10 SYMPTOMS OF FAILURE

- Low Productivity
- Low Predictability
- Structural Fragmentation
- Leadership Fragmentation
- Low Margins, Adversarial Pricing Models & Financial Fragility
- A Dysfunctional Training Funding & Delivery Model
- Workforce Size & Demographics
- Lack of Collaboration & Improvement Culture
- Lack of R&D & Investment in Innovation
- Poor Industry Image

MODERNISE OR DIE
Time to decide the industry's future.
LAND IS A FINITE BUT RECYCLABLE RESOURCE

CONSTRUCTION DELIVERY CAPACITY IS A REDUCING RESOURCE!
FUTURE PROGNOSIS FOR ‘BUSINESS AS USUAL’

Land Value Movement Since 2001:

UK Urban: -25% |
UK Greenfield - +25% 
London +160%  
(de-coupled)
FUTURE PROGNOSIS FOR ‘BUSINESS AS USUAL’

Build Cost Movement Since 2001:

UK Wide:  +40%

BCIS: All in UK Tender Price Index
FUTURE PROGNOSIS FOR ‘BUSINESS AS USUAL’

**BCIS: All in UK Tender Price Index**

Construction costs will gradually become much more dominant viability driver for residential development.

Major supply price inelasticity problem in construction costs if labour intensity remains at current levels.

Exponential upwards trend line.

Amplitude & frequency of peaks & troughs increases.
THE FARMER REVIEW OF
THE UK CONSTRUCTION
LABOUR MODEL

FUTURE PROGNOSIS FOR ‘BUSINESS AS USUAL’

- Skilled labour depleted by 20-25% (before Brexit impact)
  - Quality of partial ‘backfill’ labour reduced
- Increasing reliance on shrinking pool of senior site based personnel
  - Main contractors not in control of sub-contractors
  - Sub-contractors not in control of their labour force
- Designers know increasingly little about technical design
  - Surveyors know increasingly little about real costs
- Increasing litigation over longer term defects and residential design, materials & workmanship failures
- Developers & housebuilders embroiled in increasing risk of major reputational damage & disruptors stealing a march
  - Residential development becomes too high a risk & increasingly unviable using traditional models

MODERNISE OR DIE
Time to decide the industry’s future
THE QUALITY AGENDA IS STARTING TO SNOWBALL....
SKILLS & TRAINING AGENDA HAS TO BE SUBORDINATE TO INNOVATION IF WE ARE TO BUILD A SUSTAINABLE FUTURE

The review is about industry productivity not purely head count. Skills development needs to respond to future more varied means of designing & constructing
UNDERSTANDING DELIVERY FAILURE

DESIGN, PROCUREMENT & CONSTRUCTION DELIVERY FAILURE

DESIGN UNIQUENESS
SITE LABOUR INTENSITY
NO. OF TRANSACTIONAL INTERFACES (VERTICAL INTEGRATION)
NO. OF WORKS INTERFACES (HORIZONTAL INTEGRATION)
CHANGING THE WAY WE DESIGN AND CONSTRUCT

WE NEED TO DESIGN WITH MANUFACTURE, INSTALL & QUALITY IN MIND

WE NEED TO REDUCE INTERFACES & CHALLENGE THE NORMAL VALUE CHAIN

WE NEED TO PRE-MANUFACTURE MORE VALUE AWAY FROM FINAL WORKFACE (INCREASE THE PRE-MANUFACTURED VALUE – PMV)
PRE-MANUFACTURING VALUE MEASUREMENT

\[
\text{PMV} = \frac{\text{TOTAL CONSTRUCTION PRICE}}{\text{LESS}}
\]

- PRELIMINARIES COSTS
- OHP & RISK ALLOWANCES
- COST OF SITE LABOUR & SUPERVISION

PMV should be a proxy for cost, time & quality predictability, plus greater efficiency & speed,
WHAT DOES THIS MEAN FOR HOW WE WORK CULTURALLY & BEHAVIOURALLY?
BUT FOCUS ON BIM WITHOUT CHANGING THE DELIVERY MODEL WILL MEAN HITTING A ‘GLASS CEILING’
BIM needs connecting with a new more integrated, pre-manufacture led delivery model to unleash potential.
WHAT DOES THIS MEAN FOR DESIGN & DELIVERY PROCESS?

Need to focus on the areas of ‘chassis’ standardisation whilst allowing customised design within certain DfMA parameters.
WHAT DOES PRE-MANUFACTURING LOOK LIKE?

