



## HIGH-RISE RESIDENTIAL REFURBISHMENT

### Why High-Quality Overcladding?

**d+b facades**  
OVERCLADDING SPECIALISTS

[www.dbfacades.com](http://www.dbfacades.com)





# Contents

## EXECUTIVE SUMMARY

## KEY FEATURES AND BENEFITS OF HIGH-QUALITY OVERCLADDING

## PROJECTS

West Whitlawburn, Glasgow

Castle Court, Sheffield

The Pinnacle, Willenhall

Graiseley, Wolverhampton

Alpha House, Coventry

d+b facades The Packway Larkhill Salisbury Wiltshire SP4 8PY

T 01980 654230 F 01980 653611 E [mail@dbfacades.com](mailto:mail@dbfacades.com) [www.dbfacades.com](http://www.dbfacades.com)



## EXECUTIVE SUMMARY

Overcladding of residential tower blocks is an established approach to dealing with the problems associated with ageing high-rise tower blocks. Overcladding has been employed for 30 years in the UK, thereby providing today's specifiers and purchasing authorities with proven history of the widely varying degrees of success that have been achieved depending on the system selected.

The objective of every successful overcladding project is to deliver the lowest cost solution which meets all the required performance levels and retains a quality, desirable appearance throughout the anticipated service life of the overcladding system.

Overcladding systems fall broadly into three categories of cost and quality:

- low-cost/low-quality render
- mid-cost/mid-quality face-fixed board systems
- high-cost/high-quality fixing-free aluminium cassette systems.

Over the years, financial pressures have persuaded many purchasing authorities to specify low-cost/low-quality solutions with far fewer authorities specifying mid- and high-end systems. Today, however, 're-overcladding' schemes are increasingly prevalent whereby low-cost, and to a lesser extent mid-cost, systems have failed and require replacement long before reaching their expected in-service life. In addition to these failures, there are substantial numbers of low-cost systems seen in towns and cities across the UK which might look acceptable from a distance but where the appearance of the new overcladding has rapidly deteriorated within 5 years post-installation, leaving the in-service buildings looking little better than the original building to their residents. This will eventually reflect in reduced occupancy and demand for the undesirable accommodation as well as impact negatively upon the wider neighbourhood.

The business case for high-quality overcladding is compelling but requires a paradigm shift in terms of thinking, moving away from lowest-cost as the arbiter of system selection and embracing the principal of system longevity. All desired outcomes of an overcladding project relate directly to longevity (cost/performance/appearance/environmental) - it is the common denominator which underpins true sustainability. High-quality aluminium overcladding has an expected in-service life of 60 years, three times that of render and twice that of board, enabling it to deliver superior benefits including:

### 1. Financial

- Lowest whole life cost, c. one third that of render
- Greatly extended building life c. three times that of render
- No maintenance costs

### 2. Social

- Pristine appearance retained throughout the expected 60 year service life
- Proven performance with examples of 20-year-old projects still looking as good as when first installed without cleaning or maintenance
- Secret-fixing withstanding close visual inspection
- High-quality, desirable appearance resulting in high occupancy and long-term demand

### 3. Environmental

- Lowest whole-life environmental impact
- New building envelope is constructed of predominantly recycled materials which are 95% recyclable at the end of their 60 year life

With ever-increasing pressure on social housing, tower blocks are a valuable resource and need to be retained for the future, however their desirability is proportional to the quality of accommodation afforded. Even derelict tower blocks can be regenerated to provide accommodation which is in demand providing they are refurbished to a high standard.

This document examines the benefits of adopting a high-quality approach to external refurbishment from which a robust business case may be created. There is sufficient evidence widespread throughout the UK that system selection should no longer be subjective but based upon proven performance and proven longevity.

Best value will be achieved through sound investment in a high-quality overcladding system, wherein the tenants will benefit from a refurbished building that will remain pristine in appearance, requiring no maintenance, for generations to come. The quality accommodation provided will enhance the community and ensure long-term demand, increasing the building's asset value to the Housing Association/Local Authority and securing its long-term future.



# KEY FEATURES AND BENEFITS OF HIGH-QUALITY OVERCLADDING

The key features and benefits of adopting a high-quality approach to refurbishment are addressed in the following inter-related bullet points:

