Social Justice and Regeneration Research Report SJRRR 4/05 - November 2005

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

WHQS and Social Housing Renewal

Cost Model Report

Dadansoddi ar gyfer Polisi

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Analysis for Policy

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1 Executive Summary

1.1 Introduction

This report summarises the results of a study undertaken by Berkeley Hanover Consulting and Davis Langdon Management Consulting on the potential impact of a large scale housing renewal programme to meet the Welsh Housing Quality Standard (WHQS). Specifically, it deals with the likely construction costs of achieving WHQS by 2012.

It must be noted that the cost estimates contained in this report were generated from a cost model designed to provide likely estimates of construction cost at the aggregate level, ie for the Welsh social housing stock as a whole. Whilst indicative costs are provided for individual local authorities, these rely on certain broad assumptions covering the housing stock more generally that may not apply in each individual case. The particular circumstances of individual local authorities would therefore need to be considered when seeking to apply these estimates at the local level.

1.2 Cost Forecasts

The total forecast cost of meeting the Welsh Housing Quality Standard in Local Authority housing (160,000 dwellings excluding Bridgend) by 2012 is approximately £3.3bn over 30 years (See section 5 for information regarding exclusions). This figure is discounted and allows for a reducing stock at the rates identified by Local Authorities.

This represents an average forecast cost per dwelling of £23,000 to 2035. The target for new build homes as set by the Office of the Deputy Prime Minister is now £60,000 and this reflects the minimum figure that new homes are likely to be constructed for. This would suggest that, on a purely cost effective basis, it is likely to be best value to refurbish all but the most run down dwellings.

If a dwelling required repairs to all elements (i.e. new roof, re-render, kitchens, bathrooms, staircases, etc.) the rates used within the model suggest that the total refurbishment cost would be approximately £50,000 - £60,000 depending on the size of the dwelling. This would still support the notion that refurbishment is likely to be more cost effective than demolition and new build (remembering that the £60,000 home remains only a target). This, however, does not address dwelling inadequacies inherent within the design (i.e. dwelling layouts that cluster tenant groups resulting in an unsustainable community or communal areas which offer little protection to tenants). Where these dwellings have failed (i.e. through vandalism, poor reputation, etc) the argument for demolition and redevelopment is stronger and may prove best value over time.

There is a pronounced intensity of work required up to 2012, in order to achieve the WHQS. This is reflected in an average cost per dwelling to 2012 of £11,000. This is an annual rate of approximately £1,600 per dwelling compared to an overall average of approximately £700 per dwelling.

There is a significant disparity between the average forecast cost per dwelling to 2012 between authorities (see chart below). This is as a result of either:

- Disparate stock conditions
- Disparate interpretations and strategies for addressing the WHQS
- A combination of the above

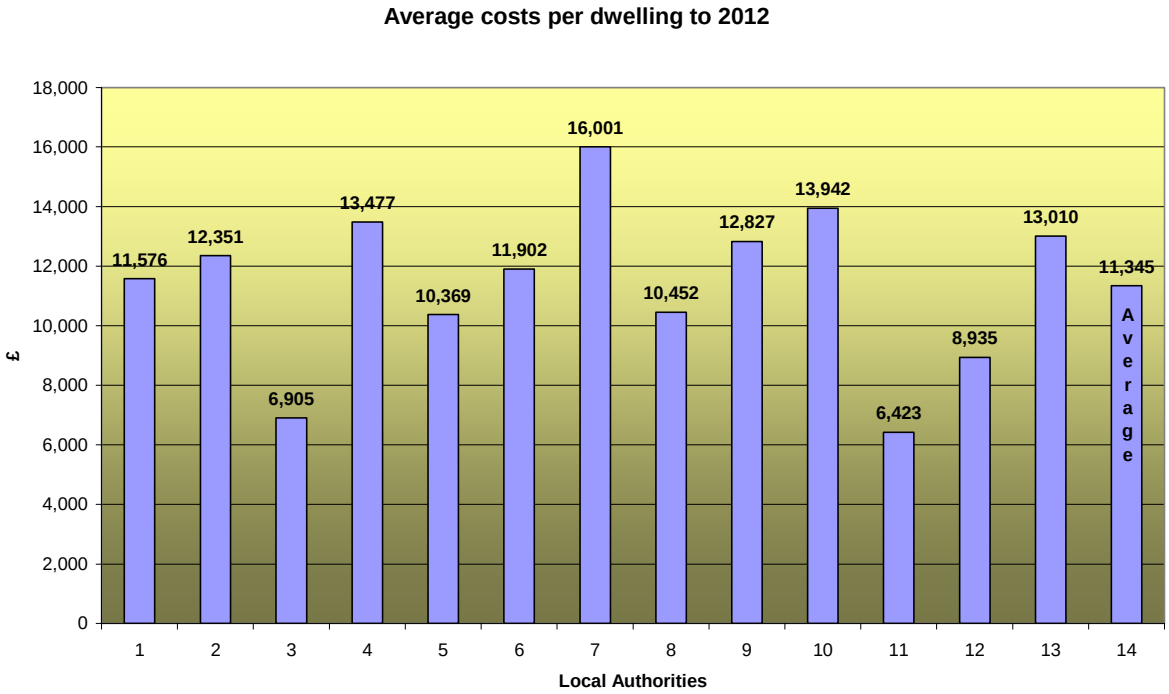


Figure 1 - Average cost per dwelling to 2012

Authorities are required to forecast the expected demand on Right To Buy sales as part of the business planning process. There is significant disparity between the forecasts supplied by each authority resulting in a large variability in the total cost forecast across Wales. The lowest (and most common) forecast is a fixed rate of 2% per 5 years. The highest rate is 17% in a single 5 year band.

Figure 2 below represents the forecast cost by region. What can clearly be seen is that South Wales accounts for a high density of work, both in total quantity of work, and through geographic density.

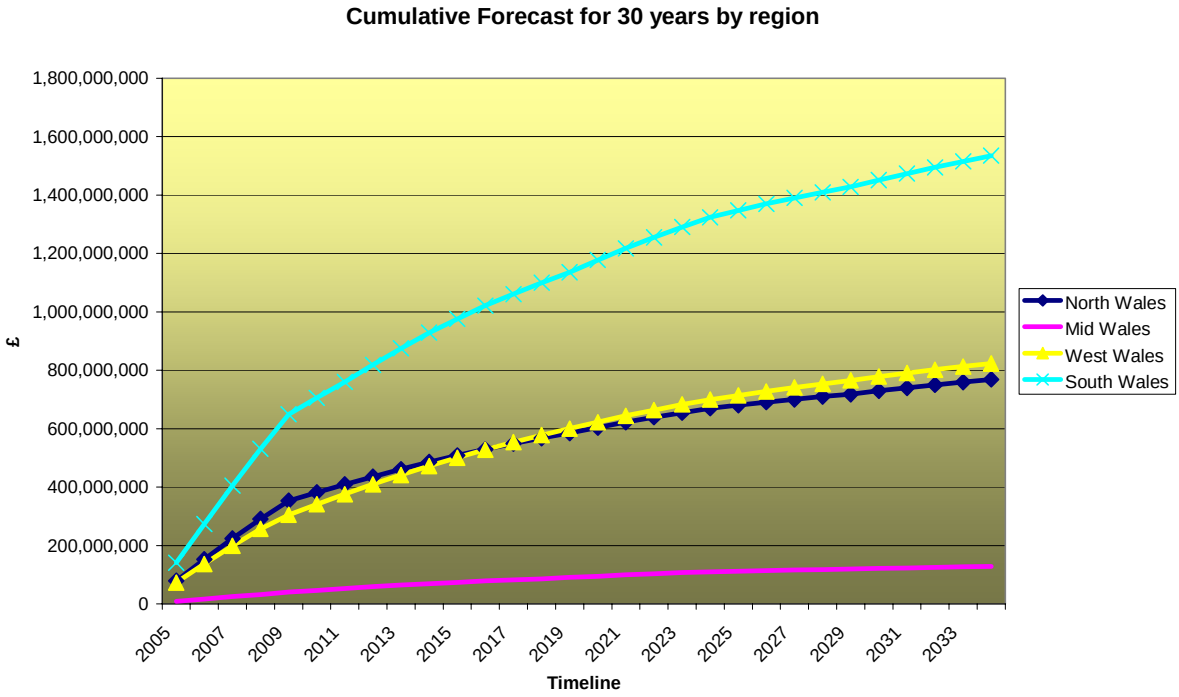


Figure 2 – Cumulative forecast for 30 years by region

1.3 Labour Forecasts

The cost model produced forecasts of the labour hours required for authorities to implement WHQS. This facilitated a calculation of the annual labour requirement likely to be created as a result of local authorities reaching WHQS. Our estimates suggest that labour demand peaks in the early part of the period to 2009, before virtually halving and remaining relatively constant through to 2024 where the requirement again declines quite sharply. At its peak in 2005-6 we forecast that the annual labour requirement for implementing WHQS will represent approximately 10% of construction operative employment in Wales through to 2009 before declining to less than 5% from 2010 onwards.

Overall, we believe that the labour demand created by Welsh Local Authorities attaining WHQS is not likely to place undue pressure on the supply side of the construction industry in Wales, particularly as some of the work is likely to be diverted from other sectors of Welsh construction output primarily public housing repair and maintenance.

1.4 Material Forecasts

The demand on materials is not even across all the dwelling elements. This demand is led by the requirements of the WHQS.

41% of the costs are generated by kitchens and bathrooms (23% and 17% respectively). This is due to three issues:

- They have a relatively high cost due to the need for multiple trades and large material demand

- They have a relatively short life resulting often in two replacements within 30 years
- They are at the core of the WHQS improvements and all authorities have committed to providing new kitchens and bathrooms.

The approximate number of units required (for the larger cost elements) are:

- 700,000 windows
- 200,000 doors
- 200,000 boilers
- 250,000 kitchens
- 200,000 bathrooms

There is a peak in demand for materials in the period up to 2012. This is particularly noticeable for kitchens and bathrooms. This would appear to be because most authorities have put new kitchens and bathrooms at the centre of their WHQS work programmes resulting in high numbers of replacements within the first 5 years. The knock on effect is that these kitchens and bathrooms are then replaced for a second time within the 30 year period.

N.B. The numbers of units are greater than the total number of dwellings (160,000 dwellings). This is because elements have life expectancies shorter than the 30 year period, resulting in elements being replaced more than once where they are replaced early in the 30 year period.

2 Table of Figures / Charts

3 Introduction

Berkeley Hanover Consulting (BHC) was invited by the National Assembly for Wales (NAW) to tender for The Potential Impact of Large Scale Housing Renewal Associated with Reaching the Welsh Housing Quality Standard (WHQS): Housing Renewal as a Tool for Sustainable Regeneration (Contract Number: 05/2004) in May 2004. BHC submitted a proposal with Davis Langdon Management Consulting (DLMC) and OPPS in June 2004. Further to a presentation in June and a subsequent letter dated 23rd June from BHC to the Client, the BHC team was appointed to undertake the study in early July.

This report forms one part of the wider project mentioned above. It contains the quantitative output from a cost model developed to forecast the construction costs to repair and improve Local Authority housing (social housing) to WHQS standards from 2005 to 2035.

3.1 Objectives and context of this report

This report contains the final outputs from the cost model. It also identifies:

- Why the model was developed in the way that it was
- The methodology of the model
- The outputs from the model and a discussion thereof

3.1.1 Overview of the cost model

Two main approaches were considered for estimating the likely construction costs of meeting WHQS:

- An assessment of data to be provided by local authorities relating to the costs of meeting WHQS
- An independent cost model, based on stock data provided by local authorities, but providing estimates of cost on a broadly consistent basis.

The cost model approach was adopted, principally because:

- Our initial survey of local authorities during Stage 1 of the study found that, although they all collected good data on their stock and the costs of upgrading it, they did so in a variety of different ways that would make aggregation to the national level very difficult
- The costing basis and assumptions varied between authorities and it would be difficult to account for such local variability at the national level
- Estimates of cost were required by NAW on a consistent basis to help provide a basis for informed planning at the level of Wales as a whole.

Additionally, while it is recognised that the implementation of WHQS throughout Wales will require significant financial expenditure, this will in turn place large demands on labour and materials supply. A means of examining the implications for regional workforce training requirements and for the organisation and management of regional and locally-based materials supply mechanisms was also required. The model addresses these requirements.

The cost model is a bespoke solution developed by Davis Langdon in collaboration with Berkeley Hanover Consulting to address the issues raised above. It applies a standard cost estimating methodology to all authorities in order to produce outputs that allow authorities' ***relative*** costs to be compared at a high-level and on a consistent basis. Whilst the model takes account of the different stock profiles of different authorities (in terms of the mix and broad condition of their dwellings) it does not take account of more specific circumstances and constraints, and therefore does not purport to produce locally accurate estimates of likely costs for individual authorities.

The model is based upon a 30 year forecast cash flow so as to reflect the timescale required by Local Authority business plans. All forecasts commence in 2005 and end in 2034.

The required outputs from the model were:

- A forecast over a 30 year period (see above) of the likely construction cost (by authority) of improving and maintaining the stock of Local Authority owned and managed properties (social housing) to WHQS standards
- Average construction cost figures for 30 years and for expenditure to 2012 (commencing 2005)
- Forecasts of labour demand for 30 years (commencing 2005)
- Forecasts of material demands for 30 years (commencing 2005)
- All Wales summaries of the above

It must be noted that the cost estimates contained in this report were generated from a cost model designed to provide likely estimates of construction cost at the aggregate level, ie for the Welsh social housing stock as a whole. Whilst indicative costs are provided for individual local authorities, these rely on certain broad assumptions covering the housing stock more generally that may not apply in each individual case. The particular circumstances of individual local authorities would therefore need to be considered when seeking to apply these estimates at the local level.

4 Methodology

4.1 Developing the methodology

4.1.1 Davis Langdon previous cost models

Davis Langdon Management Consulting has developed housing cost models previously for both Communities Scotland and the Housing Corporation. In addressing the Welsh housing stock, we considered how the lessons learnt from these models may be applied to Wales.

4.1.2 The decision to use a questionnaire

Stage 1 highlighted the disparate nature of stock information throughout the authorities in Wales. It was apparent that different authorities had used

different survey consultants and had then adopted that survey information in different ways. Davis Langdon concluded that the task of importing all stock information onto one database would be extremely complicated, and prohibitively time consuming (if indeed it were at all possible).

The decision was made therefore to construct the model around a questionnaire. The questionnaire enabled each authority to interrogate their own databases to extract the information required for the outputs. It resulted in the person best placed to interrogate the database (i.e. the person who manages and maintains it) to extract the information required.

Importantly, it was noted that FPD Savills had undertaken over 50% of the surveys in Wales, and that the information for these surveys was held on a standard Savills database. The questionnaire therefore aimed to reflect the structure of this database without excluding other authorities. The emphasis at all times was one of achieving the highest return rate possible from authorities.

4.1.3 Piloting the questionnaire

Draft questionnaires were sent to Newport Council and Caerphilly County Borough Council as part of a small piloting exercise. This was then followed with a half day discussion with each authority to assess potential difficulties in providing the information requested. This resulted in amendments to the questionnaire designed to ensure that it would be simple to complete.

The revised questionnaire was then reviewed with the largest survey consultants operating within Wales (FPD Savills, Property Tektonics, David Adamson & Partners, Michael Dyson Associates). We received either written or verbal confirmation from each that the questionnaire would be able to be completed, given the nature of each survey database.

A note was submitted to the client on the 18th April 2005 stating the revised nature of the questionnaire and the steps taken to ensure that it was able to be completed. The questionnaires were issued on 28th April 2005 and returns requested by 27th May 2005. (See paragraph 6.2 for information on returns).

5 The structure of the model

5.1 Outline structure

The model operates on the basic premise of multiplying quantities of work required by unit rates for work items. The quantity of work required is directly defined by the stock condition survey which quantifies the number of dwellings requiring different types of repairs and improvements.

5.2 Archetypes and rates

The questionnaire requested total numbers of stock, divided into different archetypes. The usage of archetypes enabled rates to be developed for different types of buildings. Archetypes are divided both into type of dwelling

(i.e. detached, bungalow, etc.) and also number of bedrooms (used to define the size of the dwelling). See below. (Note that the numbers included are illustrative only)

			Total Number in Stock
	Type	**Bedrooms**	**Nr**
1	**Mid Terrace house**	**2**	251
2	**Mid Terrace house**	**3+**	1,414
3	**End Terrace house**	**2**	142
4	**End Terrace house**	**3+**	1,020
5	**Semi Detached**	**2**	100
6	**Semi Detached**	**3+**	1,312
7	**Detached house**	**2**	8
8	**Detached house**	**3+**	27
9	**Bungalow**	**1**	107
10	**Bungalow**	**2 / 3+**	690
11	**Flat**	**1**	527
12	**Flat**	**2 / 3+**	869
		Total	**6,467**

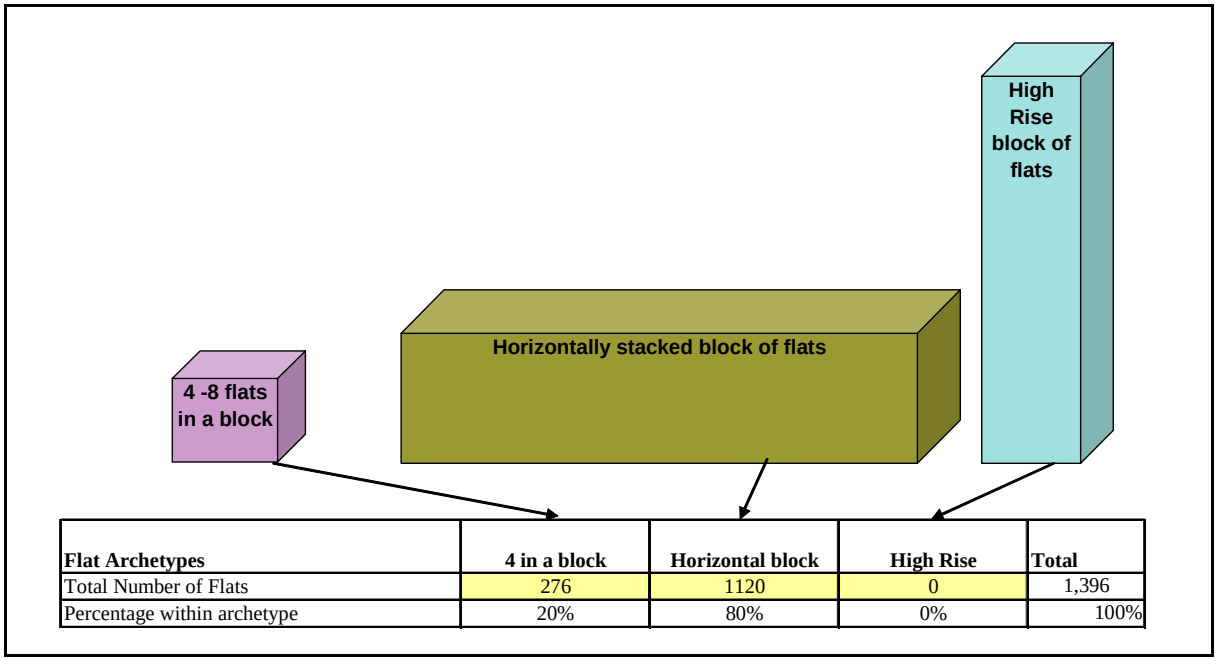
Figure 3- Archetypes

Archetypes were developed to reflect the average stock held by authorities. Davis Langdon used the Housing for Wales Pattern Book to define the archetypes (The Pattern Book is produced by the National Assembly for Wales Housing Directorate). Through discussion with colleagues working on housing refurbishment schemes within Wales it was agreed that the Pattern Book was the best, defined source of information on dwelling sizes (albeit recognising that the Pattern Book is for new dwellings).

5.3 Flats and Houses

A basic division was drawn between houses and flats. This was due to the difficulty in accounting for works to blocks of flats containing more than one dwelling. Works to flats (and the subsequent rates) were therefore either linked to the external building type as illustrated below, or to the internal size of the flat defined by the number of bedrooms.

To illustrate, works to roofs was linked to the total building, whereas works to the kitchen were linked to the number of dwellings. Authorities were therefore required to complete the table below to define what numbers of flats occur in which type of building. Again, quantities shown are illustrative only.



Flat Archetypes	4 in a block	Horizontal block	High Rise	Total
Total Number of Flats	276	1120	0	1,396
Percentage within archetype	20%	80%	0%	100%

Figure 4 - Flat Archetypes

5.4 Work headings

The WHQS was used to define the main headings for the types of work that were required. From this, typical works were proposed within each category and were refined through discussion (internally and with the pilot study), through measurement practicality and were moulded to suit the questionnaire that was to be issued. These work definitions differ for flats and for houses & bungalows due to the different types of dwelling.

See 'Appendix A: Definition of work items' for a list of work headings and their definitions.

Once the scope of the refurbishment works was agreed, detailed estimates were prepared for each work item. In most cases the individual descriptions of the associated works were developed to a near SMM7 standard in order to define specifications.

(Standard Method of Measurement of Building Works: 7th Edition, Royal Institute of Chartered Surveyors & The Building Employers Confederation, 1998.)

5.5 Unit rates

Each rate is built up from 'first principles'. In doing this, labour, plant and materials costs were identified, as well as labour in hours. This was to enable the labour and material forecasts for the final outputs.

