

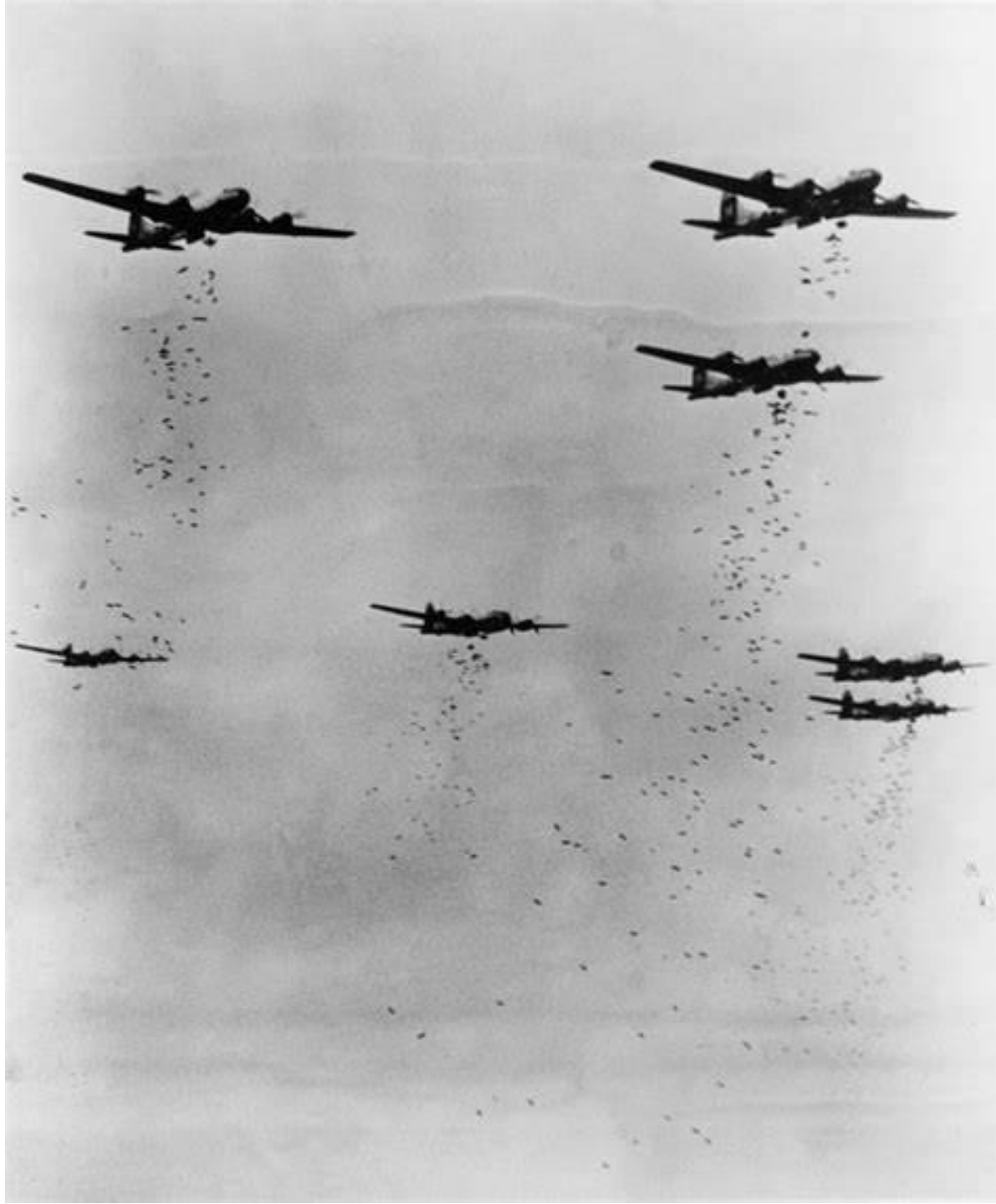
Decision Making in Engineering and Asset Management