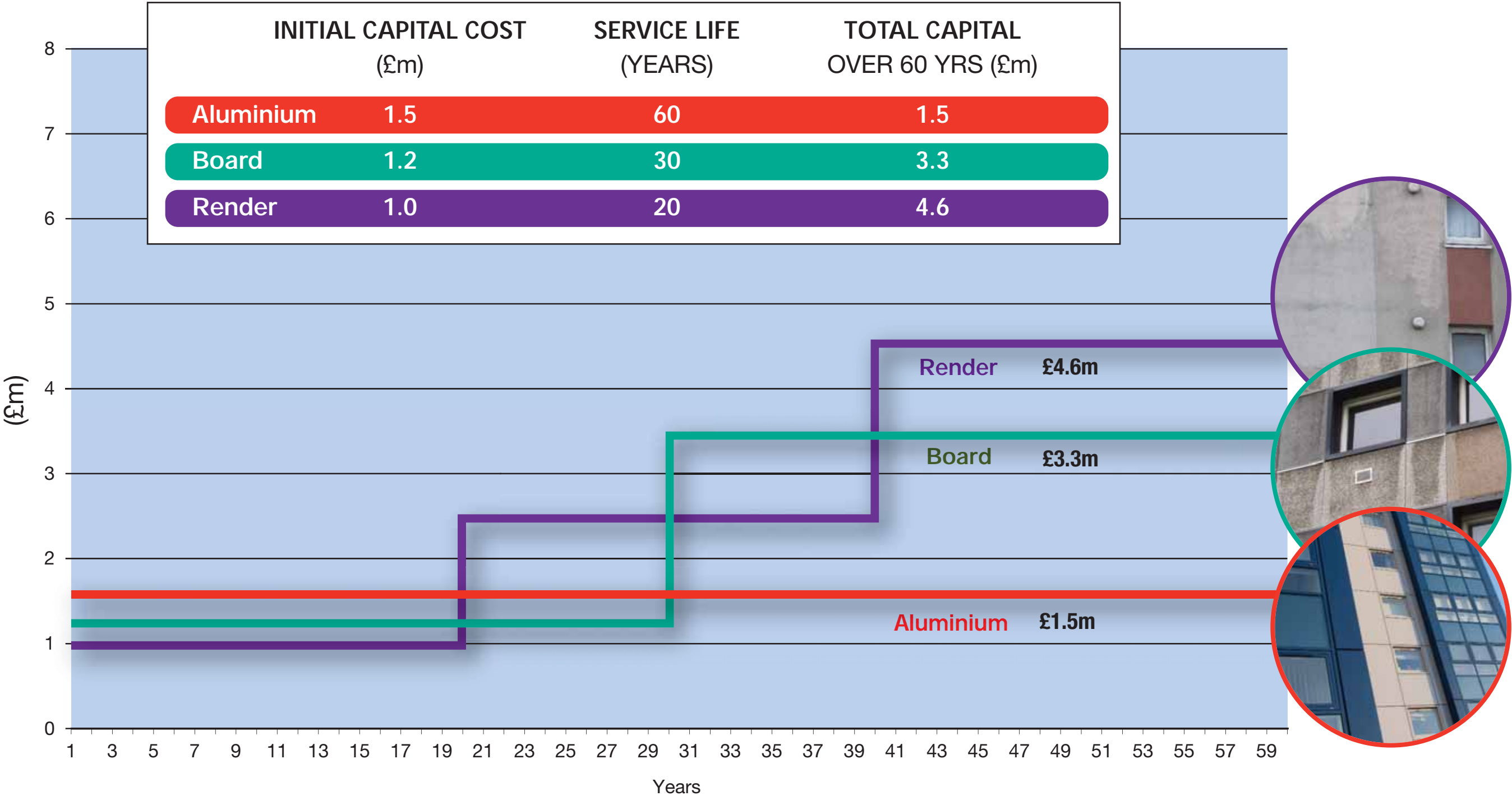
- **LONGEVITY** – a high-quality system lasts 2 and 3 times longer than mid- and low-quality systems respectively
- **APPEARANCE** – every overcladding system should remain pristine throughout its life expectancy but it is proven that low- and mid-quality systems quickly deteriorate long before, appearing dirty and unappealing within a few years. A high-quality system has an in-built water management system, self-cleaning surfaces and no visible face-fixing thereby retaining an attractive, desirable appearance throughout its 60 year life, withstanding close inspection. Low- and mid-quality systems have no water management and/or are faced-fixed, resulting in rapid pattern staining and a sub-standard, undesirable appearance
- **LOWEST COST** – a high-quality system has the highest initial capital cost but the greatly extended longevity results in the lowest year-on-year and whole-life costs. High-quality systems are therefore by far the most economic (up to 2/3rd less) over their lifetime
- **PROVEN PERFORMANCE** – overcladding has been around for 30 years, consequently the varied performance of different systems is evident and widespread. Many past low-cost overclad projects have already been re-overclad. Those remaining look drab and little better than the original construction. In contrast, there are a number of examples of 20+ year-old high-quality systems looking as good as the day they were constructed showing no signs of deterioration
- **DEMAND** – the desirable ‘in-service’ appearance sustained throughout the service life of high-quality overcladding ensures high long-term demand for the quality accommodation provided
- **THERMAL PERFORMANCE** – windows are the most sensitive element determining a building’s thermal performance (walls can achieve the same U value for each of the low-to-high-quality systems presently available). High-quality composite integrated windows readily exceed current building regulation standards by up to 30% thus reducing heating energy costs and carbon emissions. The same cannot be said of typical uPVC windows installed in low-to-mid-quality envelope systems. Windows in our 20-year-old high-quality projects still exceed today’s standards
- **SINGLE POINT RESPONSIBILITY** – this is typically the preserve of those providing high-quality solutions, wherein single point responsibility is taken for all aspects of a project from design through to completion, as opposed to a combination of system suppliers, main contractors and installers more usually seen in low-to-mid-quality systems. The single point responsibility is readily extended to include the repair of the existing structure, its ability to withstand the imposed loads and its long-term integrity once overclad – this is highly desirable from the purchasing authority’s perspective as each element of existing and new is mutually dependent upon the other for long-term performance
- **WARRANTY** – as a consequence of single point responsibility, a warranty of 20 years is available for high-quality overcladding compared to manufacturer’s warranties of c.10 years for lower-quality systems
- **SUSTAINABILITY** – high-quality aluminium rainscreen is the most environmentally sustainable option. It is made from 65% recycled aluminium, the balance being manufactured from hydro-electric sources. The entire rainscreen is 95% recyclable and re-usable at the end of its useful life, thus has by far the lowest environmental impact compared with lower-quality systems
- **LOWEST CARBON COST** – the greatly extended life expectancy of a high-quality system versus other options means that the carbon cost of refurbishment is amortised over a much longer period resulting in the lowest carbon cost
- **CONSTRUCTION** – a high-quality system is fully-engineered and manufactured off-site to enable simple, rapid installation on-site thereby minimising disruption to tenants and associated risks to operatives and ensuring predictability in meeting the required delivery programme
- **MAINTENANCE** – for high-quality systems there are no gaskets or sealants requiring periodic replacement, thus maintenance costs are eliminated. Both render and board systems require an on-going programme of scheduled maintenance
- **QUALITY-ASSURANCE** – aluminium rainscreen panels and high-quality windows are designed, sized, specified and fully -fabricated off-site and are quality-assured at the point of manufacture. This ensures a high-quality finished product with reduced reliance upon on-site trade skills
- **CDM** – high-quality overcladding has a life expectancy three times that of low-quality overcladding. By adopting a high-quality approach to refurbishment, disruption to occupants and risks to tenants and operatives is minimised to once every 60 years (the life expectancy of a high-quality system) rather than every 20 years (the life expectancy of a low-quality system)
- **BEST VALUE** – ‘The mission is to deliver the lowest cost solution which meets all the required performance levels and retains a quality, desirable appearance throughout the anticipated service life of the overcladding system’. This is achieved through sound investment in a high-quality overcladding system, wherein the tenants will benefit from a refurbished building that will remain pristine in appearance, requiring no maintenance, for generations to come. The quality accommodation provided will enhance the community and ensure long-term demand, increasing the building’s asset value to the Housing Association or Local Authority and securing its long-term future.

