



Ministry
of Justice

Designing and Building Prisons

Focus on safety

Sept 2019





The Challenge



☐ **Transform the prison estate**

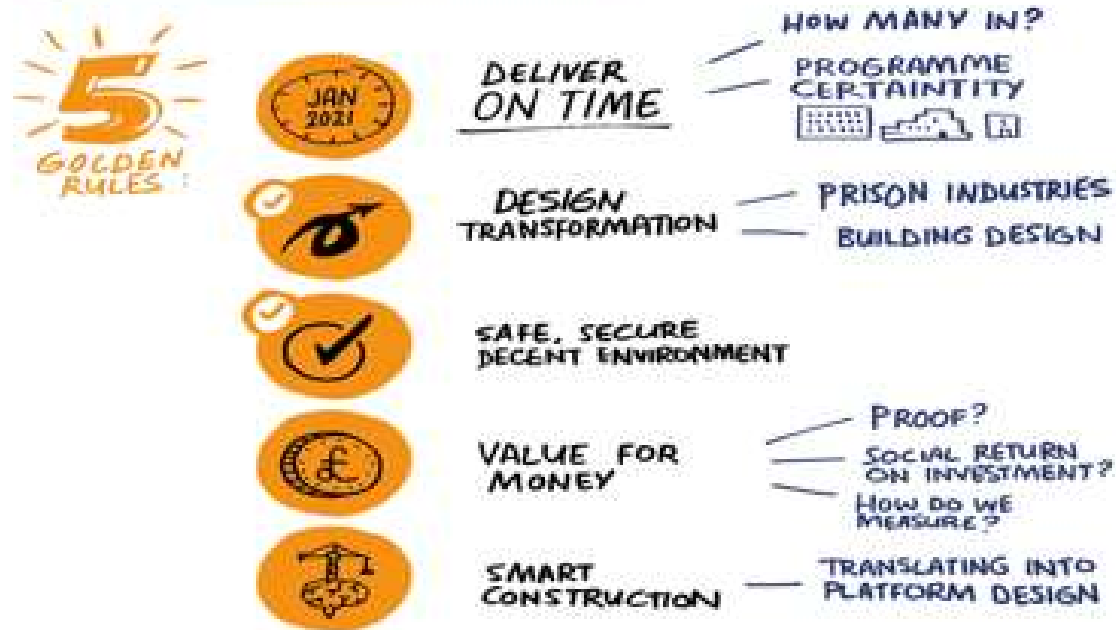
- ☐ Safer in construction and operation
- ☐ Rehabilitate
- ☐ Increase operational efficiency

☐ **Scale**

- ☐ 3,566 prison places under construction
- ☐ 10,000 further Prison places by 2025
- ☐ £2.5 Billion further Investment

Safer in Construction, Safer in Operation

OBJECTIVES



Re thinking Prison Design

- ❑ Evidence based approach consulting with Governors, Staff, Inmates their families & academics
- ❑ Reduce re-offending and violence
- ❑ New layouts promote normalisation, positive behaviour whilst maintain security
- ❑ 20 person communities increased education, training and family interaction
- ❑ Repeatable design across a number of locations to increase off site manufacture, improve productivity & predictable outcomes.

Framework for Collaboration, Safety & Repeatable Design

- ❑ Procured under PPC 2000 (partnering contracts)
- ❑ Tender assessed 80% Technical, 20% Cost
- ❑ Technical Themes –
 - ❑ Leadership
 - ❑ Health & Safety at every stage
 - ❑ Collaboration
 - ❑ Design Management
 - ❑ Supply Chain Management
 - ❑ Modern Methods of construction
 - ❑ Security and Prisoner safety
- ❑ **First vision and values priority themes being ‘Health & Safety and Wellbeing’ – key to driving culture on the project’s**

Funded from HMT and our own receipts

Disposals: Holloway

- ❑ £82m providing community facilities & 1000 housing units.
- ❑ Drives forward on our commitment to invest in estate by replacing ageing prisons and creating modern safe environments.