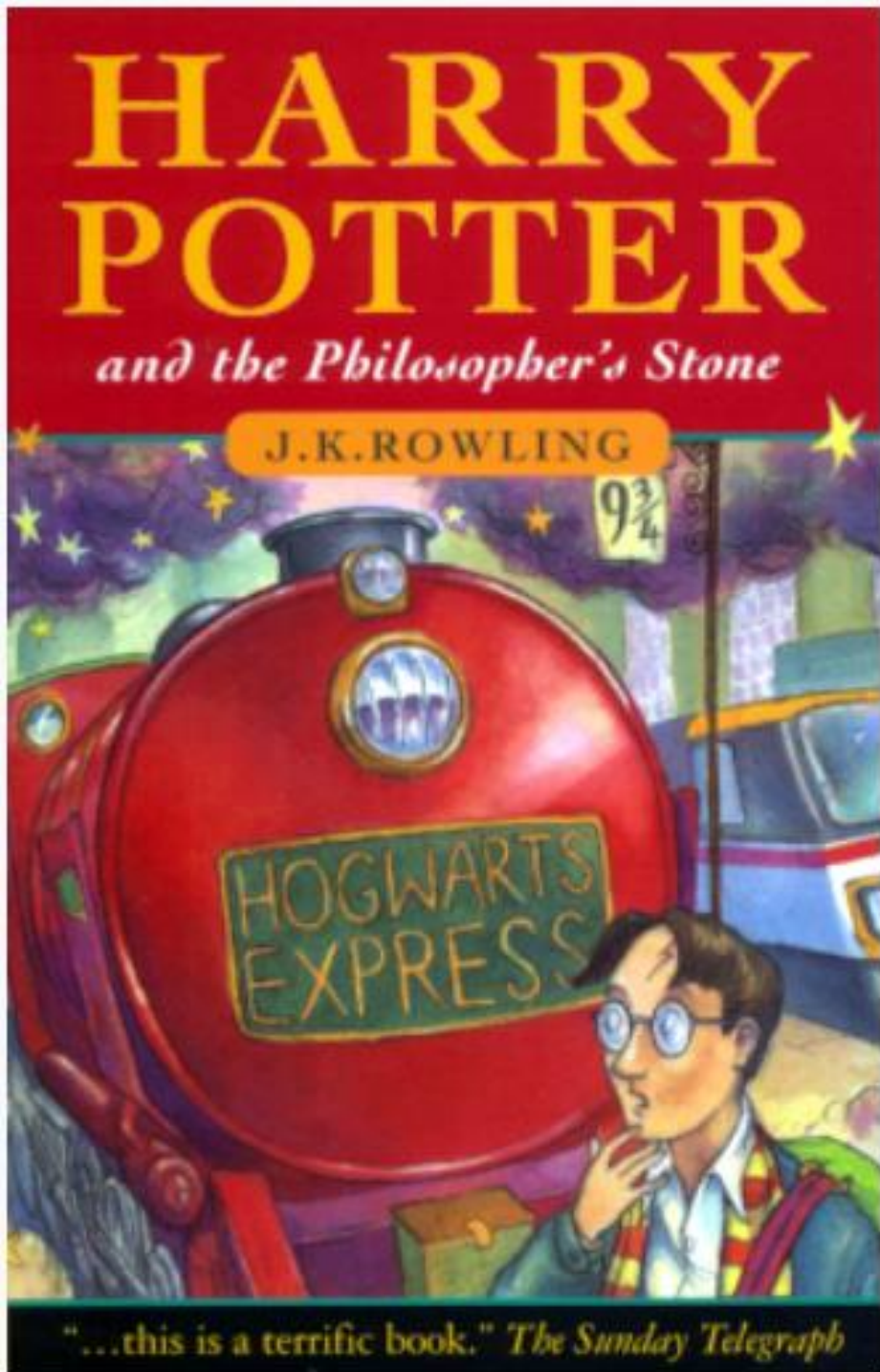
Julian Staden

Simpler.
Better.
Greener.

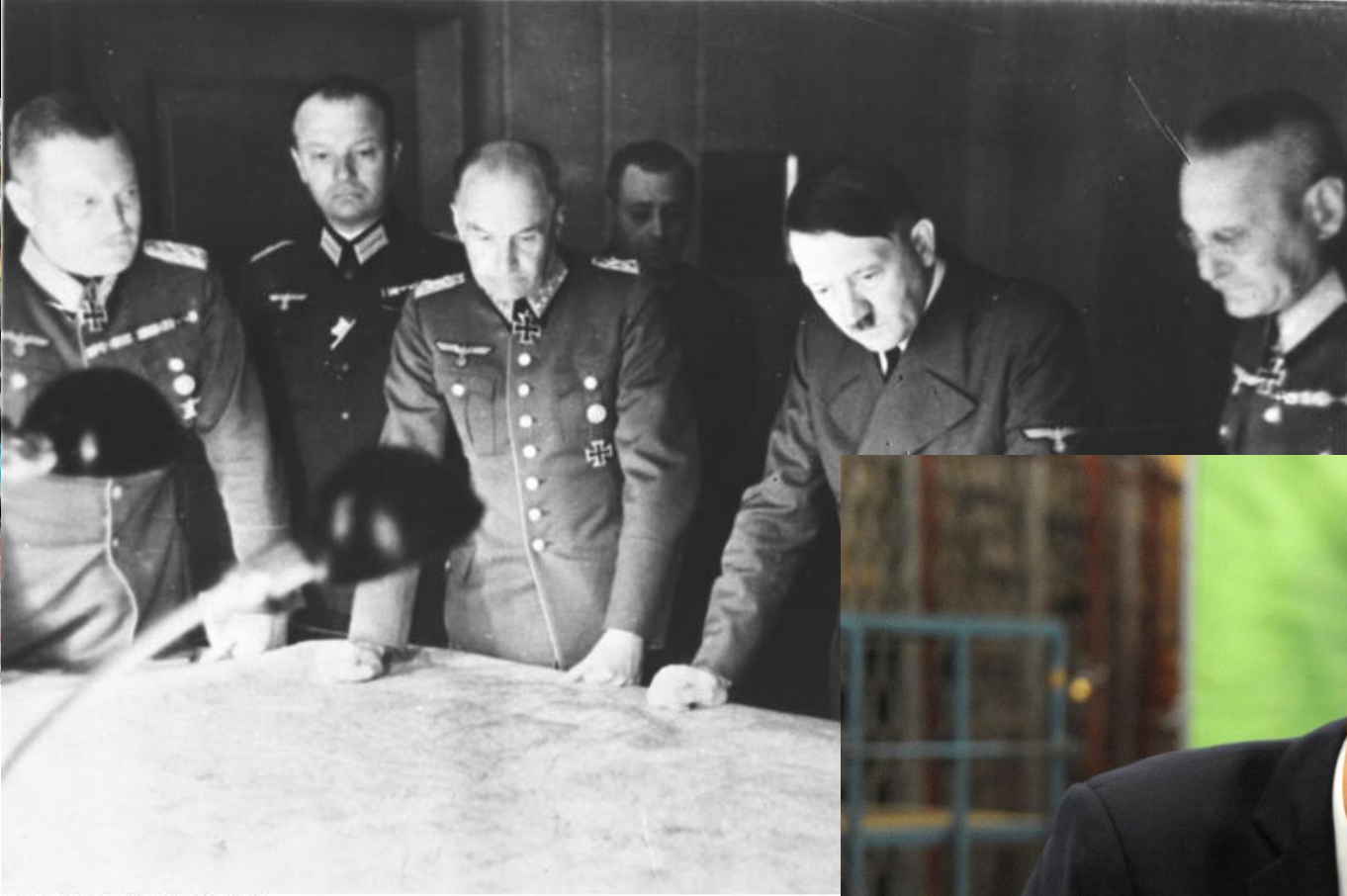








NETFLIX



Bundesarchiv, Bild 146-1971-070-81
Foto: o. Ang. | 1940/1941 ca.