Low- and mid-quality cladding systems quickly deteriorate in appearance long before reaching their in-service life expectancy, giving rise to pattern staining and a sub-standard appearance which reflects in low demand for the undesirable accommodation.



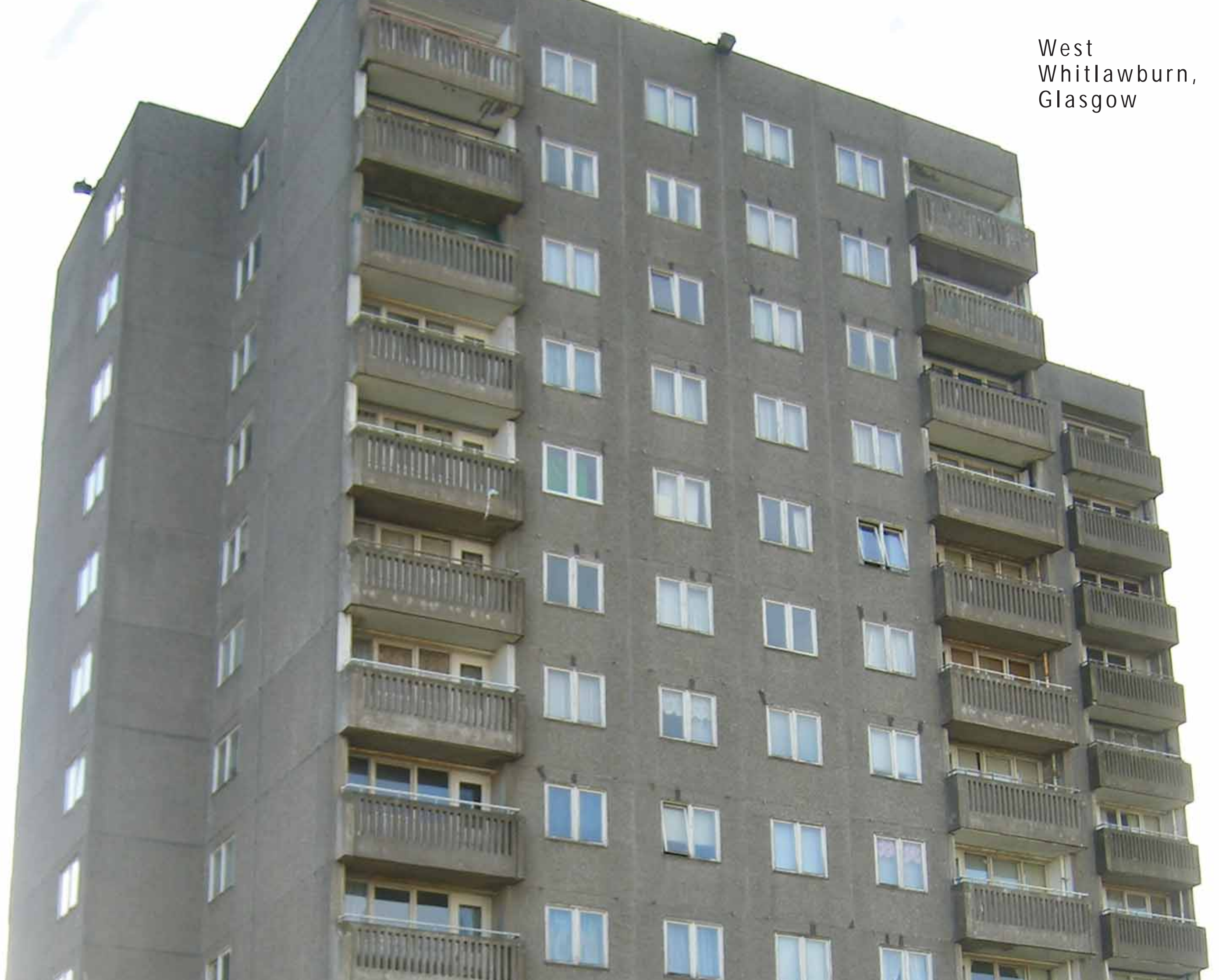
# Whole-Life Cost Comparison Between Overcladding Systems

Every overcladding system should remain pristine throughout its life expectancy but it is proven that low- and mid-quality systems quickly deteriorate long before.





West  
Whitlawburn,  
Glasgow





West  
Whitlawburn,  
Glasgow





PROJECT SCOPE

Design and installation of aluminium rainscreen, curtain walling, balcony enclosures, replacement windows, steel extension roof and roof cladding to six occupied tower blocks.



