



## BAM Nuttall – Highways Site Induction

Best Technology Based Onboarding Programme

# HELLO, we are....

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- ➔ **Susan Fletcher** – Skills & Inclusion Manager, BAM Nuttall
- ➔ **Sophie Costin** – Head of Learning Design at Make Real
- ➔ **Ben Dykes** – Director at Make Real

We're here to present the BAM Highways Site Induction:

- ➔ Conceived by BAM and Make Real
- ➔ Grant funded by CITB
- ➔ Why it is the best onboarding programme you will see today!

# INTRODUCTION

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We are going to explain:

- ➔ Set the scene: Industry need
- ➔ Set the scene: Business need
- ➔ Our objective
- ➔ The previous induction
- ➔ The solution
- ➔ Learning impact
- ➔ Q&A



# SETTING THE SCENE : INDUSTRY NEED

- ➔ In 2017 CITB commissioned the report – ‘*A new reality: immersive learning in construction*’ – to explore how the sector can modernise and innovate its training methods.
- ➔ The report identified challenges with digital adoption along with a lack of appeal to young potential recruits.
- ➔ These challenges were therefore adopted as an action plan for industry to devise digital projects that inspire: *innovation, appeal and obviously improve learning.*



## SETTING THE SCENE : INDUSTRY NEED

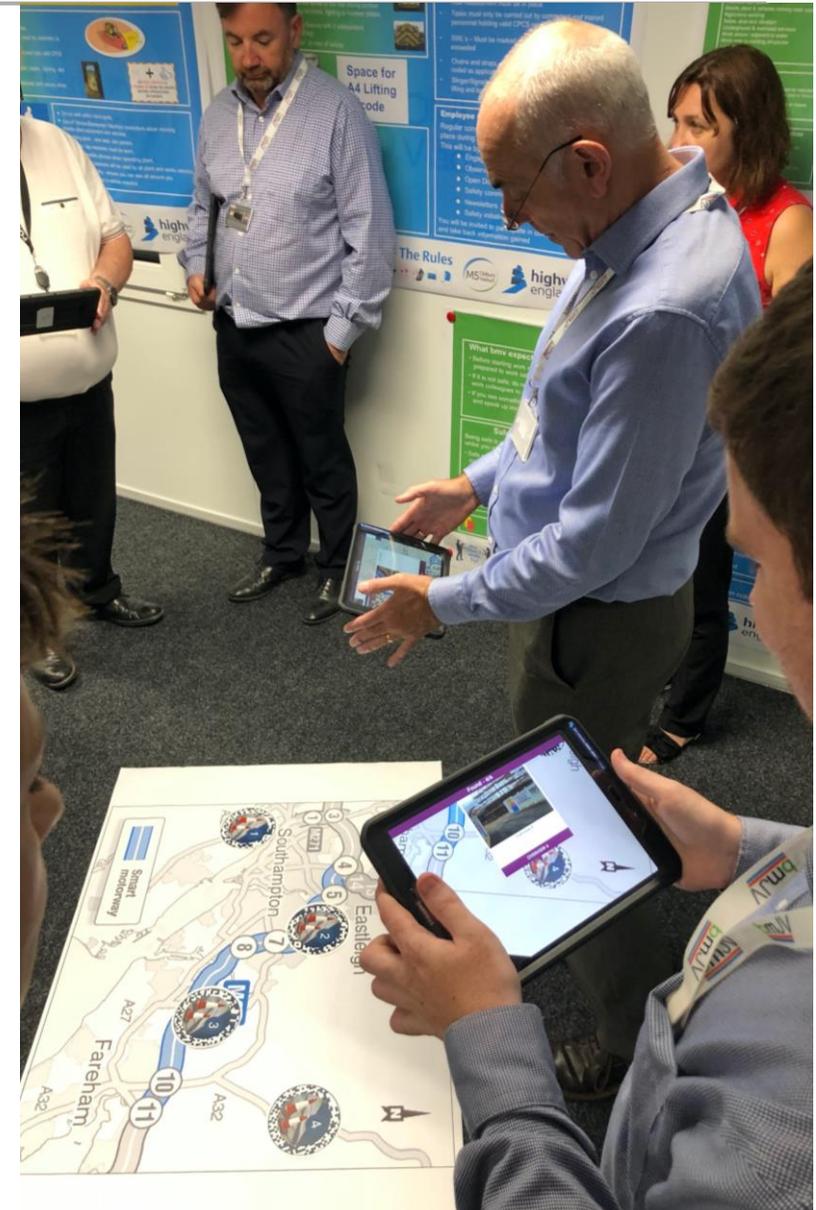
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- The action plan described a number of project objectives:
  - **Enhance industry's appeal**
  - **Increase the quality of learning** by providing experiences that not possible via traditional methods
  - **Improve levels of collaboration** and problem-solving to stimulate knowledge retention
  - **Reduce cost of delivery** and optimise trainers' time