Thursday 27 December 2023
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The Guardian

News provider of the year

Revealed: the dire state of the 'broken' rail network

By Ben Branson
Michael Gove's plan to scrap the rail franchise system is a disaster, say experts. The plan to scrap the rail franchise system is a disaster, say experts. The plan to scrap the rail franchise system is a disaster, say experts.



runned down woman killed in Merseyside Christmas Eve attack named

THE SUN

100 top property hotspots

£2bn fiasco of Britain's broken rail network

BIG NEWS

humanian gangs

METRO

SUPER STAR DJ

ALL SET

Network FAIL for commuters

TUESDAY 18 APRIL 2023 WWW.INDEPENDENT.CO.UK

Sean O'Grady Nicola Sturgeon's fall from grace has been astonishing – if she was less sanctimonious I'd almost feel sorry for her



PM faces ethics probe over his wife's childcare agency

Rishi Sunak's failure to declare Akshata Murty's shares in Koru Kids will be investigated, it was announced yesterday

More cancellations. More delays. More misery for millions

EXCLUSIVE NETWORK RAIL LEAK

Internal report seen by this newspaper reveals the pitiful state of our national rail network

JON STONE
POLICY CORRESPONDENT

Britain's teetering railways face more disruption because there is not enough money to maintain them, Network Rail has privately admitted. A leaked presentation obtained

by The Independent says funding for the next five years will not allow it to "operate, maintain and renew" the railway at current levels of reliability. It warns that delays from crumbling infrastructure are expected to worsen, with profitable network services

receiving higher priority for maintenance. The shadow transport secretary, Louise Haigh, said the railway system was broken: "Shortsighted decisions don't lower costs, they harm our public finances in the long run, leaving taxpayers to foot the bill."

HOGMANAY

Sun

ON SUNDAY

Emily's baby joy

EXCLUSIVE

CELTIC 2 RANGERS 1

THAT'S GREIGHT

ABERDEEN 0 ST MIRREN 3

HEARTS 2 ROSS COUNTY 2

KILMARNOCK 2 DUNDEE 2

MOTHERWELL 3

FREE INSIDE

29 PAGES OF SPORT

Super All

STORM TRAIN CRASH SLIP-UP

SIGNAL FAILURE

NETWORK RAIL GOT 'TREE ON LINE' ALERT BUT DRIVER IS NOT TOLD BEFORE SMASH



YOU HAVE CAUSED

CONFUSION AND DELAY



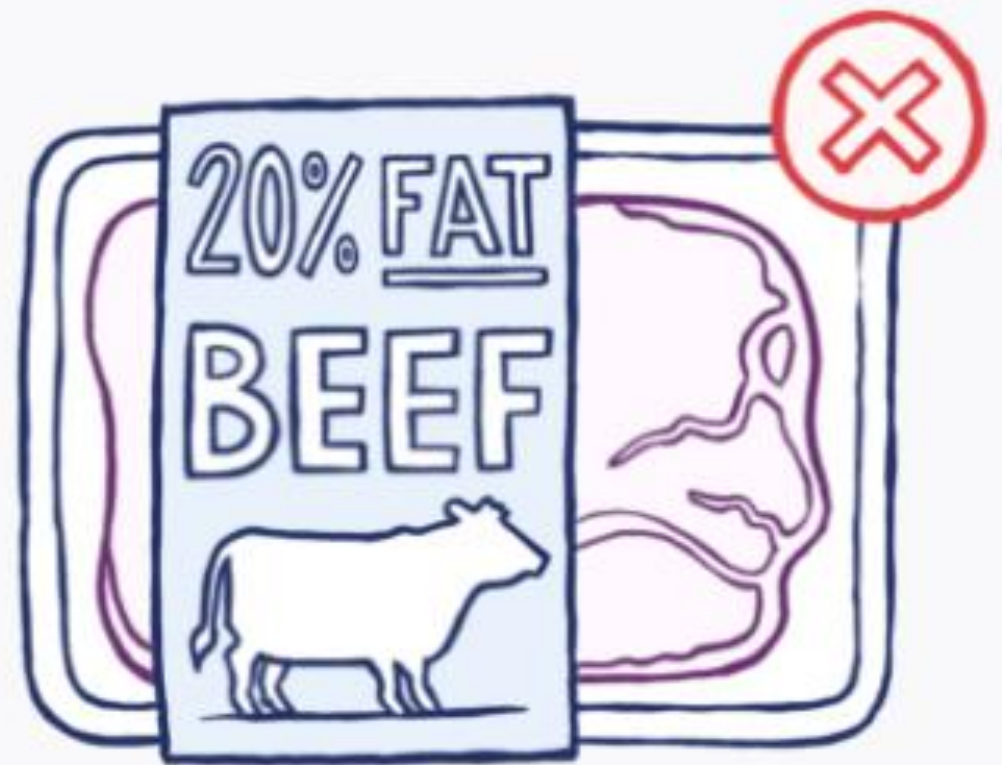
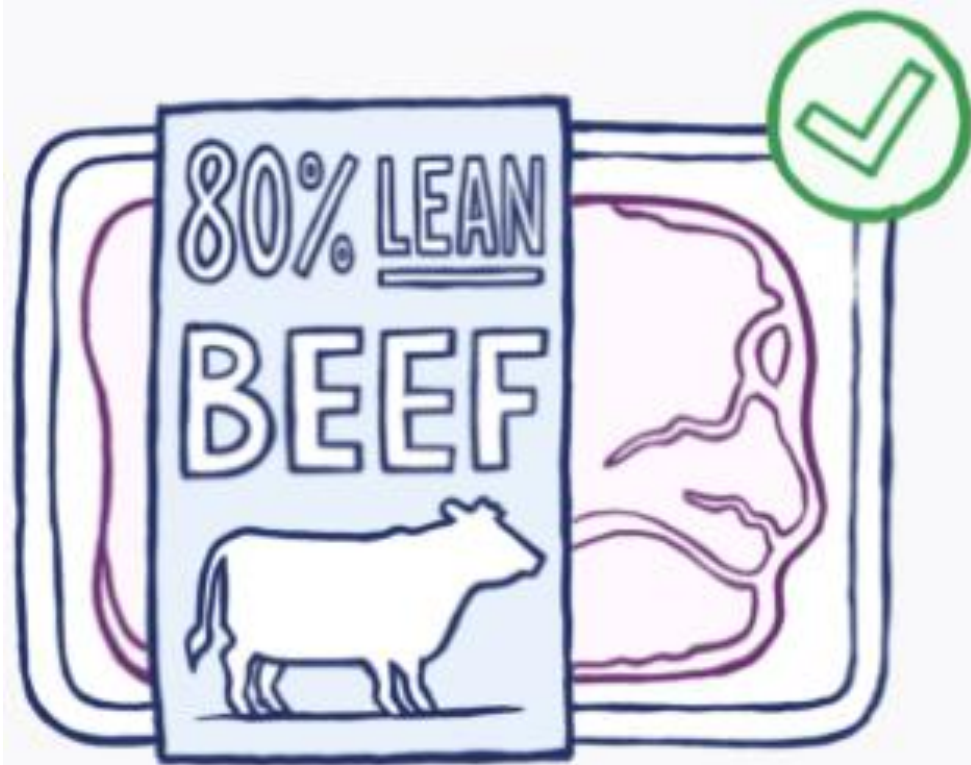