On site ‘assembly’, not ‘construction’
WHAT DOES PRE-MANUFACTURING LOOK LIKE?
WHAT DOES PRE-MANUFACTURING LOOK LIKE?
WHAT DOES PRECISION ENGINEERING LED PRE-MANUFACTURING LOOK LIKE?
WHAT DOES THIS MEAN FOR CONTRACTUAL FRAMEWORKS?

Opportunity for IPI? Need to aggregate responsibility through a non lump sum owned Main Contractor model.
ANY CHANGE STRATEGY NEEDS TO BREAK THIS VICIOUS CIRCLE

Client & Advisor Demands on Construction Industry

Project under-performance or failure

Construction Industry Response
SO HOW DO YOU BREAK THE VICIOUS CIRCLE?

CHANGE WILL BE LED FROM THREE POSSIBLE SOURCES:-

INDUSTRY DISRUPTORS, INNOVATORS & NEW ENTRANTS SEIZING THE INITIATIVE

CLIENTS, FUNDERS & ADVISORS DEMANDING IMPROVEMENT IN DELIVERY PROCESS

GOVERNMENT INFLUENCE ON CLIENTS & INDUSTRY

It is client & funder led behaviour in commissioning which is key to speed and scale of change in how the construction industry delivers
FARMER REVIEW RECOMMENDATIONS

‘PAY IF YOU DON’T PLAY’

BUT IN REALITY:

SPIRALLING BUILD COST INFLATION

WORSENING DELIVERY PERFORMANCE

BETTER DEVELOPMENT PREDICTABILITY = REDUCED RISK

REDUCED UNIT DELIVERY COSTS

SPEED

BETTER CUSTOMER FEEDBACK & LONG TERM VALUE CREATION
FARMER REVIEW RECOMMENDATIONS

SPIRALLLING BUILD COST INFLATION
WORSENING DELIVERY PERFORMANCE

‘PAY IF YOU DON’T PLAY’

Leadership
Policy
Peer Pressure

CLIENTS

BETTER DEVELOPMENT PREDICTABILITY = REDUCED RISK
REDUCED UNIT DELIVERY COSTS
SPEED
BETTER CUSTOMER FEEDBACK & LONG TERM VALUE CREATION

MODERNISE OR DIE
Time to decide the industry’s future
• Review remains in the media spotlight
  • A platform for debate in industry – you don’t have to agree with it!
    • Government has listened!
  • CITB Review initiated & dialogue held with separate review team
  • CLG Select Committee evidence provided – drive for cross party recognition of delivery capacity issues
  • All Party Parliamentary Group inquiry into Brexit happening – further BREXIT risk overlay
    • Major new pre-manufacturing disruptors entering market
    • Major developer clients starting to review their delivery options – including volume house builders looking at delivery certainty & diversity
  • Registered Provider sector assessing use of pre-manufacturing
DRIVING OUTCOMES - POLICY

Fixing our broken housing market

MODERNISE OR DIE
Time to decide the industry’s future
Driving Outcomes - Policy

Addressing skills shortages

2.31 The construction sector relies heavily on sub-contracted and self-employed labour, and has low levels of investment in skills and new technologies. This has contributed to skills shortages now facing the industry in some key trades and in some regions. This situation is likely to worsen if left unchecked, with many workers due to retire over the next 10 years. The 2016 Farmer Review of the UK Construction Model, Modernise or Die, sets out several challenges for industry, which we have considered.

2.32 The industry committed in 2016 to bring 45,000 new skilled workers into the sector by 2019/20. Some progress has been made but we now need industry to step up and increase the number of people trained on site, including through apprenticeships for workers of all ages. Industry should look at policy on retention to make best use of the skills of their existing workers and avoid unnecessary early exit from the labour market. Industry should work with local colleges to ensure that the future skills they need are being brought forward through the education and training sector. This will also help industry to address concerns it has raised about reliance on migrant labour in some areas, such as London and the South East, as we prepare to leave the European Union. This is an important moment and we should make the most of the opportunity for industry to invest in its workforce, alongside tackling the issues raised by the Farmer Review. The larger companies need to take responsibility for ensuring that they have a sustainable supply chain, working with contractors to address skills requirements.