Ultimately, all the rate build ups contained in the work sheet are reasonably anticipated specification assumptions based upon typical dwelling arrangements. They are not typical for all dwellings in all cases. Given the nature of the model, general assumptions were required based on WHQS requirements and a tacit understanding of the work involved.

5.6 Capturing stock information

Questionnaires asked for work quantities to be supplied in terms of percentages of the total stock for either flats or houses. This data was derived directly from the stock condition surveys undertaken (primarily) by survey consultants throughout Wales. These surveys identified the remaining lives of elements and also identified where work was required to meet the WHQS. This interpretation of the WHQS is likely to have been subjective and may have differed for each authority or survey consultant. Percentages were supplied for each of the work items, for forecasts in bands of 5 years.

For example, if 34% of the windows required replacement in the first 5 years, then 34% would be entered into years 0-5.

HOUSES & BUNGALOWS

	Residual Life (No. of years)							Check Box (must total) 100%
	0-5	6-10	11-15	16-20	21-25	26-30	30 + or NA	
GENERAL ITEMS								
External Windows	34%	3%	1%	10%	40%	12%	0%	100%
External doors	49%	16%	20%	8%	6%	0%	0%	100%
Electrical - rewiring	34%	25%	22%	15%	5%	0%	0%	100%

Figure 5 - Sample data entry

If not all dwellings require this work then that percentage of dwellings is entered into years 30+ or N/A.

5.7 Life Expectancies

The life expectancy of an element is the expected remaining life an element should have. (i.e. a new kitchen should be replaced every 15 years according to the WHQS). One issue identified during Stage 1 was that authorities and survey consultants had applied different life expectancies to elements. The cost model removes this variability by overlaying standard life expectancies for all authorities however, it is the consultant surveyors in discussion with authorities who have forecast the initial remaining life of each element.

The source of residual lives is either the WHQS itself or is taken from the BMI/BCIS publication “Life Expectancy of Building Components”.

External Windows	30+	
External doors	30+	
Electrical - rewiring	30+	
Roof insulation (thermal)	30+	
Wall insulation (thermal)	30+	
Paths / Hard standing - all types	30	
External Walls - Repointing	30+	
External Walls - Re-rendering	30+	
Roof structure (trussed rafters)	30+	
Chimney stacks	30+	
Damp Proof Course	30+	
Rain Water goods	30+	
Roof coverings	30+	
Painting to external elevation	15	Manufacture Gaurantee
Stairs	30+	
Balustrade	30+	
Fire alarms and equipment	30+	
Smoke Detectors	15	BMI
Rear garden - Fencing	20	BMI
Boiler	20	BMI
Central Heating System	30+	
Living room separation from main door	30+	
Mechanical extract to kitchen & bathroom	15	BMI
Kitchen	15	WHQS
Bathroom	25	WHQS

Figure 6 – Life Expectancies

The questionnaire requests information regarding the first repair of any dwelling. The model then accounts for secondary or tertiary repairs by applying a lag of whatever time the life expectancy is. For example, if a kitchen were replaced in years 6-10 then the model would replace it again in years 21-25.

5.7.1 Life Expectancies and Rates

When elements are replaced for the second time by applying standard life expectancies a factor is applied to the rates. This factor represents the fact that the initial work to achieve the WHQS is likely to be marginally more than subsequent replacement works. For example, once improvement works have been undertaken to a bathroom, it is unlikely that the same quantity of plumbing or electrical works would be required during a second refit. This factor is set at 90% and reflects the marginal difference between improvements and replacements. It is a nominal assumption only.

5.8 Producing the cost output

5.8.1 Rates and Quantities

The model operates by applying the basic formula below:

Total Number of dwellings for each archetype x Rate for element for each archetype at constant prices x Percentage of dwellings requiring repair of that element in each year band

Each archetype therefore has its own cost profile, by element, on a timescale with 5 year bands. These profiles are added to create a total cost profile for each authority. To this profile, additional costs and calculations are added to create a complete figure. These are listed below:

5.8.2 Preliminaries

Preliminaries are management and site costs associated to the works. These are traditionally applied on a percentage basis to the total works value. They have been applied at a fixed 10% on all dwelling repairs. This figure is likely to differ depending upon the nature of the contract and the tendering approach but reflects a traditional allowance for this type of work.

5.8.3 Regional Factor

Market conditions vary by region throughout Wales. This is affected by the availability of supply chains and the supply and cost of labour. *These issues are addressed in detail in the guidance documents*. This effect is felt in the cost paid for services (i.e. rates increase or decrease).

The model applies a regional factor to each authority based upon BCIS data averaged for contracts covering the period 1980-2004, rebased to Outer London = 1.00. The BCIS (Building Cost Information Service) collate cost information to evaluate market trends, inflation and regional variations. The indices are normalised to London prices. The Welsh average is 0.82 with authorities ranging above or below that figure. The lowest factor in Wales is the Clwyd region whilst the highest is South East Wales (especially Blaenau Gwent 0.87, Vale of Glamorgan Council 0.87, and Rhondda Cynon Taff County Borough Council 0.86)

5.8.4 Price linkage

All rates are at constant prices. They are at 2nd quarter 2005. If the model required an uplift due to a repeat exercise, a global inflation figure may be applied to uplift all rates. Davis Langdon could advise on a suitable rate if this were required.

5.9 Other Costs

The model incorporates other areas of capital expenditure in an attempt to build a rounded picture of expenditure. Additional costs included are:

- Structural Repairs to Non Traditional Dwellings
- Repairs to garages
- Allowance for asbestos removal
- Contingent Major Repairs
- Professional Fees

5.9.1 Structural Repairs to Non Traditional Dwellings

Social housing normally consists of a diverse stock of dwellings, spanning a construction period of often over 100 years. Early, 19th century dwellings

were generally of load bearing wall construction (i.e. rubble stone wall). Later dwellings were of load bearing, cavity-wall construction (i.e. traditional bricks and mortar).

After the war, the need for new dwellings, constructed quickly and at low cost led the government to investigate and invest in alternative construction techniques. This was further supported by post war surplus manufacturing plants for steel and aluminium. The result was that the 1940's through to the late 1960's saw a rapid growth in non-traditional dwelling construction. (Non Traditional Housing in the UK: A brief review. Commissioned by the Council of Mortgage Lenders, written by Keith Ross of the Building Research Establishment, 2002)

These innovative construction techniques sometimes contained structural inadequacies, normally evidenced as a result of decay. Additional structural support/repairs are required to some of these dwellings in order to ensure their survival. As part of the stock condition survey, the majority of authorities made an assessment as to the condition of their non-traditional stock.

The model accounts for repairs in a simple manner in reflection of the vast complexity of attempting to cost, in detail, multiple construction types and multiple construction repairs. Repairs have been classified as either large, small, or not required and accounted for as a percentage of the total number of non-traditional dwellings.

Large repairs are £15,000 and small repairs are £2,500. These costs reflect the need to do major element replacement for the former, and for the latter, discreet structural patch repairs. These costs are in addition to any other dwelling improvements.

5.9.2 Repairs to garages

Garages are directly associated with housing and are likely to require similar types of improvement works to bring them in line with the WHQS requirements. The questionnaire asked how many garages were in the stock and also, of that number, how many required the repairs mentioned below. Numbers shown are illustrative only.

Total Number of garages	**1,050**
Percentage requiring new garage doors	**20%**
Percentage requiring new roofs	**49%**
Percentage requiring new pedestrian door	**0%**
Percentage requiring structural repair	**6%**

Figure 7 - Garage work elements

These percentages were converted into quantities and multiplied by unit rates calculated by Davis Langdon.

5.9.3 Allowance for asbestos removal

Asbestos is a material which may be present in various dwelling elements. The removal of asbestos carries a cost premium due to the need for specially qualified contractors.

The Michael Dyson Associates Ltd stock condition survey for Ceredigion Council (April 2003) identified the 5 areas where asbestos most commonly occurs. This information was used in the questionnaire which asked authorities to state what percentage of their stock contained either all 5 asbestos elements, between 2 & 4, 1 or none. Rates were calculated by Davis Langdon to account for the additional costs for dealing with asbestos (i.e. approved contractors, breathing equipment, and waste disposal)

	Principal asbestos elements are:
1	**Fascia, soffit & bargeboard**
2	**Soil & vent pipes**
3	**Store roofs**
4	**Garage roofs**
5	**Artex ceilings**

Figure 8 - Asbestos elements

5.9.4 Contingent Major Repairs

When surveying dwellings, it is known that there are repairs which will be required which may not be visible at the time or without significant disruption to the fabric of the building. For example, wall ties may have failed and need repairing or floors may need strengthening. This ‘known unknown’ is best accounted for with the use of a percentage allowance applied to all capital works. This is applied at a fixed 5%.

5.9.5 Professional Fees

The planning, design, procuring and management of the capital works programme will incur professional fees. This work may be undertaken by the local authority or contracted out to consultants. In either case, they are costs directly associated to the works. Standard practice is to apply a percentage allowance to the total works value to account for the professional fees involved.

A figure of 10% has been applied to all costs.

5.10 Right To Buy / Right to Acquire

Whether stock is retained or transferred, the right for tenants to either buy or acquire their dwelling remains. (N.B. This is a complex issue and is addressed in more detail within the web guidance). The effect of this is that the stock in local authority hands reduces. A reduction in stock will result in a lower demand on capital spend, lower levels of rental incomes and increased budgets due to sales receipts.

Authorities were asked to provide their own forecast of Right To Buy sales as this is a forecast judgement best made by authorities themselves, who understand the local issues that motivate tenants to buy.

The authorities' forecasts were added to the model in order to account for falling stock numbers. The same ratio of falling stock numbers was added to the cost forecasts in order to reflect the reducing demand on capital spend over the thirty years.

5.11 Discounted Cash Flow

Discounting cash flows is the method of presenting all cost information at a single point in time. The principle being that, to spend £100 in 30 years time requires less than £100 now as money may be invested, or accrue interest. This process is therefore the platform from which stock valuations would be made.

The Welsh Assembly Government's 2002 'Guidance for Local Authority Housing Stock Business Planning' predates HM Treasury's Green Book 2003. The guidance in the former is to use a rate of inflation at 2.5% and a discount rate of 6%. It also states that changes to the Green Book should be reflected.

The current Green Book recommends a discount rate of 3.5% which takes into account inflation. This rate has been used for the model in conjunction with constant prices.

5.12 Normalised Cash Flow

Some authorities do not update their stock information annually. As a result, stock information is in some instances, provided from 2004 or earlier. The model updates all cash flows to start in 2005. Where an update is required, the actual expenditure of authorities is inserted into the model. The difference between what was forecast by the model, and what was actually spent by the authority is then carried forward to the first few years of the forecast spend. This ensures that, where work has been carried out, it is accounted for.

6 Cost Forecasts

6.1 Cost Model Outputs – Overview

The outputs from the model should be read in the context of their intended use. There is a danger that outputs will be used for purposes for which they are inappropriate. The cost model was developed as a tool to provide a holistic perspective of costs across Welsh Local Authorities. The benefit in doing this is it enables relative comparisons between authorities and also enables an All-Wales picture to be drawn. It is therefore, by definition, not a detailed estimate of works required on a local authority by local authority basis. This is not an appropriate tool with which to challenge Local Authorities estimates, without additional understanding as to how they have forecast the works.

A more detailed estimate may be produced by analysing and testing source data, by investigating local supply chains and existing levels of pricing within local authorities. This is beyond the scope of this project and would also significantly compromise the ability to produce a meaningful All-Wales picture.

6.2 Reliance upon information provided

All information received by Davis Langdon from Local Authorities has been relied upon in full. No attempt has been made to corroborate or challenge any information.

6.3 Missing Information

Significant effort has been made by Davis Langdon, Berkeley Hanover Consulting and also by the Assembly to chase late or missing information. The original timescale was extended due to the need for additional time to enable authorities to respond. At the time of writing this report the following authorities had provided returned questionnaires.

- Anglesey
- Blaenau Gwent
- Caerphilly
- Cardiff
- Conwy
- Denbighshire
- Gwynedd
- Monmouthshire
- Neath Port Talbot
- Newport
- Powys
- Rhonda Cynon Taff
- Swansea
- Torfaen

Of the received questionnaires, there was disparity about the level of information supplied. Notably, Rhonda Cynon Taff CBC did not complete the stock condition section and their response and so their expenditure could not be modelled. Also, Ceredigion Council returned a completed questionnaire, however, this was received past the deadline resulting in the questionnaire being unable to be processed.

6.3.1 Asbestos and Garage and Non-Traditional Repair information

Several authorities failed to supply information relating to asbestos, garages and non-traditional repairs. This is identified within each authority's summary. This has not been imputed

6.4 Imputation Methodology

Where questionnaires have not been received we have no information on stock condition. We do know, however, stock sizes. All-Wales summaries have therefore been developed by calculating the average forecast cost per dwelling (per annum) and multiplying this by the stock numbers of each authority. This results in an imputed cash flow which is reflective of the average condition of stock across Wales and the average forecast of Right To Buy sales.

This simple approach provides a robust answer and relies upon sensible assumptions.

6.5 Margin of Error

The following items determine the margin of error within the cost model:

6.5.1 Rates

Davis Langdon publishes one of the primary sources of building cost information (SPONS). This is the main source of cost information for the model. No account can be taken for specific market anomalies although general trends are captured through the use of sub-regional indices.

6.5.2 Quantities applied by archetype

Each dwelling will differ slightly from its neighbour. The pattern book has been used as a reasonable average for all housing stock.

6.5.3 Compression of data into archetypes

The model works by requesting stock condition for all houses and bungalows and then all flats. This is then apportioned across the archetypes. This was the solution to a problem regarding the disparate management of stock information. This was discussed with the client at the time and was agreed to be a reasonable compromise to the problem.

6.5.4 Information received from Local Authorities

Due to the lack of 100% of questionnaire receipts, there is the potential for error in the All-Wales summaries. Condition information has been received for approximately 60% of the stock. It is considered that this level of information is sufficient to reflect an overall condition of housing stock throughout Wales.

6.5.5 Grossing up of survey information from primary survey information

This exercise has been completed by survey consultants. It is assumed that information supplied is robust.

6.6 Note on general project risk allowance

The forecast costs include no general contingencies. This contingency would be required in the planning of any works programme to cover the occurrence of risks. This issue will be addressed fully in the guidance.

7 Inclusions and Exclusions

7.1 What do the figures include?

The costs presented include (unless stated otherwise) the following information:

- Forecasts for Right To Buy sales at the level advised by each local authority
- Discounted at 3.5%
- All rates are based upon independent assessments by Davis Langdon
- All rates have been updated to 1Q2005 (January – March 2005)
- All rates have been regionalised using BCIS regional indices[i]
- All forecasts are for 30 years starting in 1Q2005 (ending 2035)

7.2 What do the figures exclude?

All figures exclude (unless stated otherwise) the following information:

- Environmental Improvements
- Responsive / Void Maintenance
- Related Assets
- Cyclical Maintenance
- Demolition & Redevelopment
- VAT
- Administration and Management costs
- Statutory planning and building regulation fees
- Allowance for contaminated waste (other than asbestos)
- Loose furniture and white goods
- Additional Survey Costs
- General project risk allowance

Whilst the cost model specifically excludes the items listed above, questions were included in the questionnaire regarding the items below. As a result, these are shown in the summary sheet for each authority, although no comment is made on the validity of the information provided.

7.2.1 Environmental Improvements

These are the costs associated with improving the area outside the direct curtilage of the dwelling. They may include issues such as CCTV, re-landscaping, graffiti removal etc. The need for environmental improvements is entirely dependant both upon the condition of the local environment and also the authorities' interpretation of the WHQS. Therefore, no independent estimate may be made.

In planning the WHQS improvements, however, it is imperative that authorities consider these improvement works and make an appropriate budgetary allowance.

7.2.2 Responsive / void maintenance

This is the cost arising from landlords' obligations to carry out property repairs (on an ad hoc basis) and also the cost associated with returning void properties to a tenantable condition. It is envisaged that, as properties are improved, the level of responsive repairs should reduce as they may be replaced with planned maintenance. No independent estimate is made of these costs.

7.2.3 Related Assets

These are costs to maintain assets other than the dwelling itself (i.e. unadopted roads, play areas and hard standings)

7.2.4 Cyclical Maintenance

This is defined as "maintenance and servicing, generally similar to that stated for programmed repairs" and is recurring annually. It may include painting and decorating, servicing of boilers etc. This means that items will require maintenance during their estimated lifetimes in order for them to operate efficiently and for the length of time required. These are excluded from the estimate.

8 Right To Buy Forecasts

8.1 General Overview

Each authority was requested to supply their forecasts of Right To Buy sales. This provides an opportunity to compare the assumptions made in forecasting the desire and ability to purchase local authority stock.

8.2 Comparison of forecasts

The table below demonstrates the disparity between Right To Buy forecasts. This disparity clearly plays a large part in the overall forecast expenditure figure. A high rate of RTB implies a low capital spend.

Right To Buy Forecasts by Authority						
	0-5	6-10	11-15	16-20	21-25	26-30
Anglesey	2%	2%	2%	2%	2%	2%
Blaenau Gwent	2%	2%	2%	2%	2%	2%
Caerphilly	2%	2%	2%	2%	2%	2%
Cardiff	10%	9%	9%	8%	7%	6%
Conwy	5%	5%	5%	5%	5%	5%
Denbighshire	11%	5%	3%	3%	4%	4%
Gwynedd	14%	14%	14%	14%	14%	14%
Monmouthshire	2%	2%	2%	2%	2%	2%
Neath Port Talbot	5%	6%	6%	6%	7%	7%
Newport	2%	2%	2%	2%	2%	2%
Powys	6%	7%	6%	6%	6%	6%
Rhonda Cynon Taf	3%	2%	2%	2%	2%	2%
Swansea	7%	6%	4%	5%	5%	5%
Torfaen	17%	10%	0%	0%	0%	0%

Lines in blue have been added at 2% by Davis Langdon due to lack of information

Figure 9 - Right To Buy Forecasts

No comment is made with regard the accuracy of any one forecast. Each authority faces a differing set of circumstances. It is however, useful to reinforce that the actual demand for Right To Buy sales could have a dramatic effect on the actual out-turn cost of housing improvements under WHQS.

9 Cost Outputs

9.1 Output 1 – Total forecast cost for Wales

The total forecast cost of Welsh Local Authorities meeting WHQS by 2012 on stock under their ownership is approximately £3.3bn over 30 years (See section 5 for information regarding exclusions). This figure is discounted and allows for a reducing stock at the rates identified by Local Authorities. Figure 9 shows a pronounced curve indicating that expenditure in the first few years is higher per annum than in later years.

All forecast cash flows start in 2005 as this was the date to which all cash flows were normalised. This date was selected as the majority of information received regarding actual expenditure was up to 2004.

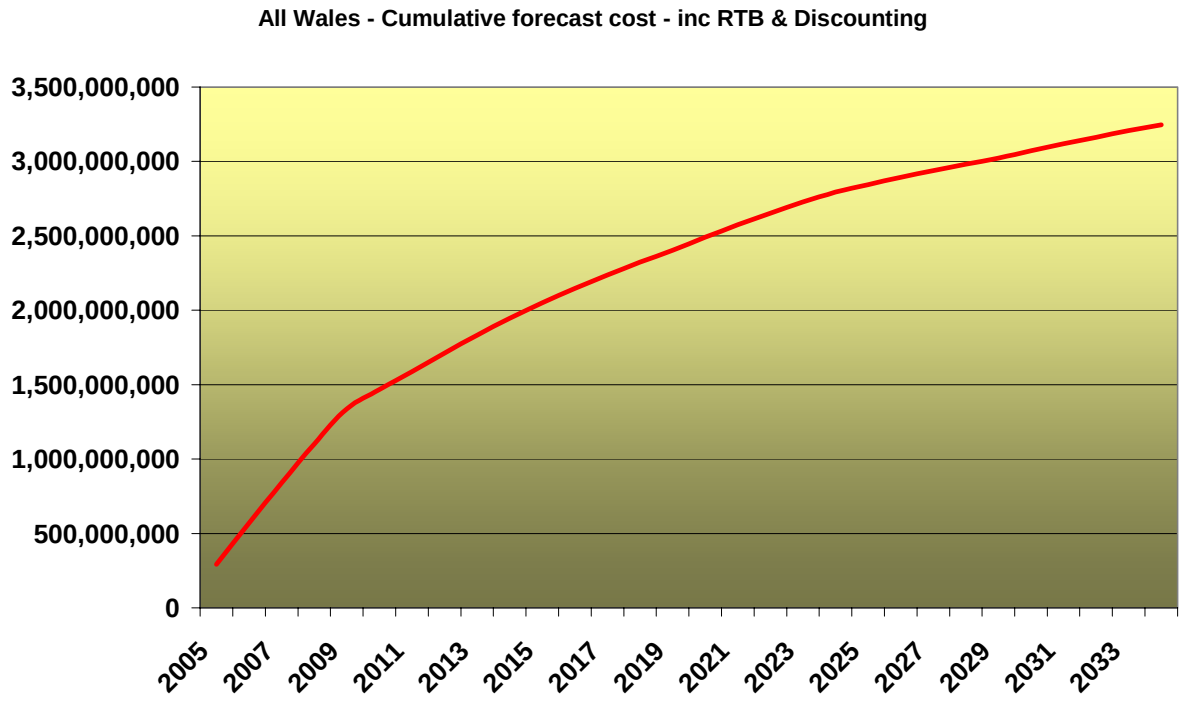


Figure 10 - All Wales cumulative cost forecast

The average forecast cost per annum up to 2012 is £215 million. This is approximately three times the average forecast cost per annum from 2013 to 2030 which is approximately £70 million. This is reflected in Figure 10 which demonstrates the annual forecast across all Wales. This highlights the marked reduction in expenditure after 2012.