The framing effect

People react different to something depending on the framing (positive or negative)



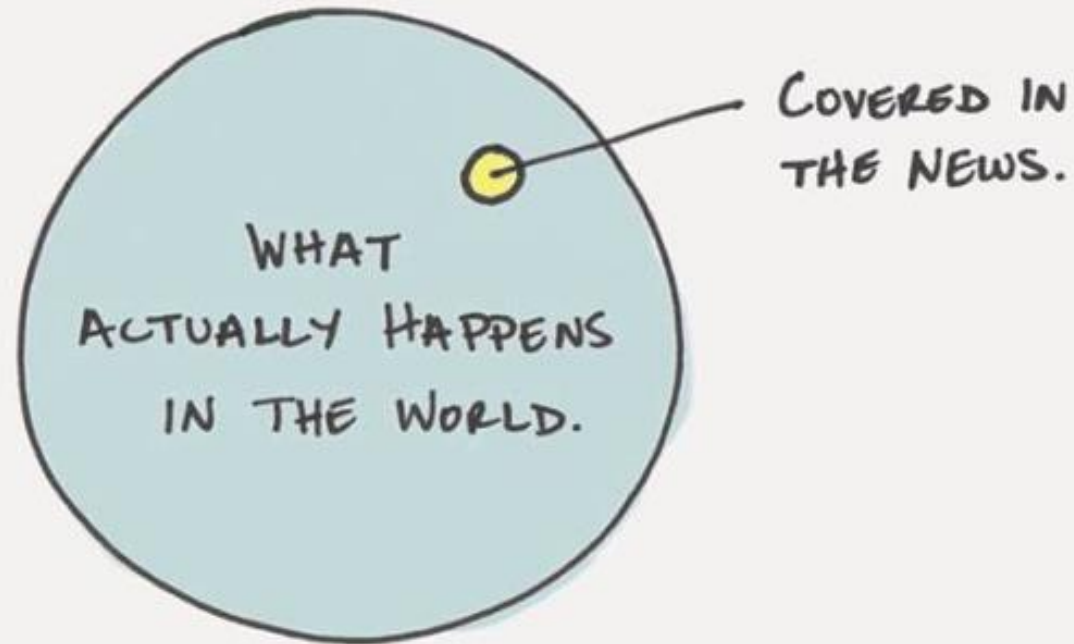
THE CONFIRMATION BIAS

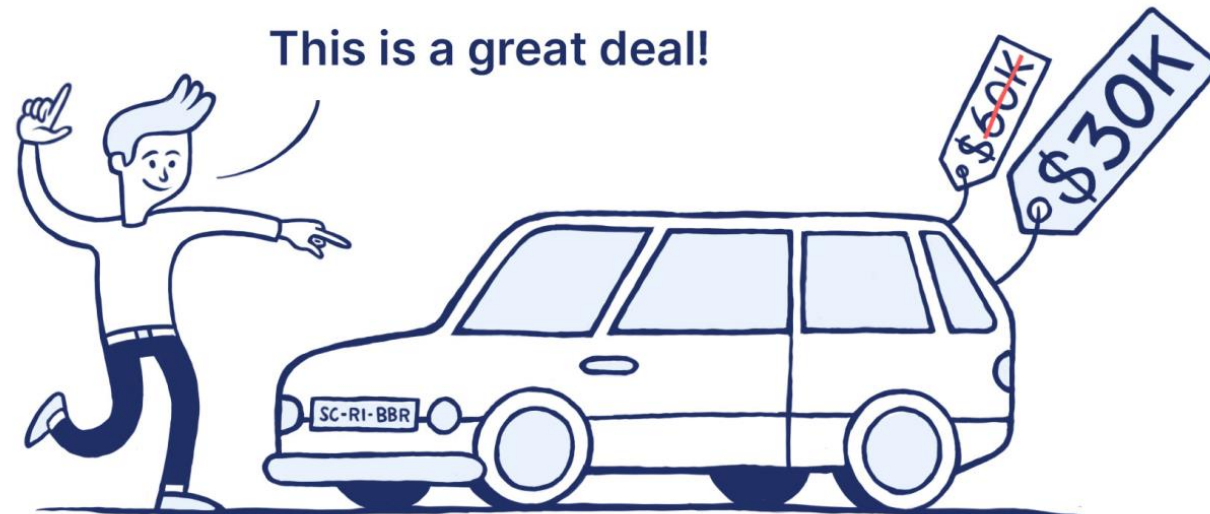


WHAT
YOU
BELIEVE



THE AVAILABILITY HEURISTIC









DEFINE THE PROBLEM
FIRST



PRIORITISE DECISIONS BY
CONSEQUENCES



AWARENESS AND
REFLECTION:

Good Decisions



SEEK DIVERSE
PERSPECTIVES



USE STRUCTURED TOOLS



FOSTER CRITICAL
THINKING



DEFINE THE PROBLEM FIRST



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FOSTER CRITICAL
THINKING





Closure of Nuneham Viaduct, and Lessons Learnt

Julian Staden



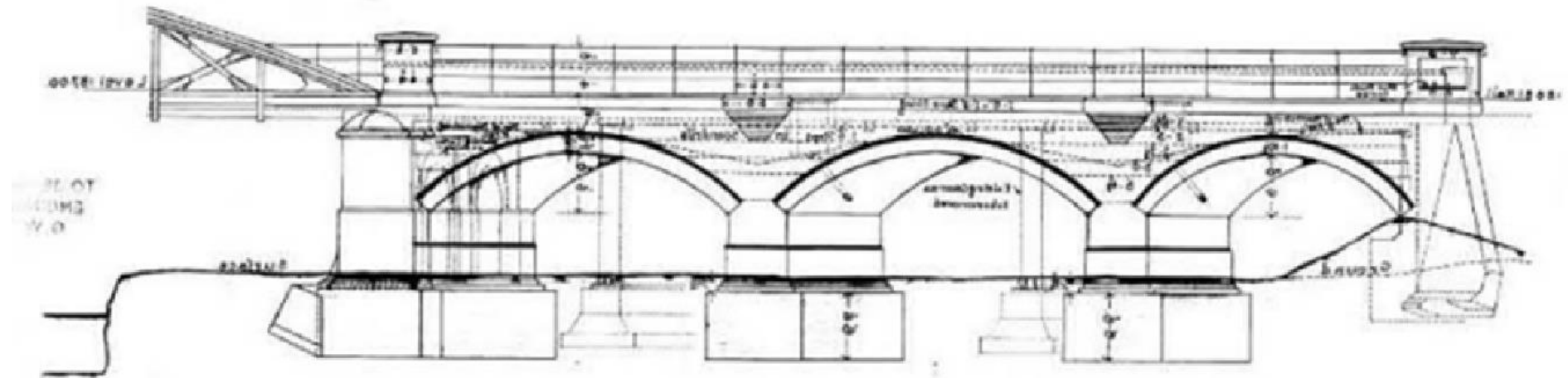
Providing technical leadership





Figure 1: Photograph showing 1856 bridge





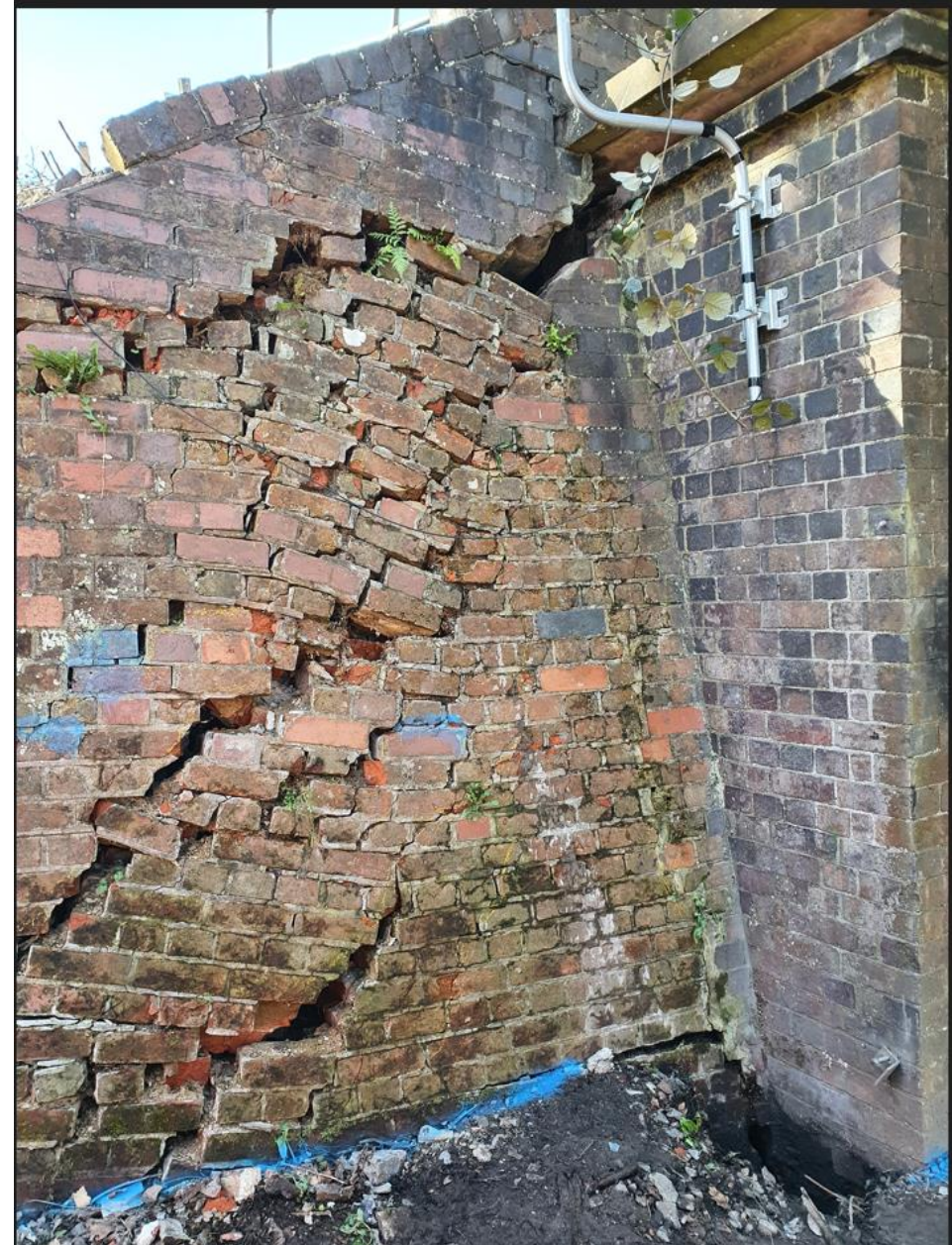




Photo No 17 - photo 17 horizontal fracture - 27/01/2023



Photo No 25 - photo 25 void below abutment - 27/01/2023



Photo No 10 - Low Mileage Downside Wingwall - Diagonal Fracture - 0m From Downside - 22/09/2022