Under Construction



Stocken

- ❑ 206 places
- ❑ In cell Misting
- ❑ Being Commissioned



Wellingborough

- ❑ 1680 places
- ❑ New Repeatable Design
- ❑ Commenced on & off site

Glen Parva

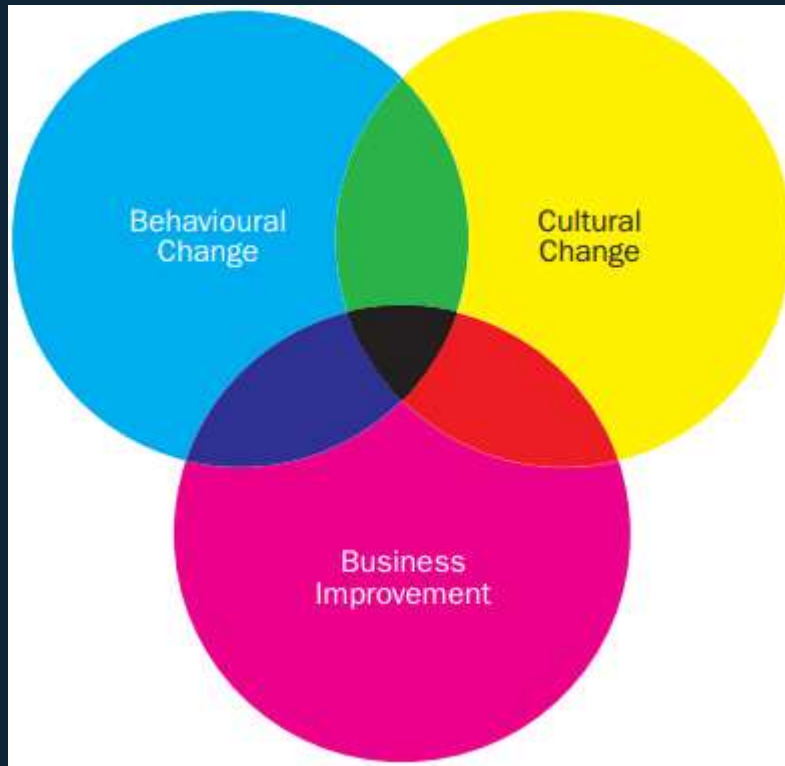
- ❑ 1680 places
- ❑ New Repeatable Design
- ❑ Enabling works

Meeting the Challenge Wellingborough



Safety Thinking

The 5 basics



Record to Refine

- ☐ Single system managing SHEA data
- ☐ Single system across Kier
- ☐ Linked to turnstyle & Logistics management system
- ☐ Greater trend analysis



Off Site Mind Set



Modern Methods of Construction (MMC)

A broad term to describe a variety of **innovative approaches** used to construct buildings and infrastructure that result in **increased efficiencies and improve productivity**. All types of 'Industrialisation' are captured within this definition.



Standardisation

The use of **standard components** or processes to provide a high level of **repeatability**. Using repeatable components increases **economies of scale** in procurement to deliver efficiencies. Using repeatable manufacturing processes gives a consistently **high quality** product.



Platform Design (P-DFMA)

A **rules based** approach to design that uses **standardised components** and process to **maximise** use across different assets, resulting in **efficiencies**. A platform design approach provides clients with **control** over elements that are important to them within a framework of options that are **efficient and cost effective** to build.