REFERENCE CONTACT

**Client** West Whitlawburn Housing Association/Lovell (MC)

**CONTRACT VALUE** £2.1m per tower

**PROJECT DURATION** Phased from 2002 to 2009





# The Business Case for High-Quality Refurbishment



## West Whitlawburn Housing Co-operative Limited

Belmont House, 57 Belmont Road, Cambuslang G72 8PG  
Telephone: 0141 641 8628 Fax: 0141 641 8028  
www.wwhc.org.uk



MB /20110322

22nd March 2011

### To Whom it May Concern:

West Whitlawburn Housing Co-operative is a tenant owned and controlled organisation based in Cambuslang, South Lanarkshire which was formed in 1989 through large-scale voluntary transfer arrangements. Prior to the Co-operative's inception, the estate suffered from fabric decay and a lack of capital and revenue funding, increasing social problems and poor environmental conditions, no demand, no local control and a lack of community spirit, coupled with a strong community urge for change and improvement.

The Co-operative now has 644 properties in management, 432 of which are multi storey flats, 112 low-rise tenemental flats and 100 new build two-storey houses. All of the flatted properties are late 1960's systems build design.

The final phase of our development programme has recently been completed with the refurbishment of the cluster of 6 high-rise residential blocks. Since it's formation in 1989, the Co-operative had long appreciated the requirement to upgrade these properties as they continued to age and decay.

Tenants were suffering from problems of continual water ingress through the roof, wall panel joints, failing windows and decaying balconies. In turn, this was impacting on people's health, educational attainment and other issues associated with deteriorating living conditions. Maintenance costs for the blocks were increasing with temporary works having very little overall effect towards resolving the problems. Strategic investment decisions need to be taken on proven demand indicators for any type of stock within an area. It was therefore important to recognise and prove to funding bodies that the demand for the multi storey properties in West Whitlawburn was still high despite all of the issues above. As part of the overall development strategy of the organisation, it was determined that major works were required in order to improve tenant's lives and extend the life of the building. Without refurbishment, these blocks would have continued to deteriorate and their life expectancy to decrease which would have a huge impact on demand and living conditions of the residents. Of the different options considered, high-quality refurbishment was chosen as it economically delivered maximum benefits to both tenants and the Housing Co-operative.

Since the refurbishment programme was completed, these high-rise blocks have become highly desirable and sought-after accommodation with very high occupancy levels. There is low tenant-turnover and when flats occasionally are vacated, they are easily filled.

The .../

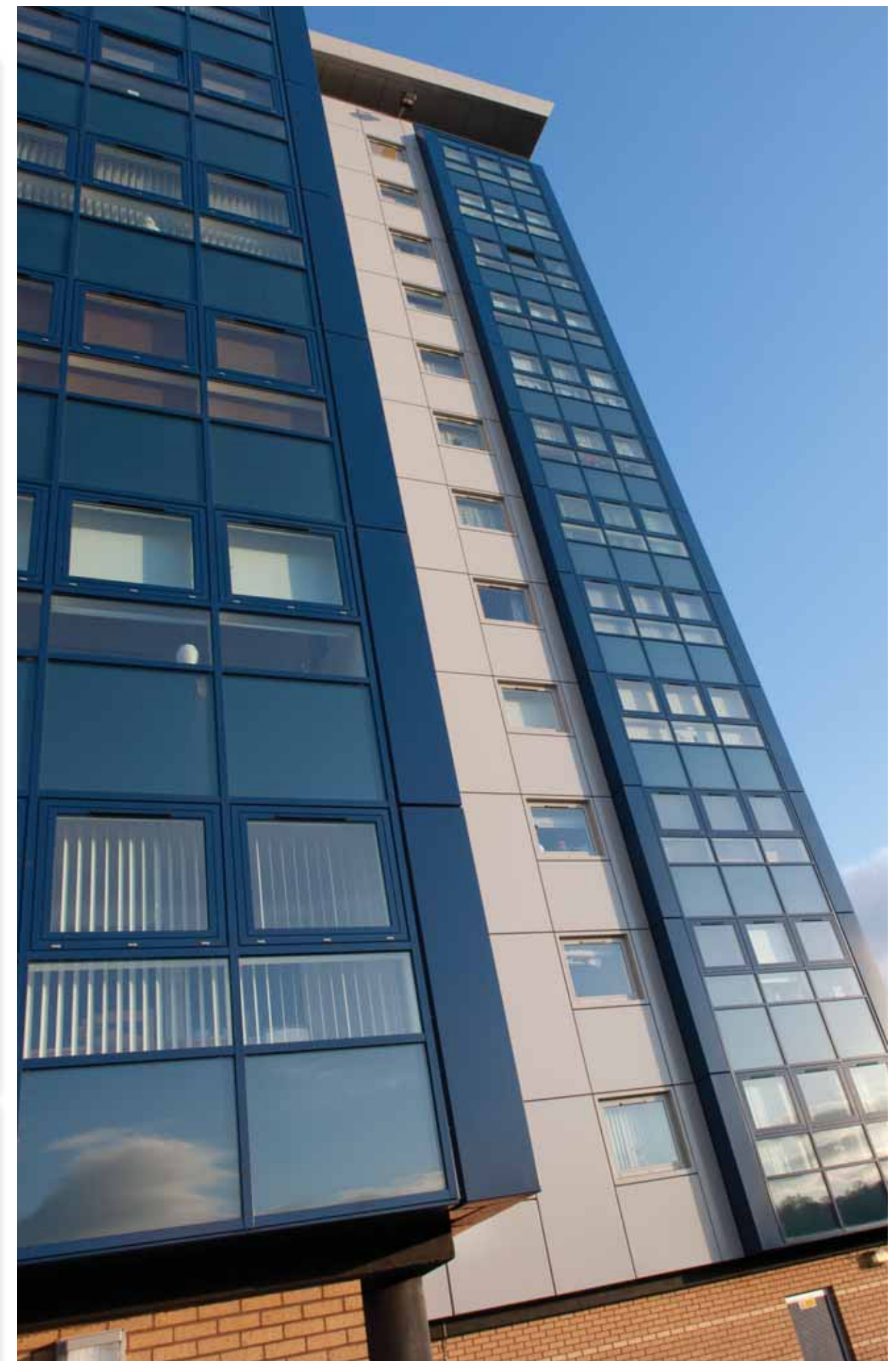
Belmont House, 57 Belmont Road, Cambuslang, G72 8PG  
Registered under Industrial & Provident Societies Act 1965: Reg No. 2308R(S)  
Registered with The Scottish Housing Regulator No. C3841 Registered Charity No. SC038737

The works taken forward have extended the life expectancy of the blocks considerably and have reduced maintenance and management costs also. This allows the Co-operative to move forward with confidence that their main aim is being met i.e. To provide good quality affordable housing for people in need.