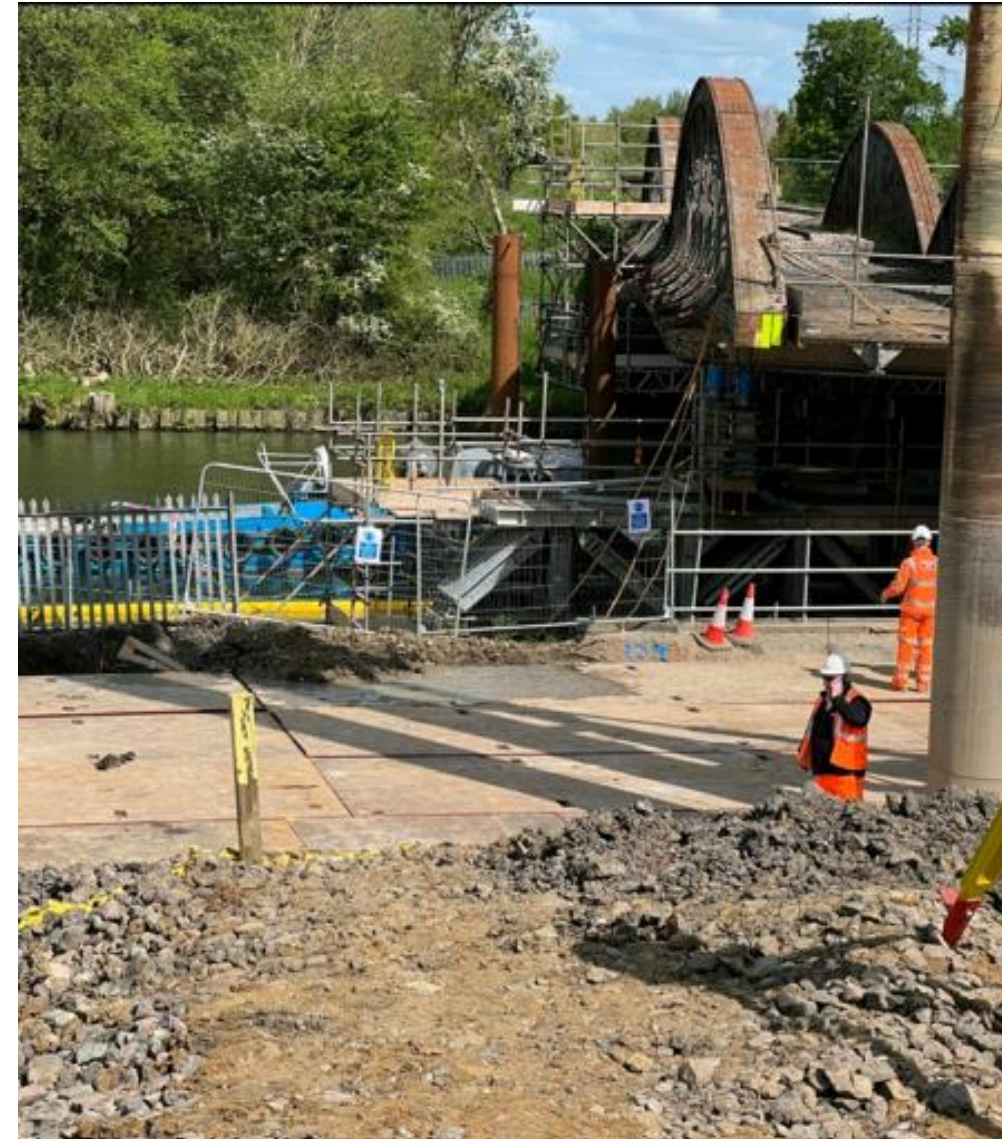
Photo No 18 - photo 18 low mileage upside wingwall - 27/01/2023