The need to spend money early in the programme is as a direct result of authorities' requirement to achieve the WHQS by 2012. Post 2012, it is assumed that local authorities will have achieved the WHQS (according to the model) and will then be in a process of general renewals. This

'peakiness' of demand has the potential to have an impact on prices, availability of labour and materials etc.

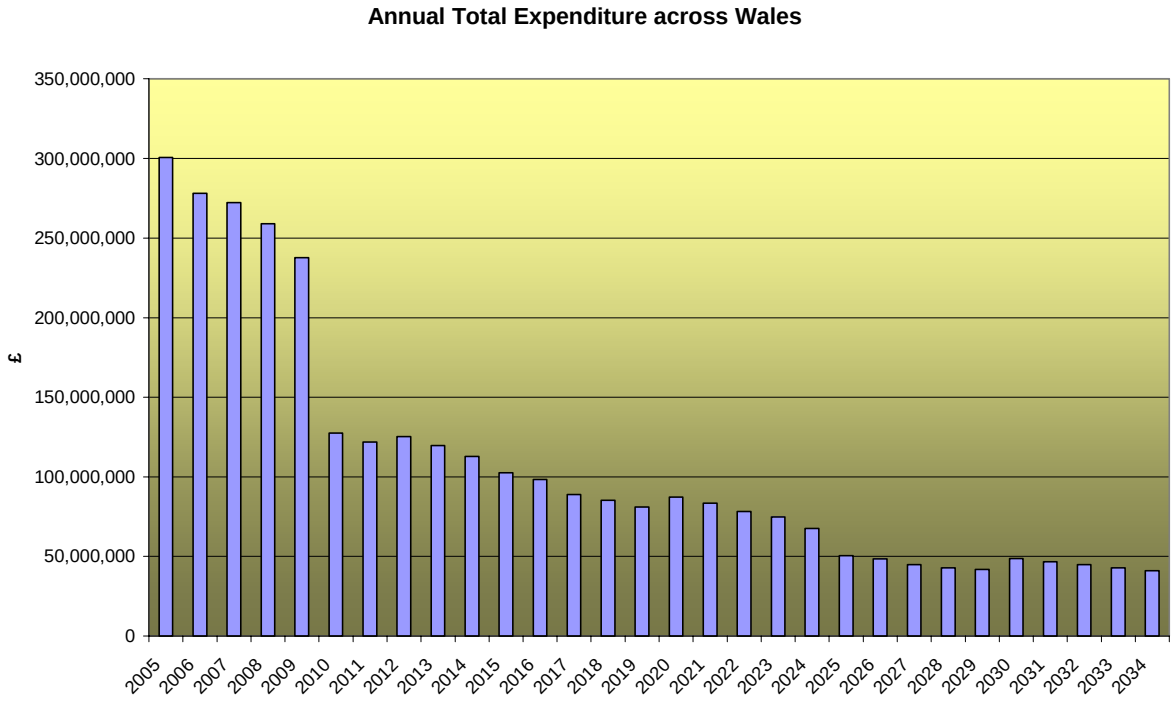


Figure 11 – Annual Total Expenditure across Wales

9.2 Output 2 – Total forecast by Local Authority

This chart demonstrates the relative shape and size of the cash flow forecasts for those authorities for which a questionnaire was received.

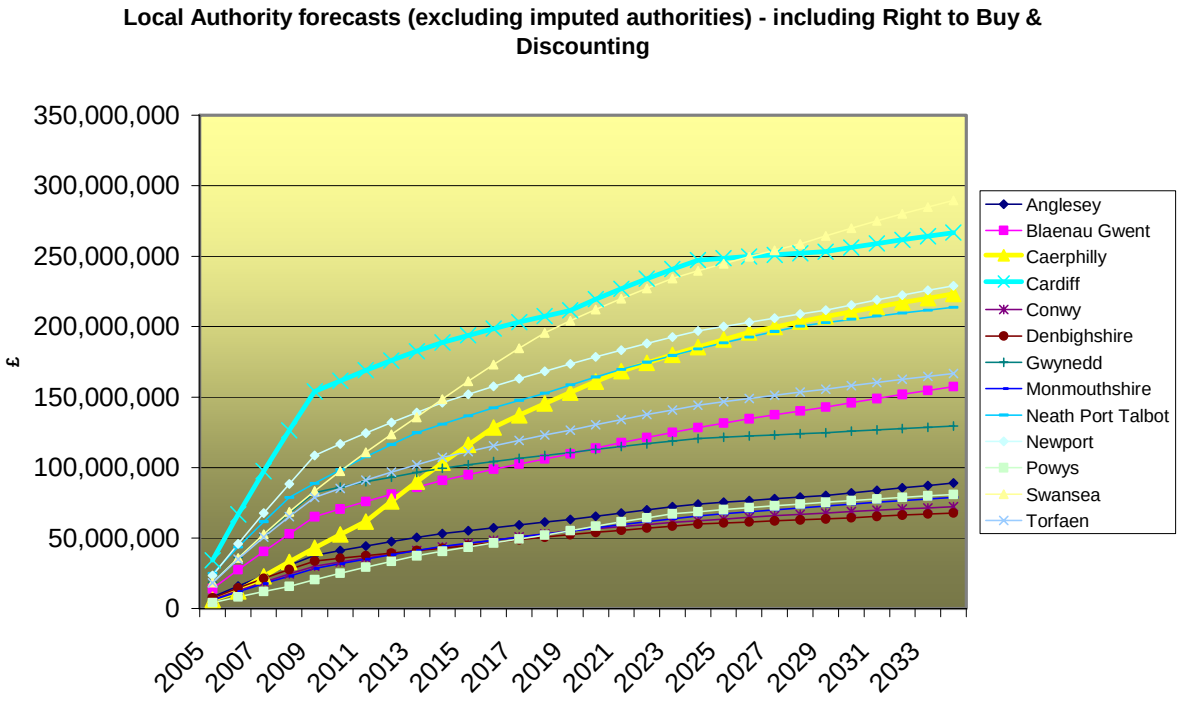


Figure 12 - Local Authority Cost Forecasts

In Figure 12, the total height of the line is a general reflection of the number of dwellings within the stock. Direct relationships may be misleading due to the variability in Right To Buy forecasts.

What is of particular interest is the shape of each of the curves. The curve for Cardiff C&CC (blue bar to the top) begins at a steep rate and then flattens to a more consistent spend rate. This is in contrast to Caerphilly CBC (yellow curve in the middle) which has a shallow gradient to start, steepening in the years 2012 to 2016.

Cardiff's cash flow is what one would expect of a stock in need of improvements to achieve WHQS. Caerphilly's curve appears to suggest that their stock is in better than average condition and that they need to undertake less work than other authorities to achieve WHQS. Caerphilly has undertaken large stock improvement programmes and the curve reflects this subsequent lag in the need to revisit properties.

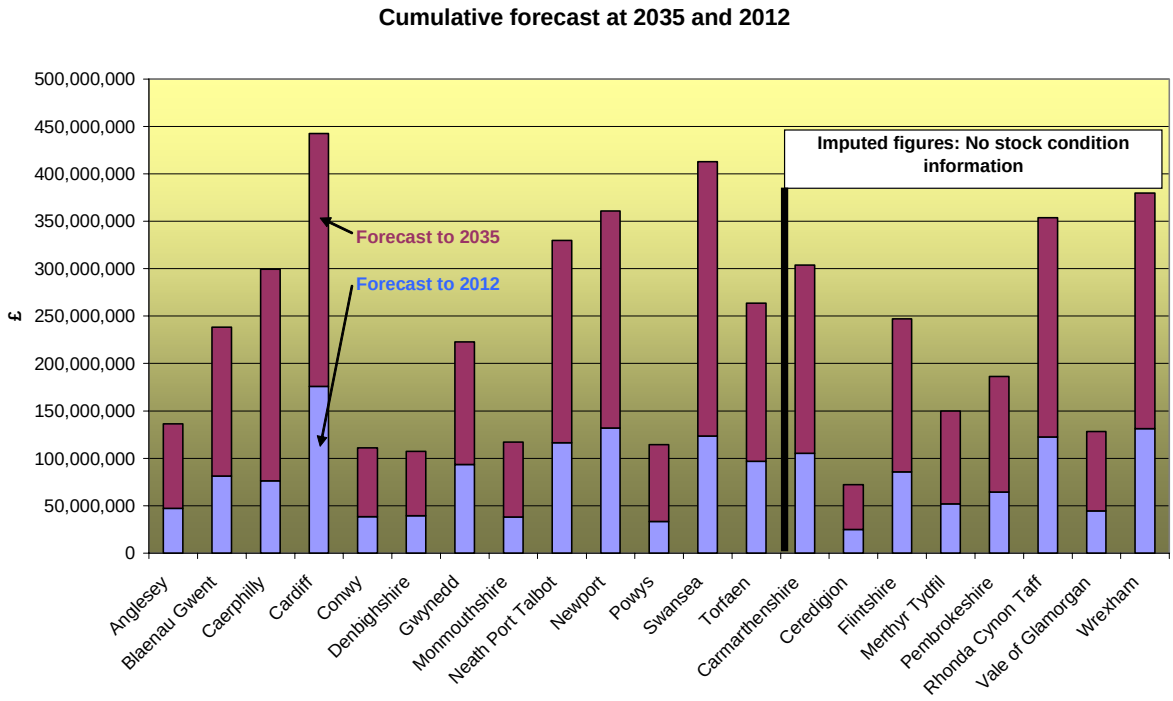


Figure 13 - Local Authority Cost Forecasts

The chart above presents the total forecast figures by authority. Those authorities to the right have been imputed due to a lack of stock condition information using stock numbers and average expenditures per dwelling from reporting authorities.

The table below lists the stock numbers for each authority and also shows the average stock numbers at 2012 and 2035 due to Right To Buy sales. Imputed authorities have a reducing stock at an average rate taken from the authorities for which information was received. The table shows the total cost forecasts for each authority. The table illustrates that approximately half the total expenditure by authorities is in the period up to 2012.

		Average stock numbers		Total Forecasts	
	Total Stock	To 2035	To 2012	To 2012	To 2035
Anglesey	4,151	3,901	4,093	47,000,000	89,000,000
Blaenau Gwent	6,662	6,261	6,569	81,000,000	157,000,000
Caerphilly	11,319	11,633	11,026	76,000,000	223,000,000
Cardiff	14,018	10,659	13,057	176,000,000	267,000,000
Conwy	3,854	3,300	3,719	39,000,000	72,000,000
Denbighshire	3,556	2,975	3,313	39,000,000	68,000,000
Gwynedd	6,467	4,191	5,833	93,000,000	129,000,000
Monmouthshire	3,696	3,474	3,644	38,000,000	79,000,000
Neath Port Talbot	9,524	8,150	9,073	116,000,000	214,000,000
Newport	9,594	9,017	9,460	132,000,000	229,000,000
Powys	5,521	4,670	5,211	33,000,000	81,000,000
Swansea	14,716	12,728	13,829	124,000,000	289,000,000
Torfaen	8,356	6,678	7,443	97,000,000	167,000,000
Carmarthenshire	*9,765*	*8,437*	*9,268*	*105,000,000*	*199,000,000*
Ceredigion	*2,317*	*2,002*	*2,199*	*25,000,000*	*47,000,000*
Flintshire	*7,945*	*6,864*	*7,541*	*86,000,000*	*162,000,000*
Merthyr Tydfil	*4,818*	*4,163*	*4,573*	*52,000,000*	*98,000,000*
Pembrokeshire	*5,980*	*5,167*	*5,676*	*64,000,000*	*122,000,000*
Rhonda Cynon Taff	*11,375*	*9,828*	*10,796*	*122,000,000*	*232,000,000*
Vale of Glamorgan	*4,122*	*3,561*	*3,912*	*44,000,000*	*84,000,000*
Wrexham	*12,210*	*10,549*	*11,588*	*131,000,000*	*249,000,000*
Totals	**159,966**	**138,208**	**151,822**	**1,720,000,000**	**3,257,000,000**

Imputed figures: No stock condition information

Figure 14 - Local Authority forecasts and stock information

9.3 Output 3 – Average costs per dwelling

In order to enable direct comparisons between authorities it is necessary to consider average costs per dwelling.

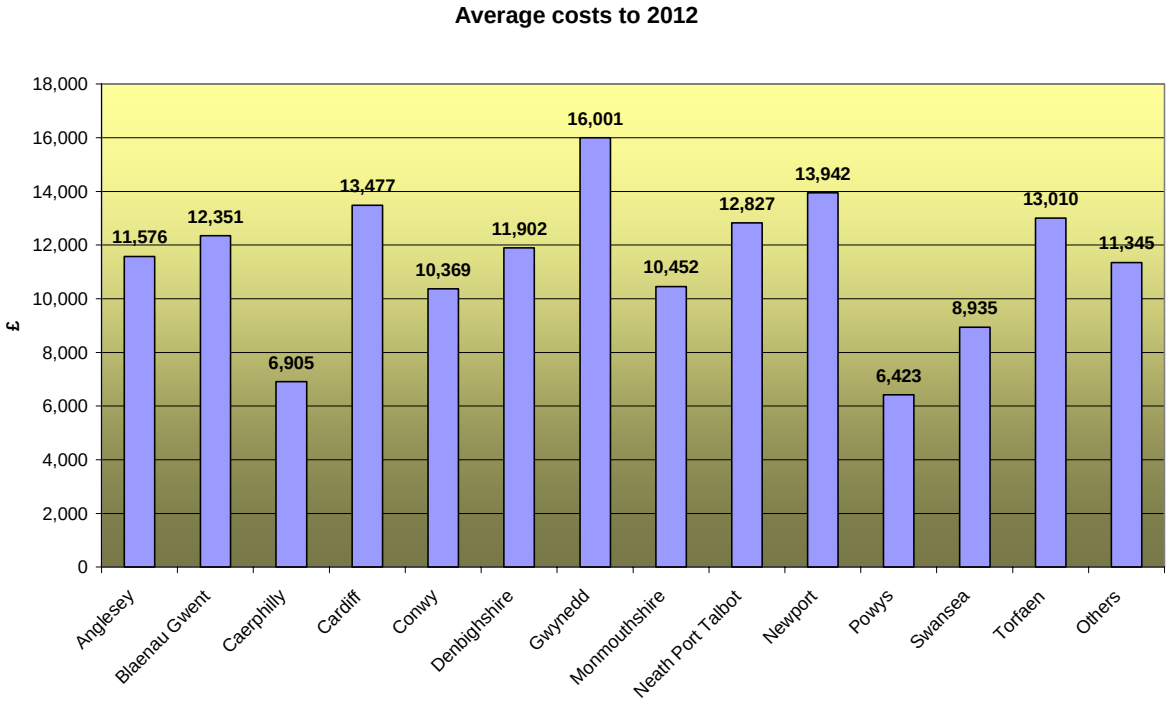


Figure 15 - Average costs per dwelling to 2012

The chart above shows the average forecast cost per dwelling to 2012. The table shows a significant disparity between authorities. There are various reasons why this may be the case.

- Authorities with high average costs may have a stock which is, on average, in worse reported condition than that of authorities with lower costs. The figure would therefore reflect a need to undertake more improvements in this timescale.
- Authorities with high figures may have applied a liberal interpretation of the WHQS and may therefore be planning to undertake works which other authorities may not. Conversely, those with low figures may have taken a restrictive interpretation and may be avoiding major expenditures. For example, one authority may be planning to undertake additional insulation work to dwellings as part of a specific strategic decision.

For the reasons identified above, no comment is made on the 'correct' value nor is any attempt made to identify and challenge outliers.

The table below contains the average forecast costs, in total, per dwelling for each authority to both 2035 and 2012. (The average is based upon the average spend curve over time and not at one point. The two figures differ marginally due to the varying shapes of the spend curves)

	Avg. costs to 2035	**Avg. costs to 2012**
Anglesey	23,000	12,000
Blaenau Gwent	25,000	12,000
Caerphilly	19,000	7,000
Cardiff	25,000	13,000
Conwy	22,000	10,000
Denbighshire	23,000	12,000
Gwynedd	31,000	16,000
Monmouthshire	23,000	10,000
Neath Port Talbot	26,000	13,000
Newport	25,000	14,000
Powys	17,000	6,000
Swansea	23,000	9,000
Torfaen	25,000	13,000
Average	**24,000**	**11,000**

Figure 16 - Average costs to 2035 and 2012

The chart below demonstrates this average forecast cost over time. The gradient of the curve indicates the intensity of work, by dwelling, within an Authority. What can be seen is that Gwynedd County Council appears to have a significantly higher level of activity than other authorities.

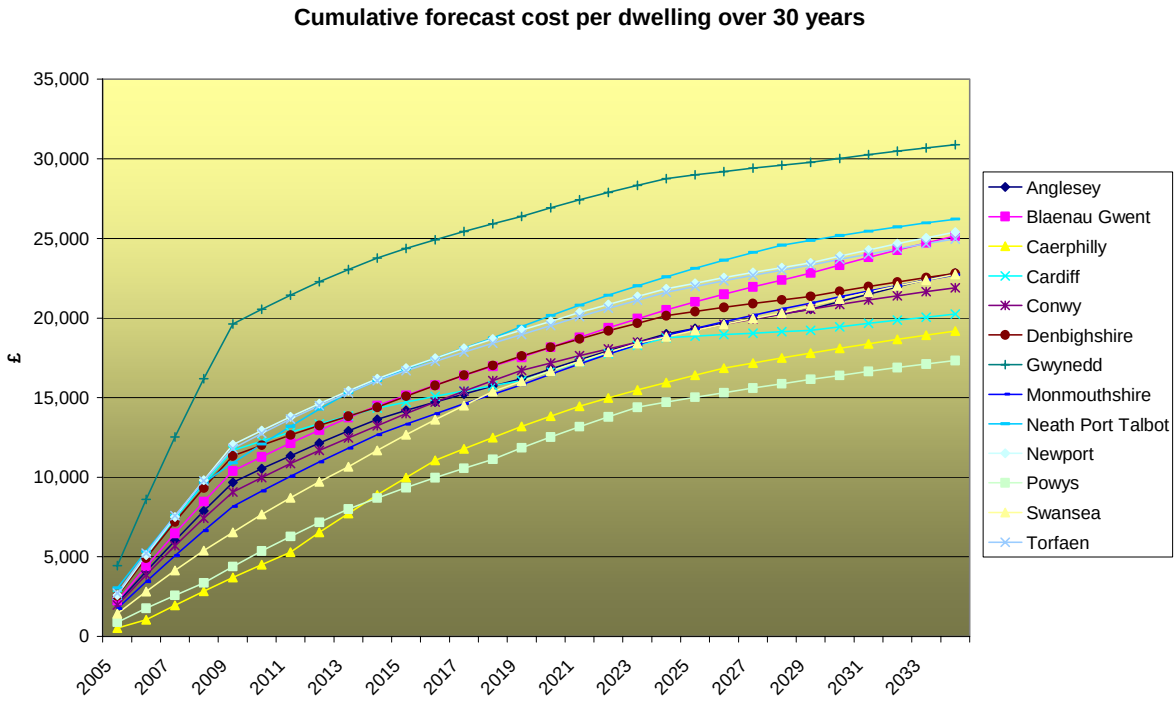


Figure 17 - Average cost per dwelling over time

A short commentary is provided on the nature of the information supplied by authorities however, it should be noted that these differences are a reflection of the level of work anticipated by authorities. It is apparent from the questionnaires that there is significant disparity between the nature and quantity of work required.

For example, Gwynedd CC consider that 89% of their houses and bungalows require roof insulation and 70% of their houses and bungalows require wall insulation. Powys, in contrast, has stated that 0% of their houses and bungalows require either roof or wall insulation. There remains a possibility that Powys CC (for example) has failed to complete the questionnaire correctly or that the reality is that none of their stock requires thermal insulation improvements. Conversely, Gwynedd may be engaging in a specific programme of thermal improvements to properties. The raw data provided does not enable us to comment beyond potential reasons for disparity.

10 Labour Forecasts

10.1 Labour Outputs – Overview

The cost model has produced forecasts of the labour hours required for authorities to implement WHQS. This is based on a simple methodology detailed below.

Our estimates that follow are based on the assumption that average hours worked per person in the UK construction industry equates to 1,935 hours annually (NIESR, 2002).

10.2 Labour Outputs – Methodology

The cost model was constructed so as to produce a forecast of labour demand, in parallel with a forecast of financial demand. The methodology for the forecasting of labour demand is as follows:

When the unit rates were developed, they were split into labour, plant and materials. In parallel, the duration in hours of each repair was also assessed. The total number of hours required was therefore calculated by using the simple formula, applied to each element and each 5 year band:

Number of hours per unit repair / Unit rate x Total forecast cost

(The regional variation factors have been derived from BCIS data averaged for contracts covering the period 1980-2004, rebased to Outer London = 1.00. Factors vary over time depending on differing regional market conditions. Statistical techniques have been employed since 1991 to provide better reflection of the latest regional differentials.)

The benefits of using this process are twofold:

- The forecasts are based upon detailed assessments of labour for each element
- All forecasts directly reflect the cost forecasts

10.2.1 Exclusions

As the labour output relies directly upon the cost model methodology, the exclusions are as per the cost model. See section 6 for a detailed explanation of exclusions and inclusions.

