

# Future Homes Standard, Grenfell and Climate Change

**3<sup>rd</sup> December 2019**

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**Or**  
**Where are we?**  
**How did we get here?**  
**What is currently happening?**  
**Where could it all lead?**





“There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know.”

*Donald Rumsfeld, February 2002*



# Known Knowns



# Where are we?

1. Existing energy and carbon related policies and legislation
2. Current Building Regulations
3. Building a Safer Future – Grenfell Tower and the Hackitt Review
4. Climate Change Act etc.
  - net zero carbon
  - Committee on Climate Change
  - Homes – Fit for the Future?
5. Future Homes Standard (Part L, Part F)
6. A digital world
7. 9 days away from a General Election....

# How did we get here?

1. Existing legislation well embedded – Building Act 1984
2. An extended period of deregulation
3. An extended period of reduction in fire related building deaths
4. Lack of real enforcement of energy related legislation
5. against a gathering body of evidence of climate change
6. and a government BIM Strategy
7. Grenfell Tower

Regulate – De-regulate – Ignore - Disaster – Re-regulate

## Leading to:

Three key pressures/drivers in relation to the future of the built environment:

Progressive tightening of the Climate Change Act and its five yearly carbon budgets will drive changes to building related energy legislation.

Building Safety programme and Hackitt reforms

The impact of digitalisation



# What is currently happening?

## **Current legislative activity:**

Commitment to update Parts L and F, and to address overheating risk.

Future Homes Standard consultation package

Hackitt Review and the Building Safety Programme

## **Other policy work:**

Achieving net zero carbon by 2050

UK Clean Air Strategy

Revision of the London Plan

Electric vehicles and the infrastructure to support them.

Future strategy for heating buildings as well as lighting them, including the possible switch to hydrogen from gas.

“Digital Transformation”





**Known Knowns**

**Business as Usual**



# Energy & Carbon Regulations for Buildings

- ~~1. CRC Energy Efficiency Scheme (CRC) (until 2019)~~
2. Climate Change Agreements (CCAs) & Climate Change Levy (CCL)
3. Energy Performance Certificates (EPCs), Display Energy Certificates (DECs) & Air conditioning inspections
4. Building Regulations (Part L, ADL2A, ADL2B)
5. Minimum Energy Efficiency Standards (for rented buildings)
6. F-Gas Regulation & related requirements
7. Smart Meters
8. Metering and Billing Regulations
- ~~9. Enhanced Capital Allowances (ECAs)~~
10. EU minimum energy performance standards and labelling (ErP)
11. Mandatory Greenhouse Gas (GHG) reporting
12. Energy Savings Opportunity Scheme (ESOS)

# Climate Change Act



# Climate Change Act 2008

- UK Domestic Legislation
- Committed UK to significant emissions reductions to 2050 – 80% relative to 1990 emissions levels
- Not directly linked to EU legislation
- But EU led measures contribute to emissions reductions...



# Climate Change Act 2008

It is the duty of the Secretary of State to ensure that greenhouse gas emissions are reduced by 80% by the year 2050, relative to 1990 levels

Carbon Budget 5 aims to reduce emissions by 57% by 2030, relative to 1990 emissions



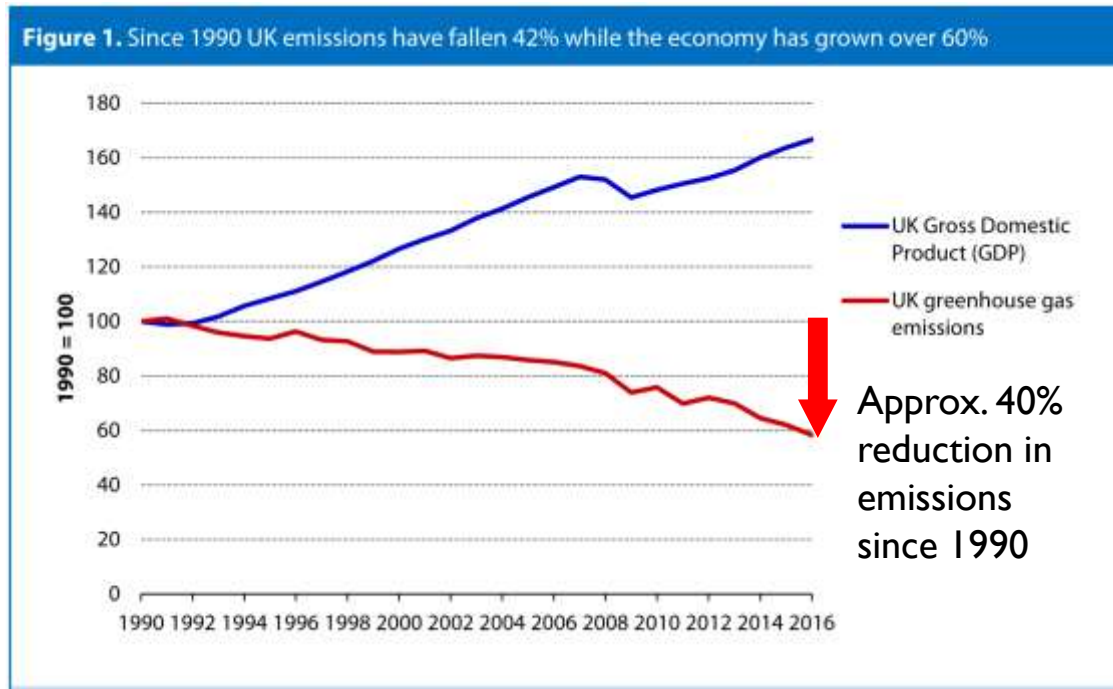
# Carbon Budgets 1 to 5

Budget	Carbon budget level	Reduction below 1990 levels
1st carbon budget (2008 to 2012)	3,018 MtCO <sub>2</sub> e	25%
2nd carbon budget (2013 to 2017)	2,782 MtCO <sub>2</sub> e	31%
3rd carbon budget (2018 to 2022)	2,544 MtCO <sub>2</sub> e	37% by 2020
4th carbon budget (2023 to 2027)	1,950 MtCO <sub>2</sub> e	51% by 2025
5th carbon budget (2028 to 2032)	1,725 MtCO <sub>2</sub> e	57% by 2030

Source: Committee for Climate Change



# Good news...



(Source: Committee on Climate Change, 2017)

We have decoupled GDP from energy and emissions

# But...



But we are not making adequate progress!

# Climate Change Act

NOW Commits UK to net zero carbon by 2050





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DRAFT STATUTORY INSTRUMENTS

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2019 No.

CLIMATE CHANGE

The Climate Change Act 2008 (2050 Target Amendment) Order  
2019

Made . . . . . \*\*\*

*Coming into force in accordance with article 1*

A draft of this instrument was laid before and approved by a resolution of each House of Parliament, in accordance with sections 2(6) and 91(1) of the Climate Change Act 2008 (“the Act”)(a).

Before the draft was laid, the Secretary of State—

- (a) obtained and took into account the advice of the Committee on Climate Change, in accordance with section 3(1)(a) of the Act; and
- (b) took into account representations made by the Scottish Ministers, the Welsh Ministers and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland in accordance with section 3(1)(b) of the Act(b).