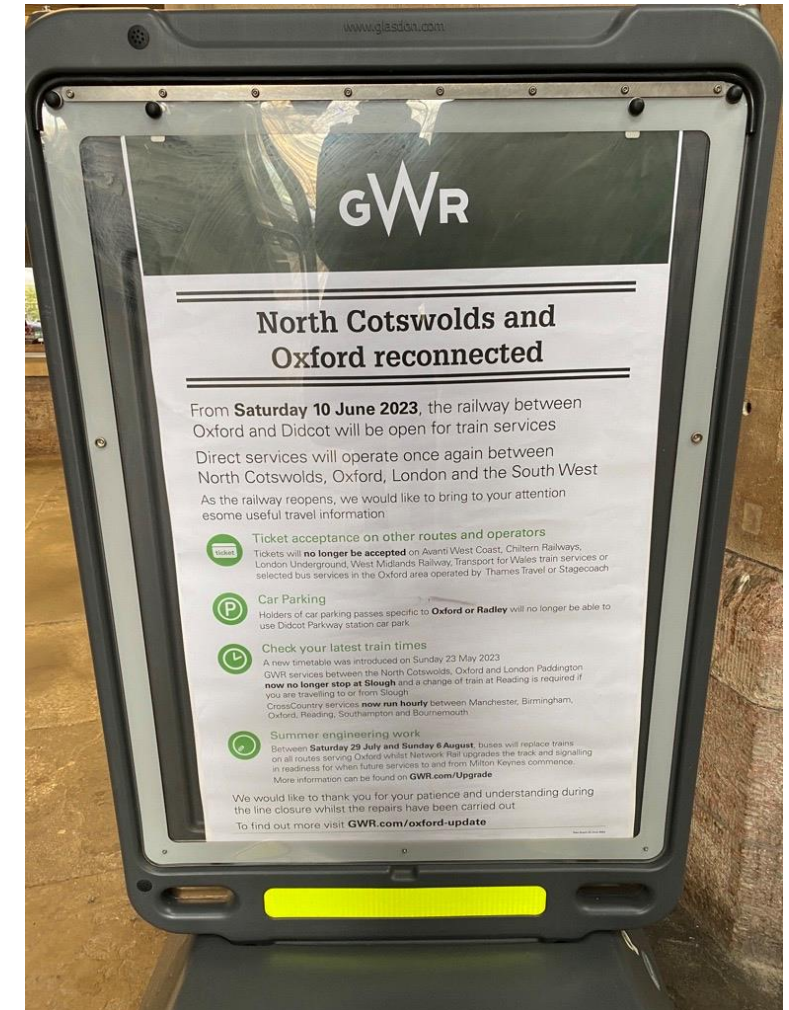
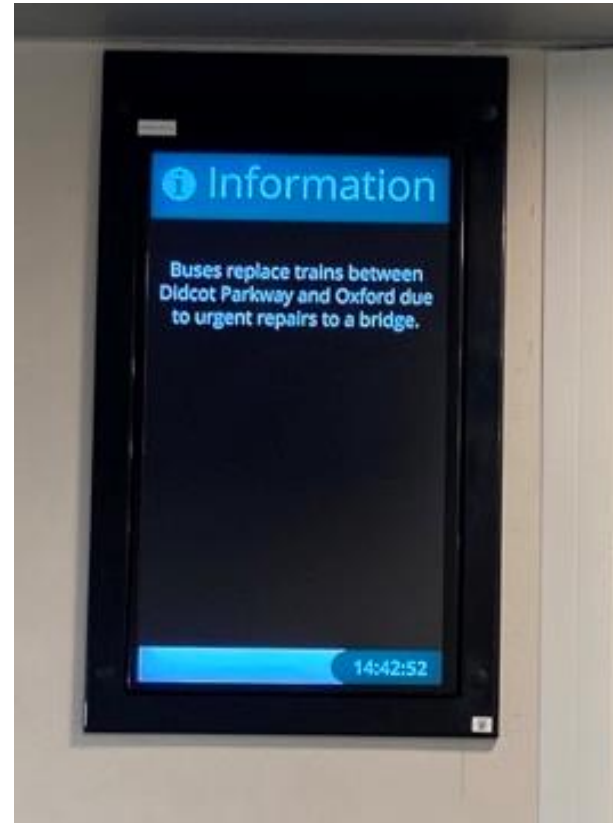


Photo No 11 - Low Mileage Downside Wingwall - Displacement - 0m From Downside - 22/09/2022