# SETTING THE SCENE : BUSINESS NEED

- Inducting/onboarding highway workers is time consuming and repetitive.
- Attention and engagement levels are very low with language often a barrier to non-native English speakers.
- On the M5 Oldbury flyover, BAM Nuttall introduced a sequence of printed wall-board materials to improve engagement.
- Our challenge was to take the M5 induction content one step further by digitising it to improve engagement.
  - Cover additional topics not possible using existing methods



# THE INDUCTION

## People Plant Interface

### Never enter an exclusion zone

### Never enter a restricted zone without permission

#### Plant Movements

Plant accidents account for 20% of construction industry fatalities

- All items of mobile plant, including access equipment must be examined by bmv JV site management prior to use on site
- Competent plant operators must be trained and certified and hold valid CPCPS (or affiliated) operator's licenses
- Traffic/pedestrian management – maintain designated routes, lighting and signage
- Immobilisation of plant – ensure locked, keys are removed and secure when not in use




**EXCLUSION ZONE**  
No admittance  
Zone ID: \_\_\_\_\_  
Contact: \_\_\_\_\_

**RESTRICTED ZONE**  
Authorised personnel only  
Zone ID: \_\_\_\_\_  
Contact: \_\_\_\_\_

**NORMAL ZONE**  
Zone ID: \_\_\_\_\_  
Contact: \_\_\_\_\_

- Do not walk within blind spots
- Use of Vehicle Banksmen/ Machine controllers when moving mobile plant equipment and vehicles
- Operating plant – one seat, one person
- Seat belts / lap restraints must be worn
- Do not use mobile phones when operating plant
- Amber flashing beacons will be used by all plant and works vehicles
- 360 Degree visibility - ensure you can see all around you
- No reversing without a vehicle marshal

**We Don't walk by! - The Rules**



## Equality, Diversity and Inclusion

The bmv board fully supports the concepts of fairness and respect which are at the core of equality, diversity and inclusion. We believe that developing a workforce that reflects the diversity of our customer base and the community in which we operate will help us successfully meet all of our commitments to our stakeholders.



#### Equality focuses on

- Race
- Gender
- Disability
- Religion or belief
- Sexual orientation
- Transgender
- Age

#### Fairness and Respect are good for business. It means we all pull together and do our best to ensure we all succeed.

We should:-

- Treat people fairly
- Respect people who are different from you and don't make fun of them
- Not use rude or insulting language about a person's individuality
- Treat others as you would like to be treated

### This site encourages Equality, Diversity and Inclusion to promote positive and inclusive behaviour, recognise the needs of others and bring your 'whole self' to work



**We Don't walk by! - The Rules**



## Working on Site

#### Traffic Management

- Chevron markings comprising alternate strips of fluorescent orange-red retro-reflective material and fluorescent yellow non reflective material
- Chevron markings should cover the whole of the rear-facing portion of the vehicle with out obscuring windows, lighting or number plates
- A Roof Mounted Amber Flashing Beacon with 2 independent light sources (seen through 360Deg)
- The sign "Highway Maintenance" on rear of vehicle



#### Cranes, Telehandlers, MEWPS, HIABS & Excavators

- Before any of the above Lifting Appliances are permitted to commence lifting operations, a Lifting Plan and applicable Risk Assessment must be in place
- Tasks must only be carried out by competent and trained personnel holding valid CPCPS cards, under supervision
- SWL's – Must be marked on each machine and must not be exceeded
- Chains and straps – Must be stamped, certificated, colour coded as applicable
- Slinger/Signaller will be required for ALL mechanical lifting and lowering operation

#### Employee Consultation

Regular consultation with employees will take place during the project

This will be by means of:

- Engagement with workforce
- Observation cards
- Open Door Policy
- Safety committees
- Newsletters
- Safety initiatives

You will be invited to participate in committees and take back information gained

#### Site Security

All persons on site must be aware of the following:

- Always carry your ID card
- All deliveries to the construction area shall be controlled and supervised
- No Plant must be taken off site unless "bmv JV" site management has been informed
- Criminal acts on site will be treated just like those off site
- If you see someone acting suspiciously report it

#### Basic precautions

- Always lock your vehicle when leaving it unattended
- Do not leave valuables on show