The Secretary of State considers that since the Act was passed, there have been significant developments in scientific knowledge about climate change that make it appropriate to amend the percentage specified in section 1(1) of the Act.

Accordingly, the Secretary of State, in exercise of the power conferred by section 2(1)(a) of the Act, makes the following Order:

**Citation and commencement**

1. This Order may be cited as the Climate Change Act 2008 (2050 Target Amendment) Order 2019 and comes into force on the day after the day on which it is made.

**Amendment of the target for 2050**

- 2.—(1) Section 1 of the Climate Change Act 2008 is amended as follows.
- (2) In subsection (1), for “80%” substitute “100%”.

	<i>Name</i>
	Minister
Date	Department for Business, Energy and Industrial Strategy

**EXPLANATORY NOTE**

*(This note is not part of the Order)*

Article 2 of this Order amends section 1 of the Climate Change Act 2008 (c. 27) by altering the percentage amount in subsection (1). Section 1(1) imposes a duty on the Secretary of State as to the level of the “net UK carbon account” (the amount of net UK emissions of targeted greenhouse gases for a period adjusted by the amount of carbon units credited or debited to the account) for the year 2050. The duty is to ensure that the net UK carbon account is lower than the “1990 baseline” (the baseline of net UK emissions of targeted greenhouse gases against which the percentage amount in subsection 1(1) is applied) by a minimum percentage amount.

The amendment in this Order has the effect that the minimum percentage by which the net UK carbon account for the year 2050 must be lower than the 1990 baseline is increased from 80% to 100%.

A full impact assessment has not been produced for this instrument.

# The Climate Change Act 2008 (2050 Target Amendment) Order 2019

## Amendment of the target for 2050

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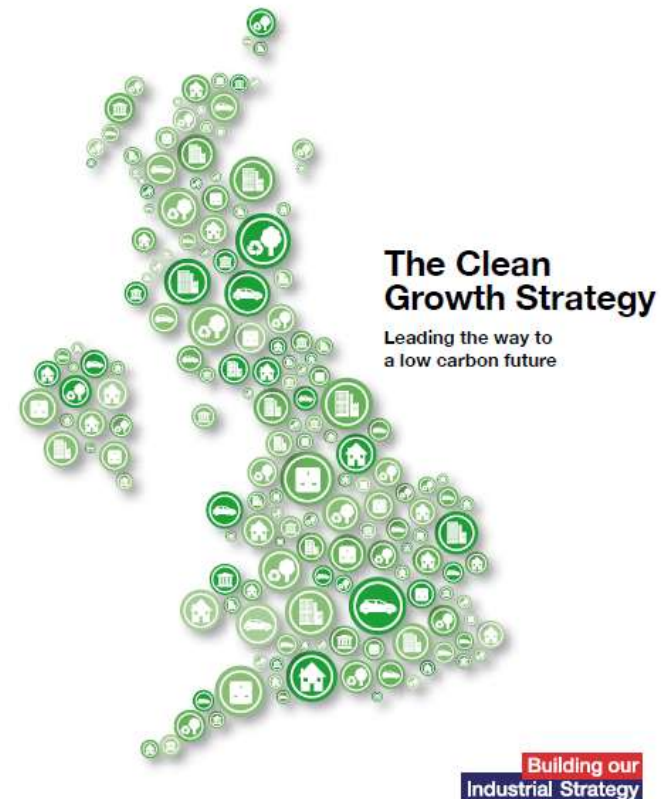


# Clean Growth Strategy

Published by UK Government in  
October 2017

“In order to meet the fourth and fifth carbon budgets (covering the periods 2023-2027 and 2028-2032) we will need to drive a significant acceleration in the pace of decarbonisation and in this Strategy we have set out stretching domestic policies that keep us on track to meet our carbon budgets.”

Clean Growth Strategy, pg9



# Clean Growth Strategy

- 102 policies and measures overall
- 51 relate to buildings and industry
- 17 to industry and commercial buildings
- 17 relating to improving our homes

Significant potential opportunity – if followed through



# An independent assessment of the Clean Growth Strategy

This report provides the Committee on Climate Change's response to the UK Government's Clean Growth Strategy.



# The report finds that

- The Government has made a strong commitment to achieving the UK's climate change targets.
- Policies and proposals set out in the Clean Growth Strategy will need to be firmed up.
- Gaps to meeting the fourth and fifth carbon budgets remain. These gaps must be closed.
- Risks of under-delivery must be addressed and carbon budgets met on time.



# Committee on Climate Change – 2018 Report

## Issued late June 2018

This year sees a change of tone and approach.

Previous broadly supportive acknowledgement of progress made and continuing opportunities replaced by a blunt assessment that we need to do more.

We need a long term plan to support simple low cost options and to stick to it without “chopping and changing policy”, with “effective regulation and strict enforcement”.



# Four specific areas of “chopping and changing”

Zero carbon homes, replaced by lower standards that would require costly retrofits in future;

Reduced Feed-in tariffs, with a 56% reduction in renewables investment between 2016 and 2017;

Efficiency measures in buildings, which the CCC says have cost 30,000 energy efficiency jobs;

Carbon-capture and Storage, where the delays will increase future costs of decarbonisation.







## UK housing: Fit for the future?

Committee on Climate Change  
February 2019



# Is UK Housing Fit for the Future?

UK homes are NOT fit for the future

We need to introduce:

- Heat pumps in off gas grid buildings
- Low carbon heating in new build: future proofing new homes now
- Low carbon heat networks
- Injecting biomethane into the gas grid

Energy efficiency retrofit of existing homes

In particular:

- hot water efficiency measures
- behavioural changes

# Fit for the Future – The Headline Ask

## Homes of the future are needed today

Decarbonising and adapting the UK's housing stock is critical for meeting legally-binding emissions targets by 2050 and preparing for the impacts of climate change. The UK Government, householders and developers need to implement policies and measures now that ensure new and existing homes are fit for the future.

# Fit for the Future – Key Messages

## **UK homes are not fit for the future.**

GHG emission reductions from UK housing have stalled, and efforts to adapt the housing stock for higher temperatures, flooding and water scarcity are falling far behind the increase in risk from the changing climate.

Quality, design and use of homes across the UK must be improved now to address the challenges of climate change. Doing so will also improve health, wellbeing and comfort, including for vulnerable groups such as the elderly and those living with chronic illnesses.

Report identifies five priorities for government action:

# Fit for the Future – Key Messages (1)

## 1. Performance and compliance.

The way new homes are built and existing homes retrofitted often falls short of design standards. This is unacceptable. In the long run, consumers pay a heavy price for poor-quality build and retrofit. Greater levels of inspection and stricter enforcement of building standards are required, alongside stiffer penalties for non-compliance. *(Have they read Hackitt?)*

The 'as-built' performance of homes, for example how thermally efficient they are, must also be better monitored. Closing the energy use performance gap in new homes (the difference between how they are designed and how they actually perform) could save between £70 and £260 in energy bills per household per year.

# Fit for the Future – Key Messages (2)

## 2. Skills gap

The chopping and changing of UK Government policy has inhibited skills development in housing design, construction and in the installation of new measures. Key steps for the UK in reducing emissions, like the wider deployment of heat pumps, require new skills.