10.3 Total labour forecast for Wales

We have calculated the annual labour requirement likely to be created as a result of Welsh local authorities reaching WHQS. The cost model outputs have produced an estimate of the labour hours required annually over the period 2005 to 2034, to this we have applied the average hours worked per person per year to arrive at the average annual labour requirement. Figure 18 below displays our estimates of the annual labour requirement and as can be seen labour demand peaks in the early part of the period to 2009, before virtually halving and remaining relatively constant through to 2024 where the

requirement again declines quite sharply. At its peak in 2005 we forecast that the annual labour requirement for implementing WHQS will reach some 3,320 operatives. We estimate that this requirement will represent approximately 10% of construction operative employment in Wales through to 2009 before declining to less than 5% from 2010 onwards.

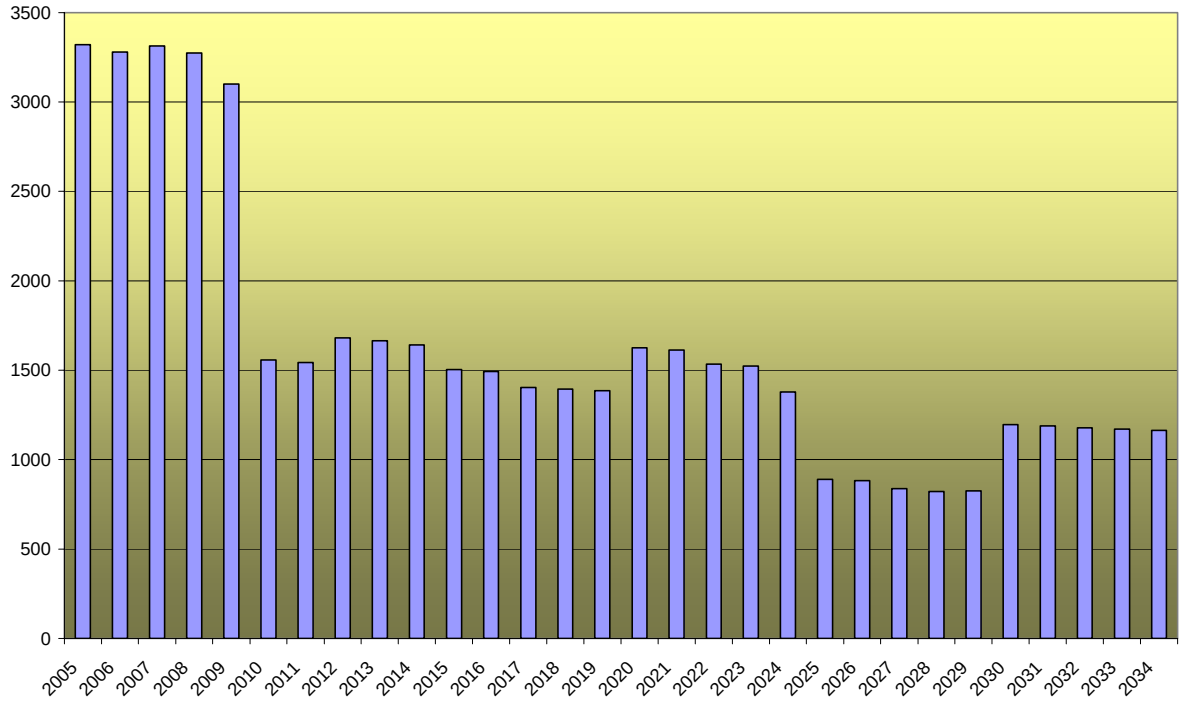


Figure 18 - All Wales – Forecast annual labour requirement 2005-2034

What does this mean for construction labour demand in Wales? It is worth setting this requirement in some sort of context. Figure 19 below provides some analysis of the recent supply side position for the construction industry in Wales (consistent data is only available from 1996 onwards due to a change in survey technique). As can be seen the number of operatives has increased considerably, if not consistently, during the period. Indeed the increase in operatives is in the region of 30% through 2002-03.

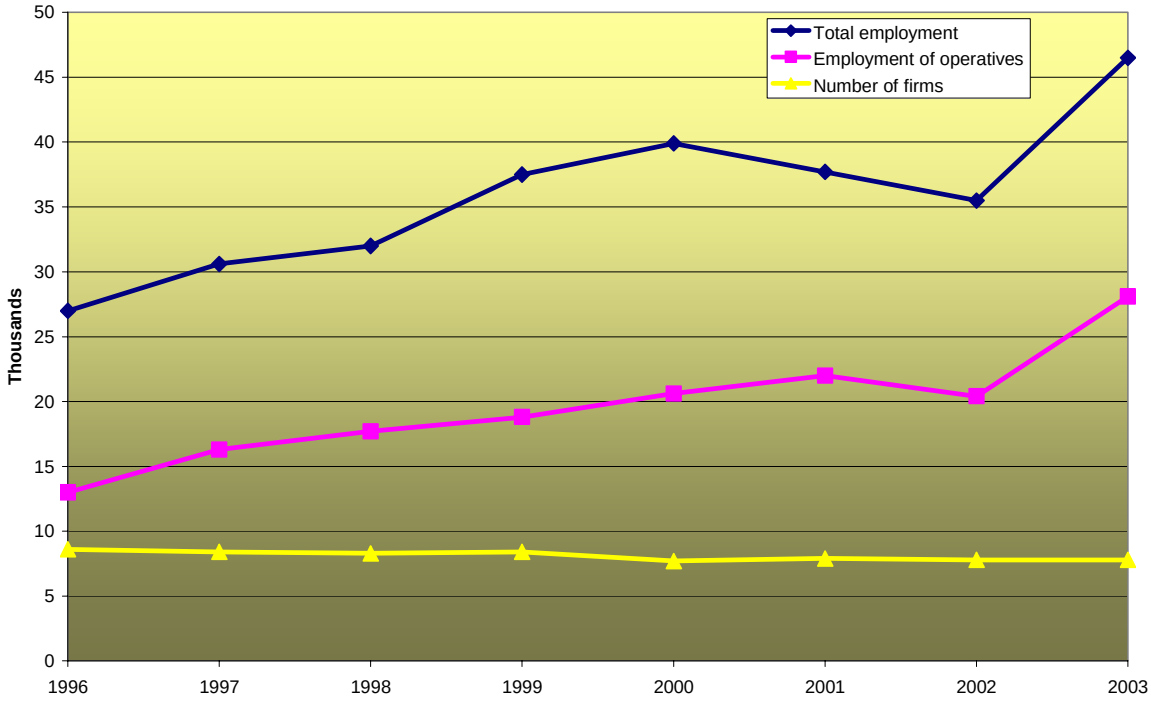


Figure 19 - Construction employment and the number of firms in Wales 1996-2003 (DTI, 2004)

Furthermore, in Figure 19 we can see that while the total number of firms has declined slightly, both total employment and the employment of operatives by these firms has virtually doubled during the period suggesting that employment levels are rising and that the industry is responding to the demands placed on it.

What levels of demand has the construction industry in Wales experienced over the recent past? Figure 20 displays construction output in Wales during the period 1996-2003, as can be seen output has increased significantly since 2001 and will have largely been driving the increases in the supply side.

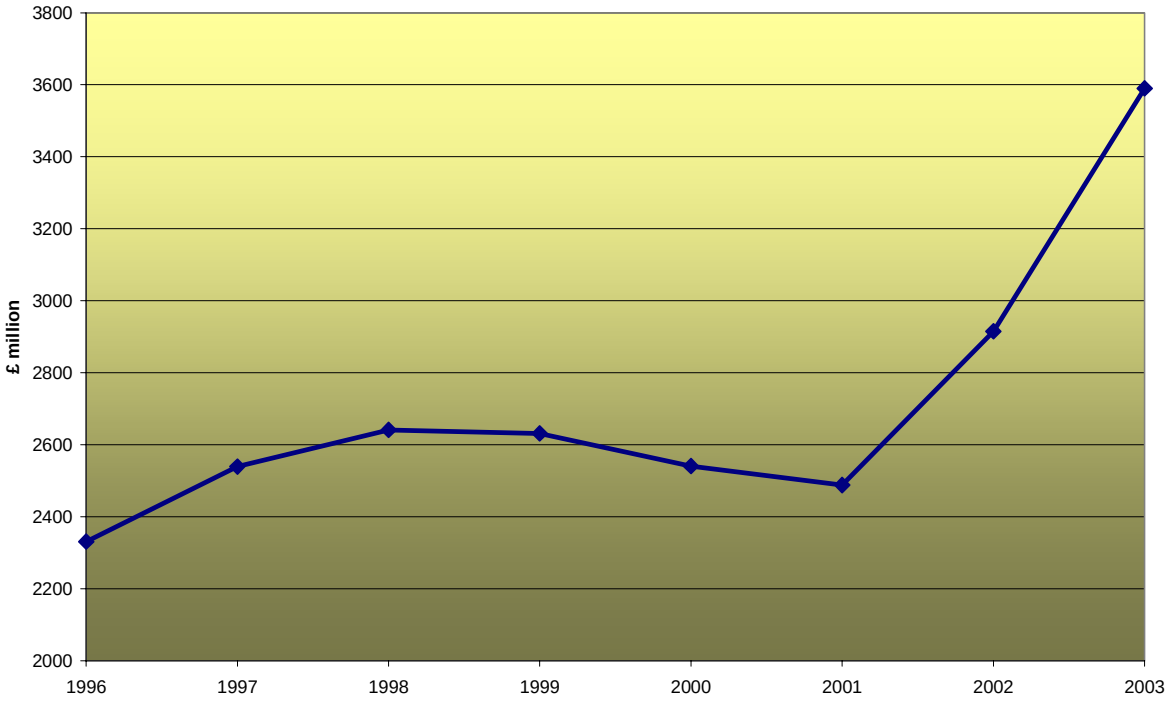


Figure 20 - Construction output in Wales 1996-2003 £ million @ current prices (DTI, 2004)

10.4 Labour forecast by Local Authority

In this section we examine the likely labour requirements of implementing WHQS at the level of individual Local Authorities. Figure 21 below displays the labour requirement by Local Authority over the period 2005-2034. As would be expected, given the information in Section 8.2, Cardiff C&CC has the highest labour requirement followed by Swansea C&CC. What's interesting about the data in Figure 21 is the sharp fall in the labour requirement in Cardiff after 2009, from almost 500 in 2009 to just over 120 in 2010. This peak in labour demand would appear to be directly linked to Cardiff's assessment that they need to replace 100% of kitchens and bathrooms, for both houses and flats, within the first 5 years. As these items carry high costs and a high labour content, this sudden peak, followed by zero demand for kitchens and bathrooms, can be explained. Cardiff may wish to consider the effect of this decision. Generally speaking the results for the other Authorities seem to be within expected limits.

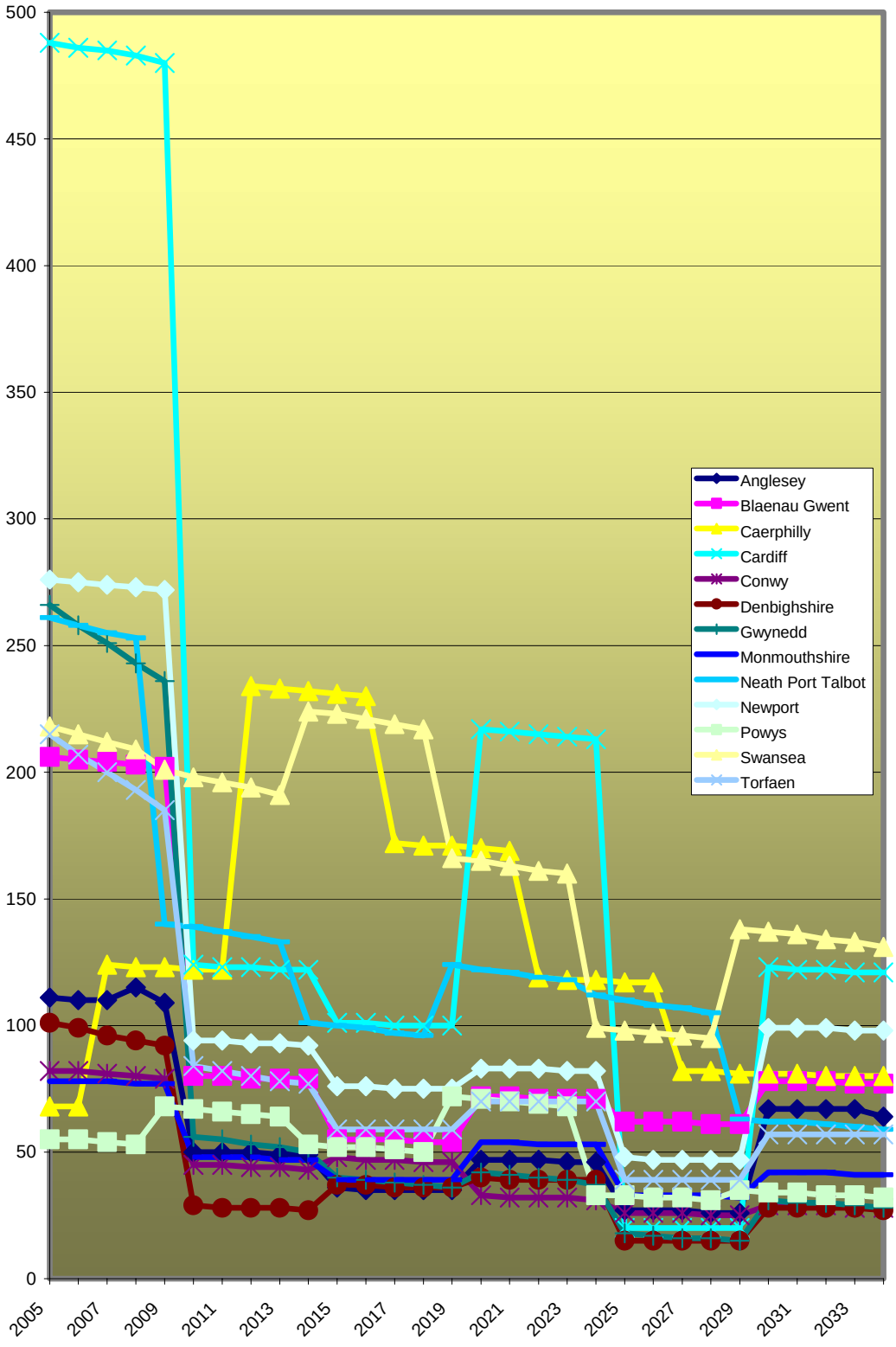


Figure 21 - Local Authority - Forecast annual labour requirement 2005-2034

10.5 Labour Types

The work involved in housing refurbishment is limited in terms of the trades likely to be involved. The DTI use the following trade categories. Those likely to be involved in housing refurbishment are underlined.

- Constructional engineers
- Demolition
- Reinforced concrete specialists
- Test drilling and boring
- Roofing
- Asphalt and tar sprayers
- Construction of highways
- Construction of water projects
- Scaffolding
- Installation of electrical wiring and equipment
- Insulating activities
- Plumbing
- Heating and ventilating engineers
- Plastering
- Joinery installation
- Flooring contractors
- Floor and wall tiling specialists
- Floor and wall covering
- Suspended ceiling specialists
- Painting
- Glazing
- Plant hire (with operators)
- Other construction work

What can be seen is that the draw upon labour is from discreet sectors only. No attempt has been made to quantify the apportionment of these labour requirements. The actual draw upon labour will depend upon issues of procurement, availability of multi-skilled operatives, cost of labour, etc.

One key issue identified during stage 1 is the need (or at least the desire for) multi-skilled operatives. The benefits of this is that, where there are many trades required in small spaces with relatively low project values, it is likely that cost and time savings may be made by using one multi-skilled operative, rather than drawing upon a pool of single-skilled operatives. Kitchens and bathrooms are the two most obvious examples. Here, the requirement is for electricians, plumbers, tilers, joiners, painters and decorators. All of these trades could be undertaken by one small gang which collectively contains all the required skills (one person need not necessarily be able to do all roles). This need is reinforced by the dominance that kitchens and bathrooms have within the cost projections.

41% of the cost is generated by kitchens and bathrooms. This suggests that, at a minimum, 41% of the work could be delivered effectively through multi-skilled labour with the skills identified above. This multi-skilled gang may then

also be able to undertake the majority of the other work within the home (i.e. boilers, staircases, partitioning, etc.)

The bulk of external works are likely to draw upon single skilled trades. The principal ones identified are:

- Roofers
- Plasterers (Rendering & pointing)
- Glazers
- Scaffolders

The availability of multi-skilled versus single skilled operatives is not assessed in this report but will be addressed further in the web guidance. Assuming that there were no supply side rigidities however, this potential split between multi-skilled versus single-skilled linking to the internals and external of a dwelling respectively is likely to be a significant factor in the procurement and programming of works. Again, this issue is progressed further within the web guidance.

10.6 Conclusions

Overall, we believe that the labour demand created by Welsh Local Authorities attaining WHQS is not likely to place undue pressure on the supply side of the construction industry in Wales, particularly as some of the work is likely to be diverted from other sectors of Welsh construction output, primarily public housing repair and maintenance.

Furthermore, we suggest that the supply side of the construction industry is particularly elastic and will respond to the demands placed on it in any period. A further consideration is the high levels of labour mobility within the construction labour force, indeed construction workers are known to travel considerable distances to particular job sites.

Specifically, the cost model has quantified the potential demand placed upon multi-skilled operatives. Further discussion will be required with training and procurement bodies within Wales to address the availability of this labour.

11 Materials Forecasts

11.1 Materials Outputs – Overview

The cost model has been constructed in such a way so as to enable approximate quantifications of material demands over time. It has been evolved to go beyond commenting purely upon numbers of dwellings requiring new windows, but also indicates an approximate number of windows, for example, that may be required. It should be noted that the quantities referred to are broad approximations and are designed to indicate the order of magnitude of demand, and not the precise requirement.

The outputs aim to provide the background for further investigation into the demands placed upon supply chains within Wales. An analysis of the structures or abilities of supply chains within Wales is specifically excluded. The web based guidance will progress this issue further and identify opportunities, areas of concern, issues of supply capacity etc. This section limits itself to a statement of demand.

The beneficiaries of this information, presented as an 'All Wales' picture will be those bodies aiming to establish new supply chains, and assess potential room for investment opportunities.

It should be noted that figures presented for materials assume 100% stock retention by authorities for the purposes of simplicity (Transferring properties would not require works and would therefore cease to impose material demands). They should therefore be considered as maximum figures.

Materials have been ranked both by value, and also by quantity. This is useful as the 'by value' figure reflects the general economic scale of the material demand. The 'by quantity' figure reflects the actual demand placed upon a supply chain.

11.2 Output 1 – Material Demand by Value

Both total package values and pure materials values have been calculated. This is in recognition that each package will have a different proportion of materials to labour. For example, rewiring is a labour bias item, whilst kitchens and bathrooms are materials biased.

N.B. All costs quoted are undiscounted and assume 100% stock retention. The intent of showing costs is primarily to identify the largest cost elements.

11.2.1 Output 1a – Package values

The chart below shows the relative package values of works identified within the model. Kitchens and bathrooms are the two largest packages. There are several smaller packages which generally constitute the majority of the remainder of the cost. These are:

- Re-rendering
- Roof coverings

- Windows
- Doors
- Rewiring
- Boilers

It is these principal cost items which define the core works required by the WHQS.

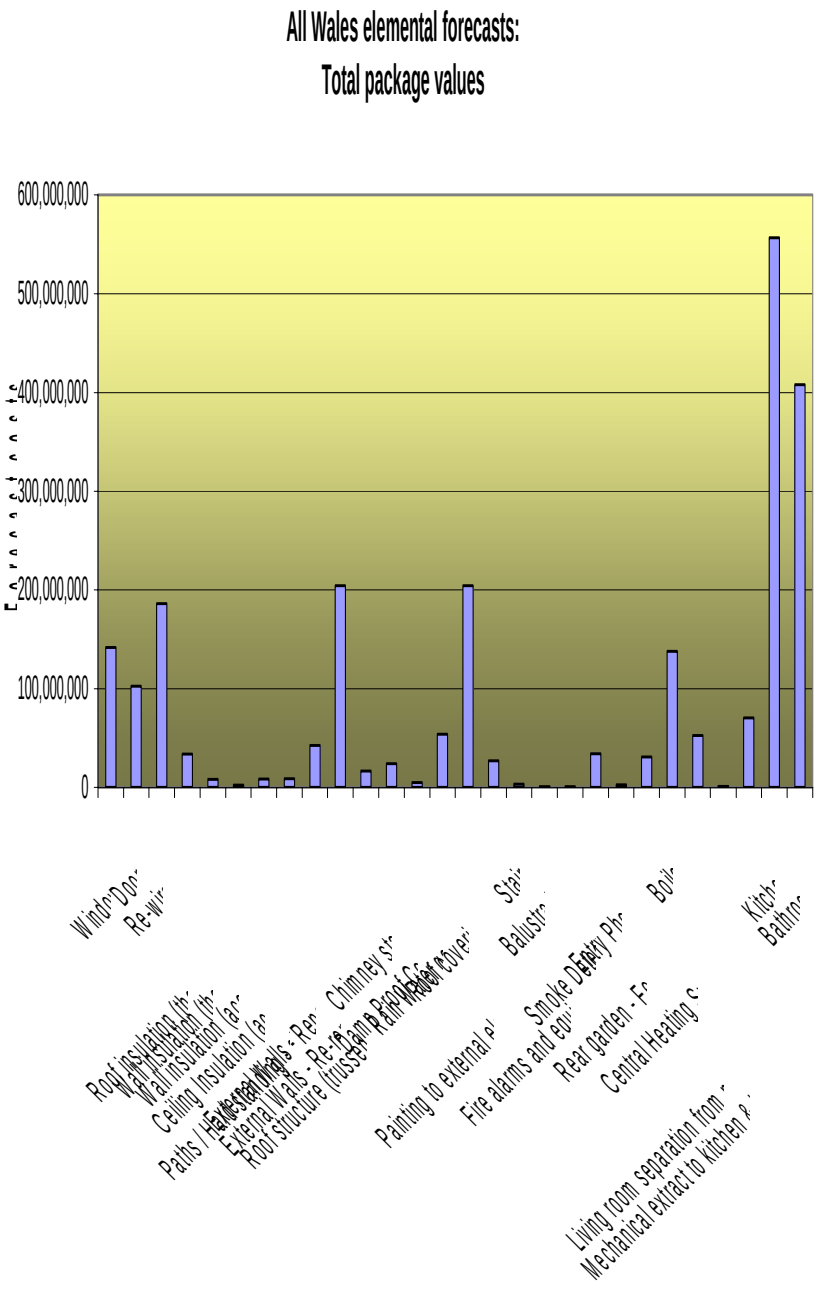


Figure 22 - Total Package values

11.2.2 Output 1b – Material Values

The chart below shows the materials values across Wales (i.e. excluding labour and plant). What can be seen in comparison to the chart above is that, due to the relative materials and labour elements within a unit rate, the ranking of relative value is different from that of package values.