**We Don't walk by! - The Rules**



## Emergency procedures

## Current Project Information

#### Emergencies

Fire, Ambulance or Police CALL: 999  
Then call your supervisor and bmv contact

#### Non emergencies

Call your site supervisor or bmv site contact



#### Fire plan

Details of the emergency procedures for each location are displayed on the walls

#### Water Rescue

Full details will be given in briefings

#### General Emergency Control

- Emergency contact details / Notice boards
- Emergency / Fire Assembly Point
- First aid container
- Emergency eye wash
- Defibrillator
- Portable fire extinguishers
- Air horn / torch
- Spill kit bins / booms / absorbent granules / sand

**We Don't walk by! - The Rules**



## Health and Wellbeing

#### Occupational Health and Wellbeing

Hazards to your health may be created by someone working nearby and not necessarily by your own tasks

Examples of hazards include:

- Dust
- Chemicals
- Water
- Manual handling tasks
- Activities between the joints
- Contamination in the ground
- Lethal gases (Weld fumes)
- Noise and Vibration
- Guano
- Stress and heatstroke
- UV radiation from the sun

Make sure you are familiar with the appropriate control measures that will protect your health

All personnel working on site are expected to have a "Critical Worker Medical"

#### Mental Health

If you feel you are experiencing mental health problems, please feel confident to be open about these and we will support and be understanding, without fear of stigma or discrimination

#### Employee Assistance Programme (EAP)

For help and advice on any matter, please contact your employer's individual employee assistance helpline number or contact the Construction Industry Helpline on 0343 504 1996

#### Managing Fatigue

Fatigue can arise due to a number of factors including stress at work, working long hours, working white and night working

- The experience of fatigue can impact on work and safety – it is not just about feeling tired, but also feeling less alert and having lesser ability to pay attention to what you are doing
- Individuals should contact their supervisor or Occupational Health nurse if they feel fatigued

#### We are committed to ensuring your health and wellbeing

We have available free of charge the facility for a regular basic occupational health assessment.

Our Occupational Health technician is available to offer advice and guidance on what individuals can do to lead a healthier life

- Blood pressure
- BMI
- Cholesterol & Diet
- Eyesight checks
- Exercise
- Hearing
- Mental Health
- Fatigue
- Lifestyle Choice
- HAV assessment

Did you know?  
More people die as a result of Occupational Health issues than safety issues!



**We Don't walk by! - The Rules**



## Hazards

#### High Risk Activities

- Working adjacent to "Live Traffic"
- Working at heights
- Asbestos
- Contact / exposure to waste, debris, sharps etc
- Excavations
- Interface with public
- Mobile plant / vehicles moving near operatives
- Night-time working
- Noise, dust and vibration
- Underground & overhead services
- Work above / adjacent to water
- Work near to existing structures
- COSHH
- Lifting operations

#### Incident Reporting

All injuries, incidents, or near-misses must be reported immediately to your supervisor/manager and to "bmv JV"

We actively encourage the reporting of near misses

#### Mobile Phones & Hand-held devices

The use of mobile phones including bluetooth headsets and hand-held devices is prohibited whilst you are driving a road vehicle or operating plant or equipment

Mobile phones and hand-held devices should only be used in a safe place.

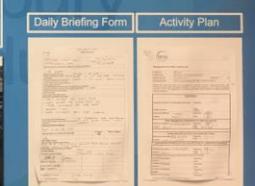
#### Controlling Risk

All equipment must have a written safe system of work

- Risk Assessment and Activity Plan (Method Statement)
- You must be briefed and sign onto all relevant documents before work commences
- Don't be afraid to ask if you do not understand something
- Site supervisors must confirm understanding
- Change control - If your safe system of work has changed or needs to be amended, you must stop and seek instruction from your site supervisor on how to proceed

#### Permits to work must be in place for the following activities

- Disturb ground - Permit to dig
- Confined space entry
- Cut and remove electric cables
- Hot-works
- Work under overhead cables
- To pump water
- For vegetation clearance
- To load (temporary works)



**We Don't walk by! - The Rules**



# OUR OBJECTIVE

Our objective was to **blend existing behavioural induction** training for up to twenty people with new immersive learning content.

Seven key Health & Safety themes and topics needed covering alongside traditional content:

- ➔ Access and egress
- ➔ Exclusion zones
- ➔ People plant interface
- ➔ Open excavations
- ➔ Lifting
- ➔ Hazard identification
- ➔ Service strikes