2.33 Alongside this, the Government needs to play its part. We will:

- change the way the Government supports training in the construction industry so that we have the best arrangements to ensure strong industry leadership to address the skills challenge; improve retention and ensure that training courses cover the right skills to the right standards. We will start by reviewing the Construction Industry Training Board’s purpose, functions and operations. The review will report in the Spring and ensure that developers benefiting from public funding use the projects to train the workforce of the future;

- launch a new route into construction in September 2019 – as announced in the Skills Plan, this will streamline the number of courses available and improve quality and employability; We have already announced the apprenticeship levy which will come into effect from April 2017, and

- work across Government, with the Construction Leadership Council, to challenge house builders and other construction companies to deliver their part of the bargain. We want to see developers investing more in training to secure future needs, supporting retention and will work with industry to better understand any barriers to delivering this.

2.34 We have used the opportunity of major construction programmes, such as Crossrail, to help train the workforce of the future. Crossrail alone has created over 600 apprenticeships across the project and enrolled over 17,500 people at the Tunneling and Underground Construction Academy in Ilford. More than 1,000 people who were previously unemployed have gained work on the project. We will explore whether this successful approach can be applied more broadly in the construction sector.

Holding developers and local authorities to account

2.35 Strong local leadership is vital if the homes that local areas have planned for are to be built. We need to hold local authorities more closely to account for the delivery of homes that they have planned for, and enable them to hold developers accountable. We also need to improve transparency of the end-to-end house building process, so there is clarity about the delivery of new homes and where blockages lie. We propose to improve transparency, certainty and accountability for authorities and developers.
Driving outcomes - policy

Boosting productivity and innovation: modernising the housebuilding sector

3.37 The housebuilding industry is less productive than the wider economy, partly because it has been slow to modernise and make use of more efficient and faster ways of building. By increasing innovation and making greater use of modern methods of construction we can change this. Industry reports suggest homes constructed offsite can be built up to 30% more quickly than traditional methods and with a potential 25% reduction in costs. They are high quality, reliable, more productive and can be highly energy efficient. They require fewer people on site, helping to mitigate the skills shortage. Some firms are increasing their use of these methods, but we need to go further.

3.38 The industry has the potential to expand significantly, but a lack of demand from house-builders means that large firms tend to focus on manufacturing hotels, student accommodation and schools. Firms have told us that the most significant barrier to growth is the lack of a pipeline. A forward view of future orders and more information about the land available for development would allow them to secure investment to scale up production. International evidence suggests that as production increases the cost per unit falls. Scaling up production would allow industry to explore and deliver efficiencies, driving down costs. In turn this will encourage more builders to use these methods as it becomes economically sensible for them to do so.

3.39 To underpin the growth of this sector we must ensure that homes built offsite can access finance on the same basis as traditionally built homes. The Buildoffsite Property Assurance Scheme, which provides assurance to lenders on methods of construction, has existed for some time but there is limited take-up among lenders, partly because of a lack of data to support them in making decisions.

61 Modern methods of construction include homes that are built offsite or can be rapidly assembled or use other building techniques that increase productivity.
DRIVING OUTCOMES - POLICY
DRIVING OUTCOMES - POLICY
DRIVING OUTCOMES - POLICY

The pillars

1. Investing in science, research and innovation – we must become a more innovative economy and do more to commercialise our world leading science base to drive growth across the UK.

2. Developing skills – we must help people and businesses to thrive by: ensuring everyone has the basic skills needed in a modern economy; building a new system of technical education to benefit the half of young people who do not go to university; boosting STEM (science, technology, engineering and maths) skills, digital skills and numeracy; and by raising skill levels in lagging areas.

3. Upgrading infrastructure – we must upgrade our standards of performance on digital, energy, transport, water and flood defence infrastructure, and better align central government infrastructure investment with local growth priorities.

4. Supporting businesses to start and grow – we must ensure that businesses across the UK can access the finance and management skills they need to grow; and we must create the right conditions for companies to invest for the long term.

5. Improving procurement – we must use strategic government procurement to drive innovation and enable the development of UK supply chains.

6. Encouraging trade and inward investment – government policy can help boost productivity and growth across our economy, including by increasing competition and helping to bring new ways of doing things to the UK.

7. Delivering affordable energy and clean growth – we need to keep costs down for businesses, and secure the economic benefits of the transition to a low-carbon economy.

8. Cultivating world-leading sectors – we must build on our areas of competitive advantage, and help new sectors to flourish, in many cases challenging existing institutions and incumbents.

9. Driving growth across the whole country – we will create a framework to build on the particular strengths of different places and address factors that hold places back – whether it is investing in key infrastructure projects to encourage growth, increasing skill levels, or backing local innovation strengths.