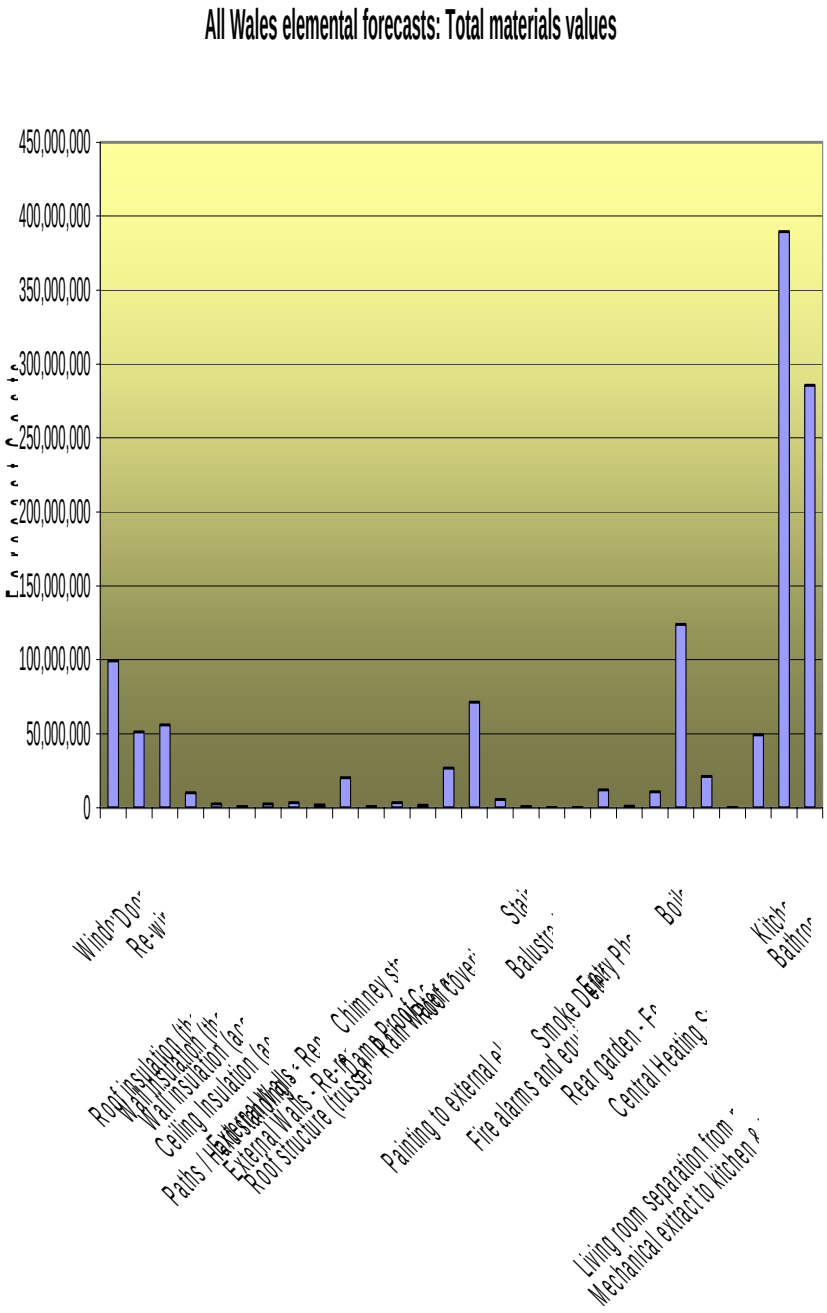


Figure 23 - Total Materials value

Specifically, kitchens and bathrooms can be seen to generate a significant part of the cost and are a major cost factor in all authorities cost forecasts. Other significant cost items are:

- Windows
- Doors
- Re-wires
- Roof coverings
- Boilers

11.2.3 Output 2 – Material demand by Quantity

The table below shows the approximate number of material units required across Wales. A more detailed authority by authority breakdown is included in the appendices.

These figures reflect the order of magnitude of demand, and are not precise figures.

Where the unit is stated as ‘occurrences’, this means that the work may not be broken down further than ‘per dwelling’.

TOTAL QUANTITIES	UNIT	ELEMENT
733,000	Nr	**Windows**
228,000	Nr	**Doors**
148,000	Occurences	**Re-wires**
72,000	Occurences	**Roof insulation (thermal)**
19,000	Occurences	**Wall insulation (thermal)**
1,000	Occurences	**Wall insulation (acoustic)**
5,000	Occurences	**Ceiling Insulation (acoustic)**
85,000	Occurences	**Paths / Hard standing - all types**
45,000	Occurences	**External Walls - Repointing**
74,000	Occurences	**External Walls - Re-rendering**
23,000	Occurences	**Roof structure (trussed rafters)**
48,000	Occurences	**Chimney stacks**
7,000	Occurences	**Damp Proof Course**
137,000	Occurences	**Rain Water goods**
127,000	Occurences	**Roof coverings**
106,000	Occurences	**Painting to external elevation**
21,000	Occurences	**Stairs**
8,000	Occurences	**Balustrade**
50,000	Occurences	**Fire alarms and equipment**
179,000	Occurences	**Smoke Detectors**
18,000	Occurences	**Entry Phone**
118,000	Occurences	**Rear garden - Fencing**
219,000	Nr	**Boiler**
49,000	Occurences	**Central Heating System**
2,000	Occurences	**Living room separation from main door**
199,000	Occurences	**Mechanical extract to kitchen & bathroom**
253,000	Nr	**Kitchen**
213,000	Nr	**Bathroom**

Figure 24 - Numbers of units required

12 Local Authority Analysis

12.1 General Overview

For each unitary authority for which a questionnaire has been returned, a discreet output has been prepared. This output includes specific details of their output figures, highlights areas where information has not been provided, and also provides a general comment on the nature of the information provided.

Outputs are shown both at constant prices and by discounting at 3.5%. They are also presented either assuming 100% stock retention, or by accounting for Right To Buy sales at the rate advised by the authority.

A chart of relative materials values is also shown for each authority. This is used to highlight which aspects are driving the cost profiles for each authority. What can be seen is a common trend of kitchens and bathrooms generating a large percentage of the cost forecasts.

12.2 Anglesey Council

12.2.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Anglesey**
REGIONAL INDICES#	**0.80**

Numbers of dwelling at time of survey	4,151
Average Number of dwellings to 3035	3,901
Average number of dwellings to 2012	4,093

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£116,408,650			
	Asbestos	£7,614,298			
	Garages	£0			
	Non Traditional Dwellings	£0			
	Contingent Major Repairs @ 3%	£380,715			
	Professional Fees	£12,440,366			
	Total Capital Costs	**£136,844,029**	**£130,023,735**	**£92,638,592**	**£89,055,290**

Total Capital Costs to 2012	**£52,828,352**	**£52,211,319**	**£47,911,553**	**£47,381,270**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£32,967	£33,328	£22,317	£22,827
Total costs per property to 2012	£12,907	£12,757	£11,706	£11,576

	0-5	**6-10**	**11-15**	**16-20**	**21-25**	**26-30**
Right To Buy Sales forecasts	2%	2%	2%	2%	2%	2%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**2,075,500**
Responsive / Void Maintenance*	**42,179,349**
Related Assets*	**5,833,800**
Cyclical Maintenance*	**£18,679,500**

* Figures are in total and undiscounted

London =1.00

12.2.2 Information missing

Anglesey Council did not provide a complete breakdown of dwellings by archetype. They identified the split between houses & bungalows and flats. Taking these figures the stock was apportioned into the various possible archetypes by averaging the split for those authorities where the breakdown was provided.

No information was supplied for Anglesey's Right To Buy forecasts. They have been taken as an average 2% as this is the most common forecast.

No information was supplied for garages or non-traditional dwelling repairs. This has not been imputed and remains an omission from the figures presented above. See the summary on Non-Traditional dwellings and garages for further information.

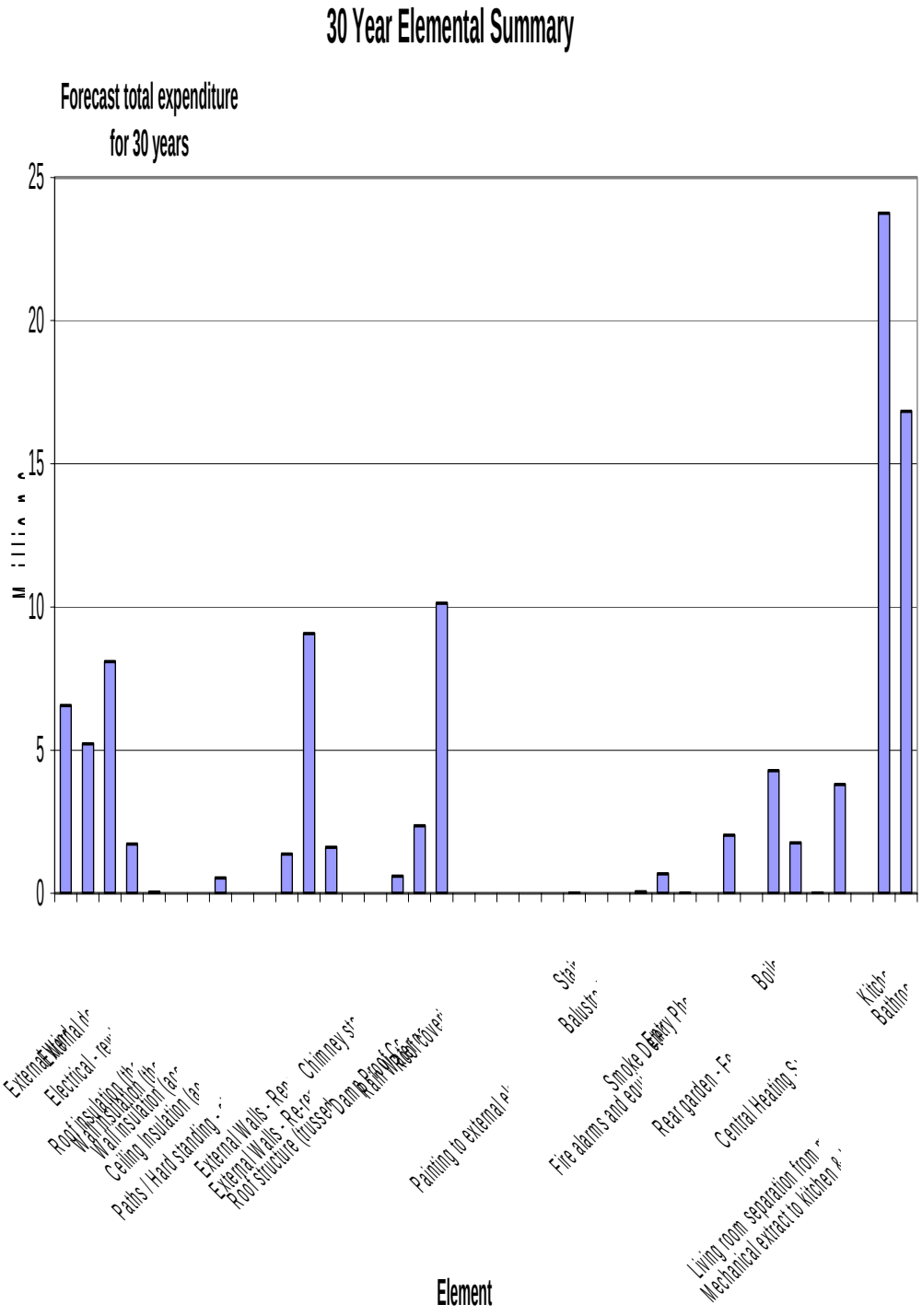
12.2.3 Commentary on results

Anglesey Council has a smallish stock of around 4,000 dwellings. Their average spend falls well within the average cost per dwelling showing a peak demand from between 2005 to 2010.

The condition questionnaire indicates:

- 43% & 58% of bathrooms are replaced in houses and flats respectively in the first 5 years
- 69% and 82% of kitchens are replaced likewise
- 100% of windows and doors are replaced over the 30 year period on a relatively consistent basis
- Around 75% of boilers will be replaced with the majority in the first 15 years

12.2.4 Elemental Breakdown



12.3 Blaenau Gwent County Borough Council

12.3.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Blaenau Gwent CBC**
REGIONAL INDICES#	**0.87**

Numbers of dwelling at time of survey	6,662
Average Number of dwellings to 2035	6,261
Average number of dwellings to 2012	6,569

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£199,980,713			
	Asbestos	£7,258,765			
	Garages	£404,840			
	Non Traditional Dwellings	£13,400,750			
	Contingent Major Repairs @ 3%	£1,053,218			
	Professional Fees	£22,209,829			
	Total Capital Costs	**£244,308,115**	**£231,908,900**	**£163,948,245**	**£157,440,293**

Total Capital Costs to 2012	**£90,378,868**	**£89,331,812**	**£82,032,222**	**£81,131,561**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£36,672	£37,038	£24,609	£25,145
Total costs per property to 2012	£13,759	£13,600	£12,488	£12,351

	0-5	6-10	11-15	16-20	21-25	26-30
Right To Buy Sales forecasts	2%	2%	2%	2%	2%	2%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**0**
Responsive / Void Maintenance*	**155,171,000**
Related Assets*	**15,000,000**
Cyclical Maintenance*	**£13,733,000**

* Figures are in total and undiscounted

London =1.00

12.3.2 Information missing

Blaenau Gwent CBC provided a fully completed questionnaire.

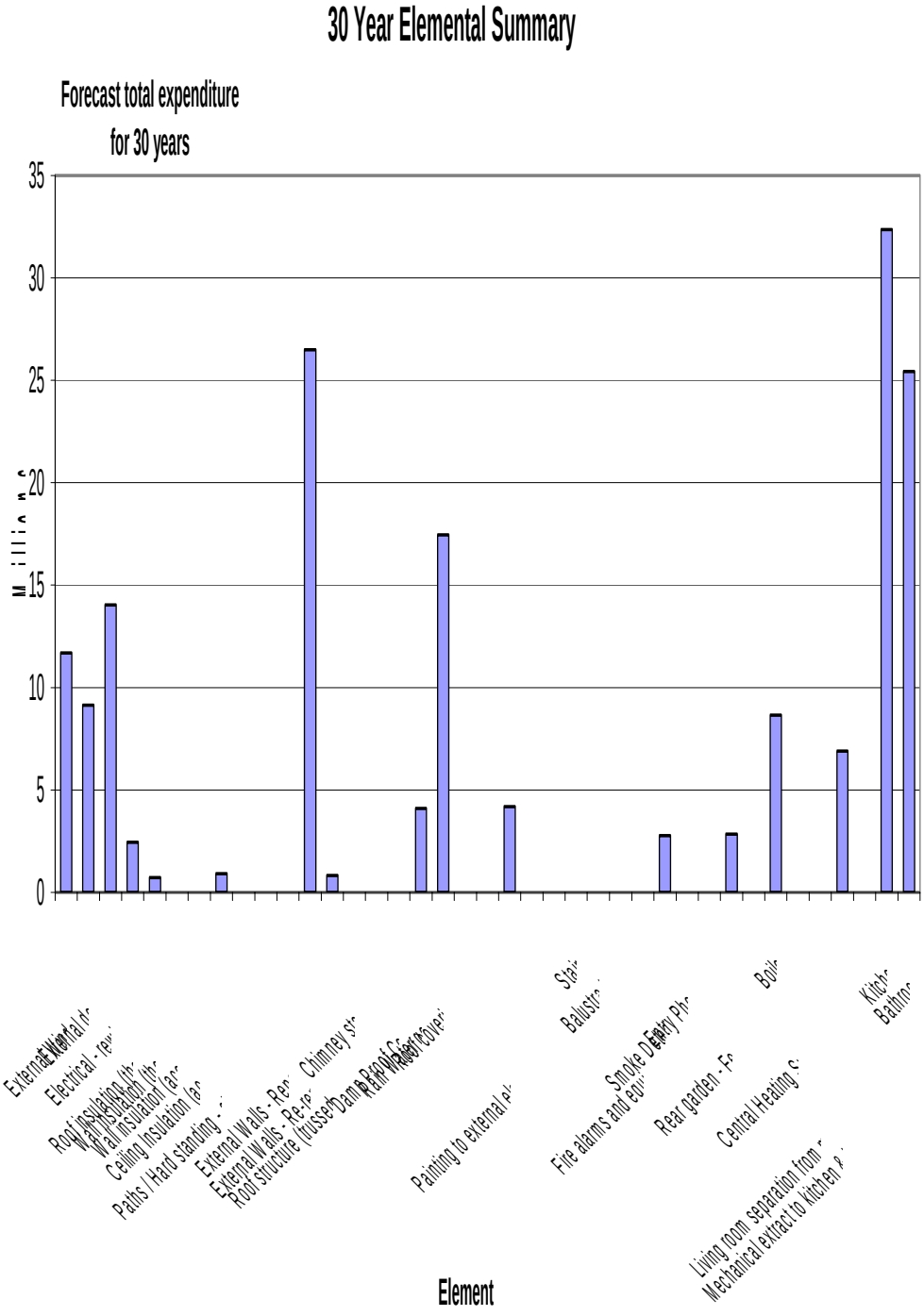
12.3.3 Commentary on results

Blaenau Gwent CBC has a stock of nearly 7,000 dwellings. Their average cost per dwelling is slightly higher than average but falls well within the average cost per dwelling profile.

The stock condition questionnaire indicates:

- Kitchens and bathrooms are replaced evenly over the 30 year period
- Almost 100% of dwellings are to be re-rendered in the first 10 years.
- No windows have been programmed for replacement in the first 10 years.
- No proposal for the replacement of central heating systems is proposed although boilers are replaced throughout the 30 year period.

12.3.4 Elemental Breakdown



12.4 Caerphilly CBC

12.4.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Caerphilly**
REGIONAL INDICES#	**0.87**

Numbers of dwelling at time of survey	11,319
Average Number of dwellings to 2035	11,633
Average number of dwellings to 2012	11,026

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£287,843,073			
	Asbestos	£6,560,068			
	Garages	£3,129,870			
	Non Traditional Dwellings	£34,144,000			
	Contingent Major Repairs @ 3%	£2,191,697			
	Professional Fees	£32,535,486			
	Total Capital Costs	**£366,404,194**	**£342,630,074**	**£236,734,786**	**£223,182,852**

Total Capital Costs to 2012	**£90,050,410**	**£87,491,215**	**£78,311,760**	**£76,138,896**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£32,371	£29,453	£20,915	£19,185
Total costs per property to 2012	£8,167	£7,935	£7,102	£6,905

	0-5	**6-10**	**11-15**	**16-20**	**21-25**	**26-30**
Right To Buy Sales forecasts	2%	2%	2%	2%	2%	2%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**0**
Responsive / Void Maintenance*	**181,906,560**
Related Assets*	**55,474,734**
Cyclical Maintenance*	**£62,220,000**

* Figures are in total and undiscounted

London =1.00

12.4.2 Information missing

Caerphilly CBC provided a fully completed questionnaire.

