Managing Design Risk in Extra Care Housing
MANAGING DESIGN RISK IN EXTRA CARE HOUSING

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“The most architecturally exciting Extra Care developments staffed by caring and expert staff will ultimately fail should the site and building design risks, the early integration of building services and consideration for on-going continuing occupancy following completion not be thoroughly considered by project teams from inception through to end of building life”.
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Project Feasibility Pre Planning Risk Management Strategy:

- **Procurement route** – D&B Tender / Negotiation?
- **Select experienced development team ‘at risk’**
- **Site Visit & Development Risk Appraisal**
- **Desktop Study Local Area as well as Site**
- **Scored Site Risk Appraisal to identify actions**
- **Abandon or Develop?**
- **Commit Feasibility Fees to minimise risk**
- **Actions from Site Risk Appraisal**
- **Topographic / Site Investigations / Services / BREEAM / Initial collaborative design-cost feasibility studies.**
- **Spend Time to Develop Brief – often underestimated!**
Design & Build Tendering - Pre Contract Stage.

- **Client Appointments** – *(Who and Why?)*
  - **Architect / Designer** - necessary if only to Planning Approval stage!
  - **Project Manager** - normally unless in-house facility.
  - **Structural Engineer** - if only to do site investigation!
  - **M&E Consultant** – why? when the D+B Contractor has experience or you have previous knowledge?

- Extra Care Housing is a complex cellular and highly serviced multi residential development with specialised equipment serving ageing vulnerable customers with complex future care needs.

- Clients must be prescriptive for quality.

- M&E Services Consultant plays an increasingly key role in managing the services design risk and needs to closely collaborate with the design team from the feasibility stage through to completion.
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Pre Planning M&E Design Risk Management.

- Establish Principles & Standards to be Adopted.
- Review & Assess initial Architectural Proposals.
- Investigate Statutory Services implications.
- Metering Strategies.
- Fire Engineering Strategy Advice
- Early Establishment of Local Authority Planning Requirements.
Live Example 1 – (Non-collaborative approach - BEFORE)

Feasibility Stage - example of lack of services forethought.
Live Example 1 – (Non-collaborative approach – AFTER PLANS REVIEW)

Highlighting plant space and optimum location of plant areas and service voids / risers provision to provide the renewable energy strategy meeting the sustainability requirements of the local authority.

Observations – Actions required without affecting internal layout.
Live Example 2 – (Non-collaborative Post Planning Layout)

Post Planning Services Integration Problems.
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Live Example 2 – (Actions taken)

Post planning problems
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- Having considered the importance of the design team’s collaborative integration of M&E services in the communal areas of Extra Care in order to reduce the risk of abortive work we will now look at:

- **Long Term Sustainability** by considering flexibility of flat layout when designing new developments.

- **Remodelling Existing Sheltered Housing** into sustainable Extra Care developments

  - **Exit routes** available by careful new build layout considerations.
Demographic backdrop:

- 30% of all householders currently over retirement age rising to 60% by 2033.
- 82% increase in those of 80 or more from 2.5 million in 2011 to 4.54 million by 2030, (POPPI, 2012)

Political backdrop:

- The NPPF headline is the ‘presumption in favour of sustainable development’.
- For housing for older people this is a ‘home for life’
- Reduction in public funding

The Case for truly Flexible Life Time Homes:

- Research has disproved the assumption that people want less space as they grow old.
- ‘Young Old’ people now in their late sixties and early seventies are very different to people now over eighty in the way they relate to their attitude as consumers.
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Breaking the Mould – What of the Future?:

Typical Layout
2B3P Flat
The inherit problems of limited adaptability

Design Sustainability – New Build & Future Proofing – **Typical Limited Flexibility**
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Design Sustainability – New Build & Future Proofing – **Active Open Plan Design**

Protected Image – please contact Darren Heffer at darrenh@saundersboston.co.uk
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Design Sustainability – New Build & Future Proofing – High Care Divided Flat

Protected Image – please contact Darren Heffer at darrenh@saundersboston.co.uk
Summary of Proposed Layouts:

Why a 90m2 flat?