## 3. Retrofitting existing homes.

The 29 million existing homes across the UK must be made low carbon, low-energy and resilient to a changing climate. This is a UK infrastructure priority and should be supported as such by HM Treasury. Homes should use low-carbon sources of heating such as heat pumps and heat networks.

# Fit for the Future – Key Messages (3)

**4. Building new homes.** There are plans for 1.5 million new UK homes by 2022. These new homes must be built to be low-carbon, energy and water efficient and climate resilient. The costs of building to a specification that achieves the aims set out in this report are not prohibitive, and getting design right from the outset is vastly cheaper than forcing retrofit later.

From 2025 at the latest, no new homes should be connected to the gas grid.

## **5. Finance and funding.**

There are urgent funding needs which must be addressed now with the support of HM Treasury: low-carbon heating (currently only funded up to 2021), and resources for local authorities, in particular building control.

## Homes of the future are needed today









Decarbonising and adapting the UK's housing stock is critical for meeting legally-binding emissions targets by 2050 and preparing for the impacts of climate change. The UK Government, householders and developers need to implement policies and measures now that ensure new and existing homes are fit for the future.

### What does a low-carbon, sustainable home look like?

Current technology, and measures aimed at preparing for the impacts of climate change, can help new and existing homes to become low-carbon and ultra-efficient as well as adapted to flooding, heat and water scarcity.

#### Existing homes

Improving existing homes can help existing house-holders meet the challenges of climate change

- 1  **Insulation** in lofts and walls (cavity and solid)
- 2  **Double or triple glazing with shading** (e.g. tinted window film, blinds, curtains and trees outside)
- 3  **Low-carbon heating** with heat pumps or connections to district heat networks
- 4  **Draught proofing** of floors, windows and doors
- 5  **Highly energy-efficient appliances** (e.g. A\*\* and A\*\*\* rating)
- 6  **Highly water-efficient devices** with low-flow showers and taps, insulated tanks and hot water thermostats
- 7  **Green space** (e.g. gardens and trees) to help reduce the risks and impacts of flooding and overheating
- 8  **Flood resilience and resistance** with removable air brick covers, relocated appliances (e.g. installing washing machines upstairs), treated wooden floors



#### New build homes

New build homes can and should meet even more ambitious standards in some areas

- A  **High levels of airtightness**
- B  **More fresh air** with mechanical ventilation and heat recovery, and passive cooling measures such as openable windows
- C  **Triple glazed windows and external shading** especially on south and west faces
- D  **Low-carbon heating and no new homes on the gas grid by 2025 at the latest**
- E  **Water management and cooling** more ambitious water efficiency standards, green roofs and reflective walls
- F  **Flood resilience and resistance** e.g. raised electricals, concrete floors and greening your garden
- G  **Construction and site planning** timber frames, sustainable transport options (such as cycling)





# Fit for the Future – What needs doing?

UK homes have a critical role to play in meeting the twin climate goals of reducing emissions and adapting to the current and future climate. **It will not be possible to meet the legally-binding 2050 emissions reduction target (or future ambitions for net-zero emissions) without a near complete decarbonisation of how we heat our homes.**

Retrofitting of measures offers substantial opportunities for addressing climate risks and improving people's health and wellbeing. **Upcoming reviews of building regulations provide an opportunity to make sure new homes are built for the future.** Our homes must be low-carbon, energy efficient, have safe moisture levels, excellent indoor environmental quality, and be climate resilient.

# Thermal comfort, ventilation & indoor air quality

The technology exists to deliver homes which have high levels of thermal efficiency (staying warm in winter while cool in summer), while being moisture-safe and with excellent indoor air quality. Achieving this requires a holistic approach in design, build and retrofit, which is currently not being driven effectively by existing policy.

Standards for overheating must be put in place. Passive cooling measures should be adopted in existing and new homes to reduce overheating risks before considering active measures such as air conditioning.

Regulations around ventilation must evolve to keep pace with improvements in the energy efficiency of buildings and there is a need for better coordination across energy and ventilation requirements. Further work is needed to ensure mechanical ventilation systems perform as they should.

# Electrical energy efficiency, flexibility and peak management

Fabric efficiency (walls, lofts) and other measures such as glazing will reduce space heating demand, but more is needed to reduce energy requirements for hot water and appliances.

This means insulating hot water tanks and pipes, putting in hot water thermostats, low-energy lighting and highly efficient appliances.

Measures such as batteries and smart appliances also allow householders to use energy more flexibly, helping to shift consumption away from peak and towards periods when renewable energy is available.

# Whole-life carbon impacts and wood in construction

We need more focus on the whole-life carbon impact of new homes, including embodied and sequestered carbon. Using wood in construction to displace high-carbon materials such as cement and steel is one of the most effective ways to use limited biomass resources to mitigate climate change, [as] it both displaces industrial carbon emissions and stores carbon long-term in buildings.

The *Clean Growth Strategy*, committed to developing new policies to support a substantial increase in the use of wood in construction - these are needed to overcome a range of cultural, skills and financial barriers in the construction sector.

Low-regret action should also be taken to support the assessment and benchmarking of whole-life carbon in buildings, with a view to informing future policy framework.

# Making Homes Fit for the Future

## 36 Recommendations – 23 related to Buildings

Feeding into “a wide array of current work by UK Government and devolved administrations are planning for 2019, including: the reviews of Part L and Part F of the Building Regulations, an update of the planning practice guidance in England, development of a roadmap for policy on heat decarbonisation, review of a per capita water consumption target in England and the Government’s commitment to halve the energy use of new homes by 2030.”

Compliance and the performance gap (4)

Building Regulations (9)

Low Carbon Homes (6)

Overheating (2)

Water efficiency (2)

Property level flood protection (2)

Green Infrastructure & Planning (2)

Transport (7)

Local Action & Planning (2)



# Making Homes Fit for the Future

## Future Homes Standard

Announced in March Statement by then Chancellor Philip Hammond as part of a package of Clean Growth measures.

“to help ensure consumer energy bills are low and homes are better for the environment, the government will introduce a Future Homes Standard by 2025, so that new build homes are future-proofed with low carbon heating and world-leading levels of energy efficiency”





And then in May the CCC followed up with its response to the Government's request to assess the UK potential input to global emissions abatement in the wake of the Paris Agreement. This called for the change of target to net zero by 2050.

# Net Zero

- Applies across the economy, not just to the built environment
- Acknowledges that the cost of decarbonising the buildings sector is high and cannot be met by owners
- Calls for other financial measures
- Sets challenging targets for the building sector to retrofit existing buildings





'Theresa has not made progress this year. She is easily distracted and has often not completed her climate change homework due to her attention to other interests.'