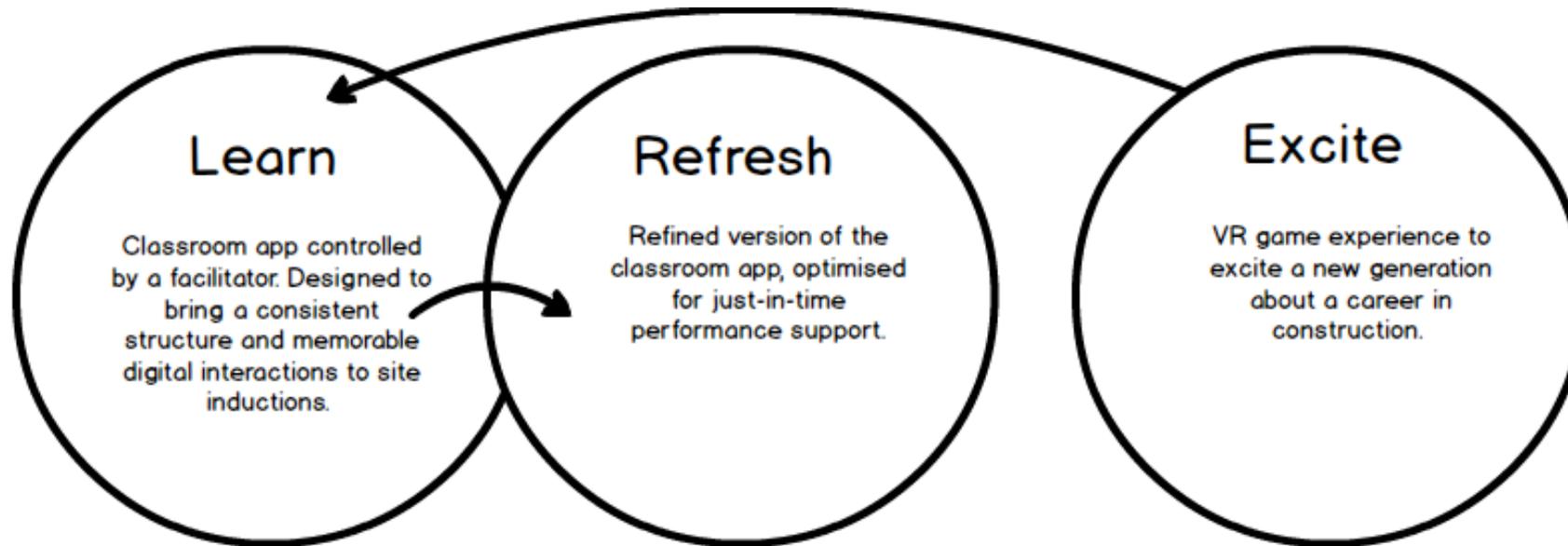


# The Onboarding Solution

# THE SOLUTION: What is it?

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The digital solution comprised of three related, but distinct, applications to support the induction and address industry and business challenges.





Facilitator



Participant



# Learn: The classroom session



Participant  
view

Select your language.