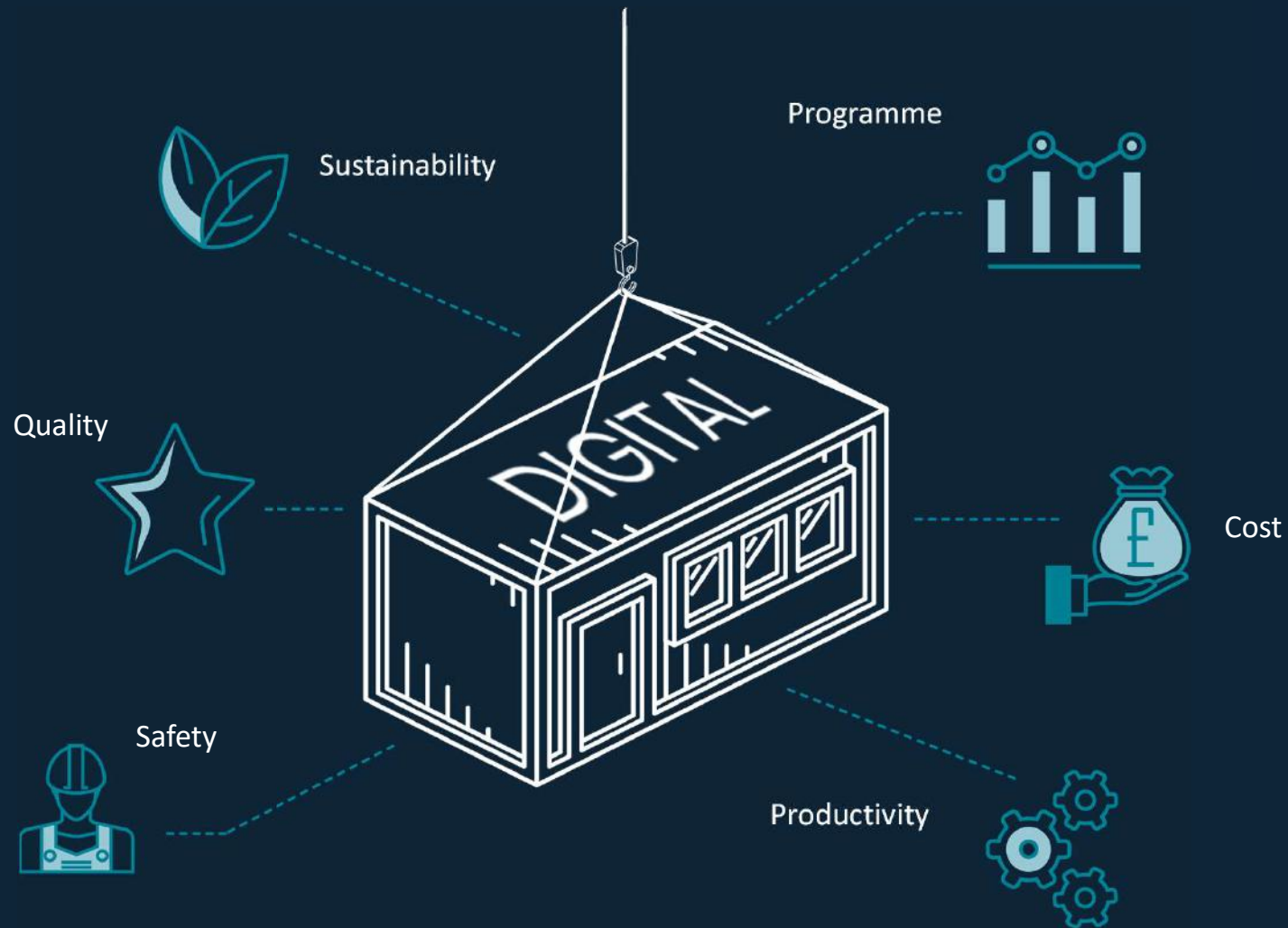


Offsite Manufacture (OSM)

The design, planning, manufacture and pre assembly of construction elements of components in a factory environment. **Reducing labour on site, improving quality and safety**.