## End of term report





House of Commons

Business, Energy and Industrial  
Strategy Committee

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# Energy efficiency: building towards net zero

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Twenty-First Report of Session  
2017–19

*Report, together with formal minutes relating  
to the report*

*Ordered by the House of Commons  
to be printed 9 July 2019*

# Headlines

BEIS Select Committee calling for far greater focus on retrofit and energy efficiency upgrades to existing buildings

Calls for the Future Homes Standard to be extended to non domestic buildings and be developed quickly

Calls for a greater enforcement activity around energy efficiency standards in the private rented sector





Ministry of Housing,  
Communities &  
Local Government

## The Future Homes Standard

2019 Consultation on changes to Part L (conservation of fuel and power) and Part F (ventilation) of the Building Regulations for new dwellings

# Future Homes Standard 2025

Announced at start of October  
Runs until 10<sup>th</sup> January

A compendium of  
consultations covering  
The Future Homes Standard  
Changes to Part L  
Changes to Part F  
Airtightness testing  
SAP changes

# Building a Safer Future

Independent Review of Building  
Regulations and Fire Safety:  
**Final Report**



# Terms of Reference for the Independent Review

Dame Judith was commissioned to focus on “High Rise Residential Buildings” – HRRBs.

A twofold purpose to the review:

- to make recommendations that will ensure we have a sufficiently robust regulatory system for the future and
- to provide further assurance to residents that the complete system is working to ensure the buildings they live in are safe and remain so.

# Dame Judith was asked to:

- map the current regulatory system (i.e. the regulations, guidance and processes) as it applies to new and existing buildings through planning, design, construction, maintenance, refurbishment and change management;
- consider the competencies, duties and balance of responsibilities of key individuals within the system in ensuring that fire safety standards are adhered to;
- assess the theoretical coherence of the current regulatory system and how it operates in practice
- compare this with other international regulatory systems for buildings and regulatory systems in other sectors with similar safety risks;
- make recommendations that ensure the regulatory system is fit for purpose with a particular focus on multi-occupancy high-rise residential buildings.

**The current system is “broken”**





# In Dame Judith's words:

“In my interim report published in December 2017 I described how the regulatory system covering high-rise and complex buildings was not fit for purpose. In the intervening period, we have seen further evidence confirming the deep flaws in the current system:

- lack of an audit trail as to whether essential safety work was carried out on the Ledbury Estate, and other large panel systems tower blocks;
- a door marketed as a 30-minute fire door failed prior to 30 minutes when tested, revealing concerns around quality assurance and the ability to trace other fire doors manufactured to that specification;
- another tower block fire where fire spread between floors via wooden balconies; and
- a major fire in a car park in Liverpool which came close to encroaching on a block of flats nearby.”

# Key issues underpinning system failure

**Ignorance** – regulations and guidance are not always read by those who need to, and when they do the guidance is misunderstood and misinterpreted.

**Indifference** – the primary motivation is to do things as quickly and cheaply as possible rather than to deliver quality homes which are safe for people to live in. When concerns are raised, by others involved in building work or by residents, they are often ignored.

Some of those undertaking building work fail to prioritise safety, using the ambiguity of regulations and guidance to game the system.

# What is a regulation?

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STATUTORY INSTRUMENTS

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2010 No. 2214

**BUILDING AND BUILDINGS, ENGLAND AND WALES**

The Building Regulations 2010

*Made* - - - - - 6th September 2010  
*Laid before Parliament* 9th September 2010  
*Coming into force* - - - 1st October 2010

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The Building Regulations 2010

**Conservation of  
fuel and power**

**APPROVED DOCUMENT**

**L2A**

**L2A Conservation of fuel and power  
in new buildings other than dwellings**

# Key issues underpinning system failure

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Some of those undertaking building work fail to prioritise safety, using the ambiguity of regulations and guidance to game the system.

## Key issues underpinning system failure (2)

**Lack of clarity on roles and responsibilities** – there is ambiguity over where responsibility lies, exacerbated by a level of fragmentation within the industry, and precluding robust ownership of accountability.

**Inadequate regulatory oversight and enforcement tools** – the size or complexity of a project does not seem to inform the way in which it is overseen by the regulator.

Where enforcement is necessary, it is often not pursued. Where it is pursued, the penalties are so small as to be an ineffective deterrent.

**Consultants**

**Constructors**

**Producers**



# Key findings and recommendations

- Creation of a regulatory body consisting of building control, fire and rescue and the health and safety executive to jointly oversee HRRBs
- Reform of the system of building control to limit choice of regulator and cost based competition between inspectors



## Key findings and recommendations (2)

- A system of approval gateways up to handover
  - At the planning stage
  - At detailed plans stage
  - At handover
- A “golden thread of information” to be created during design and construction and handed over at completion to inform the management and operation of the building

# Key findings and recommendations (3)

## Clearer and more effective product specification and testing

- 7.14 The scope of testing, the application of products in systems and the resulting implications must be more clearly communicated in plain, non- technical and consistent language to ensure the information is accessible and readily understandable by those specifying the products. Part 3 of this chapter also makes recommendations for an improved labelling regime which will facilitate the right products being put together as systems and enable more effective record keeping of this information through the golden thread of building information.

# Key findings and recommendations (4)

## Recommendation 7.1

- a. A clearer, more transparent and more effective specification and testing regime of construction products must be developed. To include products as they are put together as part of a system.
- b. Clear statements on what systems products can and cannot be used for should be developed and their use made essential. This should ensure significantly reduced scope for substitution of any products used in a system without further full testing. Until such time, manufacturers should ensure that they adhere to the current limitations set out in classification reports in the current regime.
- c. The scope of testing, the application of products in systems, and the resulting implications must be more clearly communicated in plain, consistent, non- technical language.

# Key findings and recommendations (5)

## Recommendation 7.4

Test methods and standards should be maintained under a periodic review process in order to drive continuous improvement and higher performance through the development of new test methods, and encourage innovative product and system design under better quality control.

# Professional Competence

## Recommendation 5.2

a. The professional and accreditation bodies working within the construction and fire safety sectors should continue the work started in response to the interim report and present a coherent proposal to government within one year. As a minimum, this proposal should cover the role and remit of an overarching body to provide oversight of competence requirements and support the delivery of competent people working on HRRBs, including:

- the professional bodies, professions and disciplines in scope;
- its membership and governance;
- its role in receiving, agreeing and monitoring the individual competence frameworks for those bodies, professions and disciplines in scope for individuals within their membership or on their register, and/or whether a single competence framework for professional bodies in scope should be established;
- its role in agreeing and monitoring accreditation and reaccreditation, and the period within which the competence of individuals should be reassessed and reaccredited;
- its role in establishing a method for demonstrating or proving competence;
- how the correct balance between construction sector skills and fire safety skills should be balanced; and
- whether the competence requirements for those working on HRRBs should also be extended to cover other multi-occupancy residential buildings and to institutional residential buildings.

## Professional Competence (2)

b. Progress should be monitored by government, with the professional and accreditation bodies providing government with quarterly progress reports.

c. If government does not consider that the proposed approach provides the necessary assurance to the JCA, or there is evidence that the fragmented approach to the oversight of competence will continue, then government should mandate a body to establish the competence levels required and oversee its implementation.

# Implementation

Government has published its Implementation plan

This commits to:

- take immediate action to establish a radically-new system for the future
- bringing forward legislation at the earliest opportunity to carry out the necessary reforms

“This implementation plan sets out what the far-reaching overhaul of the system will involve over the coming years.”