English



Pੰਜਾਬੀ



Polski



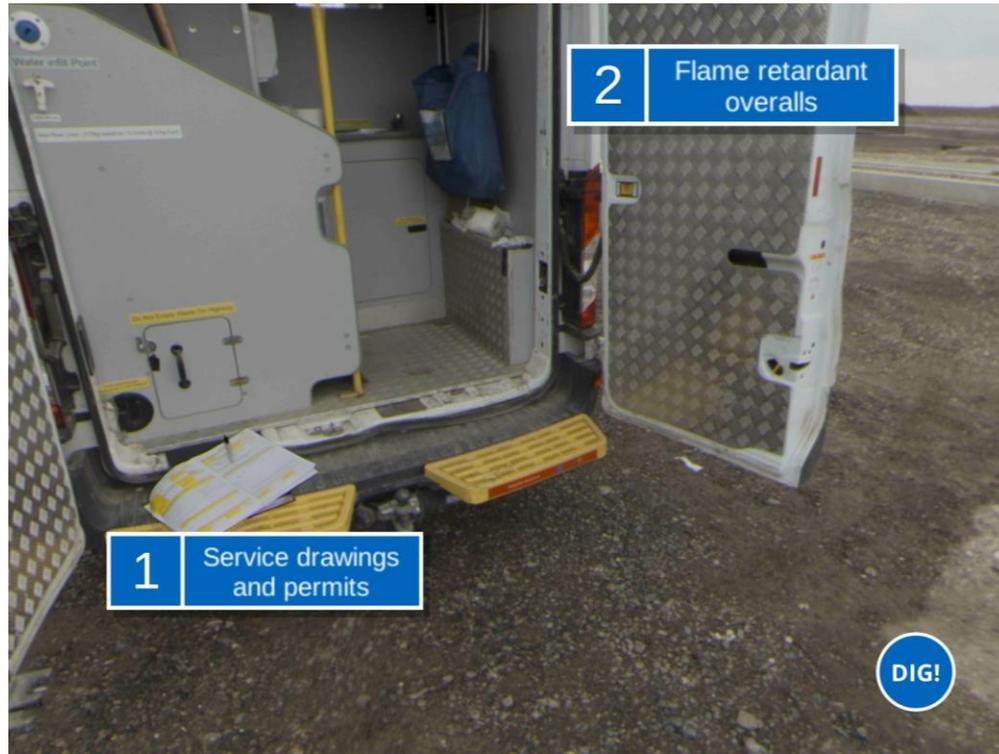
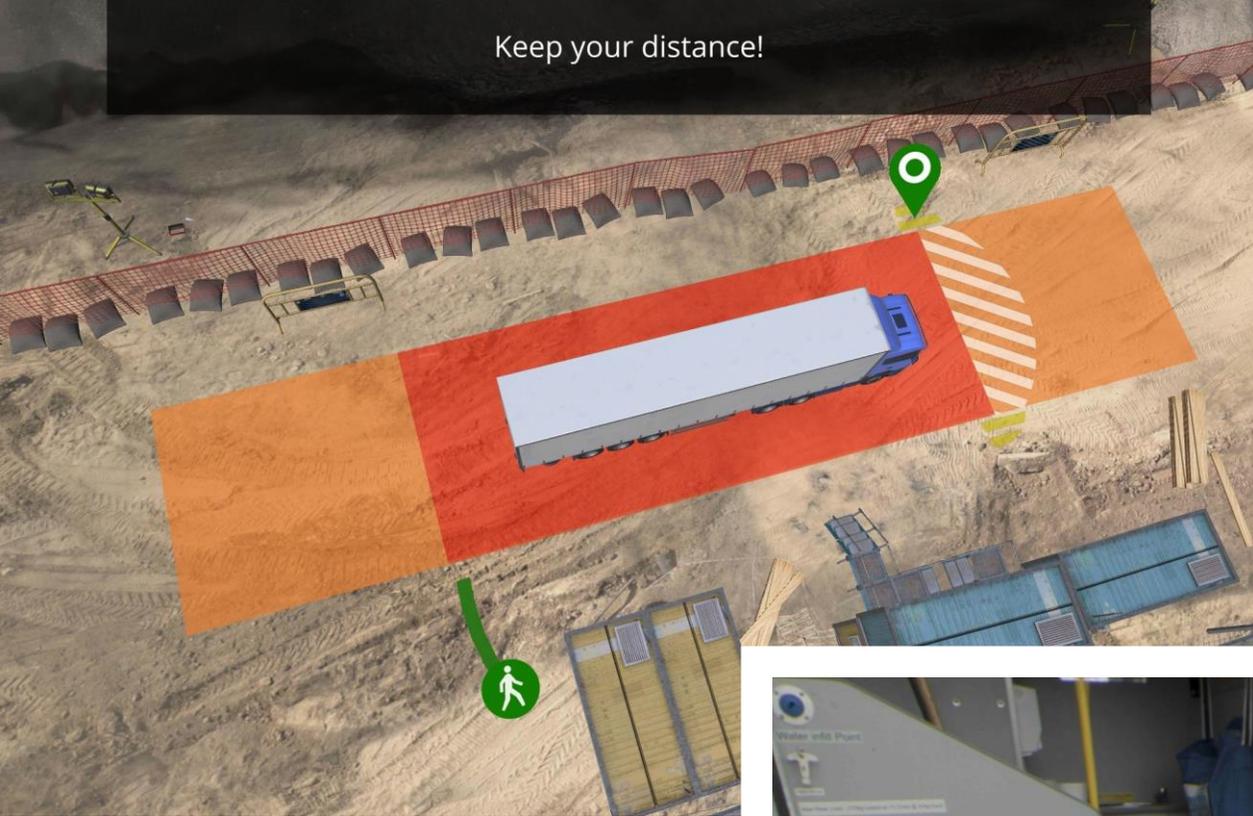
Română



