

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".



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!



Appendix C - Feasibility Stage Risk Assessment

Risk & Observations	Severity			Further Ander (Mideoler	Descentibility
	Low	Medium	High	Further Action / Mitigation	Hesponsibility
1.0 THE SITE / ACQUISITION					
1.1 Existing Uses:					
Existing buildings on the site.					
Existing foundations.					
Existing basements / buried structures.					

assessment Risk At easibility Work Ш Paid

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.





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)



✤ 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.



First Floor

Live Example 2 – (Non-collaborative Post Planning Layout)

Ground Floor Basement hd hd LAUNDRY KITCHEN

PLANT

Failures of an uncollaborated approach

Care Scheme Case Study



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Post Planning Services Integration Problems.

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Live Example 2 – (Actions taken)





Failures of an uncollaborated approach

Care Scheme Case Study



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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 2.5million in 2011 to 4.54million 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.





Design Sustainability – New Build & Future Proofing

Breaking the Mould – What of the Future?:



Typical Layout

2B3P Flat

The inherit problems of limited adaptability



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Design Sustainability – New Build & Future Proofing – Typical Limited Flexibility



Applied Passivhaus

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Layout 1

Minimum care need, very active.

Person B:

Minimum care need, very active. Spouse of person A



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Design Sustainability – New Build & Future Proofing – Active Open Plan Design



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Person A:

Medium - High Care need

Person B:

Minimum care need, very active. Spouse or son/daughter of person A



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Design Sustainability – New Build & Future Proofing – Medium Care Semi Open









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High - acute care need, possibly living with dementia

Person B:

Minimum care need, active, family member/ 'carer' of person A



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Design Sustainability – New Build & Future Proofing – High Care Divided Flat

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

Design Sustainability – New Build & Future Proofing







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?









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







Design Sustainability – First Principles – Before Considering Renewables



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.





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'





Sustainability: BREEAM Considerations

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.







Sustainability: Design Risk Mitigation Considerations

BIM – UK Government's Position



"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)

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):

BIM Project Execution Plan Categories

BIM Project Execution Plan
OverviewProject InformationKey Project ContactsProject Goals / BIM UsesOrganizational Roles / StaffingBIM Process DesignBIM Information ExchangesBIM and Facility Data RequirementsCollaboration ProceduresQuality ControlTechnological Infrastructure NeedsModel StructureProject DeliverablesDelivery Strategy / Contract

"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)

✤ BUILDING INFORMATION MODELLING (BIM) – 'The Wedge'



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.







Maximisation of Performance, Evaluation and Monitoring

"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



CONSTRUCTIVE EXPERTISE

Any Questions before we break?