10. Creating the right institutions to bring together sectors and places – we will consider the best structures to support people, industries and places. In some places and sectors there may be missing institutions which we could create, or existing ones we could strengthen, be they local civic or educational institutions, trade associations or financial networks.
DRIVING OUTCOMES - POLICY

HOMES FOR LONDONERS

AFFORDABLE HOMES PROGRAMME 2016-21
FUNDING GUIDANCE

NOVEMBER 2016

MAYOR OF LONDON
DRIVING OUTCOMES - POLICY

Supporting skills and apprenticeships

97 The Farmer Review highlighted the need for more action to develop skills in the construction industry. Construction has an ageing workforce, and struggles to attract, develop and retain the people it needs. The provision of high-quality apprenticeship programmes is essential for the industry, and the GLA expects providers to review the quality of the apprenticeships they offer in light of the Review.

Modern Methods of Construction

98 The Farmer Review also highlights the need to pre-manufacture more of our homes. Precision-manufacturing homes can offer an increased level of consistency and quality control and additional benefits in terms of speed of delivery, cost efficiencies and safety on site. Furthermore, an industry-wide move towards more off-site work could make a career in the construction sector more attractive to young people. The GLA therefore expects to see an increasing number of bids that involve the precision-manufacture of new and affordable homes.

Delivering affordable homes on public land

99 The Mayor is keen to maximise affordable housing on public land. Public sector organisations, and providers bringing forward projects on public land, are encouraged to engage fully with the GLA at an early stage, in order to maximise affordable housing provision.
DRIVING OUTCOMES - POLICY

20 of 37 Innovation Fund

56 Expressions of interest are encouraged from providers who want to deliver affordable housing using GLA investment in an innovative way. Proposals must deliver products that offer a similar level of affordability to consumers as the three tenure products set out in paragraphs six to 24. Interested providers must evidence the following:

- a previous track record of delivering homes at scale;
- that land has been acquired or lined up to enable early delivery;
- that the delivery model is capable of being scaled up to deliver significant numbers of new homes;
- that the delivery model will be compliant with State Aid rules;
- the circumstances in which GLA grant would be repaid and when this is expected to occur.

57 Expressions of interest will be evaluated and, if of sufficient quality, further information will be sought to develop more detailed proposals.

58 The GLA also offers funding which makes available very low cost investment on a loan basis to increase the volume and pace of housing delivery, with homes initially let on an intermediate rent basis. The term sheet for this funding stream is here.
THE FUTURE FOR CONSTRUCTION’S PRE-MANUFACTURING SKILLS & TRAINING?
WHAT DOES THIS MEAN FOR CLIENTS?

- NEED TO GENERALLY DEMAND MORE FROM ADVISORS AND SUPPLY CHAIN
  - BIM SHOULD BE A ‘GO / NO GO’
- CLIENT BRIEF SHOULD DEFINE REQUIREMENT FOR HIGHER EFFICIENCY WORKING INCLUDING USE OF DfMA & EXPECTATIONS OF PMV MEASURE
- USE MODERNISATION AS PLATFORM FOR PRODUCT INNOVATION & QUALITY NOT JUST FOR THE SAKE OF IT
  - DEMAND ‘BESPOKE STANDARDISATION’
  - DON’T CHANGE YOUR MIND!
- REQUIRE INTELLIGENT BENEFITS CASE ESTABLISHMENT; DO NOT ACCEPT ‘ITS TOO DIFFICULT’ RESPONSE
- LOOK TO BUILD RELATIONSHIPS, PARTNER & COLLABORATE WITH OFF-SITE PLAYERS WHERE APPROPRIATE
- QUESTION USE OF ADVISORS OR SUPPLY CHAIN PARTICIPANTS WHO DO NOT WANT TO EMBRACE MODERNISATION
- ACCESS AVAILABLE PUBLIC FUNDING INITIATIVES INCL R&D TAX CREDITS

Large scale change will start with clients and their advisors asking for something different from the industry
WHAT DOES THIS MEAN FDR DESIGNERS & ADVISORS?

- Designers need to start thinking more about how their designs will be built
  - This is more than ‘buildability’
  - Needs a ruthless assessment of how DfMA principles can be applied
  - Should be led by assessment of ‘pre-manufactured value’ (PMV)
- Requires a standardisation focus irrespective of whether off-site solutions are chosen
- Needs a non-hierarchical mindset and one centered on collaboration with constructors and manufacturers
- Town planning must be respected – standardisation with aesthetic context
- Demand more of the supply chain – do not work with businesses / people that you do not trust or believe will deliver
WHAT DOES THIS MEAN FDR DESIGNERS & ADVISORS?

