing in & out for project works in blue topper areas
  - Taking planned fire isolations for project works
  - Signing out keys and access cards for project works in operational areas (engineers & supervisors should verify access requirements for rooms with the relevant NG Bailey team prior to requesting keys from the permit office)
- NOTE: only one person per work group (engineer or supervisor) is required to sign in for blue topper works. Permit office telephone number: 07739 786634.



**Continued from page 1**

But what does it mean for safety when defective work has occurred and needs putting right? Well for a starter, the fact that a totally avoidable piece of remedial work has to be carried out, puts someone at some level of risk. Also the defective or outstanding work has often been brought into use and is within operational areas such as the platforms or tracks or on the concourse. As you know these are far more challenging environments to work in, with greater risks.

At London Bridge we certainly know the consequences of this and there are some of stark examples of how going back to remedy defective works can result in some significant safety events.

▶ **October 2015 Significant event – Near miss of buried 20KV HV cables**

During the installation of drainage in the car park area the pipework in a certain location had been set at the wrong falls. Not identified at the time due to poor

quality control, HV ducts had been installed close to the drainage, the area backfilled and a concrete slab cast. Following these works the car park became operational and was being used by the station staff.

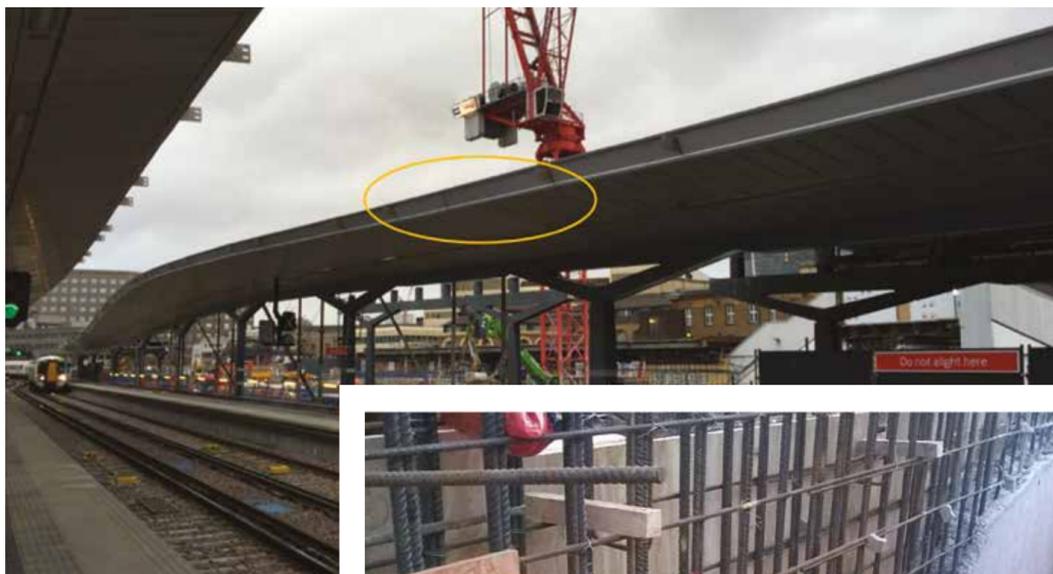
Subsequently the defect was found by camera survey as part of the assurance process and it was decided that the installation of an inspection chamber and new drainage runs would resolve the issue. Since the completion of the original drainage works the HV cables had been pulled through the ducts and energised. They were live and known about during the remediation works.

Through a serious non-compliance in the permit to dig process the excavator came within a fraction of hitting the HV ducts. While of course the remediation works should have been carried out safely the key point to this article is that this whole sequence of events could have been avoided if the drainage works had been done right the first time!



◀ **February 2016 – Significant event – Canopy flashing came loose**

During storm Doris an inadequately fixed nosing flashing became loose on platform 7. Too few fixings allowed the high winds to get behind the flashing and force it loose. The quick actions of site staff allowed the trains to be stopped and the flashing was made safe. Fortunately the flashing did not become airborne otherwise it could have caused serious injury or damage. However significant disruption to the operational railway and services continued until the following day. Ensuring that the requirements for leaving works in an incomplete state is fully considered and part of the inspection and test plan would have prevented this event.