12.4.3 Commentary on results

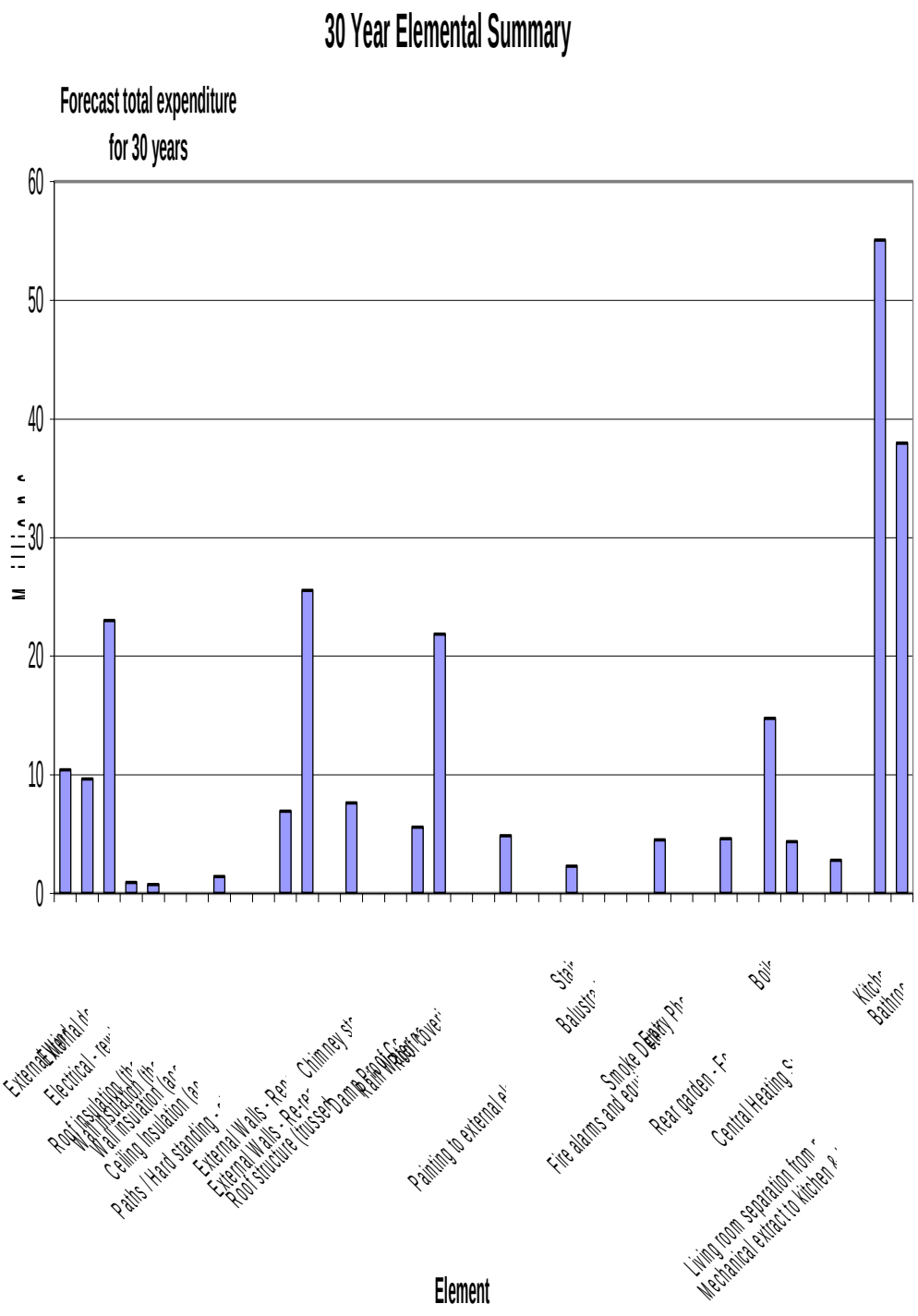
Caerphilly's spend profile is markedly different to other authorities. Their peak expenditure is between years 2013 and 2017. This supports earlier conversations held with Caerphilly where they advised that they had undertaken significant programmes of renewal already.

This would explain why they have stated that, for example:

- Only 1% of flats need new windows in 30 years
- No flats need re-rendering and only 1% re-pointing
- No flats need a damp proof course
- Only 1% need new guttering
- Only 64% of houses and bungalows require new windows
- 100% of houses and flats need new kitchens and bathrooms but the works are not bulked in the first five years.

Caerphilly has indicated a large number of non-traditional dwellings that require a large structural repair (2066 dwellings). This accounts for £34 million of their total forecast which is 9% of the total cost. This is relatively larger than the average.

12.4.4 Elemental Breakdown



12.5 Cardiff C&CC

12.5.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Cardiff**
REGIONAL INDICES#	**0.84**

Numbers of dwelling at time of survey	14,018
Average Number of dwellings to 2035	10,659
Average number of dwellings to 2012	13,057

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£387,729,866			
	Asbestos	£649,945			
	Garages	£0			
	Non Traditional Dwellings	£0			
	Contingent Major Repairs @ 3%	£32,497			
	Professional Fees	£38,841,231			
	Total Capital Costs	**£427,253,539**	**£353,700,921**	**£308,670,302**	**£266,713,596**

Total Capital Costs to 2012	**£202,034,645**	**£191,527,567**	**£185,138,887**	**£175,974,120**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£30,479	£33,185	£22,020	£25,023
Total costs per property to 2012	£15,473	£14,669	£14,179	£13,477

	0-5	**6-10**	**11-15**	**16-20**	**21-25**	**26-30**
Right To Buy Sales forecasts	10%	9%	9%	8%	7%	6%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**?**
Responsive / Void Maintenance*	**294,541,000**
Related Assets*	**?**
Cyclical Maintenance*	**£49,364,000**

* Figures are in total and undiscounted

London =1.00

12.5.2 Information missing

No information was supplied upon the condition of non-traditional dwellings.

No information was supplied for garages as they informed that these will not form part of the refurbishment scheme.

All other information was provided.

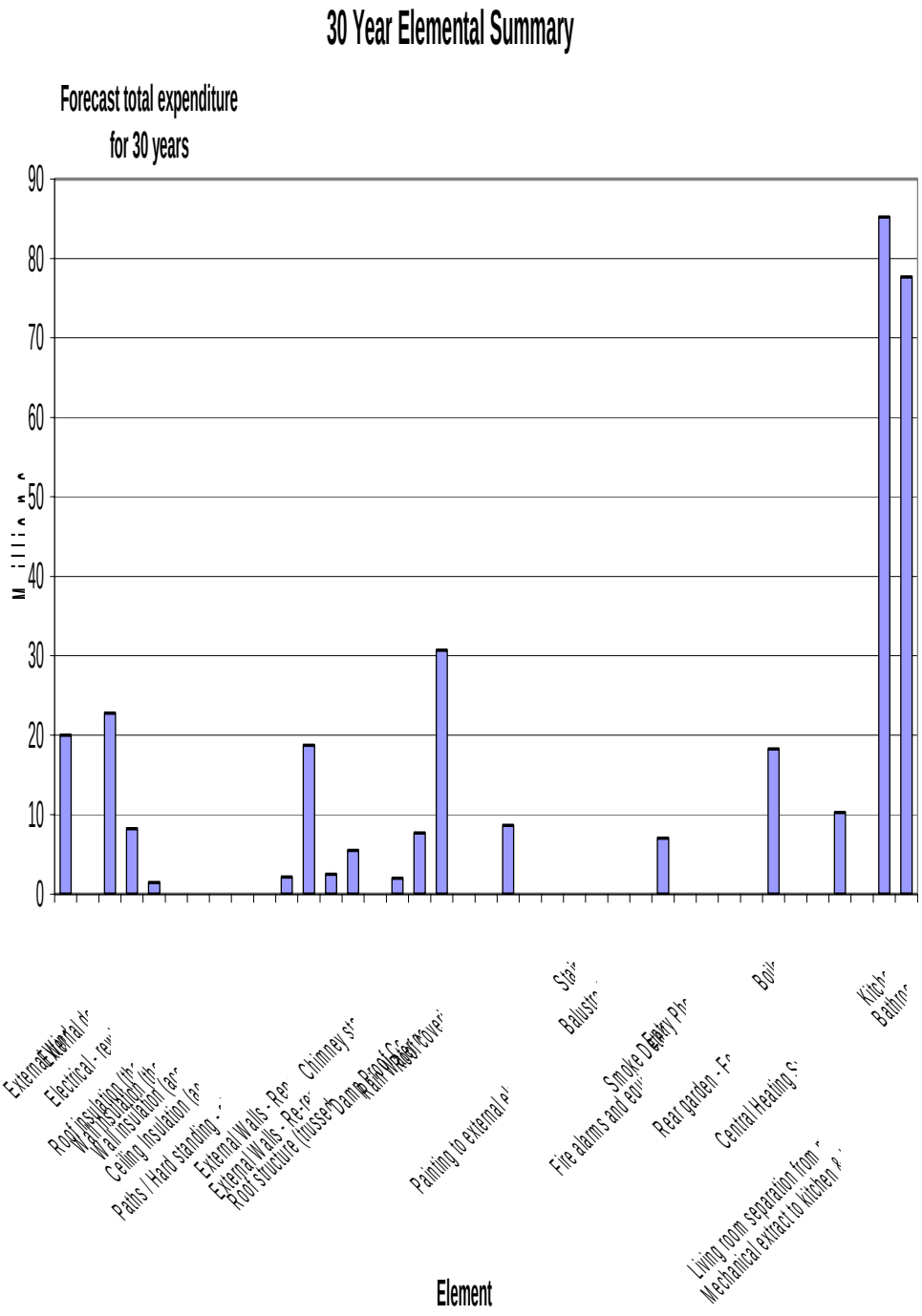
12.5.3 Commentary on results

Cardiff C&CC has a large stock of around 14,000 dwellings. The average cost per dwelling to 2012 is slightly higher than average. This is primarily due to the proposed replacement of 100% of kitchens and bathrooms in both flats and houses in the first 5 years. These two elements carry large costs. Also, due to the short lifecycles of these elements, this results in 100% of kitchens and bathrooms being replaced twice in the 30 year period.

Conversely, no complete central heating system renewals are proposed, only boilers.

Window replacements are spread relatively evenly over the period.

12.5.4 Elemental Breakdown



12.6 Conwy CBC

12.6.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Conwy**
REGIONAL INDICES#	**0.81**

Numbers of dwelling at time of survey	3,854
Average Number of dwellings to 2035	3,300
Average number of dwellings to 2012	3,719

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£102,190,360			
	Asbestos	£2,925,002			
	Garages	£0			
	Non Traditional Dwellings	£0			
	Contingent Major Repairs @ 3%	£146,250			
	Professional Fees	£10,526,161			
	Total Capital Costs	**£115,787,773**	**£102,568,051**	**£79,543,154**	**£72,280,956**

Total Capital Costs to 2012	**£43,929,940**	**£42,599,412**	**£39,701,693**	**£38,562,209**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£30,044	£31,078	£20,639	£21,901
Total costs per property to 2012	£11,812	£11,454	£10,675	£10,369

	0-5	6-10	11-15	16-20	21-25	26-30
Right To Buy Sales forecasts	5%	5%	5%	5%	5%	5%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**?**
Responsive / Void Maintenance*	**?**
Related Assets*	**?**
Cyclical Maintenance*	**?**

* Figures are in total and undiscounted

London =1.00

12.6.2 Information missing

Conwy CBC supplied complete information apart from information on garages and non-traditional dwellings.

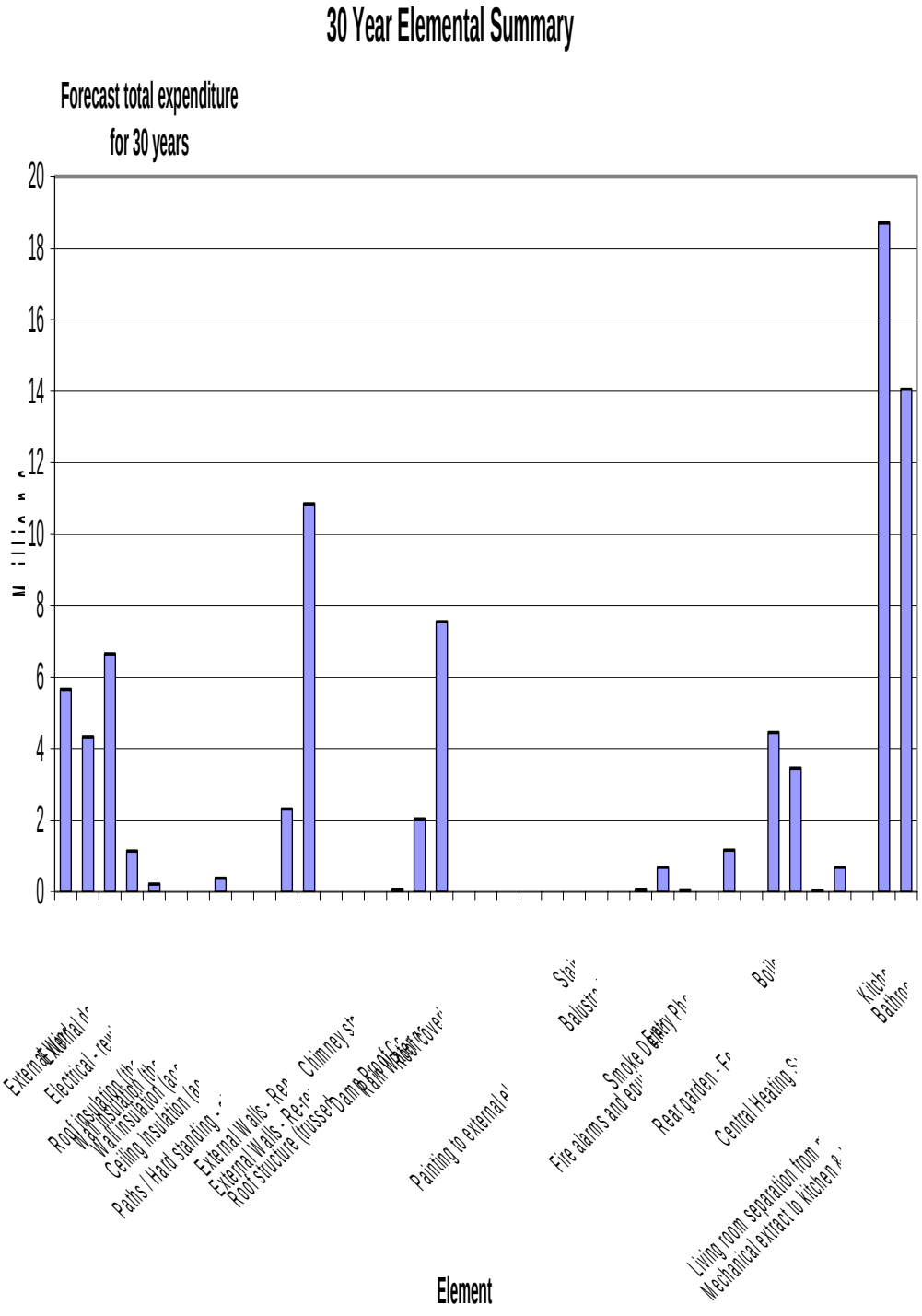
12.6.3 Commentary on results

Conwy CBC have a lower than average forecast cost per dwelling to 2012. The condition information supplied shows a steady expenditure across the majority of the cost elements with the usual emphasis to the pre 2012 period.

The condition questionnaire indicates that:

- Approximately 50% of kitchens and bathrooms are replaced in the first 5 years (100% in 20 years)
- 100% of windows are to be replaced over 30 years with peaks in years 0-5 and years 21-25.
- 65% of rear garden fencing in years 0-10

12.6.4 Elemental Breakdown



12.7 Denbighshire Council

12.7.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Denbighshire**
REGIONAL INDICES#	**0.81**

Numbers of dwelling at time of survey	3,556
Average Number of dwellings to 2035	2,975
Average number of dwellings to 2012	3,313

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£94,944,352			
	Asbestos	£1,978,487			
	Garages	£825,792			
	Non Traditional Dwellings	£313,500			
	Contingent Major Repairs @ 3%	£155,889			
	Professional Fees	£9,821,802			
	Total Capital Costs	**£108,039,822**	**£94,038,776**	**£76,109,573**	**£67,835,611**

Total Capital Costs to 2012	**£45,571,044**	**£43,031,344**	**£41,647,899**	**£39,431,020**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£30,382	£31,615	£21,403	£22,805
Total costs per property to 2012	£13,757	£12,990	£12,573	£11,903

	0-5	6-10	11-15	16-20	21-25	26-30
Right To Buy Sales forecasts	11%	5%	3%	3%	4%	4%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**3,500,000**
Responsive / Void Maintenance*	**36,800,000**
Related Assets*	**5,300,000**
Cyclical Maintenance*	**£15,600,000**

* Figures are in total and undiscounted

London =1.00

12.7.2 Information missing

Denbighshire Council supplied complete information.

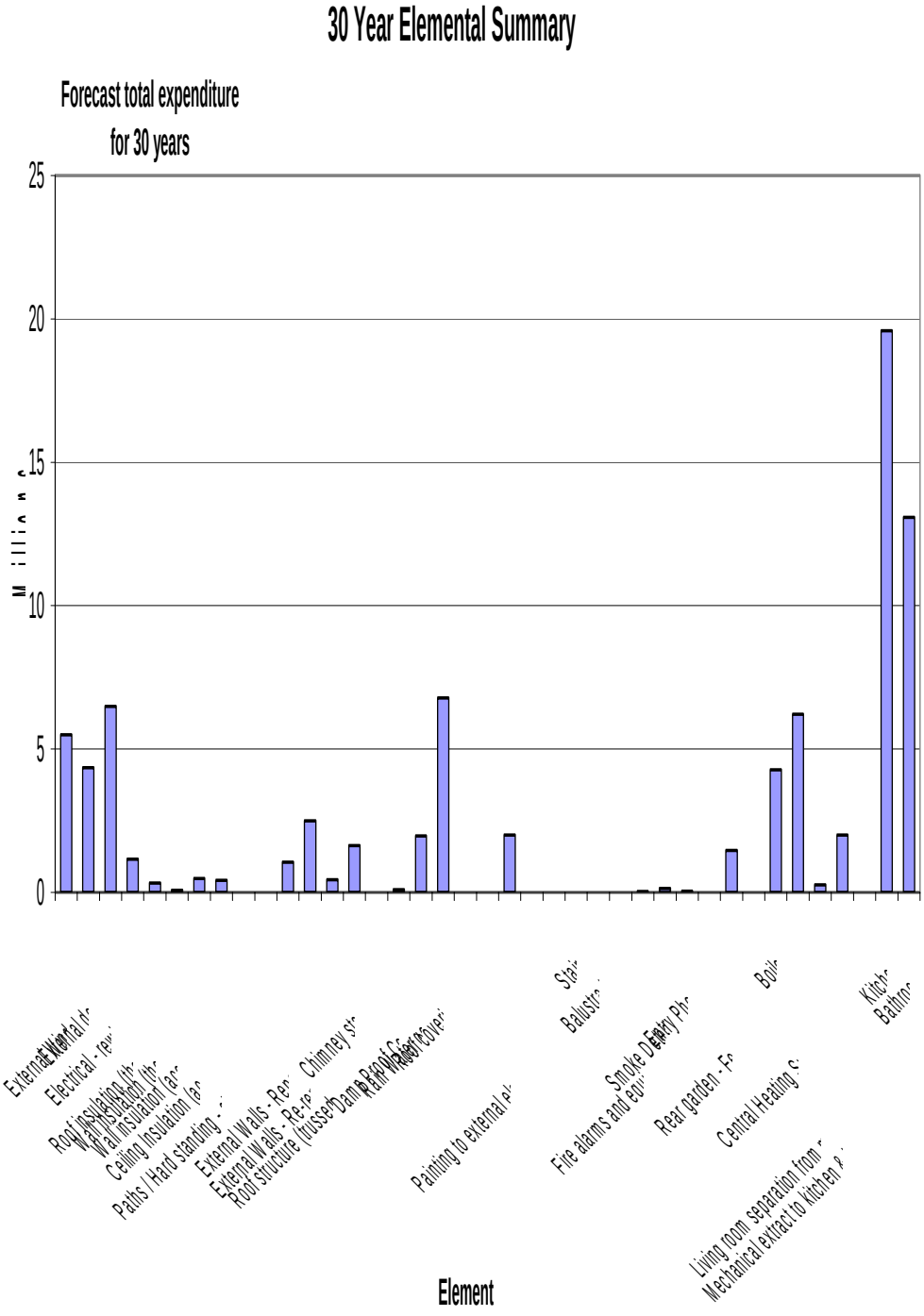
12.7.3 Commentary on results

Denbighshire Council has an average cost per dwelling of approximately £12,000 to 2012. The stock information supplied suggests an even spend across the work elements with a peak in the first years up to 2012.

The stock information suggests:

- Kitchens are improved at a rate of 44%, 14% and 42% over the first 3 five year bands.
- Bathrooms are similar although slightly more stretched over time
- 45% of boilers are to be replaced in years 0-5 (out of a total of around 90% to be replaced)
- 50% of windows and doors are to be replaced n years 0-5 (100% in total)
- 72% of central heating systems are to be replaced.

12.7.4 Elemental Breakdown



12.8 Gwynedd CC

12.8.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Gwynedd**
REGIONAL INDICES#	**0.81**

Numbers of dwelling at time of survey	6,467
Average Number of dwellings to 2035	4,191
Average number of dwellings to 2012	5,833

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£182,264,831			
	Asbestos	£7,196,219			
	Garages	£877,934			
	Non Traditional Dwellings	£6,979,500			
	Contingent Major Repairs @ 3%	£752,683			
	Professional Fees	£19,807,117			
	Total Capital Costs	**£217,878,283**	**£164,969,446**	**£159,494,417**	**£129,442,758**

Total Capital Costs to 2012	**£109,519,044**	**£101,440,517**	**£100,382,050**	**£93,336,266**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£33,691	£39,360	£24,663	£30,884
Total costs per property to 2012	£18,776	£17,391	£17,209	£16,002

	0-5	**6-10**	**11-15**	**16-20**	**21-25**	**26-30**
Right To Buy Sales forecasts	14%	14%	14%	14%	14%	14%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**7,056,000**
Responsive / Void Maintenance*	**72,832,500**
Related Assets*	**7,500,000**
Cyclical Maintenance*	**£19,686,300**

* Figures are in total and undiscounted

London =1.00

12.8.2 Information missing

Gwynedd CC supplied complete information.