Yours faithfully,

*Mags Brownlie*

Mags Brownlie  
Assistant Director (Operations)











Balconies were enclosed creating additional internal living space.













Castle Court,  
Sheffield  
1991





Castle Court,  
Sheffield  
2010







## PROJECT SCOPE

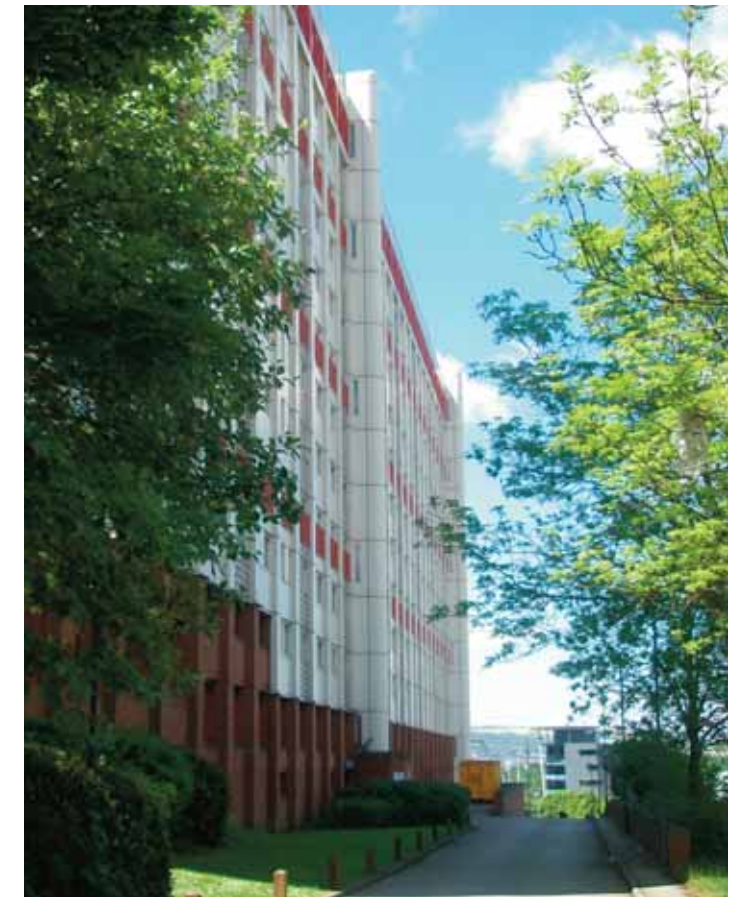
Major residential scheme to convert empty accommodation into high-quality apartments. External envelope works comprised 15,000m<sup>2</sup> of aluminium rainscreen and high-performance replacement windows.

### Client Testimonial

*Castle Court provides 1, 2 and 3 bedroomed general purpose social housing with no restrictions on tenant-type. These flats are very popular because they provide high-quality accommodation, the site is very secure with extensive CCTV and there is a 24 hour, 7 days-a-week concierge service. Castle Court is always fully occupied and there is a long waiting list for them so when any flats do become vacant we fill them immediately. With the way the building looks and the quality of internal accommodation, tenants are always very surprised to learn how old the building actually is.*

**Mike Hollindale**

Area Estate Manager, Guinness Northern Counties Housing Association



### REFERENCE CONTACT

Mike Hollindale, Area Estate Manager,  
Guinness Northern Counties Housing Association  
2 Castle Court, St Johns Road,  
Sheffield S2 5JX  
T: 0114 2591514

**CONTRACT VALUE** £4.6m

**PROJECT DURATION**  
46 weeks (1991)



*Since refurbishment the building has been fully occupied throughout and there is a waiting list for the quality accommodation afforded. The building is pristine in appearance today and has not required cleaning or maintenance since the new envelope was installed in 1991. It will remain in this immaculate condition for at least a further 40 years, thereby ensuring long-term demand and best value for the building owner.*







The Pinnacle,  
Willenhall





The Pinnacle,  
Willenhall





# Development Case Study – The Pinnacle

## Background

Originally constructed in 1967 using a large panel system, this 15 storey residential tower block is representative of high-rise buildings of the period. Owned by Walsall Council and named St Mary's Court, it provided 87 two bedroomed units for social housing. Situated in the south east corner of the town centre, the high-rise building stood alone, flanked to the North and West by the town centre, to the East by low-rise residential housing and to the South by small industrial units.

Fully occupied from time of construction until the late 1980's, the building slipped into decline in the early 1990's. New low-rise social housing was being constructed and occupants were rapidly migrating to this alternative as the tower by now provided sub-standard, dated and unappealing accommodation. With lack of demand and falling occupancy, the building was no longer economically viable to run and maintain and in 1997 the Council closed the building.

As is common in these situations, the building and the immediate vicinity subsequently became subject to urban and social decay with the consequence that the Council decided to demolish St Mary's Court. Financial evaluation of this option determined that the land value was no greater than the cost of demolition, therefore the Council elected to seek an alternative way forward by selling the building. As the surrounding area had already been earmarked for regeneration, the principal condition of sale was that the purchaser refurbished the building to a high standard.