▶ **October 2016 – Remedial works exposing the workforce to SHE risks**

Errors were made during the pouring of a reasonably simple reinforced concrete wall. Normally routine night shift logistics failed, inadequate concrete was delivered and the pour was incomplete. No plant or facilities were available during the night shift to strip and wash out the pour. The resulting remedial measures are simple but crude. Hand held breakers were used to trim back the exposed face and prepare for a remedial pour. The workforce were exposed to all manner of hazards in this operation and careful, detailed management was required to manage the exposure – vibration, noise, dust, muscular-skeletal, etc. In addition these works were near to sensitive receptors in the community that required control measures. Another example where attention to Quality matters and re-work exposed the workforce to health and safety risks.



**Is there a link between Quality and Safety?**

It is widely known that the costs of defective works are a significant barrier to the construction industry being more efficient, but our examples also show that it also increases safety risks. If we focus on the following things we believe we will improve safety and quality together:

- Detailed planning that allows sufficient time to carry out the task. Rushing can lead to incidents and accidents and increase the likelihood of defects.
- Making sure the co-ordination and interface with other trades is understood and reflected in the sequence of works. For example closing up voids when other trades work is incomplete will result in either defective work or increasing the likelihood of unsafe working practices to get round the problem.
- Ensure competent well trained and experienced people are involved in the planning and delivery of the works.

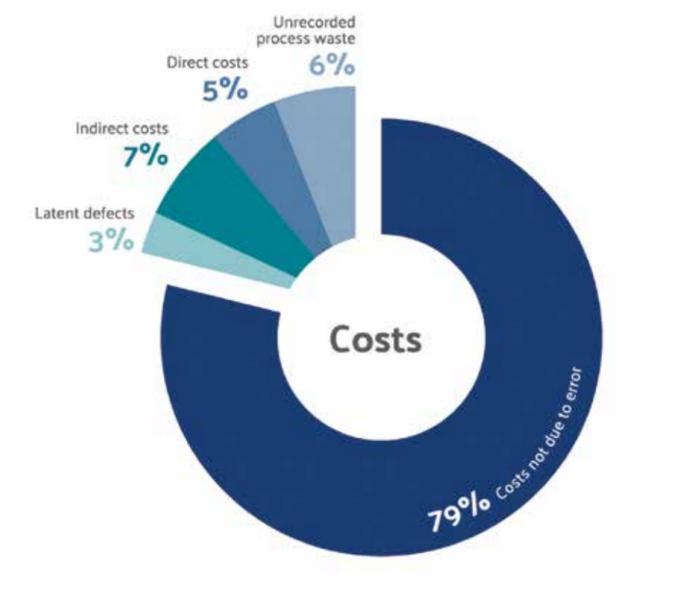
An experienced team is more likely to have some qualities such as:

- **Engagement:** people carrying out the works talking about how it's going, what could go wrong and what would work better.
- **Independent checking.** A fresh pair of eyes can often pick issues up that those who are close to the works miss through familiarity.
- **Communication.** Making sure effective two way communication to ensure all parties involved in the plan understand the key safety and quality issues and associated controls.

**Did you know**

Key international studies suggest that the direct costs of avoidable errors are in the order of 5% of project value. This is higher than average profit levels across the industry and equates to approximately £5Bn per annum across the sector in the UK.

When unrecorded process waste, latent defects and indirect costs are included, the situation gets much worse with estimates of total costs of error ranging between 10% and 25% of project cost or between £10-25Bn per annum across the sector.