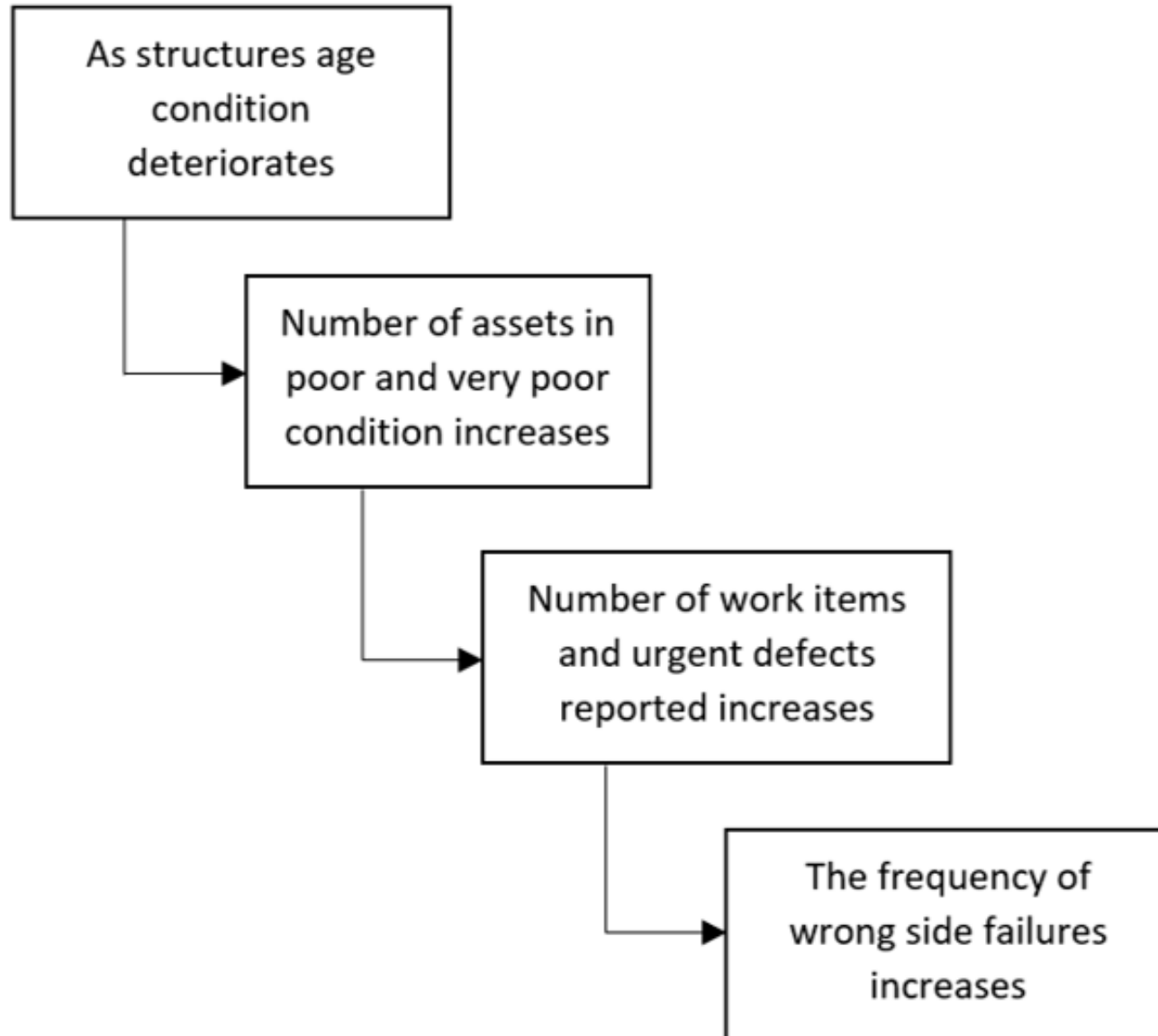


Photo No 8 - Low Mileage Downside Wingwall - 22/09/2022

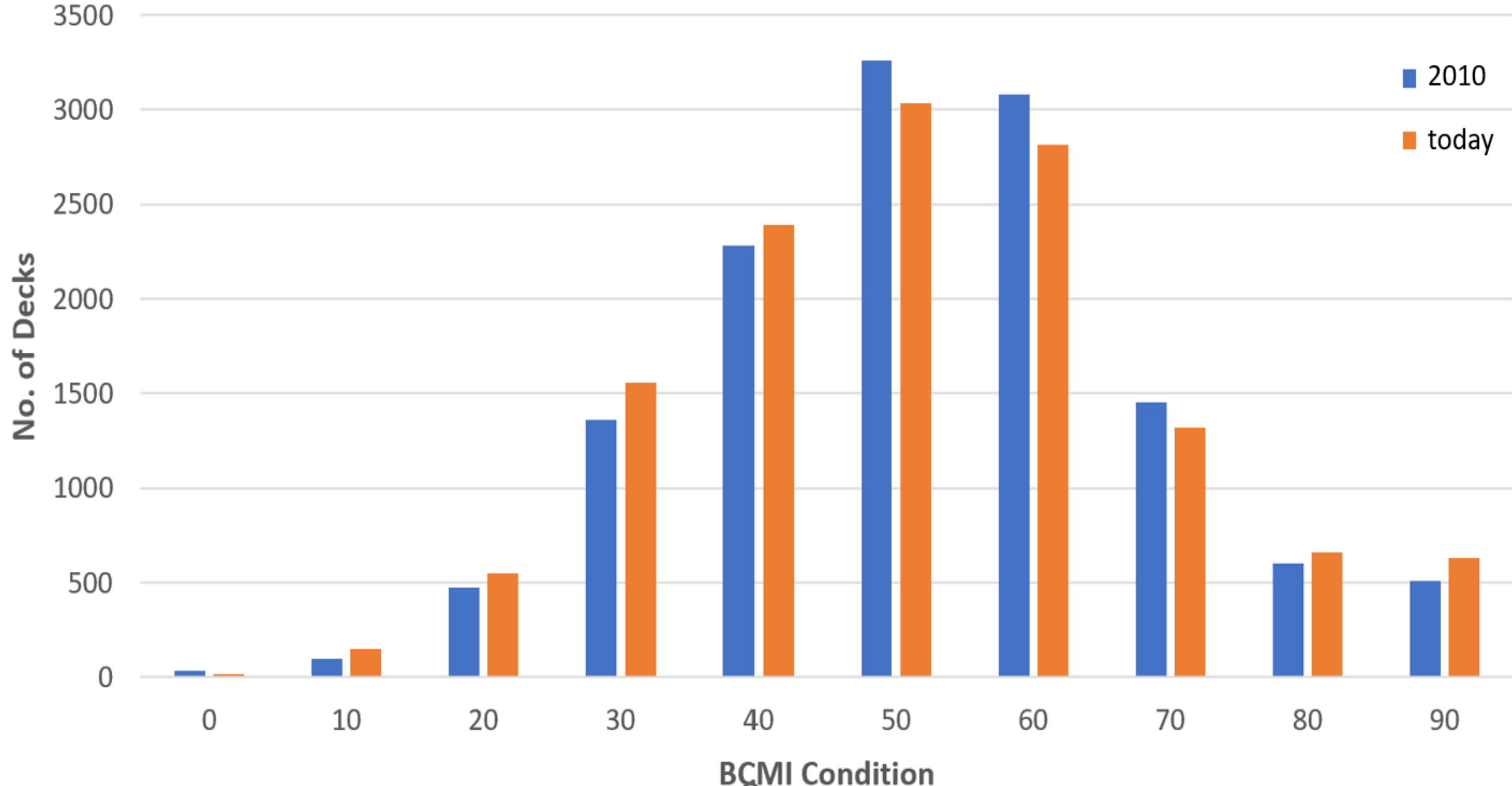




The wider structures portfolio

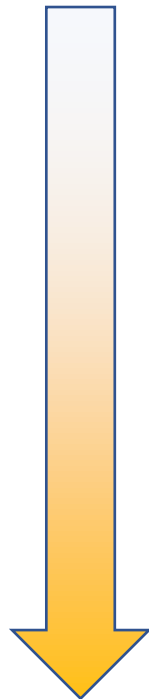


Metallic Underbridges



The wider structures portfolio

Increasing Demands

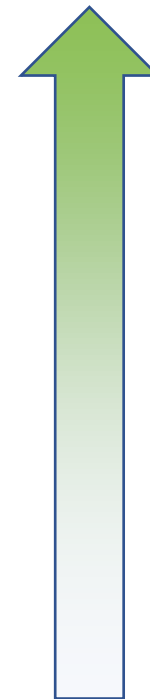


Climate change and
extreme weather
events

Budget constraint

Public expectation

Tools



Better insights

Improving competence

Technology application

Targeted and risk based
management



Summary of findings from the Investigation

Settlement was known to be an issue at the structure, amplified by the change in span configuration in the early 1900's;

Simple monitoring techniques were deployed (date tabs), When date tabs failed, more date tabs were installed until deterioration was significant, affecting the quality of the track;

Access for routine examination was frustrated meaning deterioration couldn't be assessed regularly;



Summary of findings from the Investigation

Qualitative assessment of the abutment during the capability assessment was questionable, as it stated no significant defects were observed during the IfA;

Holding repairs were undertaken but repeatedly failed. No long term plan was in place;

The asset management teams were unsure on the failure mechanism, so the responsibility was passed between the different teams without a guiding mind;



Summary of findings from the Investigation

Polymer injection was a last ditch attempt to stop the abutment settlement until a permanent remediation could be introduced.

Overall, there were missed opportunities to avoid the emergency situation, however the works will have been required at some point.