9:08 AM



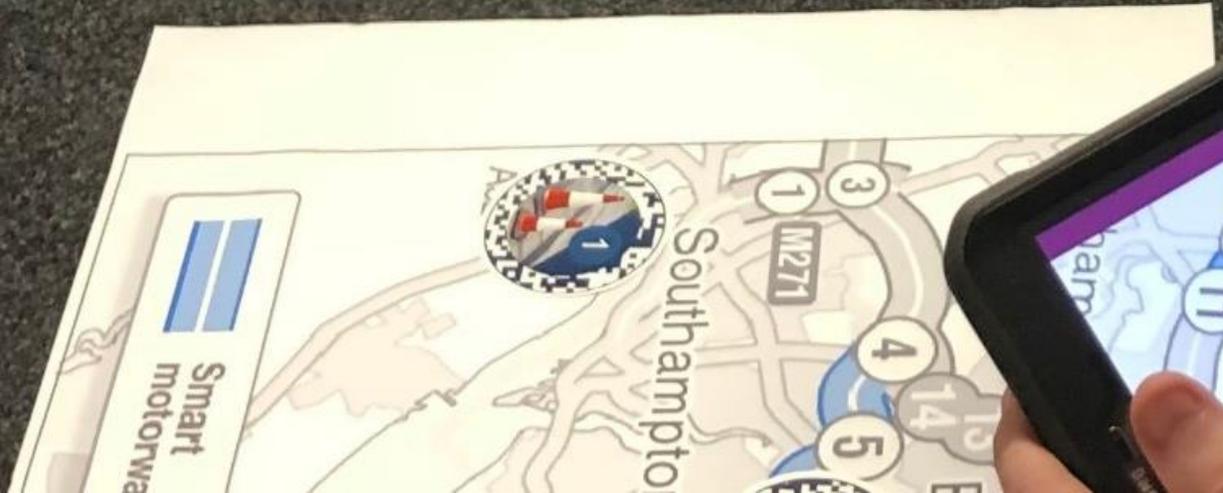
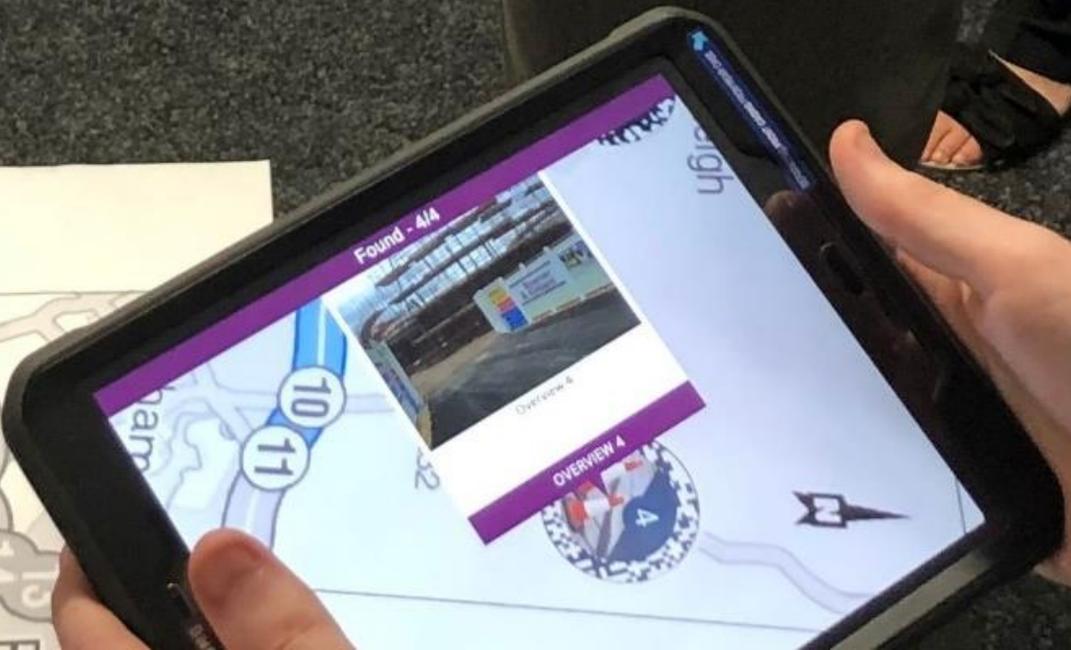
Keep your distance!



RESET

Use your finger to draw restricted zones.

LIFT!



h  
eng

bmw

TOPIC TITLE

1/2

THAT'S RIGHT!

KEEP

BUST

Emergency procedure

1/2

You're working on site when you discover a fire. What do you do?

Call your supervisor

Call the emergency services

Get everyone to a safe place

GO

Health and wellbeing

1/10

Question 1

Which of these areas are safe to work in?  
Select all that apply.

GO

Health and wellbeing

1/10

Question 1

If I don't want to complete a job because I don't think it's safe, the company will support me.

TRUE

FALSE

# Learn: The classroom session



Facilitator  
view

## Personal Protective Equipment (PPE)

Group's response

Participants' responses

|               |            |
|---------------|------------|
| Participant 1 | Option 1   |
| Participant 2 | Waiting... |
| Participant 3 | Option 3   |
| Participant 4 | Option 1   |
| Participant 5 | Waiting... |
| Participant 6 | Option 3   |
| Participant 7 | Option 1   |



Talk to the group about how we can all do our best work when we feel valued and respected.