12.8.3 Commentary on results

Gwynedd CC have the highest average cost per dwelling. This is primarily as a result of the significant initial expenditure in the first years to 2012. A large percentage of their workload is required in this period and indicates one of two things.

Firstly, the state of Gwynedd's stock may be in a worse condition than the average, thus necessitating additional work to improve it before 2012.

Secondly, Gwynedd CC may have applied a stringent interpretation of the WHQS to their stock. This may have resulted in a works programme that is more onerous than for other authorities.

The two possibilities are not mutually exclusive.

Specifically:

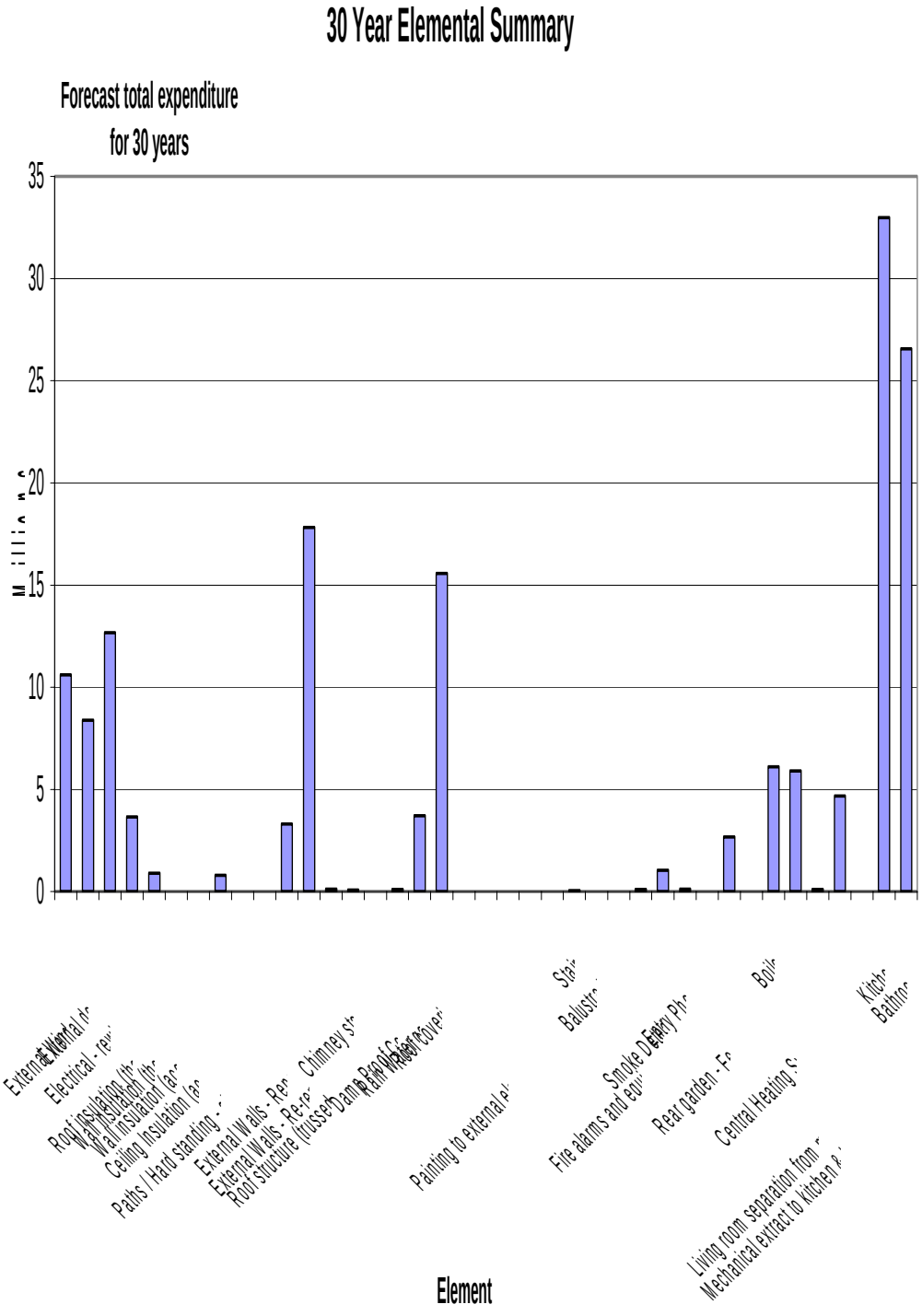
- Kitchens and bathrooms are nearly 90% replaced in the first 10 years
- 67% of fencing is replaced in the first 5 years
- 50% of roof coverings are to be replaced in the first 5 years
- 70% of wall insulation is to be replaced in the first 5 years
- 38% of boilers are to be replaced in the first 5 years

After the initial peak over the first 7 years, the forecast cash flow then flattens to match other authorities spend rate per dwelling.

Ultimately, Gwynedd have forecast that they need to do more work than other authorities.

Furthermore, Gwynedd have the highest forecast of Right To Buy sales at a steady 14%.

12.8.4 Elemental Summary



12.9 Monmouthshire Council

12.9.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Monmouthshire**
REGIONAL INDICES#	**0.84**

Numbers of dwelling at time of survey	3,696
Average Number of dwellings to 2035	3,474
Average number of dwellings to 2012	3,644

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£111,342,530			
	Asbestos	£0			
	Garages	£0			
	Non Traditional Dwellings	£231,000			
	Contingent Major Repairs @ 3%	£11,550			
	Professional Fees	£11,158,508			
	Total Capital Costs	**£122,743,588**	**£116,549,144**	**£82,218,498**	**£78,890,011**

Total Capital Costs to 2012	**£42,823,479**	**£42,284,709**	**£38,544,910**	**£38,085,554**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£33,210	£33,551	£22,245	£22,710
Total costs per property to 2012	£11,751	£11,603	£10,577	£10,451

	0-5	**6-10**	**11-15**	**16-20**	**21-25**	**26-30**
Right To Buy Sales forecasts	2%	2%	2%	2%	2%	2%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**3,696,000**
Responsive / Void Maintenance*	**41,572,500**
Related Assets*	**6,000,000**
Cyclical Maintenance*	**£17,312,340**

* Figures are in total and undiscounted

London =1.00

12.9.2 Information missing

No information was supplied for Monmouthshire's Right To Buy forecasts. They have been taken as an average 2% as this is the most common forecast.

12.9.3 Commentary on results

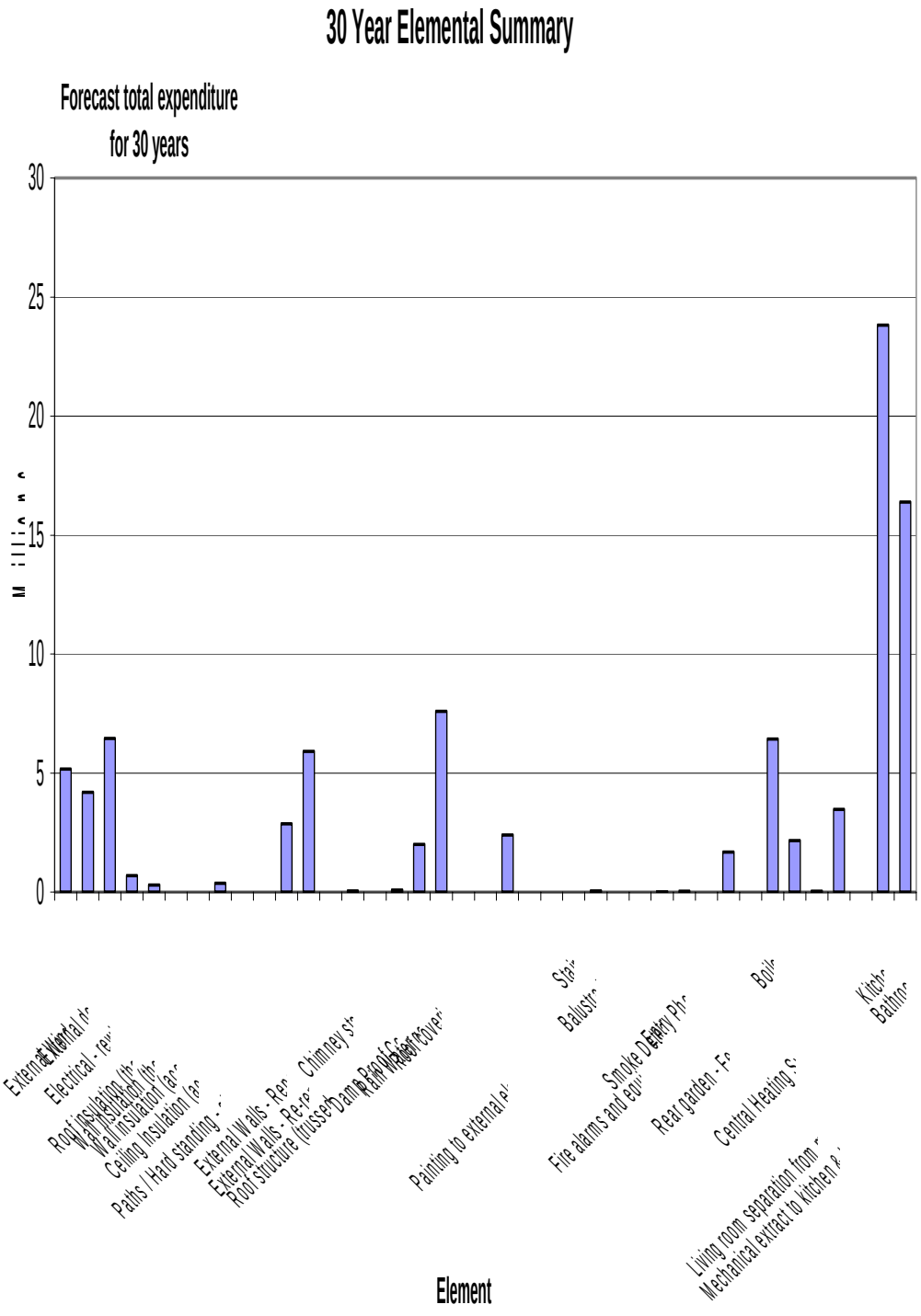
Monmouthshire Council have a slightly lower than average cost forecast per dwelling up to 2012. They also have a relatively small stock (4,000) which results in them having one of the lower total forecasts.

The stock condition information suggests:

- 60% of boilers are to be replaced in years 0-5
- 50% of kitchens and bathrooms are to be replaced in years 0-5
- Around 60% of dwellings are to be rendered with the emphasis of work at the end of the 30 year period.

Monmouthshire identified only 12 non-traditional dwellings which required a major structural repair.

12.9.4 Elemental Summary



12.10 Neath Port Talbot CBC

12.10.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Neath Port Talbot**
REGIONAL INDICES#	**0.83**

Numbers of dwelling at time of survey	9,524
Average Number of dwellings to 2035	8,150
Average number of dwellings to 2012	9,073

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£297,506,451			
	Asbestos	£11,657,719			
	Garages	£0			
	Non Traditional Dwellings	£9,231,750			
	Contingent Major Repairs @ 3%	£1,044,473			
	Professional Fees	£32,618,894			
	Total Capital Costs	**£352,059,287**	**£301,866,504**	**£241,346,185**	**£213,631,790**

Total Capital Costs to 2012	**£133,408,616**	**£127,965,115**	**£121,087,591**	**£116,377,563**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£36,965	£37,037	£25,341	£26,211
Total costs per property to 2012	£14,703	£14,103	£13,345	£12,826

	0-5	**6-10**	**11-15**	**16-20**	**21-25**	**26-30**
Right To Buy Sales forecasts	5%	6%	6%	6%	7%	7%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**25,396,000**
Responsive / Void Maintenance*	**168,900,000**
Related Assets*	**21,395,900**
Cyclical Maintenance*	**£47,000,000**

* Figures are in total and undiscounted

London =1.00

12.10.2 Information missing

Neath Port Talbot CBC supplied complete information although they entered 0% for all garages.

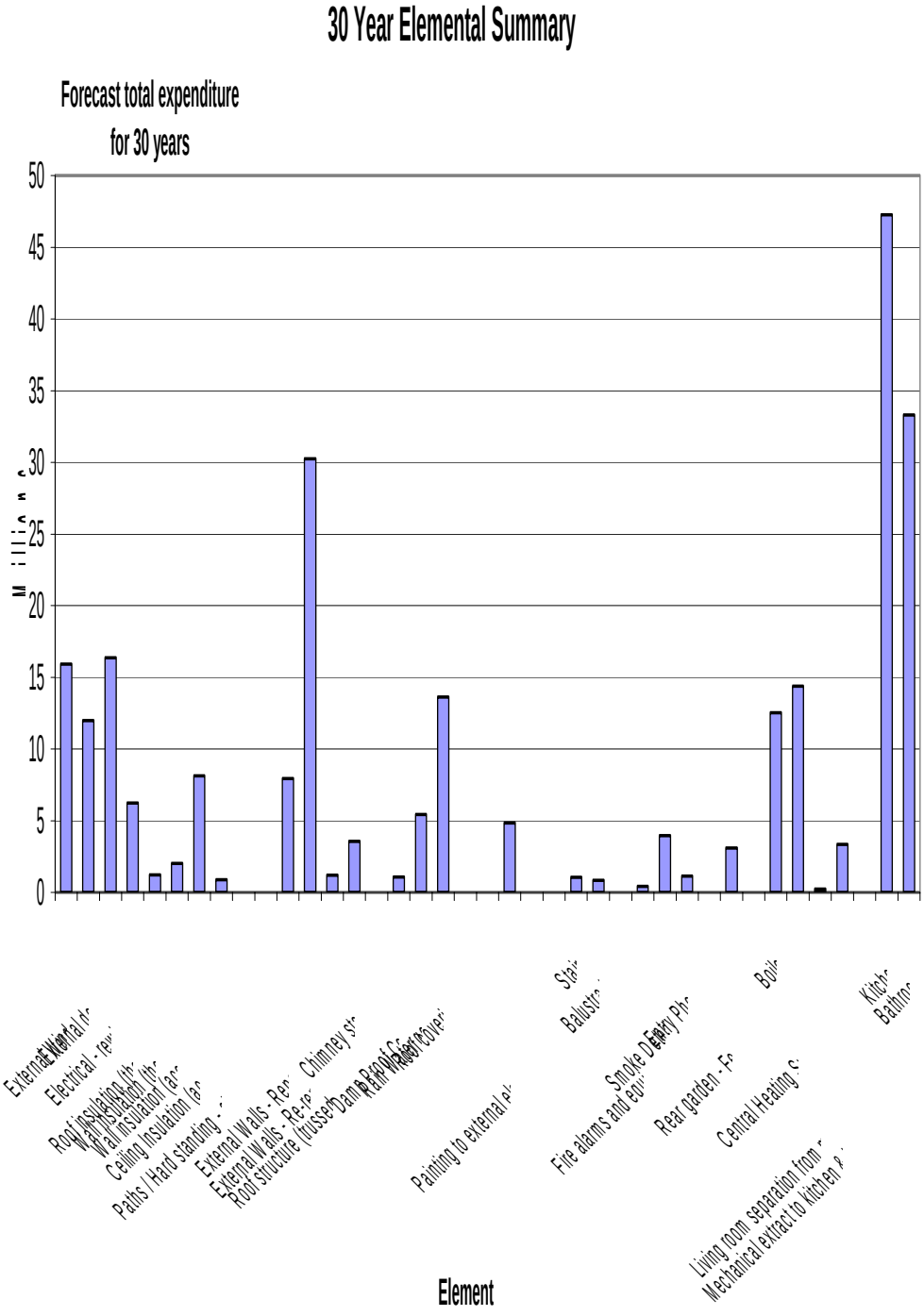
12.10.3 Commentary on results

Neath Port Talbot's average forecast cost per dwelling up to 2012 is slightly higher than the average. Their condition questionnaire indicates:

- All kitchens being replaced in the first 15 years
- All bathrooms being replaced over 25 years
- 100% of the stock having roof insulation in the first 5 years
- All windows being replaced at a reducing rate over the 30 years

Their higher average spend figure would appear to relate to a need to large amounts of insulation work early on, combined with a generally high level of work across most work elements.

12.10.4 Elemental Summary



12.11 Newport Council

12.11.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Newport**
REGIONAL INDICES#	**0.83**

Numbers of dwelling at time of survey	9,594
Average Number of dwellings to 2035	9,017
Average number of dwellings to 2012	9,460

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£259,686,228			
	Asbestos	£17,419,165			
	Garages	£0			
	Non Traditional Dwellings	£27,527,500			
	Contingent Major Repairs @ 3%	£2,247,333			
	Professional Fees	£30,688,023			
	Total Capital Costs	**£337,568,249**	**£322,262,804**	**£237,245,876**	**£228,965,149**

Total Capital Costs to 2012	**£146,419,020**	**£144,777,213**	**£133,310,522**	**£131,893,048**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£35,185	£35,739	£24,729	£25,392
Total costs per property to 2012	£15,478	£15,305	£14,092	£13,943

	0-5	6-10	11-15	16-20	21-25	26-30
Right To Buy Sales forecasts	2%	2%	2%	2%	2%	2%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**15,000,000**
Responsive / Void Maintenance*	**143,100,000**
Related Assets*	**inc above**
Cyclical Maintenance*	**£48,000,000**

* Figures are in total and undiscounted

London =1.00

12.11.2 Information missing

Newport Council did not provide a complete breakdown of dwellings by archetype. They identified the split between houses & bungalows and flats. Taking these figures the stock was apportioned into the various possible archetypes by averaging the split for those authorities where the breakdown was provided.

No information was supplied for Newport's Right To Buy forecasts. They have been taken as an average 2% as this is the most common forecast.

No information was supplied for garages or non-traditional dwelling repairs. This has not been imputed and remains an omission from the figures presented above. See the summary on Non-Traditional dwellings and garages for further information.

12.11.3 Commentary on results

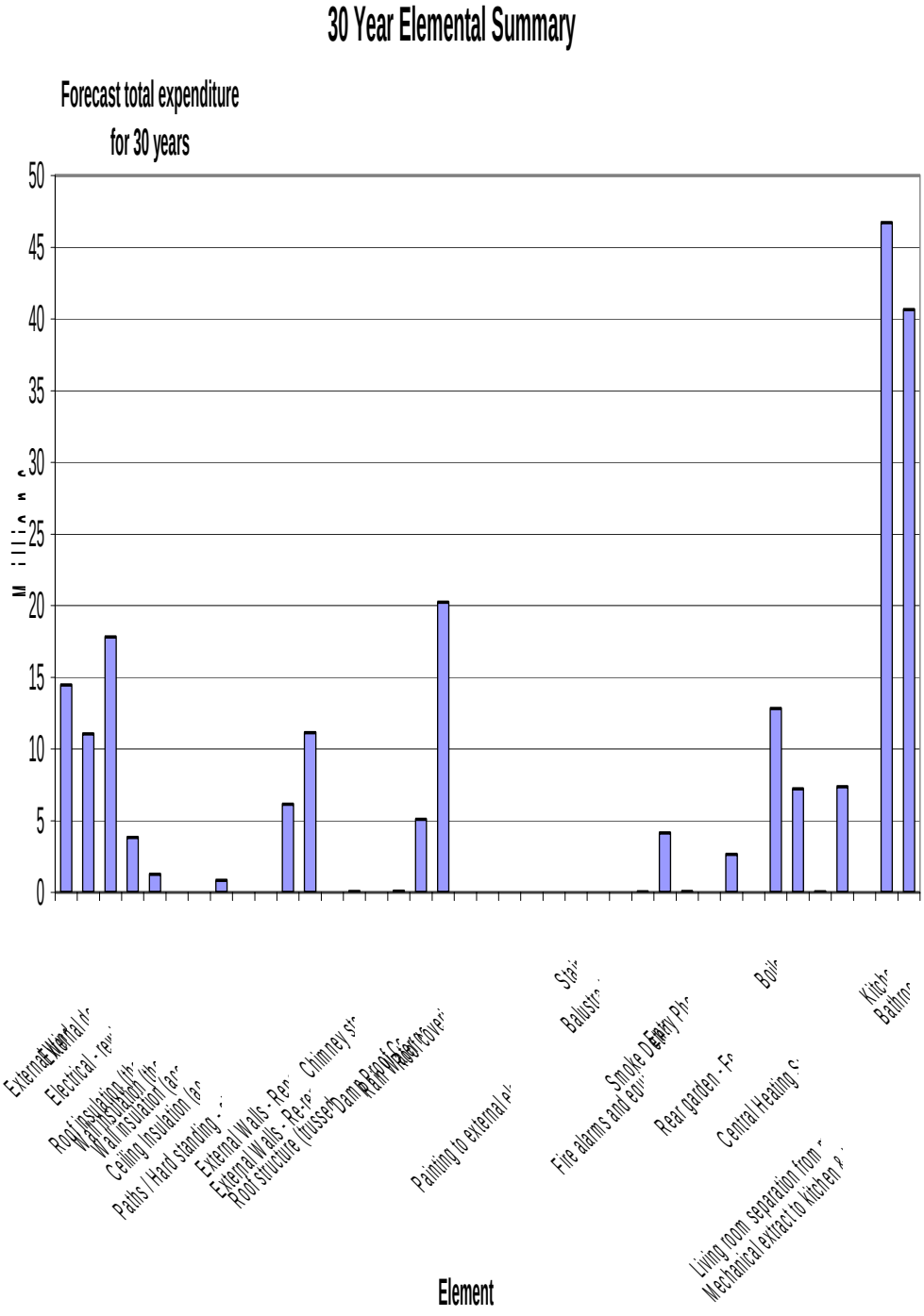
Newport's average forecast cost per dwelling to 2012 is higher than average.