## Commercial Appraisal and Proposal

d+b facades' appraisal of the commercial potential identified that:

- the location on the edge of the town centre was reasonable from a development perspective
- the building was structurally sound
- high-rise living is popular if the quality is right - numerous new build multi-unit residential building projects were underway and selling off-plan in nearby towns

The proposal to the Council included the following project aims:

- Provide new build-equivalent homes for re-sale to the open market. Previous experience had been gained with refurbishment of Hyde Park Flats (Castle Court) for Guinness Northern Communities Housing Association. They remain fully occupied and in pristine condition twenty years later
- Resale would be aided by a 10 year insurance-backed warranty from the UK's National House Building Council, the independent standard-setting body whose 'Buildmark' warranty covers more than 80% of new and newly-converted homes built in the UK. NHBC approval would be needed for all works
- High-rise buildings are subject to severe exposure, therefore longevity and robustness of design and materials and products used was essential
- The internal arrangement (see floor plan) was dated and would need to be reconfigured to a contemporary layout.



## Other Considerations

### 1. High-quality overcladding

The quality of the refurbishment directly influences the build cost and also the resale value. A saving of GBP 500,000 in external refurbishment cost, equivalent to more than GBP 5,000 per unit, could have been achieved if a cheap render cladding was used. Such an approach would have been inconsistent with the 'new-build equivalent ethos' which underpinned the refurbishment / resale project and also would not have been acceptable to the NHBC, therefore high-quality aluminium rainscreen was chosen

### 2. Appearance

Tall buildings benefit aesthetically from penthouses and/or feature rooftops. These additions also contribute towards greater social appeal, adding distinctiveness and desirability to a development. Furthermore, through the addition of penthouses, additional space is created at relatively low cost

### 3. Internal structural modifications

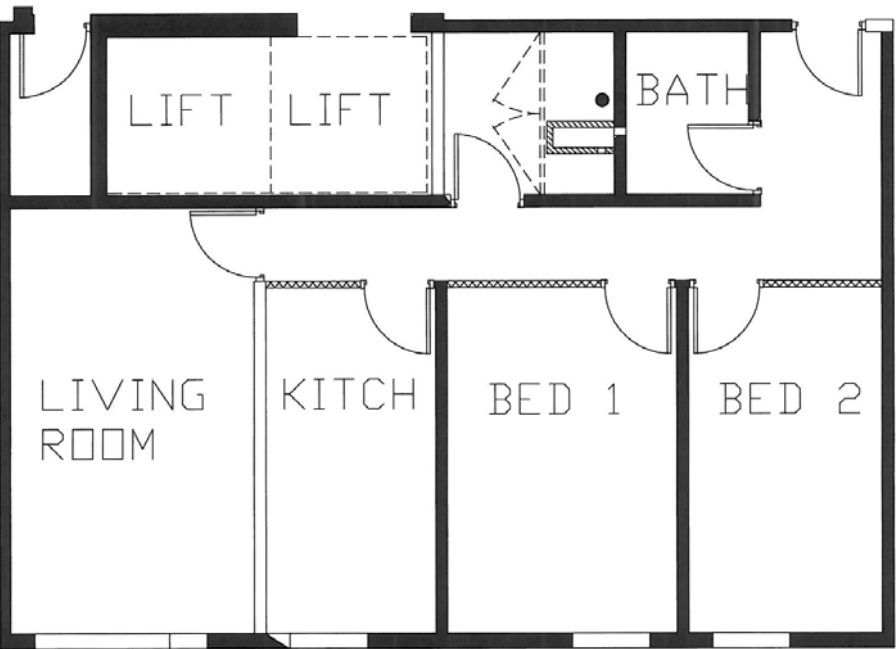
The concrete pre-cast panel internal walls were structural and did not lend themselves readily to being altered to form contemporary layouts. In order to generate maximum appeal to future occupants, openings would need to be formed and strengthened in order to achieve open-plan living accommodation

### 4. Facilities improvement

A single bathroom / WC does not fit with modern living requirements. The refurbishment plan therefore had to provide each two bedroomed unit with a bathroom / WC suite and a shower room / WC suite (see floor plan).

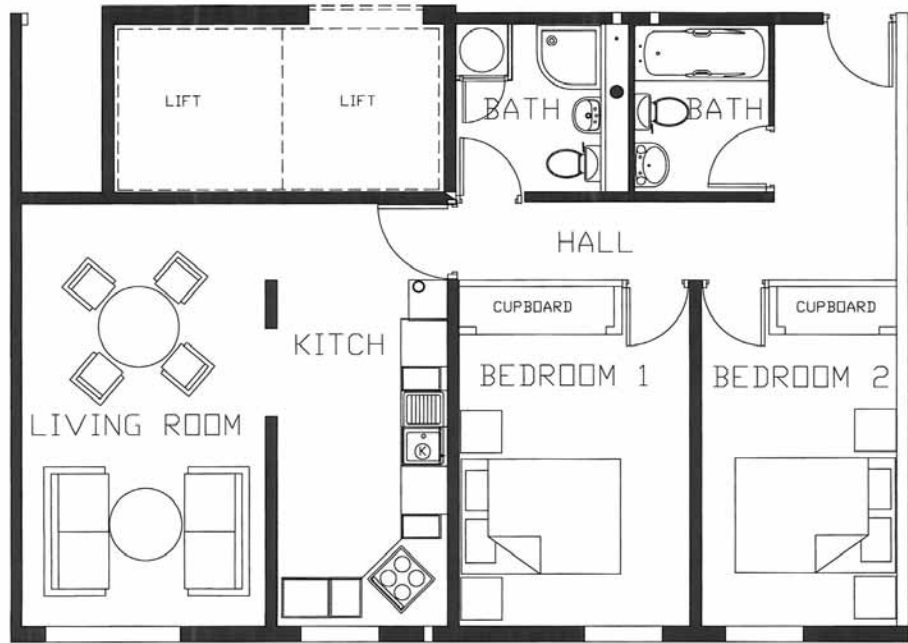


Existing Apartment Plan



Dated internal layout with separate kitchen / living-room, single bathroom and no shower facility is inconsistent with modern living requirements.