END QUIZ

NEXT



## Session: 24th June 2019 15:00

Return to the previous screen to export this session

| Date ▲           | ID ▲  | Pass/Fail | Complete   |
|------------------|-------|-----------|------------|
| Thomas Taylor    | 18530 | Fail      | Incomplete |
| Keith Black      | 18992 | Pass      | Complete   |
| Abraham Amir     | 19701 | Pass      | Complete   |
| Karin Popov      | 19320 | Pass      | Complete   |
| Josh Patel       | 18023 | Pass      | Complete   |
| Annabel Katani   | 18530 | Pass      | Complete   |
| Peter Manson     | 18992 | Pass      | Complete   |
| George Griffon   | 19701 | Pass      | Complete   |
| Jeremy Fisher    | 19320 | Pass      | Complete   |
| Alan Clark       | 18023 | Pass      | Complete   |
| Anthony Bartlett | 19320 | Pass      | Complete   |
| Harold Beard     | 18023 | Pass      | Complete   |

BACK

### Personal Protective Equipment (PPE)

1/2



Lead a discussion around the around the site-specific service or structure strike controls.

Your group has been asked:

**What controls might you find on this site that would help prevent a service or structure strike?**

Other questions to consider:

- How would you make sure it's safe to excavate around live services?
- Why might it be dangerous to work near a structure?
- What site and service controls have you worked with in the past?

MENU

# Refresh: The take-away app



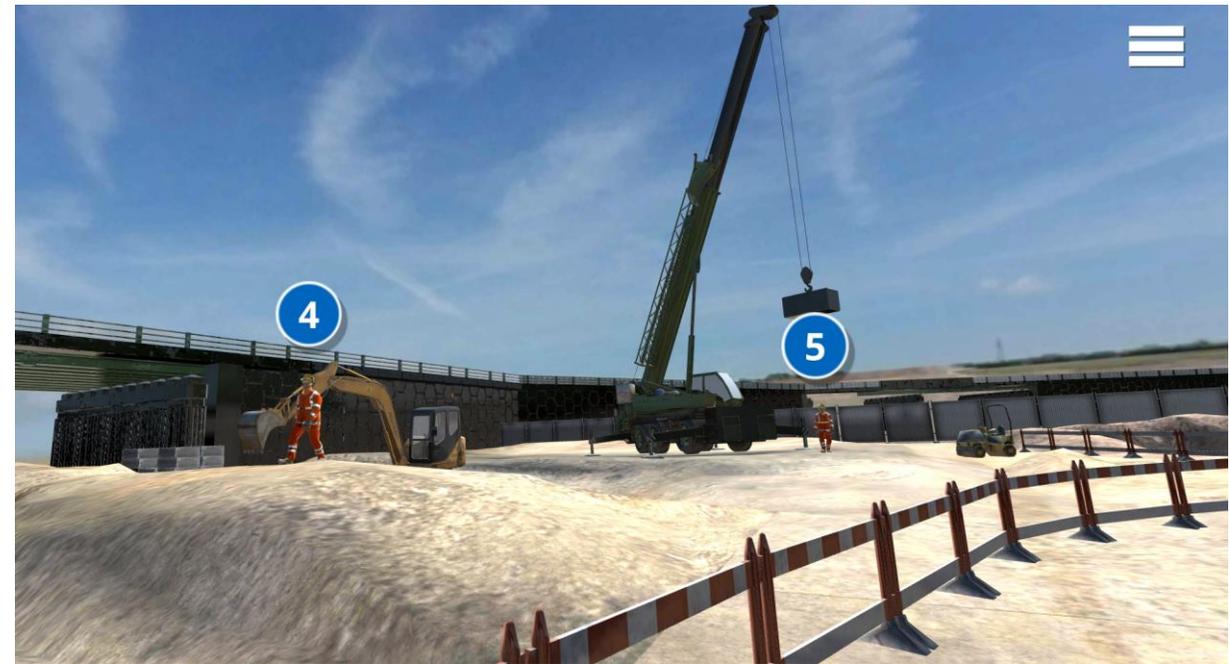
## Give it a go

### Welcome!

Welcome to the CITB Induction Refresher! This app includes six mini-games.

If you've already experienced the games during your on-site inductions, have a play through to see how much you've remembered.

If you haven't had a BAM Nuttall on-site induction, no worries! Take a look around and give the games a go. They'll introduce you to some of the challenges you might meet on site.



## If you only remember three things...



**Good housekeeping is essential:** equipment should be tidied away and routes kept clear to prevent slips, trips, and falls.



**Take preventative action:** using preventative measures will minimise risk – like placing barriers around a pit and reinforcing its edges.



**Stay vigilant, stay proactive:** when on-site, look out for potential hazards and deal with any issues before they become problems.