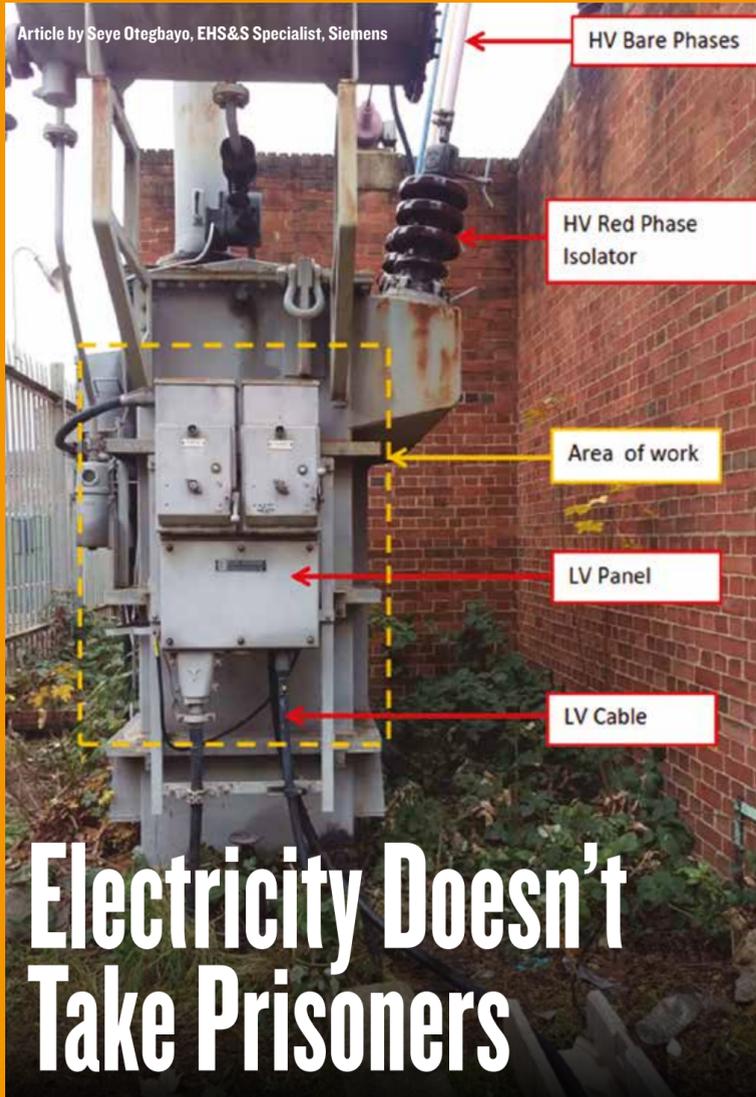
**What can you do to prevent dangerous and expensive rework?**

- Focus on safety and quality – They are both important
- Make sure your works are covered by an approved inspection and test plan:
  - Understand it
  - Follow it
- If something is preventing you carrying out the works correctly, stop and ask for help.
- Do it right. Don't leave a problem for someone else



Polly Bowman (Self delivery Agent) discussing quality with the workforce and supervisors during the earlier stages at London Bridge

Article by Seye Otegbayo, EHS&S Specialist, Siemens



# Electricity Doesn't Take Prisoners

Back in December during a planned High Voltage (HV) Outage, a team were charged (excuse the pun) with working on the low voltage side of an electrical transformer. This was located at Lewisham Substation. The Low voltage (LV) panel they were to work on was used for the domestic power supply to the Electrical Control Room and Substation.

Before starting work the team carried out their usual tests to make sure the low voltage equipment was isolated then opened the panel containing the various terminals. At this point they noticed the cable they intended to install, could only be run in from the top of the panel. To reach up they got hold of some glass fibre ladders climbed up and proceeded to start installing the cable.

As the work got underway they were alerted by Network Rail Maintenance staff, that the transformer beside the LV panel could still be "live" as the residual

energy had not been discharged when the HV power was isolated. Unbeknown to them they had been working within 500mm of a potentially live bare bus bar that fed the transformer! The transformer was a 66kV transformer!!

Works were immediately stopped and Lewisham Electrical Control Room, Network Rail Electrification and Plant staff and the Thameslink Project Team were notified of the issue.

The project team reassessed the risks and put a safe working method in place and work was able to continue. The safe method was for the Senior Electrician

**“Be aware of the environment you're working in”**

who understood all the risks to carry out the works and had direct supervision from Network Rail staff holding Level A competence, the highest for this type of work.

This was a very significant close call that could have resulted in serious injury to our colleagues so we investigated to help us understand where we went wrong and how we can prevent such a situation from happening again.