Refurbished Apartment Plan



Contemporary accommodation post-refurbishment:

- Open-plan living with walk-through kitchen and lounge / diner
- WC / shower room in addition to WC / bathroom
- New-build equivalent specifications



Project Delivery

d+b facades tender was accepted by Walsall Council in 2003. With full co-operation from the Council, a planning application was quickly submitted and consent was granted at the same time as purchase completion. Building Controls and NHBC design approvals were also granted. The refurbishment project commenced shortly thereafter beginning with strip-out works in late April 2004.

Project Completion and Analysis

Renamed ‘The Pinnacle’, the building was regenerated from derelict tower block to high-specification property including the addition of 6 new penthouse units within 50 weeks. It was completed in early April 2005 and was opened by the Lord Mayor of Walsall.

This project was undertaken on a commercial basis involving complete refurbishment ahead of onward sale. From the outset, it fully considered and adopted a high-quality, whole-life approach, exemplifying all the benefits of economic, social and environmental sustainability contained within this document and showcases what is possible in refurbishment projects.



Objective	Deliverable
ECONOMIC	<ul style="list-style-type: none"><li>• At the point of building closure, rental income was c. GBP 250 per unit with 50% occupation</li><li>• Building had reached the end of its useful life</li><li>• Demolition cost c. GBP 0.5M</li><li>• Land asset value post-demolition c. GBP 0.5M, therefore no economic benefit to demolition</li></ul> <p>Purchase and Refurbishment Costs:</p> <ul style="list-style-type: none"><li>• Building consisting of 87 flats was purchased for GBP 1M</li><li>• Refurbishment cost of GBP 4m in 2005</li></ul> <p>Economic Benefits:</p> <ul style="list-style-type: none"><li>• Resale value of GBP 7M</li><li>• Present rental income GBP 450 per unit</li><li>• Present occupation 95%</li><li>• Building life extended by 60 years</li><li>• Refurbishment underwritten by comprehensive warranty</li><li>• Energy consumption per unit reduced from c. GBP 200 per quarter to less than GBP 70 per quarter, saving 70%</li><li>• Maintenance costs eliminated</li></ul>
SOCIAL	<ul style="list-style-type: none"><li>• Contemporary and aesthetically pleasing</li><li>• External surfaces will remain pristine</li><li>• Desirable accommodation</li><li>• Low unit turnover</li><li>• Healthy internal environment</li><li>• Preserved and modernised the original design intent</li><li>• Good quality of life for tenants</li><li>• Has contributed towards local urban regeneration</li></ul>
ENVIRONMENTAL	<ul style="list-style-type: none"><li>• Building performance equivalent to a new-build</li><li>• Low carbon emissions</li><li>• The building’s embodied carbon has been preserved</li><li>• Refurbishment has used materials which are predominantly (65%) recycled and which are themselves 95% recyclable at the end of their useful lives</li></ul>



Graiseley,  
Wolverhampton





Graiseley,  
Wolverhampton





PROJECT SCOPE

Design and build of an insulated aluminium rainscreen and replacement windows to three 10 storey occupied residential tower blocks. Additional works undertaken included extensive structural steelwork to extend and enclose balconies to provide increased internal accommodation and provision of an additional lift to the exterior of the buildings with a glazed link separating this feature from the buildings.

REFERENCE CONTACT

Lisa Green, Principal Renewal Officer  
Neighbourhood Renewal (Operations), Regeneration and Environment  
Wolverhampton City Council    T: 01902 554813  
E: [lisa.green@wolverhampton.gov.uk](mailto:lisa.green@wolverhampton.gov.uk)

TYPE OF CONTRACT Partnering contract with Bullock Construction Ltd

CONTRACT VALUE £3.0m

PROJECT DURATION 78 weeks

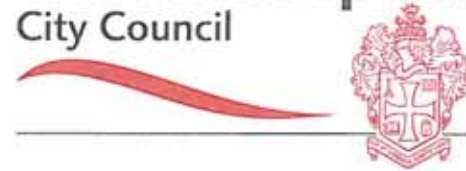




Please Ask For  
Direct Line  
Facsimile  
E-mail  
Minicom

Neil Woolley  
01902 550143  
01902 555403  
neil.woolley@wolverhampton.gov.uk

## Wolverhampton City Council



Tony Woods  
Head of Property Services

Civic Centre St Peter's Square  
Wolverhampton WV1 1RL  
Main Switchboard (01902) 556556  
Website [www.wolverhampton.gov.uk](http://www.wolverhampton.gov.uk)

Your Ref.

My Ref. NPW/0054

MMS: NSD

Date: 22.12.2010

TO WHOM IT MAY CONCERN

Dear Sirs

### D & B Facades UK Ltd.

The above Company were part of the Partnered Contract for the Graiseley High Rise Refurbishment Project which was undertaken over a two year programme finishing in 2006.

This project consisted of the refurbishment of three 10 storey high rise blocks, one of which provided sheltered accommodation, together with over-cladding, the enclosure of external balconies and replacement of windows, whilst the flats were in occupation. Shortly before commencing on site it was also decided to provide an additional lift to the exterior of the building with a glazed link separating this feature from the building.

D & B Facades were enthusiastic and actively involved in both developing the design,, providing alternative detailing solutions and working as part of a team to achieve a scheme that met the Client's requirements in terms of value for money and programme timescales. Without the level of commitment shown by D & B Facades it is unlikely that the project would have achieved any of the Client's objectives.