- Change in tenure shift from affordable rent to shared ownership or market sale – what would you invest your equity in?
- ‘Young/old’ generation
- Increasing expectations for future generations

Built Examples:

- Abbeyfield, Girton, Cambridge – 100m2 Three bedroom flats (all sold off-plan)
- ExtraCare Charitable Trust, Lovett Fields Milton Keynes - 85m2 Two bedroom flats

Quote:

“If I had asked the people what they wanted, they would have answered ‘faster horses’”

………Henry Ford
Housing LIN “Are we making the best use of our Sheltered Housing asset?”

ADASS/Housing LIN describes the challenges facing providers of sheltered housing:
- increased expectations
- a shift towards supporting people to remain in their own home
- an emphasis on creating a home for life
- dealing with difficult to let poorly designed housing.”

In light of these findings:

1. - How can we make best use of what is a significant housing asset whilst ensuring it meets the needs and aspirations of older people now and in the future?
2. - What approaches can be taken to reviewing provision, and what options are there for change?
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Typical 1960-80’s Sheltered Housing flat – circa 45m²
Outmoded, non-compliant, difficult to let

Remodelling for the Future – Utilising Existing Building Stock
- Design Sustainability and BREEAM
- First Principles of Good Design related to Site
- Architecture first then
- Commission an LZC Report to inform on Life Cycle Costs
- Develop a Renewable Strategy to meet requirements
- BREEAM Workshops to confirm initial proposals
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Design Sustainability – First Principles – Before Considering Renewables

1. Siting / orientation
2. Compact Form
3. Thermal Envelope
4. Natural Ventilation
5. Low Primary Energy
6. Energy Recovery

First Principles:

Sustainability in Design
Managing Design Risk In Extra Care Housing

- Using the footprint of existing building stock, all internal walls can be customised to users' needs, yet external walls need remains.
- Internal Airtrics can remain naturally ventilated.

MVHR
- Extracting air from certain rooms and supplying fresh air to others.

Green Roof & Walls
- Not essential but reduces carbon footprint by enhancing green space.

Triple Glazed Argon Filled Glazing
- To maximize heat absorbancy and minimize cold bridging.

Effective Solar Shading/PV Energy Harvesting
- Providing adequate shading from summer overheating and solar power harvesting.

Design Sustainability - Thermal Design Modelling - Before Renewables
Sustainability in Building Design

- **Integration of Renewable Technologies consideration**
- **Optimise Energy Use** – reduce energy loads and improve the building’s thermal performance and efficiency.
- **Fabric 1st Approach** – with reduced u-values and good air tightness before considering integration and use of renewable technologies such as:
  - Ground / Air Source Heat Pumps
  - Solar PV
  - Solar Thermal
  - Biomass
  - Wind Turbines
  - **Potentially CHP** (depending upon the view of the Local Authority) some recognise CHP as a renewable, some don’t.
- **LZC Feasibility Study** to support the Planning Application.
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BREEAM Considerations:

- BREEAM Multi-Residential is intended for use on multi occupancy residential buildings (such as Extra Care Housing) containing communal areas in excess of 10% of the net Internal Floor area.

- Private Extra Care ‘For Sale’ Apartments are required to have Code for Sustainable Homes certification with BREEAM being applied based upon >10% rule above.

- BREEAM/Code for Sustainable Homes Compliance Levels are usually prescribed by HCA or other funding bodies / Local Authorities as a planning condition.

- Establish Local Authority Sustainability Policy, BREEAM, Code requirements at early Pre Planning stage.