The **choice** factory book by Kier has a wider Glossary of terms available via Google

Benefits



Precast for accommodation

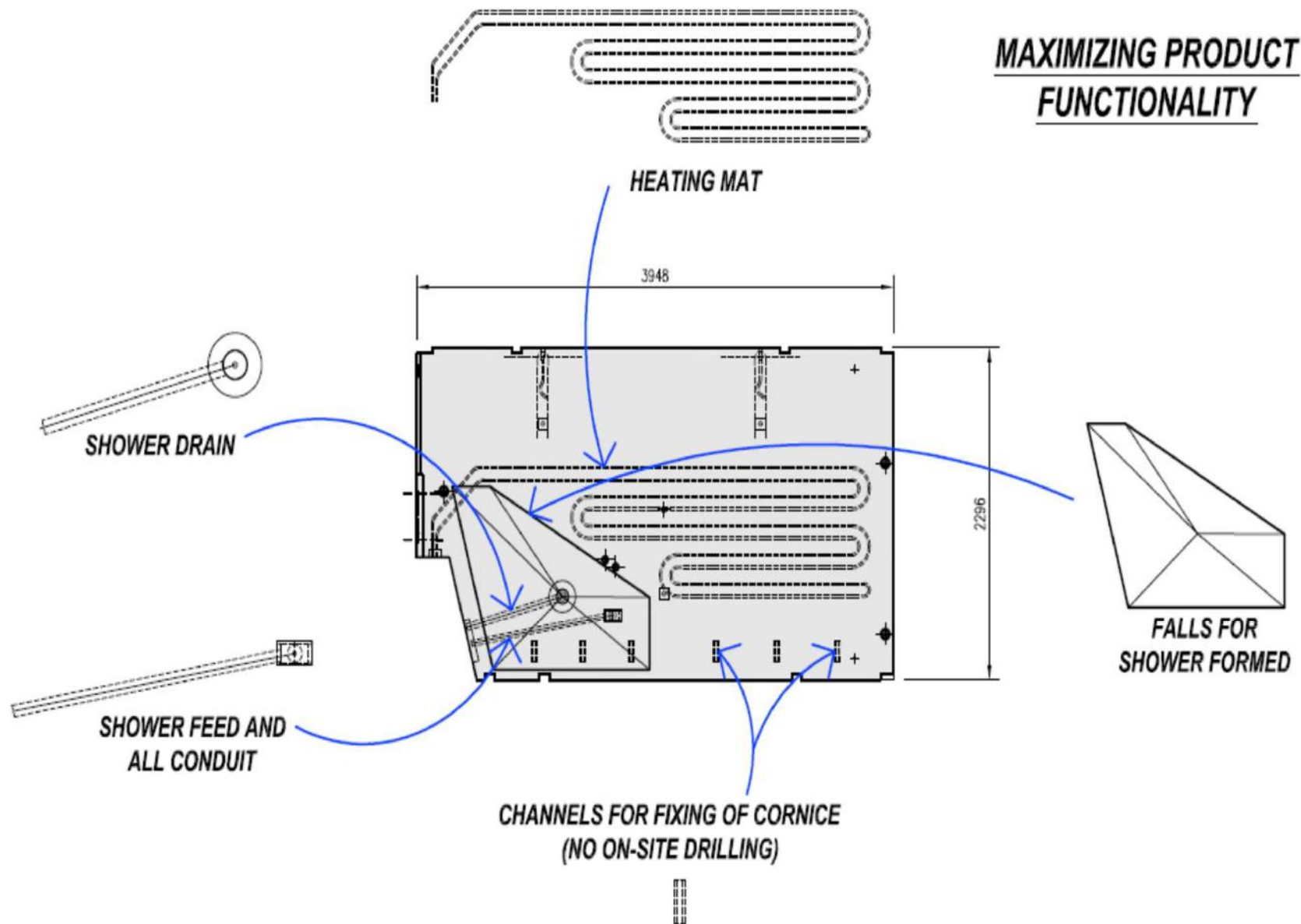
Precast benefits:

- ☐ Secure
- ☐ Fire
- ☐ Acoustics
- ☐ Designed with safety in mind
- ☐ Combined structure & façade
- ☐ Integrated MEPH maximising functionality
- ☐ Large components including sub assembly components (Doors, MEPH, Windows)
- ☐ Repeatable design (platform design)
- ☐ Available supply chain
- ☐ Reduced deliveries, Reduced Labour, Reduced Waste



Impacting safety from every angle

Precast optimisation



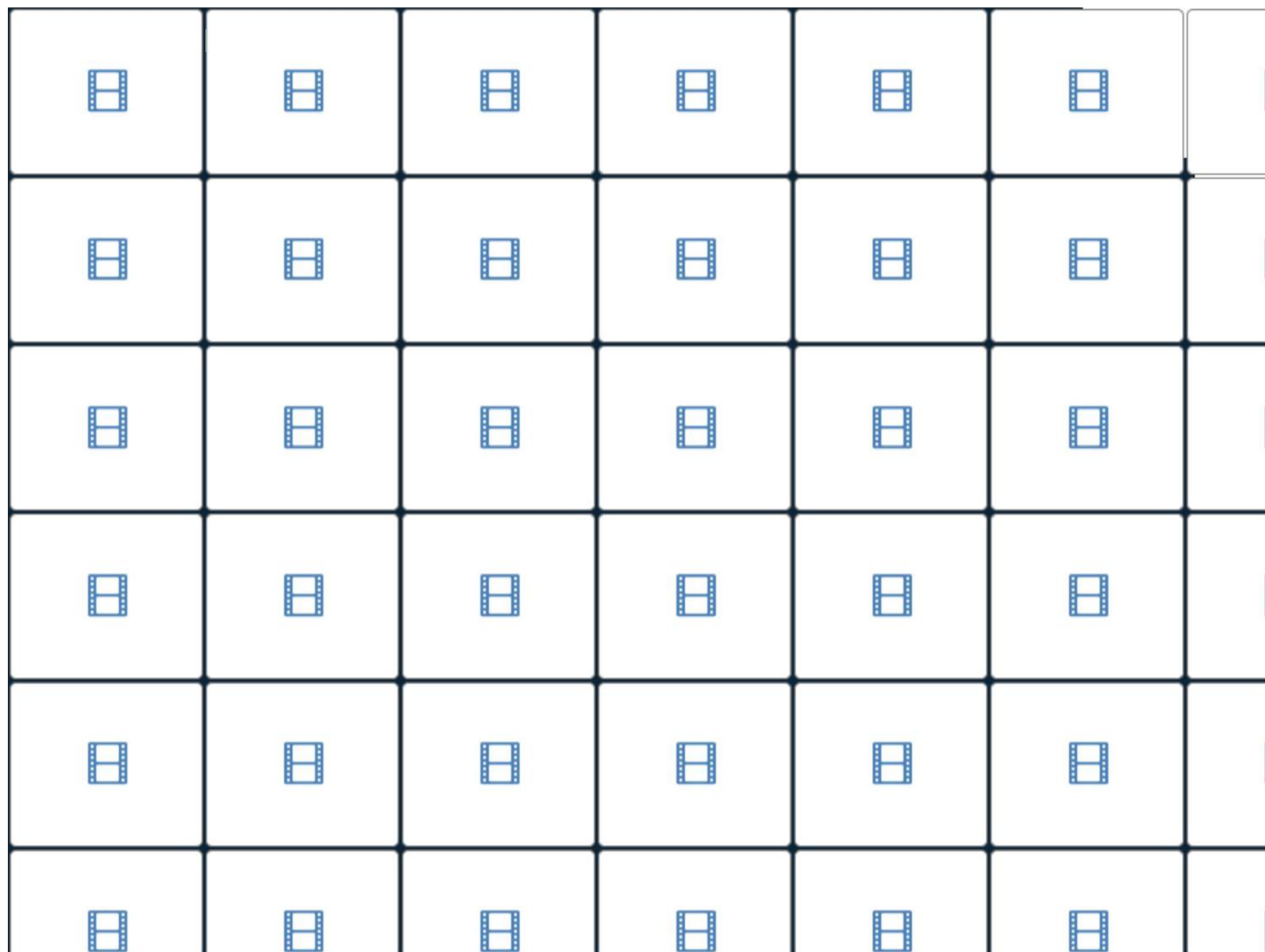
Maximising DFMA – Wellingborough

Precast structures incorporate (approximate):