The investigation highlighted the following issues:

- The substation layout being old,

was unusual therefore High and Low Voltage assessments needed to be detailed and relevant drawings available to the teams

- The railways standards and forms for requesting isolations were not clear when working in areas with both high and low voltage equipment
- Planning is key, competencies need to be defined and all parties need to be involved
- Work Package Plans and Task Briefings need to be specific for the site and clearly list all tools and equipment likely to be used
- Network Rail staff holding Level A competence had been arranged, but were unclear on the level of supervision they were to provide; therefore a full briefing was not given
- Although the Level A was in the Substation building for the duration of the work he wasn't directly next to the team
- We have now made the following recommendations to all project partners working on the Thameslink programme:
- The whole project team is to work together to produce a safe process for planning isolations
- Clear instructions for High/Low Voltage assessments and supervisory arrangements, including Level A, B and C competences are to be put in place
- Work Package Plans and Task Briefings are to be signed off by the Senior Power Engineer, so all risks are considered and managed
- Network Rail Maintenance teams are to be involved in reviewing 3rd party works in Sub-stations and assist with isolations before work commences
- Network Rail Standard NR/L3/ELP/21067 is to be expanded to cover work carried out on Low Voltage panels within High Voltage compounds

We all can learn from this incident, take the lessons learnt on board and make sure that our colleagues get home safe everyday.

As always be aware of the environment you are working in. Risks cannot only arise from the activity you are carrying out but from other activities surrounding you.

**Remember – When new risks or issues are identified during your work**

1. Stop work
2. Re-assess the risk
3. Document it on the Task Briefing sheet
4. Re-brief the working party and
5. Continue work only if it is safe to do so.

Electricity cannot be seen but its effects can be catastrophic.

## London Bridge Integrated Team Day 31st March 2017

Article by Gary Smith, Network Rail Station Project Interface Specialist



On Friday 31st March a Station Integrated Team day took place in advance of key Project Interface Changes at London Bridge on Monday 3rd April when the new permit office opened, and when the 24/7 NGB Facilities Maintenance team rota went live. Over twenty five people attended including Denis Kirk the Network Rail Station Manager. Those in attendance were predominantly from 3 key teams involved in day to day Railway operational management and Project Interface activities in areas already entered into service at London Bridge Station.

- This included:
- Network Rail Station Shift Managers
  - LBSR Project Interface / Permit Office Team
  - NGB Facilities Maintenance Team
  - Gary Smith who is the Network Rail Station Project Interface Specialist facilitated the event and the key objectives of the day included:
  - Knowledge Sharing
  - Understanding each others issues
  - Building Relationships
  - Planning for Success
  - Developing Integrated Operational Processes
  - Ensure effective communication processes is agreed between all relevant parties

Everyone in attendance received a presentation on the Time 2 Talk and Close Call process that we have in place on Thameslink, and the Managed Stations team were requested to use the Thameslink Process at the same time as reports were sent via the national close call reporting system.

### Scenario/Emergency Planning Management

Teams were split into groups and requested to implement an integrated management strategy linked to a burst water mains on St Thomas Street which had an operational impact on both the local highways and station train operations post-handover to TfL in 2018. This particular scenario was prevalent as a similar incident had taken place in 2016 prior to the station street level concourse opening.

### Permit to Work and Fire Isolation Changes

Two vital presentations on the day were given by Janey Bell (NR Project Manager) and Alvaro Bennett (Operations Manager NGB Facilities Services), who both provided the station management with briefings on the permit to work and fire isolation procedural changes taking place the following week, which includes both their teams operating a new 24/7 rota to ensure a more integrated working relationship with the Network Rail Station team over the next 18 months, in advance of full handover of the station to the Route.

# Improving Thameslink Safety and Behaviours with Bridgeway Close Call Champions

Bridgeway explain how they are improving close calls



Did' session as part of the Bridgeway Thameslink Town Hall Health & Safety Briefings

- Help Bridgeway to enhance our positive reporting culture.

Whilst there will always be a focus on physical Close Calls such as hazards causing: Slips, Trips and Falls, unlocked access points or Infrastructure defects, Rob and Andrew will also encourage and support Bridgeway Thameslink staff to raise Close Calls in relation to individuals who demonstrate poor safety behaviours e.g. Not conducting safety briefings correctly, incorrect PPE, driving whilst using a mobile phone – irrespective of who the individual works for.