It should also be noted that post-Contract D & B Facades have readily supplied any additional information requested and rectified any (minor) defects identified at the end of the 12 months Defects Period.

I would have no hesitation in strongly recommending D & B Facades for any similar projects and would welcome the opportunity to work with them should the Authority undertake projects of this nature again.

Yours faithfully

N. P. Woolley  
Architect Section Leader  
Project Delivery  
Customer & Shared Services  
Wolverhampton City Council



In partnership with  
**JACOBS** **BK**



Balcony enclosures created additional internal living space.



Balcony treatments are varied.







Alpha House, Coventry





Alpha House, Coventry





#### Client Testimonial

*"We chose d+b facades' to externally refurbish Alpha House because their proposed solution was a superior product to all other tenders. We were also strongly influenced by their track record of similar projects and experience as developers in their own right. The project progressed extremely well and we are delighted with the outcome which provides high quality accommodation for our tenants."*

**Keith Rounds** Head of Planning & Procurement, Whitefriars Housing Group

**CONTRACT VALUE** £1.97m

**PROJECT DURATION**  
46 weeks





Background

Alpha house, is a square on-plan, multi-unit residential building of 17 storeys built in 1962 comprising 97 residential units. It was constructed using a Jack-Block system around a central concrete structural core with cantilevered floor plates supporting a non-structural cladding system.

The building is owned by Whitefriars Housing Group, part of West Mercia Housing Group, Coventry’s largest social landlord and one of the UK’s most successful social housing associations. The Group is a not-for-profit organisation owning and managing approximately 16,500 homes across the city of Coventry.

Planning consent had been granted for a new cladding system in order to meet thermal insulation performance levels required as part of the Decent Homes Standard 2010. This programme was launched in England in 2000 by the Department for Communities and Local Government to improve the conditions of homes for social housing tenants and vulnerable households in non-decent private-sector accommodation. The target was for all social housing managed by local authorities and Registered Social Landlords to be decent by 2010.

Before



After



Enquiry Document

The enquiry document describing the works to be undertaken specified:

- Removal of the existing steel and glazed curtain walling system and windows
- Installation of a new curtain wall constructed from a composite of uPVC, steel and aluminium, replacement windows and thermal insulation
- Enclosure of the existing open building entrance in keeping with the proposed new cladding system
- Safe removal of all asbestos

d+b facades’ Solution

With accumulated experience and expertise developed from refurbishing many high-rise, occupied residential buildings, d+b facades quickly identified a number of risks and areas of concern, particularly relating to the requirement for removal of the existing curtain wall.

An alternative approach was developed and proposed which involved retaining the existing curtain wall and overcladding the entire building. In this way, critical concerns and risks were designed-out from the original enquiry document (Table 4.). Whitefriars Housing Group adopted d+b facades’ enhanced solution as being the best to meet their near-and long-term project goals.

Comparison Between The Requirements of the Enquiry Design and d+b facades’ Enhanced Solution

Impact of Original Enquiry Design	d+b facades’ Solution
Complete removal of existing curtain wall means temporary wall required: <ul style="list-style-type: none"><li>• prevents occupants from risk of fall</li><li>• constructed from within dwelling in existing living space causing excessive disruption to occupants</li><li>• needs to be weather-tight and able to satisfy high-rise building regulations</li><li>• internal wall and floor coverings require protection</li></ul>	Retain existing curtain wall and overclad. New envelope fully constructed from outside prior to removal of existing windows with minimal disruption to occupants and minimising works inside flats, the building remains weather-tight at all times and retains structural integrity
Programme schedule is partly dependent upon internal access and co-operation of residents	The new building envelope is constructed forward of the existing building so the programme can proceed without constraints of occupation
No water management system, the facade will thus require regular cleaning and sealing gaskets will require periodic replacement	Innovative water management system means surfaces are self-cleaning, minimising maintenance and retaining as-new appearance
Removal of asbestos - health and safety risks to occupants and operatives	Asbestos is undisturbed and encapsulated under new cladding system
Proposed replacement composite uPVC/steel/aluminium curtain wall system has no track record of use in high-rise projects of this nature and uPVC windows inevitably require an ongoing maintenance programme throughout their useful life	The aluminium rainscreen system has been used successfully in more than 50 projects and established a proven track record on projects identical to Alpha House. Timber/aluminium windows are much stronger than uPVC and require no maintenance, making them more appropriate for high-rise dwellings



Before



After



Although the original enquiry design for replacement of the curtain wall and new windows would have delivered financial, social and economic benefits to the building's owners and tenants, d+b facades' enhanced solution delivered even greater benefits for little additional cost.

Enhanced Solution - Sustainability Improvements

ENQUIRY DESIGN	d+b facades' REDESIGN
Estimated energy saving of £278 per flat per annum	Estimated energy saving of £321 per flat per annum
Estimated carbon emission saving of 1.98 tonnes per flat per annum	Estimated carbon emission saving of 2.29 tonnes per flat per annum
Components made from uPVC have a significant environmental footprint, particularly in the manufacturing process	The aluminium rainscreen is composed of 65% recycled material which is 100% recyclable at the end of its useful life. The timber element of the windows is 100% sustainable
Will require regular cleaning and ongoing maintenance	Surfaces are self-cleaning and will remain as-new with no maintenance
Refurbishment life expectancy of up to 40 years	Refurbishment life expectancy of 60 years. Amortised spend substantially lower when based on whole-life cost

Benefits:

- Warmer in winter
- Reduced heating costs
- Reduced solar gain in summer
- Less noise intrusion
- Improved natural ventilation
- Tilt mechanism permits windows to be safely cleaned without leaning-out
- Residents offered an individual choice of internal window finishes