- ❑ 15,183 precast components
- ❑ 1,682 cell doors
- ❑ 2,400 windows
- ❑ 19,680 conduits and 2,110 underfloor heating mats in the pre cast concrete panels
- ❑ 1,682 shower tray (dish) and drainage
- ❑ 27,000 provision for fixing M&E and joinery without the need for on site drilling

M&E prefabrication includes:

- ❑ Cell service risers
- ❑ Plant modules and skids
- ❑ Plug and play electrics and plumbing
- ❑ Multi services modular units down corridors and in ceiling voids



Creating Controlled Environments

INSITU FRAME AND BLOCK WALLS - 78 WKS

DfMA PROGRAMME HOUSEBLOCK BUILDINGS - 58 WKS

SUBSTRUCTURE



Deliveries: 60% fewer



Labour: 16% fewer staff on site



Waste: 30% less site waste



Time: 15% faster

FRAME & FACADE



Deliveries: 80% fewer



Labour: 80% fewer staff on site



Waste: 90% less site waste



Time: 50% faster

INTERNAL FIT-OUT



Deliveries: 80% fewer



Labour: 65% fewer staff on site



Waste: 80% less site waste



Time: 23% faster

Safety In Operation



- ☐ Fully assembled off site
- ☐ Robotics for welding operations
- ☐ Developed for factory casting into precast panel
- ☐ Maintained from the Cell



- ☐ In Cell Misting
- ☐ Common area misting
- ☐ Greater fire safety
- ☐ Allowing more soft furnishing



- ☐ Segregated maintenance access
- ☐ Flat roof plant areas
- ☐ Designed for maintenance
- ☐ Soft landing

Creating Normalising Environments

Secure welcoming environment





Component Assembly

ASSA Abloy
Crown House Tech
WMS Underfloor Heating
William Hayley Engineering
Kingspan
British Gypsum

Precast

Bison
FP McCann
Banagher Precast

Site

HMP Wellingborough

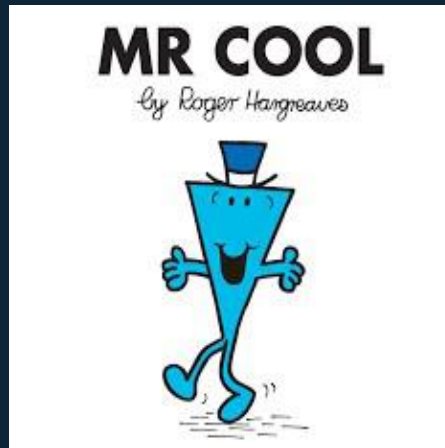


Maximising MMC



15,183 off site
manufactured
precast Units
weighting **27,055**
Tonnes

2,139 double
decker busses.



MEPH riser units
over **3** Kilometres
in total length
Saving **54,000**
working hours on
site

Time to read
106,000 books to
children



The project will
create approx.
94,800 GB data to
refine the design
and processes

6,212,812,800
IBM desk tops
required !



More energy efficient than a Victorian prison

Improved cell door



Renewable energy generation (PV)



Barless windows



Family engagement through welcoming environments



Building fabric energy loss 1/10 of 1970 prison



WIFI in every cell enabling in cell learning



Increased prison accessibility



Smaller / smarter prison communities



Rehabilitation through the built environment



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102 Petty France
London SW1H9AJ

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