Andrew Harris (Night Manager/ Track Safety Assessor) and Neil Clemence (ES/COSS) are undertaking a 2-day Close Call Champions Training course delivered by Network Rail and the Track Safety Alliance.



Andrew and Neil will:

- Work with Bridgeway Thameslink staff to encourage regular reporting of all Close Calls.
- Take the lead on reporting them to the Bridgeway HSQE Team.
- Provide feedback and continuous updates to the Close Call reporter.
- Deliver a Close Call update and a 'You Said, We

“Raising Close Calls is great way of preventing accidents,” said Andrew. “And I’ll be working with my Bridgeway work mates to ensure we raise as many as possible. It’s really important that we follow up on Close Calls to try and close them out. My role will also be working with the Bridgeway HSQE team to ensure that regular updates and feedback is given to the Close Call Reporter.”

“I’m really looking forward to further improving safety on the Thameslink project – it’s one of the safest projects that I’ve worked on but we can’t afford to become complacent – Close Call reporting is a fantastic way of highlighting and dealing with issues that could cause harm to anybody that works on Thameslink and the wider stakeholders. I’m looking forward to my role as one of Bridgeway’s Close Call Champions”, said Neil.

## Clink Street Access Close Call ‘You Said, We Did’

- An individual slipped and hurt their ankle whilst walking down the stairs at Clink Street Access Point.
- The access was dark, had uneven surfaces and the steps had a hand rail which was not fit for purpose.
- Following collaboration between the Network Rail and the Bridgeway HSQE Team, works on improving the access has recently been completed. The access now has metal steps with handrail installed and the floor has been resurfaced and appropriate lighting installed.



## Close Call Definition

**Close Calls** - Anything that has the potential to cause harm or damage to a person, the environment, or railway infrastructure, plant, vehicles, tools and equipment

### Remember:

- A Hazard – is anything that has the potential to cause harm
- A Risk – is the chance that a hazard will cause harm
- Reporting a Close Call is a positive act
- The Close Call system operates in a blame free environment
- It is better to have a Close Call than a Lesson Learnt!



# The March of Diabetes

## Is there anything we can do?



Kate Cook is a nutritionist who has worked with leading companies for 16 years to improve health through inspiring change in nutrition. Eating better,

she believes, is not only better for individuals but for companies too. She has written 5 books including "The Corporate Wellness Bible" and has a clinic in Harley Street, London.

**Kate will be giving us some advice on health and wellbeing. If you have any specific requests for articles that you'd like to see Kate cover contact sharon.fink@networkrail.co.uk.**

If diabetes was classed as an infectious disease being passed throughout the population, then we would say that we are in the midst of an epidemic. The number of people living with diabetes in the UK has soared by 59.8 per cent in a decade according to analysis by Diabetes UK. Not included in this calculation are the numbers of people who have diabetes but have not been diagnosed. More alarmingly still (if that were possible) the rates of diabetes in children of what used be called "adult onset" diabetes is growing enough year by year to alarm experts.

The tragedy is that preventing Diabetes Type 2 is much easier than controlling the disease once it has been diagnosed. Some ethnicities seem to be more prone to developing Diabetes Type 2 than others but certainly, lifestyle changes and essentially diet changes can help keep symptoms under control. However, many people are still consigned to taking on-going medication, even when making an effort to control lifestyle factors.

Diabetes Type 2 occurs usually when the pancreas still produces insulin to lower blood glucose but the body's individual building blocks (cells) lose their sensitivity to respond to insulin (the hormone that lowers blood sugar). Diabetes Type 2 can also occur when the pancreas does not produce enough insulin to lower the blood glucose levels to a normal functioning range. The uncontrolled high glucose level (which is normally controlled by insulin from the pancreas) is dangerous to health and can cause (amongst other issues) organ damage, and tissue death, damage to vision, heart issues/stroke and other life threatening complications. It is certainly not a condition to be sneezed at.

Surely the trick is to avoid getting the condition in the first place. Could this "epidemic" be part of what is not working when we are working? Long

hours, not enough breaks, not eating "real food" (grabbing a sandwich) and crucially not moving from our desks or doing enough exercise?

Five Tips for A Lifestyle that is less likely to develop Diabetes Type 2...