## Building a Safer Future

An Implementation Plan



# Consultation – Summer 2019

## Government proposals to reform the building safety system

Develops December 2018 Government Implementation Plan in response to Building a Safer Future;

Goes **beyond** “Dame Judith’s recommendations”

Covers how we build, who builds, what with, and who regulates all those processes, people and products

Issued - 6 June 2019

Closed – 31 July 2019

Many proposals require primary legislation





# Proposals to strengthen system and assure building safety

Main themes of Dame Judith's Review were:

- The need for greater definition and clarity over competence and control over who works on higher risk buildings
- The need for a more effective regulatory and accountability framework
- The need for greater clarity over regulations, standards and guidance
- Putting residents at the heart of building safety
- Driving Cultural Change and creating a more responsible building industry



# The Consultation

Chapter 1 – set out **progress** to date

Chapter 2 – the **buildings in scope** of the proposals

Chapter 3 –proposals for **reform of how we design, build and operate buildings, and for competence of those who design, build and operate** buildings

Chapter 4 – how **residents** will be empowered

Chapter 5 – proposals to ensure **robust oversight** of building safety, including regulations, standards and products

Chapter 6 – proposals to improve **compliance** and strengthen **enforcement** with regulations



# Implications for professional engineers

Competence – M[name of professional body] and Chartered[profession] will not be enough:

So CIBSE needs to consider how our current membership and registration feeds into the proposed new system.

There will be new Gateways, Building Safety Certificates and requirements to sign off:

So how will CIBSE provide the tools, knowledge and guidance to our members and to the wider industry?

*eg. We have already been asked to provide a CIBSE input to a new British Standard on digital management of fire safety information.*



# Wider Implications

A new regulatory body to oversee regulations, guidance and competence (subsuming BRAC)

A new Product Safety regime, probably under the Office for Product Safety

Major changes to the Approved Documents to clarify them and to encourage systems thinking



# Building a Safer Future Independent Review of Building Regulations and Fire Safety: Final Report

## Chapter 8: Golden thread of building information

Identifies the need for a 'golden thread' of information for all higher risk residential buildings (HRRBs), so that their original design intent is preserved and changes can be managed through a formal review process. Equally, access to up-to-date information is crucial when effectively carrying out a fire risk assessment of a building and determining whether any action is required.

With thanks to Dr Anne Kemp OBE



# Call for integration

Fledgling examples of an  
**Integrated Digital Built Environment:**

- Smart cities
- Common place availability of location – based mobile apps
- Autonomous transportation systems

These challenges generally demand integrated approaches, with a need to move information and data freely between different disciplines/modelling approaches – joined up multi-disciplinary thinking

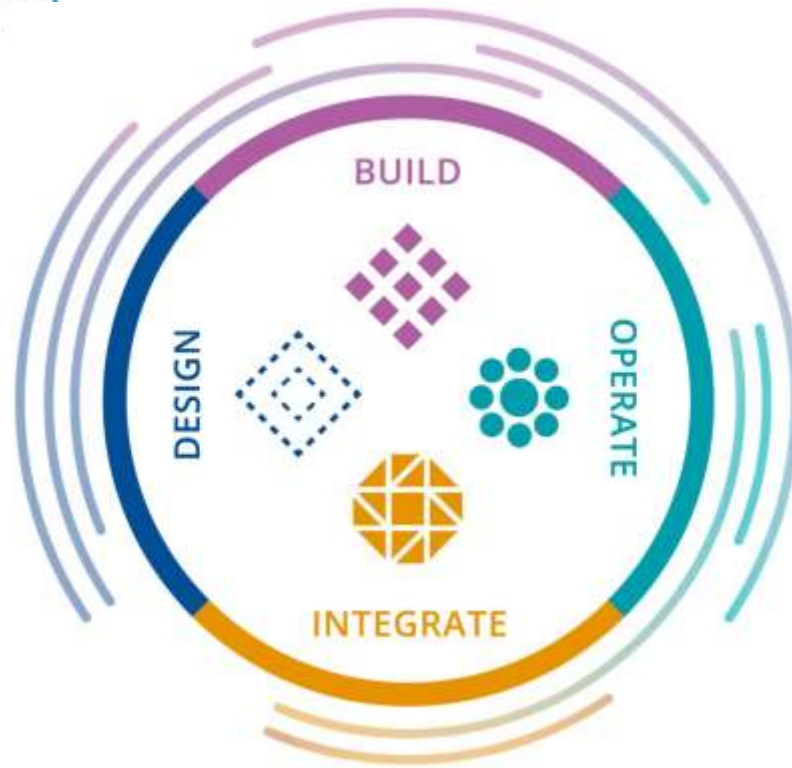


# Future Direction of BIM

## ..... *Realising Digital Transformation*

- This is what the BIM movement was set up for. To develop approach to digital transformation, which allows us to understand and have control over the shift from analogue to digital
- How to demonstrate semi-automated and then automated processes in scalable way
- To develop open, shareable standards which allow for checkable, repeatable, improvable processes.

# UK BIM FRAMEWORK



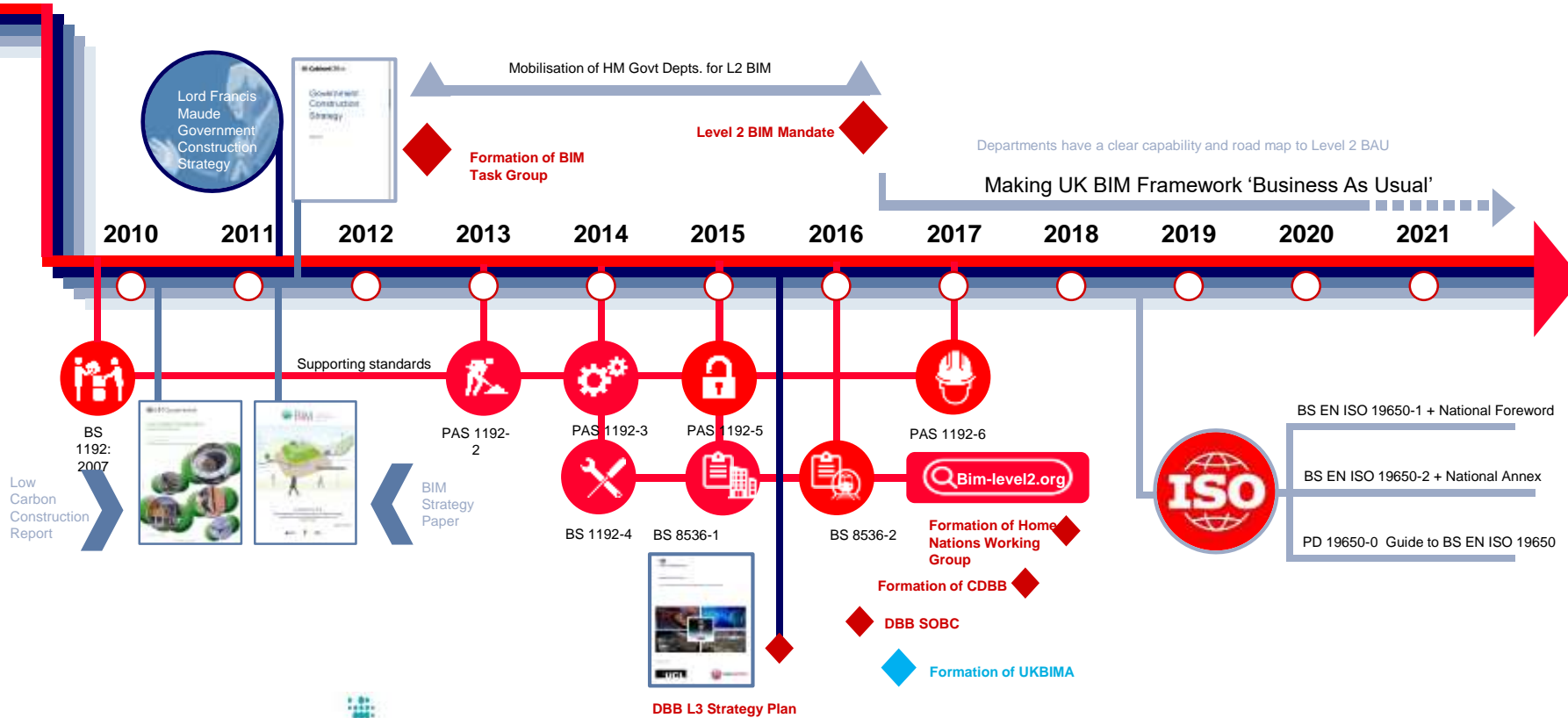
bsi.