- Undertake BREEAM pre-tendering Pre Assessment’ to assist and guide the design process

- Basic Level currently required by HCA is ‘Very Good’
Commit Feasibility Fees to minimise risk

Reduce D&B ‘Risk Pricing’ / Uncertainty by committing fees to procure Pre Planning Sustainability Design reports:

- Lighting Strategy report – (good dementia design)
- Thermal Model Report – (economic natural temp control)
- Fire Engineering Assessment – economic design larger scheme
- Secured by Design report – for certainty & marketing
- Carry out SAP and SBEM Calculations (for BREEAM credits)
- Energy Monitoring strategy by sub-metering – (savings in use)
- LZC Report with Life Cycle Costs – (financial appraisal input)
- All Site Investigation Work
- BREEAM ‘Pre-Assessment’

All the above should be issued as Tender Supporting Information for the tenderer to appraise and develop further should he so wish.

We would stress the importance of employing an M&E Consultant in order to integrate all of the above matters into a scheme specific tender information support package.
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BIM – UK Government’s Position

Building Information Modelling (BIM)
“A NEW WAY OF WORKING”

“BUILDING INFORMATION MODELLING” (BIM)

Why do we need to know about it?

- All Government funded (HCA/DOH) Extra Care project teams will have to implement working to a “fully collaborative 3-D BIM as a minimum by 2016”.
- To reduce risk of construction industry failing in project delivery matters such as:
  - Delivery on time
  - Delivery on budget
  - On-site co-ordination
  - Carbon performance
  - Reduction in waste
  - Reduction in change orders
  - Improved communications
  - Effective post-completion building management
BUILDING INFORMATION MODELLING (BIM)

BIM is both a New Way of Working plus a New Technology.

- **New way of working** = collaboration, plus enhanced information sharing, communication and delivery.

- **Technology** = design models, space programming tools, quantity take-offs, estimation, modular prefabrication, FM models, etc.

- **Definition** (from Wikipedia):

  “Building Information Modelling (BIM) is a digital representation of physical and functional characteristics of a facility. A BIM is a share knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition”.

Building Information Modelling (BIM)
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- BUILDING INFORMATION MODELLING (BIM) – ‘The Wedge’

**BIM**
A 3D (Level 2) modelling system that involves data sharing between all the contributors on a project to create a digital model that can be used from a project’s inception/design stages through to completion and monitoring of subsequent performance.

<table>
<thead>
<tr>
<th>Current Percentage Use</th>
<th>93%</th>
<th>7%</th>
</tr>
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<tbody>
<tr>
<td>Mandatory by 2016</td>
<td>100%</td>
<td>No timescale set for Level 3 yet</td>
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Building Information Modelling (BIM)
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D&B CONTRACTOR’S PROPOSALS

Contract Preliminaries should refer to:

- **Timescale** for presentation of:-
  - **Schedule Client Decision Dates** with time for consideration.
  - **M&E Proposed Layouts**, lighting & heating calculations.
  - **Proposed materials** for approval of the client.
  - **Proposed supply chain components** for approval of client.
  - **BREEAM Design Stage certification**

- **Itemised Design Fee breakdowns required** – only to be paid upon satisfactory submission and client approval.

Post Contract – D+B Contractor’s Proposals Presentation
Successful Post Completion Management:

Efficient Facilities Management requires:-

- Good Quality O&M’s
- Staff Training with Simplified Pictorial Manuals available
- Induction Videos for continuing guidance
- Residents Pictorial Home User Guides
- Regular Contractor monitoring of scheme during 12 months
- Resident meetings every quarter to discuss operation of unfamiliar services – particularly important with renewables and spec items such as under floor heating
- Building Project Performance Monitoring
- Defects Response Time Monitoring
- Evaluation of results
- Building services adjustments – both seasonal and fine tuning

All the above requirements to be included within the Contract Preliminaries.
“If everyone is moving forward together, then success takes care of itself”

Henry Ford

“In the long history of humankind…… those who learned to collaborate and improvise most effectively have prevailed”

Charles Darwin
Any Questions before we break?