### 1. Eat Real Food



Eat real, good quality food, i.e. whole food you cook yourself. Real food is likely to have the vitamins, minerals, enzymes and other qualities that nurture and feed the body. Food isn't just about the fuel. For example, a chromium is a mineral that we need in trace amounts but is required in adequate amounts in the body to help maintain insulin sensitivity. Brewer's yeast, broccoli, meat and whole-grain products are all excellent sources. Some fruits, vegetables, and spices provide chromium. Romaine lettuce, raw onions and ripe tomatoes are all good sources. If you do consider dietary supplementation, talk to your healthcare provider first, especially if you are already diabetic.

### 2. Eat The Type of Food that Maintains an even blood sugar



Eating food in its natural state, which is non processed is more likely to hit this criteria. Foods have different speeds at which they are converted into sugar in the body. Eating foods that deliver glucose more slowly into the system is vital. "White, Fluffy" foods deliver glucose in the body rapidly (white and fluffy means processed foods, foods without nutrients, foods which are light and have a low density (popcorn), mashed potatoes (processed - you mash it), white bread, white rice etc). Typical advice is to stick to a Mediterranean type diet (without loads of white pasta with no nutrients!) lean protein principally as fish, whole grains, vegetables.

### 3. Sugary Drinks - boring yes but water is the best choice



There are some studies to show tea and coffee have a protective effect (they are not sure why yet) - obviously not with cream and sugar.

### 4. Birthday Cakes and Biscuit Tin:



Quite a new trend at work is that every day someone has a birthday and brings in a cake. Yes, difficult not to offend but make it a rule just to take a really small bit to be polite and then bin it (obviously don't get spotted doing this).

### 5. It seems that in some studies Omega 3 fat is not directly protective,



but I believe that if you lower the inflammation in the body generally (omega 3 oil especially found in oily fish is an anti-inflammatory agent)

and generally stick to an anti-inflammatory diet (essentially fresh food, upping vegetables), and improve general health you are improving the cells ability to transport nutrients and become more sensitive to insulin. Chronic inflammation is not easy to identify. "What we're talking about here is low-grade inflammation that you don't see or feel easily," says Vivian Fonseca, MD, Professor of Medicine, Tullis Tulane Alumni Chair in Diabetes, and Chief of the Section of Endocrinology at Tulane University Medical Center in New Orleans. "The whole body is essentially inflamed, particularly the blood vessels." It is suggested that some foods may be inflammatory eg. Red meat, and therefore should be eaten in moderation. Grass-fed meats are the better choice as the nutrient composition is higher and it contains a better ratio of anti-inflammatory fats.

## Wordsearch

Wordsearch by Tim Witcomb, Network Rail

A wordsearch puzzle: The following 30 words are hidden in the grid above. Words can appear forwards or backwards. Can you find them all?

- ULTRA VIOLET RAYS
- UMBRELLAS
- COMMON
- TRICKIER
- SUN IS SHINING
- SMEARS
- LATCHING
- STAY HYDRATED
- MOVING ON
- SEQUENCE
- NEVER FORGET
- GUARDS
- CAMERA MAN
- BETRAYING
- EMPANEL
- REASONABLY
- LAURENCE
- ABANDON
- MADDEST
- OBEYING
- OFFENCES
- NAVIGATORS
- BLOVIATE
- SCANDALOUS
- AVENUE
- AUGUST BLOCKADE
- OROLOGY
- SUNSCREEN
- AVERAGE
- GOOD LUCK

S	S	U	N	I	S	S	H	I	N	I	N	G	I	A
D	E	N	E	X	D	A	E	T	A	I	V	O	L	B
R	Q	O	F	F	E	N	C	E	S	R	Y	O	L	A
A	U	G	U	S	T	B	L	O	C	K	A	D	E	N
U	E	N	H	Q	A	E	M	P	A	N	E	L	R	D
G	N	I	Y	A	R	T	E	B	N	E	C	U	N	O
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B	U	E	A	E	S	R	O	T	A	G	I	V	A	N
M	A	S	E	V	I	C	R	A	L	E	R	A	C	U
U	L	T	R	A	V	I	O	L	E	T	R	A	Y	S