cdbb  
Centre for Digital Built Britain

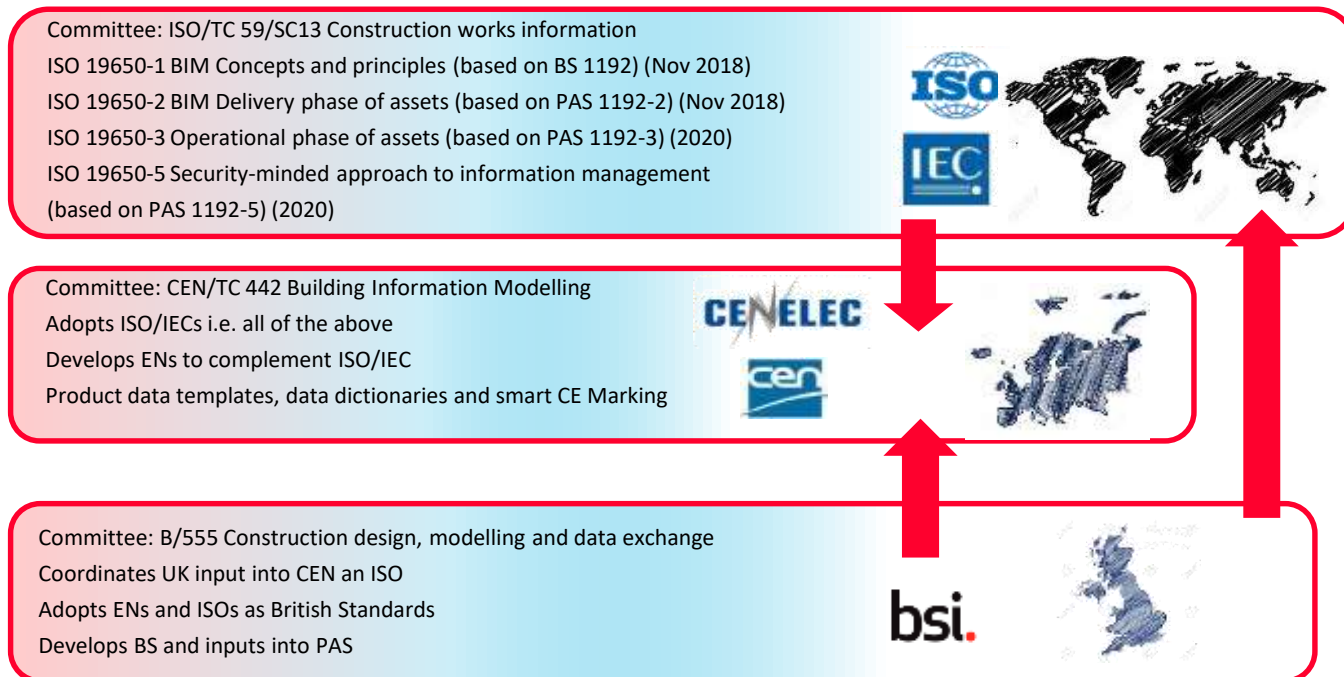
UKBIM  
ALLIANCE  
Enabling Digital Transformation



# Timeline



## International BIM standardisation

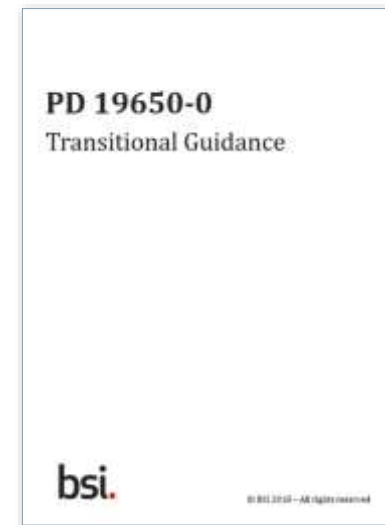


# Information management according to ISO 19650: *The UK BIM Framework*

The published UK BS/PAS 1192 Series .....



From January 2019, was superseded by:



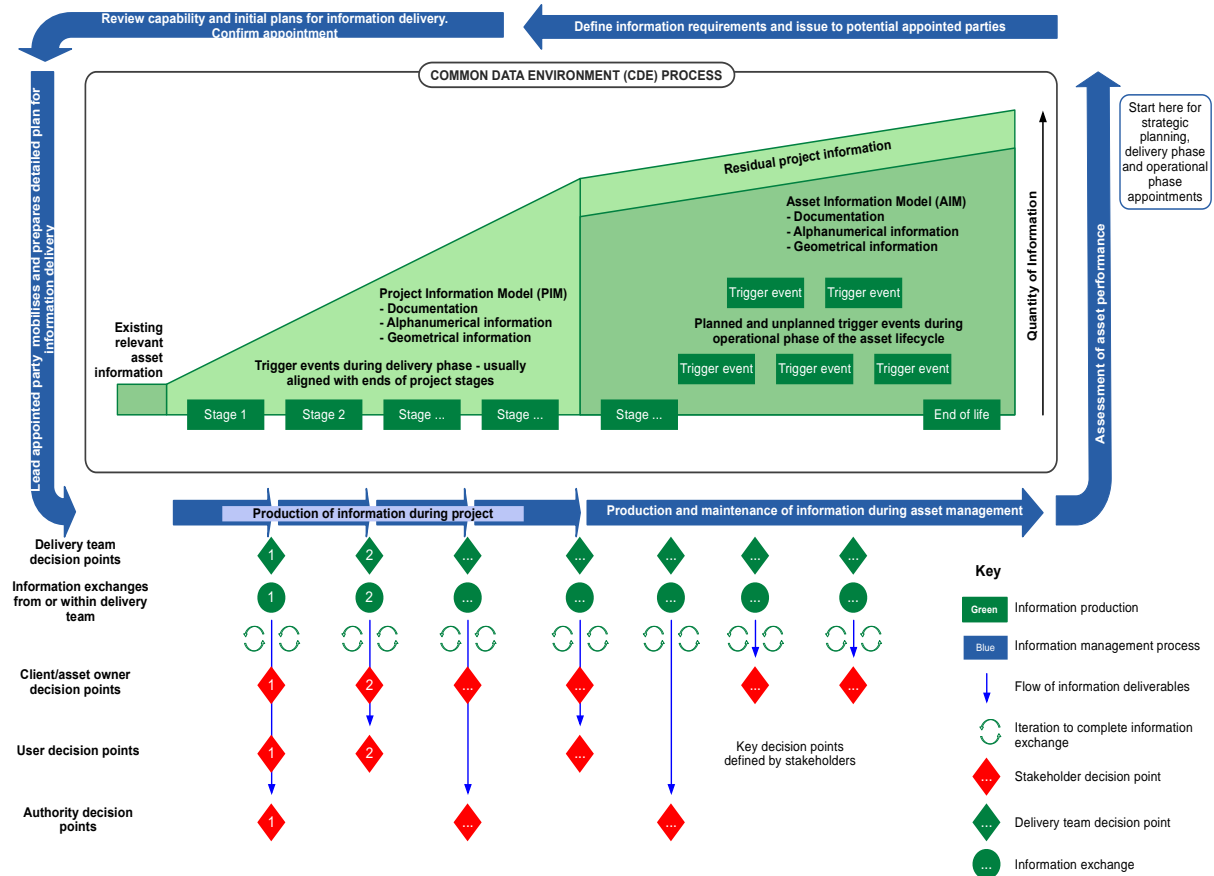
What if I'm already using the 1192 standards?