• **WORK TO ASSESS TRUE BENEFITS CASE – PREDICTABILITY, TIME, QUALITY AS WELL AS CAPEX / OPEX**

• **CAMPAIGN FOR MORE UNIFORMITY IN TECHNICAL ASPECTS OF PRE-MANUFACTURED SYSTEMS – UNIQUENESS OF SYSTEM IS CONSIDERED A RISK – INTER-OPERABILITY / INTER-CHANGEABILITY**

• **MARKET YOURSELVES TO PROGRESSIVE CLIENTS AS BEING EXPERTS IN AN EMERGING SECTOR**

Consultancy professions are at the heart of whether the industry will be able to modernise itself and deliver higher efficiency outcomes.
WHAT DOES THIS MEAN FOR THE OFFSITE SECTOR?

- An unprecedented demand led opportunity for pre-manufacturing
- Investors & developers are interested in accessing better development solutions
  - Government wants more quality housing & quickly
- But opportunities are still being filtered through client & funding advisors that don’t understand benefits or want to protect status quo
- Need to build trust led relationships that by-pass inertia, are benefits led & have a clear route to the money and decision making
- Important need to address ongoing concerns over financial fragility in sector
WHAT DOES THIS MEAN FOR THE OFFSITE SECTOR?

- SOME INVESTORS & GOVERNMENT SEE THE PRE-MANUFACTURING SECTOR ITSELF AS AN OPPORTUNITY - SELL YOURSELVES AND FULLY ACCESS GOVERNMENT FUNDING INITIATIVES!

- LOOK TO COLLABORATE WITHIN SECTOR – DEVELOP PROTOCOLS, STANDARDS, & SHARE EXEMPLARS; CRITICAL MASS IS CRUCIAL – DON’T HIDE BEHIND COMMERCIAL / IP BARRIERS – LOOK AT THE EXAMPLE OF EMERGING BUILD TO RENT SECTOR

- NEED TO SUPPORT NEW FORMS OF APPROPRIATE TRAINING & ENGAGEMENT WITH HEFE SECTOR – IE DUDLEY COLLEGE ‘INSTITUTE OF TECHNOLOGY’ INITIATIVE, AMRC & HVM CATAPULT PROGRAMMES

- ABOVE ALL, FOCUS SHOULD BE ON RESULTS – THE BENEFITS CASE IS FRAGILE & FORMATIVE – IT REQUIRES EVERYONE IN THE SECTOR TO BE CUSTODIANS OF ITS FUTURE POTENTIAL

The success of the sector is in its own hands particularly if demand step changes. Needs to avoid temptation to over trade or over promise!
WHAT DOES THIS MEAN FDR CONSTRUCTING EXCELLENCE?

Can you really force collaboration into an industry operating adversarial models and with so many vested interests and facing new unprecedented pressures?
WHAT DOES THIS MEAN FDR CONSTRUCTING EXCELLENCE?

• WE NEED TO CHANGE THE GAME NOT THE RULES

• COLLABORATION IN A FRAGMENTED INDUSTRY WILL NOT HAPPEN (IMHO)

• ONE ‘BIG IDEA’ TO GET BEHIND THAT FOCUSES ON HARD RATHER THAN SOFT ISSUES?

• YOU NEED GOVERNMENT POLICY BEHIND YOU NOT JUST GOVERNMENT AS AN EXEMPLAR CLIENT

• YOU NEED TO EXPLOIT TO THE CURRENT NEGATIVE STIMULUS FOR CHANGE RATHER THAN TRY TO PUSH AN ASPIRATIONAL MESSAGE THAT MANY WILL JUST NOT LISTEN TO

• REMEMBER CHANGE WILL START WITH CLIENTS AND DISRUPTORS HELPED BY GOVERNMENT POLICY – INDUSTRY WILL NOT CHANGE ITSELF AT SCALE – CCG ROLE??

• YOU NEED FOCUSED SUPPORT FROM INDUSTRY & ACADEMIA THAT MORE LINKS TO REAL TANGIBLE & SCALABLE CHANGE IN PHYSICAL INDUSTRY DELIVERY MODELS

• CE CAN BE A REAL VOICE FOR PHYSICAL MODERNISATION THAT IS ‘HARD WIRED’ INTO INDUSTRY AT LARGE!

It’s for CE & members to decide its future role but my view is your focus should be on driving real industry change by embracing pre-manufacturing in all its guises as a central agenda for change
THE FARMER REVIEW OF THE UK CONSTRUCTION LABOUR MODEL

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