PLAY  
AGAIN

MAIN  
MENU

## Give it a go

### Working on Site : Lifting



# Excite: VR game



# Concrete Mixing

★☆☆

**Not Bad**  
Your quantities are quite far off.

Next Table

### THE BRIEF

**THE PROBLEM**  
CHILDREN IN THIS AREA CURRENTLY NEED TO WALK AROUND A RIVER IN ORDER TO GET TO SCHOOL.

**THE SOLUTION**  
CONSTRUCT A FOOTBRIDGE THAT WILL ALLOW CHILDREN TO SAFELY WALK TO SCHOOL.

2 FACTORY

CORRECTLY ASSEMBLE MANY AS YOU CAN

DESTROY!

PLACE ASSEMBLED SECTIONS HERE

COMPLETED SECTIONS:

DISCARD INCORRECT SECTIONS HERE

# Factory

★☆☆

Job!

Completed all the bridge sections you need.

Next Table

### Bridge Constructed Off-Site

The Bridge is built away from the construction site in a specialist factory. The bridge is normally constructed in sections so that it can be transported to site more easily.

This task takes 18 weeks to complete, but all other activity on site can take place during this time.

3 CONCRETE MIXING

MIX THE RIGHT AMOUNT OF...

# Learning and Impact



# LEARNER IMPACT

Piloting over last six months has limited due to Covid-19, however, the key impacts have been:

- ➔ More people are passing 1<sup>st</sup> time (100% pass rate)
- ➔ Increased class sizes from 15-20 people
- ➔ Digital assessment has reduced administration time by 5 mins per person
- ➔ 50% saving in time and cost for inductions.
  - ➔ Time reduced from 3 hours to 1.5 hours per induction over the original Power Point
- ➔ Highly positive user feedback including, Engaging, quick and intuitive
- ➔ Positive qualitative impacts have been seen across the learner experience and engagement

|   |                                       |  |
|---|---------------------------------------|--|
| 2 | 26/03/2020 11:34 AM<br>ID: 138123625  | The interactive games were good, interesting and engaging. |
| 3 | 26/03/2020 12:21 PM<br>ID: 138127095  | engagement   |
| 4 | 07/08/2020 09:48 AM<br>ID: 146211873  | intuitive  |
| 5 | 20/08/2020 10:12 AM<br>ID: 146830249  | Ease of use  |
| 2 | 2 <input type="button" value="Hide"/> |  |
| 1 | 26/03/2020 12:21 PM<br>ID: 138127095  | learning   |
| 2 | 07/08/2020 09:48 AM<br>ID: 146211873  | easy   |
| 3 | 20/08/2020 10:12 AM<br>ID: 146830249  | Quick  |
| 4 | 20/08/2020 10:12 AM<br>ID: 146830266  | Quick  |
| 3 | 3 <input type="button" value="Hide"/> |  |
| 1 | 20/08/2020 10:12 AM<br>ID: 146830249  | Engaging   |

# CITB FEEDBACK

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## **Feedback from Marcus Bennett, CITB future skills and innovation lead:**

*“People learn in different ways and the decades-old model of everyone sitting passively in front of a presentation may not be the best, particularly if better technology is available.*

*The projects delivered by Make Real and BAM Nuttall are improving learning and memory retention through active participation, collaboration and discussion and ultimately will improve capability and site safety for all.*

*I’ve seen the projects develop – they are hugely impressive, using technology in a way that is intuitive but challenging; monitors and reports progress so that we actually demonstrate what has been achieved.*

*I am confident that others will want to emulate what has been achieved.”*

# What the end-users said...

“Engaging,  
informative”

“Lots of opps for  
discussion + comment,  
group learning.”

“I found it  
enjoyable and a  
good experience.”

“I liked how simple  
but engaging the  
app is.”

“Brilliant idea  
to encourage  
engagement.”

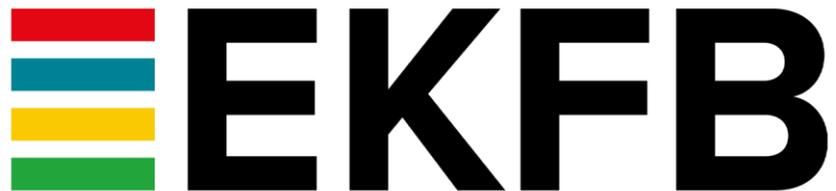
“It was more fun and  
interesting than the  
previous format.”

## ADOPTION AT HS2

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As a result of the initial pilot rollout and learner sessions carried out before COVID-19 lockdown, multiple other high-profile construction sites have stated a clear interest in rolling out the solution at their training sites nationwide.

Discussions are underway to include this approach on the HS2 induction site for the Greatworth section of the HS2 project being delivered by the BAM Nuttall, Kier, Eiffage and Ferrovial Agroman Joint Venture (EKFB).





make [ REAL ]

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# Questions?