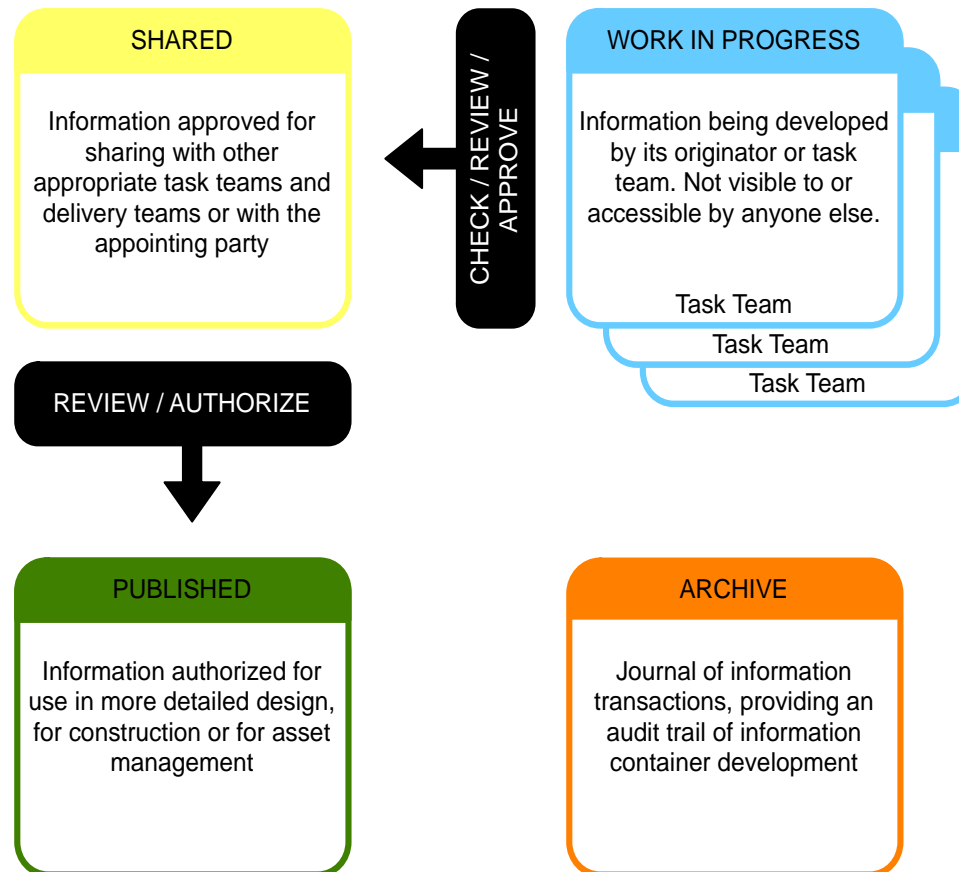
# Information management according to ISO 19650

BS EN ISO 19650-1

## The Information Delivery Cycle



# Information management according to ISO 19650



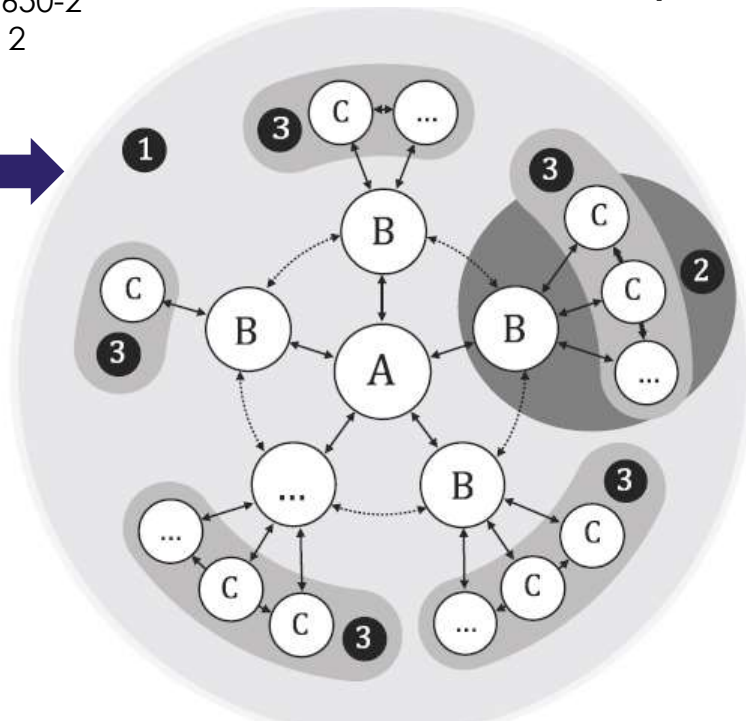
**Figure 12:**

**Common Data Environment concept**

# Information management according to ISO 19650

ISO 19650-2  
Figure 2

Part 2 process – 1<sup>st</sup> edition



## Key

A appointing party

B lead appointed party

C appointed party

... variable amount

1 project team

2 illustration of a delivery team

3 task team(s)

↔ information requirements and information exchange

↔ information coordination

Figure 2 — Interfaces between parties and teams for the purpose of information management

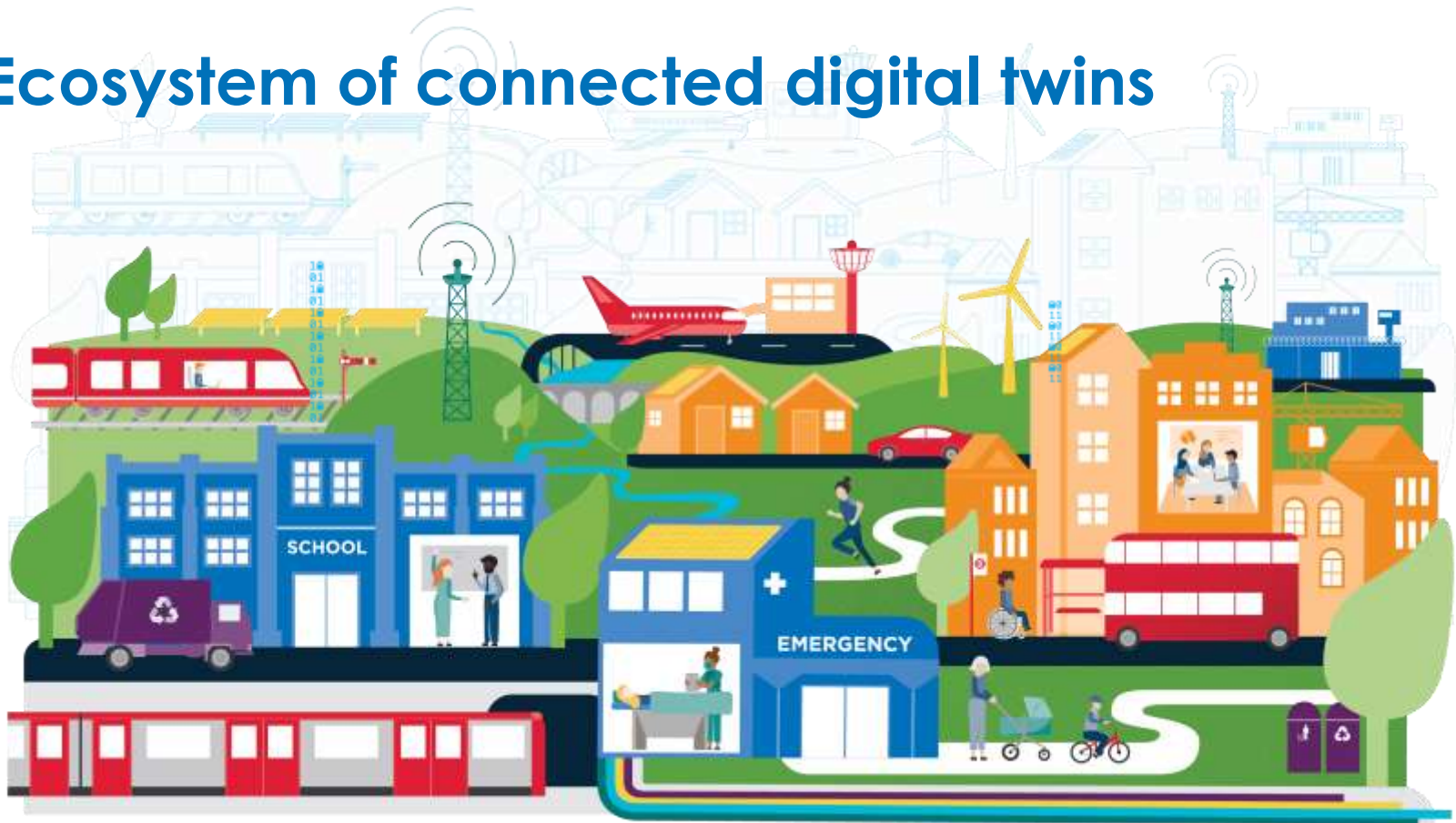
**National Digital Twin** – An ecosystem of connected digital twins enabling better decisions faster across the built environment

# Built environment

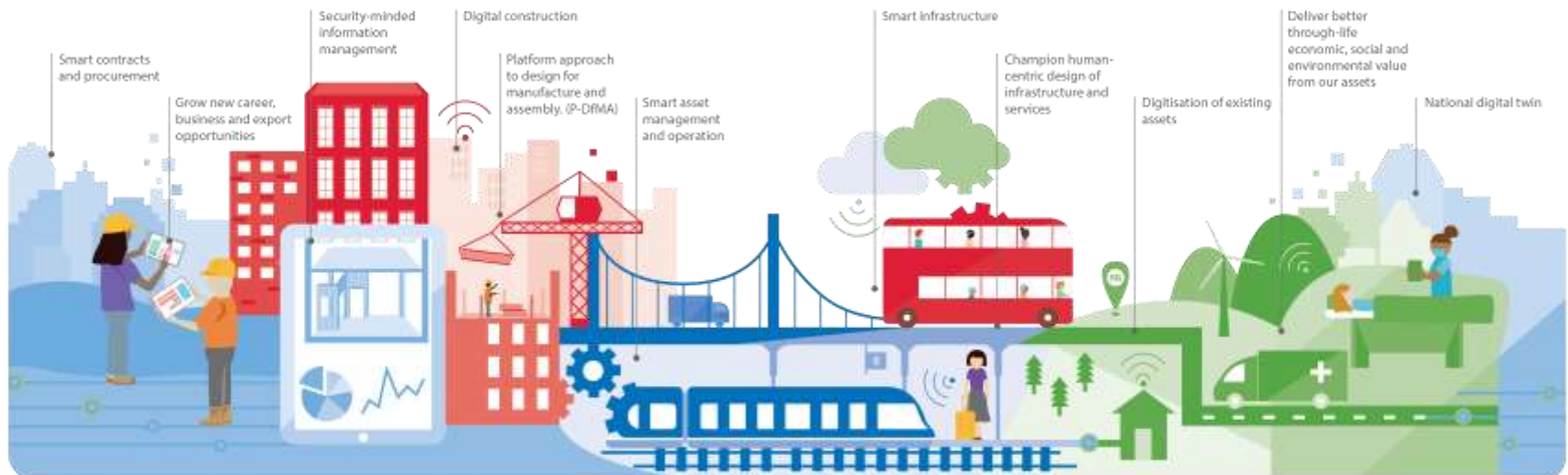




# Ecosystem of connected digital twins



# This is Digital Built Britain



## Design

Use best practice, secure by default, information management and digital techniques to get data right from the start and design better-performing homes, buildings and infrastructure.

## Build

Exploit new and emerging digital construction, information management, and manufacturing technologies and techniques to improve safety, quality and productivity during construction.

## Operate

Use effective information management to transform the performance of the built environment and the services it delivers.

## Integrate

Understand how the built environment can improve citizens' quality of life and use that information to drive the design and build of our economic and social infrastructure and the operation and integration of the services they deliver.

# Unknown unknowns





There are things we don't know we don't know

**So**  
**Where are we?**  
**How did we get here?**  
**What is currently happening?**  
**Where could it all lead?**



# Summary

It is a time of unprecedented change in our sector:  
'Hackitt' and Climate Change attract attention & headlines;

Hackitt is leading to radical change;

Progressive tightening of the Climate Change Act and its five yearly carbon budgets constrains changes to building related energy legislation.

Meanwhile, digitalisation is creeping up on us!



**Thank you for listening**

Any Questions?

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