Their condition questionnaire indicates:

- Approximately 50% of kitchens are replaced in the first five years
- Approximately 65% of bathrooms are replaced in the first five years
- Almost 60% of boilers are replaced in the first 5 years
- Almost 60% of windows are replaced in the first five years

The above items carry the largest costs and are high percentages of the total stock. This is sufficient to explain a higher than average cost per dwelling.

12.11.4 Elemental Summary



12.12 Powys CC

12.12.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Powys**
REGIONAL INDICES#	**0.81**

Numbers of dwelling at time of survey	5,521
Average Number of dwellings to 2035	4,670
Average number of dwellings to 2012	5,211

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£130,878,493			
	Asbestos	£711,116			
	Garages	£1,731,960			
	Non Traditional Dwellings	£0			
	Contingent Major Repairs @ 3%	£122,154			
	Professional Fees	£13,371,472			
	Total Capital Costs	**£146,815,195**	**£121,800,786**	**£94,838,062**	**£80,924,947**

Total Capital Costs to 2012	**£40,381,605**	**£37,949,306**	**£35,530,182**	**£33,471,788**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£26,592	£26,081	£17,178	£17,328
Total costs per property to 2012	£7,750	£7,283	£6,819	£6,424

	0-5	6-10	11-15	16-20	21-25	26-30
Right To Buy Sales forecasts	6%	7%	6%	6%	6%	6%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**191,000**
Responsive / Void Maintenance*	**60,000,000**
Related Assets*	**0**
Cyclical Maintenance*	**£22,500,000**

* Figures are in total and undiscounted

London =1.00

12.12.2 Information missing

Powys CC supplied complete information except for the condition of their non-traditional dwellings.

The model produced a cost forecast of approximately £3.5million in the first years. The information supplied was from information dated 2004 and therefore required normalising. Powys advised that their actual spend in 2004 was £9 million. In order to avoid a negative forecast for year one, the actual expenditure was manipulated to equal the forecast. The reason for this anomaly may be for two reasons:

- Powys have undertaken a programme of improvements in advance of, or at a different rate to that identified within the condition information
- The actual expenditure figure provided includes costs additional to capital improvements.

12.12.3 Commentary on results

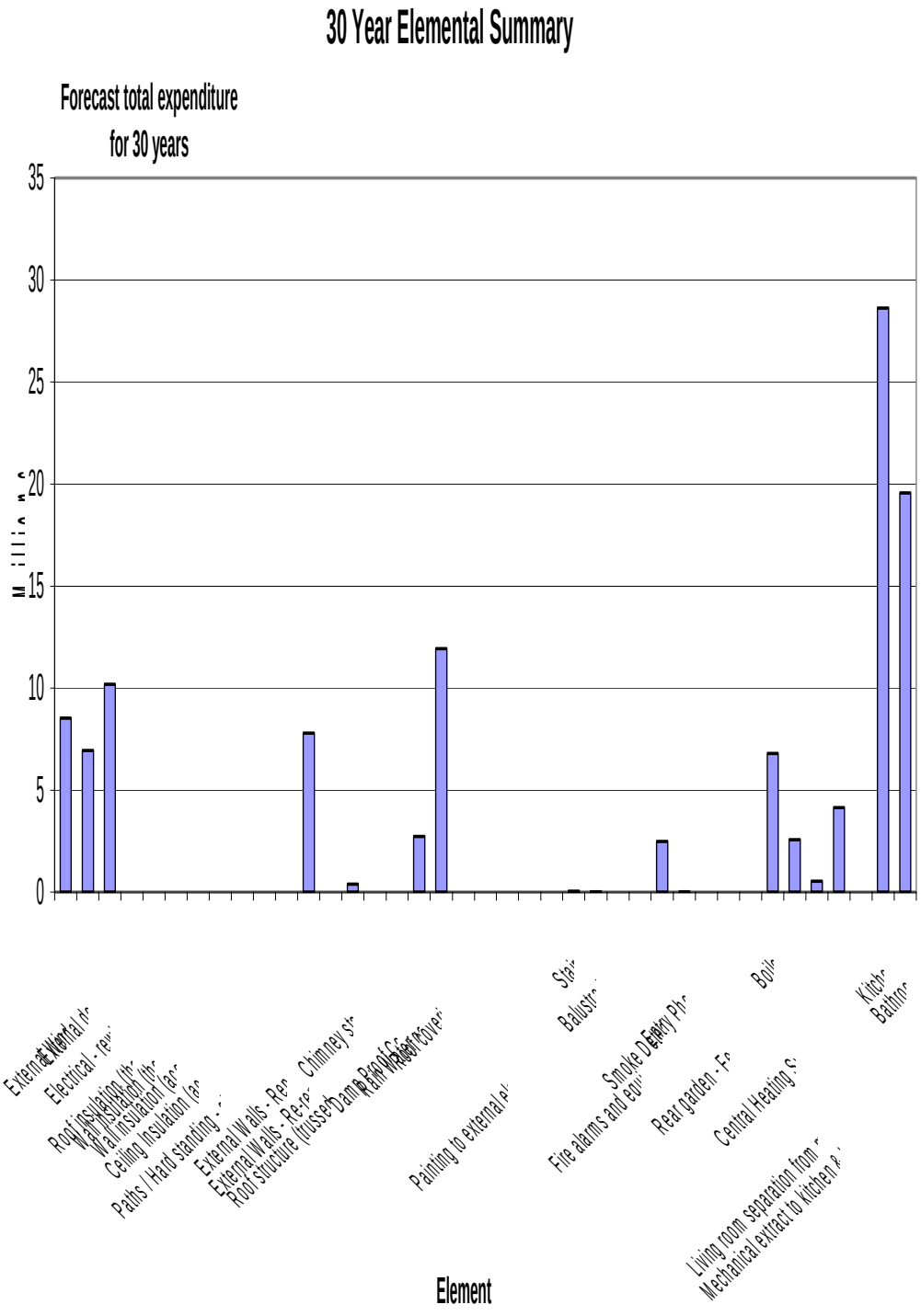
Powys has the lowest forecast average cost per dwelling than any authority (£6,400) and is nearly less than half the average.

Their condition questionnaire indicates:

- 0% wall or roof insulation over 30 years
- 0% paths and hard standing renewals over 30 years
- 0% repointing over 30 years
- 0% painting of external elevations
- 0% rear garden fencing
- 100% new kitchens and bathrooms spread roughly evenly over the first 20 years
- 100% new windows over the 30 years peaking in years 16-20

In general, Powys has identified less work than other authorities which has resulted in a lower forecast.

12.12.4 Elemental Summary



12.13 Swansea C&BC

12.13.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Swansea**
REGIONAL INDICES#	**0.81**

Numbers of dwelling at time of survey	14,716
Average Number of dwellings to 2035	12,728
Average number of dwellings to 2012	13,829

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£393,608,805			
	Asbestos	£19,172,836			
	Garages	£42,786			
	Non Traditional Dwellings	£50,927,250			
	Contingent Major Repairs @ 3%	£3,507,144			
	Professional Fees	£46,882,269			
	Total Capital Costs	**£514,141,090**	**£435,206,080**	**£333,325,677**	**£289,467,352**
Total Capital Costs to 2012		**£147,247,884**	**£138,435,123**	**£131,108,105**	**£123,556,127**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£34,938	£34,192	£22,651	£22,742
Total costs per property to 2012	£10,648	£10,011	£9,481	£8,935

	0-5	**6-10**	**11-15**	**16-20**	**21-25**	**26-30**
Right To Buy Sales forecasts	7%	6%	4%	5%	5%	5%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**24,572,554**
Responsive / Void Maintenance*	**189,121,000**
Related Assets*	**11,049,866**
Cyclical Maintenance*	**?**

* Figures are in total and undiscounted

London =1.00

12.13.2 Information missing

Swansea C&BC supplied complete information.

12.13.3 Commentary on results

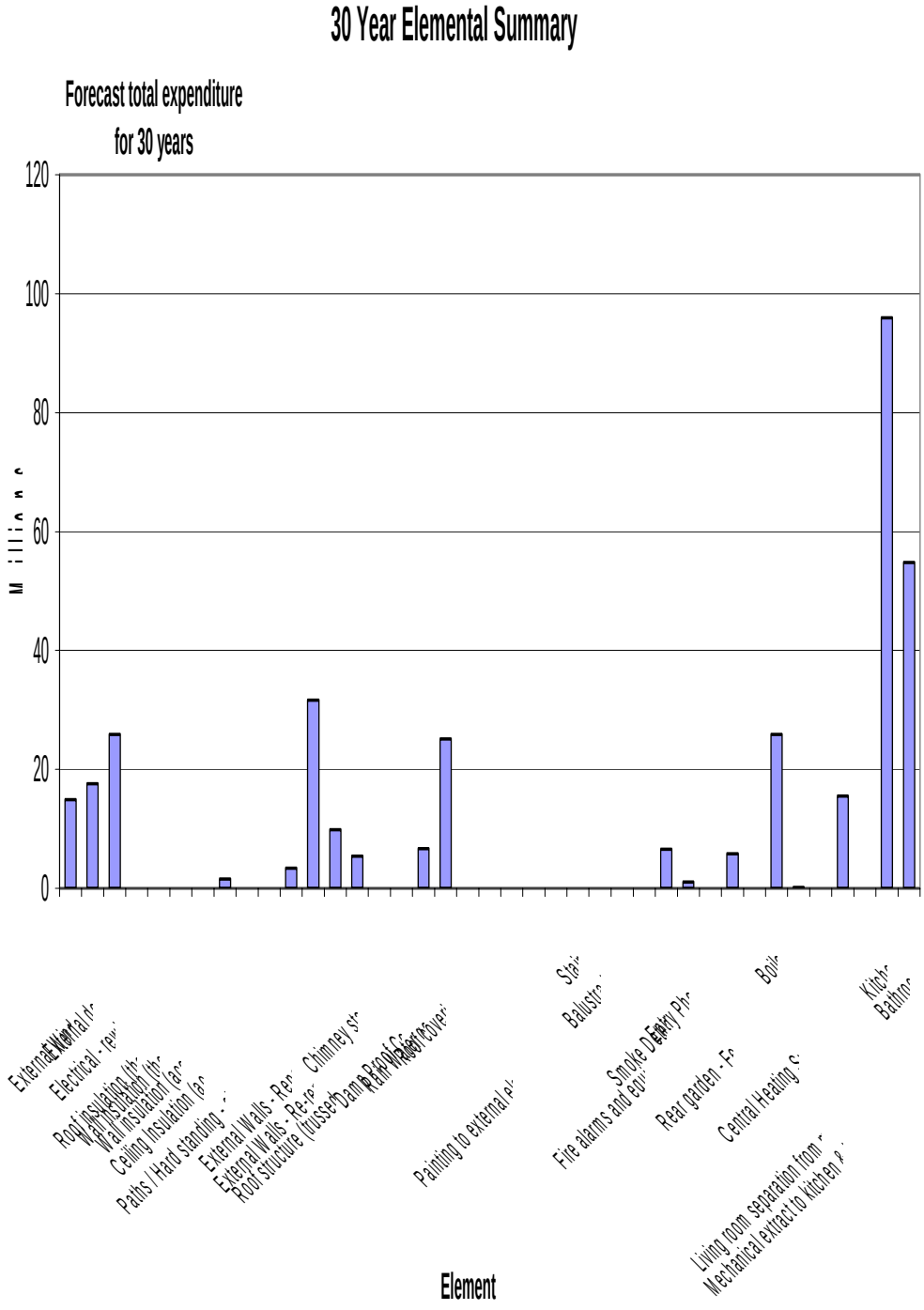
Swansea's average forecast cost per dwelling to 2012 is lower than average.

Swansea C&BC has the second largest total forecast cost projection due to the size of their stock (14,700 dwellings which is the largest in Wales).

Their condition questionnaire indicates:

- For houses and bungalows, 80% will be replaced with the peaks in both years 0-5 and 26-30. Flats have only 20% replacements forecast
- 100% of doors are to be replaced over the 30 year period
- No thermal insulation works are proposed
- Almost 100% of boilers will be replaced within the first 15 years
- Only 1 % of central heating systems will be renewed
- 100% of dwellings will receive new garden fencing
- 100 % of kitchens and bathrooms will be replaced within the first 25 years with the peak in yeas 0 to 10
- Over 3,000 non traditional dwellings require a large structural repair. This accounts for approximately £50 million out of a total forecast of circa £500 million (10%).

12.13.4 Elemental Summary



12.14 Torfaen Council

12.14.1 Summary output sheet

Welsh Social Housing Cost Model
Summary Output Sheet

LOCAL AUTHORITY	**Torfaen**
REGIONAL INDICES#	**0.80**

Numbers of dwelling at time of survey	8,356
Average Number of dwellings to 2035	6,678
Average number of dwellings to 2012	7,443

		Constant Prices		Discounted Cash Flow	
		Constant stock	**Allowing for RTB**	**Constant stock**	**Allowing for RTB**
TOTAL FORECAST OF COST FOR 30 YEARS					
	Dwelling Repairs	£218,744,029			
	Asbestos	£12,382,008			
	Garages	£0			
	Non Traditional Dwellings	£22,418,000			
	Contingent Major Repairs @ 3%	£1,740,000			
	Professional Fees	£25,528,404			
	Total Capital Costs	**£280,812,440**	**£233,189,336**	**£196,359,531**	**£166,717,992**
Total Capital Costs to 2012		**£117,260,010**	**£106,229,955**	**£106,368,972**	**£96,831,095**

TOTAL COSTS PER PROPERTY				
Total Costs per property for 30 years	£33,606	£34,919	£23,499	£24,965
Total costs per property to 2012	£15,755	£14,273	£14,292	£13,010

	0-5	**6-10**	**11-15**	**16-20**	**21-25**	**26-30**
Right To Buy Sales forecasts	17%	10%	0%	0%	0%	0%

N.B. All figures start from 2005

ADDITIONAL FORECAST FIGURES SUPPLIED BY LOCAL AUTHORITY

Environmental Improvements*	**8,439,000**
Responsive / Void Maintenance*	**97,285,100**
Related Assets*	**12,658,500**
Cyclical Maintenance*	**£49,919,125**

* Figures are in total and undiscounted

London =1.00

12.14.2 Information missing

Torfaen Council did not provide a complete breakdown of dwellings by archetype. They identified the split between houses & bungalows and flats. Taking these figures the stock was apportioned into the various possible archetypes by averaging the split for those authorities where the breakdown was provided.

Torfaen Council did not comment on the works required to garages. This is therefore excluded.

12.14.3 Commentary on results

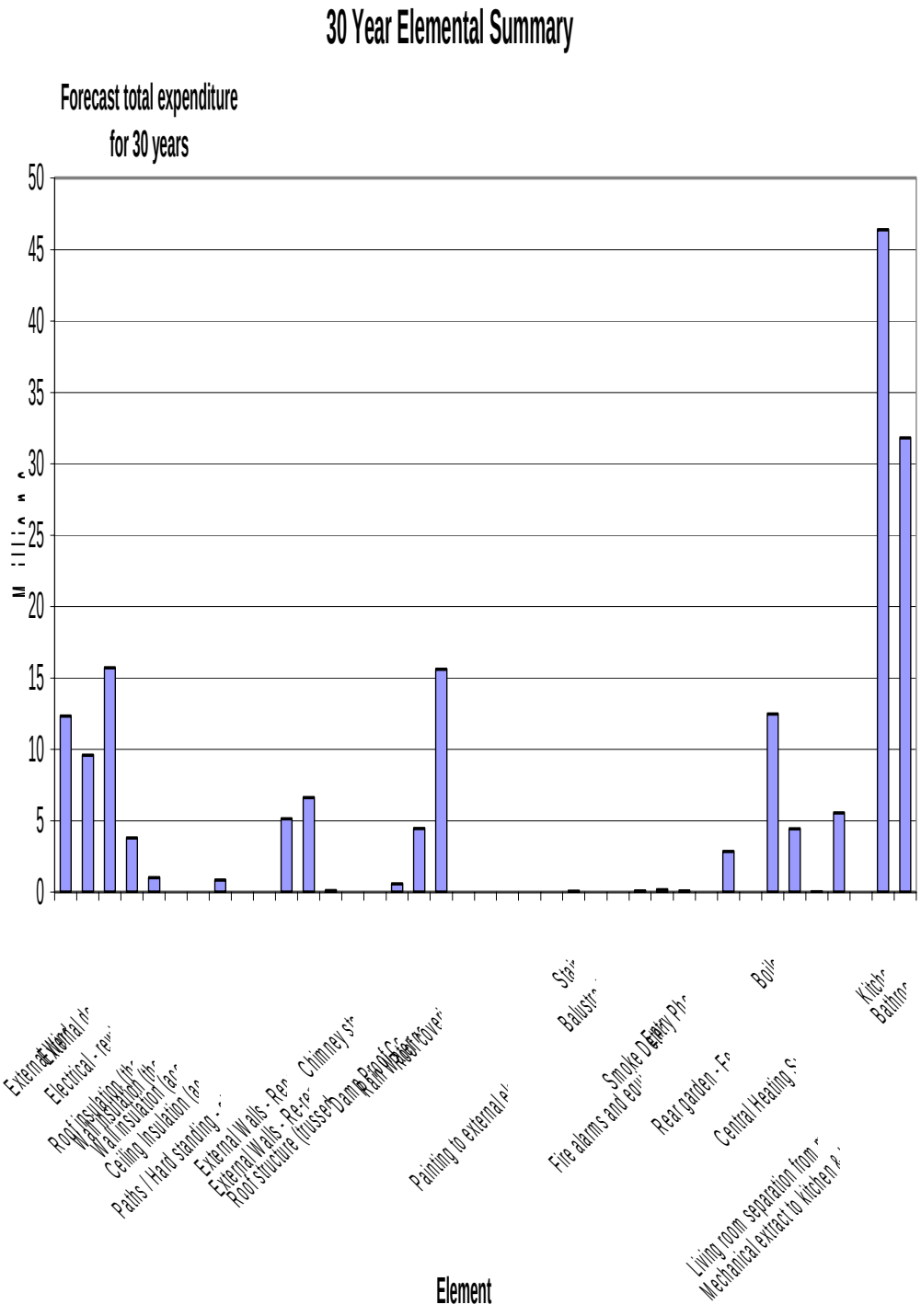
Torfaen's average forecast cost per dwelling to 2012 is higher than average. (£13,000).

Their condition questionnaire indicates:

- 100% of windows and doors will be replaced roughly evenly over the 30 year period
- 100% of dwellings will be re-wired with the peak in years 0-15
- Approximately 60% of dwellings will have new thermal insulation in years 0-5
- 98% of boilers will be replaced with 64% in the first five years
- 100% of kitchens will be replaced with approximately 70% of the works in years 0-5
- 100% of bathrooms will be replaced with approximately 40% of the works in years 0-5

Torfaen's higher than average cost per dwelling to 2012 would appear to be related to the high demand for new kitchens and bathrooms in years 0-5. As these are high cost items they skew the overall picture (They represent approximately 40% of the total works costs).

12.14.4 Elemental Summary



13 Bibliography

DTI (2004) Construction Statistics Annual, TSO

National Assembly for Wales Housing Directorate *The Pattern Book*.

National Institute of Economic and Social Research (2002) Sectoral Productivity Dataset, www.niesr.ac.uk/research

Non Traditional Housing in the UK: A brief review. (2002) Commissioned by the Council of Mortgage Lenders, written by Keith Ross of the Building Research Establishment

Royal Institute of Chartered Surveyors & The Building Employers Confederation (1998) *Standard Method of Measurement of Building Works: 7th Edition*

Spon's Architects' and Builders Price Book Edited by Davis Langdon. Taylor and Francis Group. London & New York, 2005.

14 Appendix A: Definition of work items

14.1 Definitions overview

The following definitions define the nature of the work upon which the model is based. These definitions were used by Davis Langdon's Quantity Surveying team to create a schedule of work items from which unit rates were developed.

14.1.1 External windows

Allowance has been made to replace every window in each property type. Their sizes have been standardised to facilitate estimating only. This includes associated making good works.

14.1.2 External doors

Allowance has been made to replace all external doors. In the case of dwellings with only one entrance, only replacement of a front door has been accounted for.

14.1.3 Electrical re-wiring

Allowance has been made to replace all lighting and power installations and associated cabling. The basis of estimating takes the gross internal floor area (GIFA) (excluding kitchens and bathrooms which are covered elsewhere) and uses a rate to estimate the overall likely costs rather than define the works too finitely.

14.1.4 Roof insulation

Allowance has been made to lay new quilt insulation horizontally in all existing roof voids. The basis of estimating uses the GIFA and divides this area by the number of storeys to establish the m^2 quantity of insulation required per dwelling.

Additional allowances have been made with this item to relocate and partially dispose of sundry loose items within each roof void.

14.1.5 Wall insulation- Thermal

An assessment has been made regarding how many dwellings are likely to have cavities (or not). Rates have been developed which cater for works to both cavity and non cavity walls. The average of these has been applied based upon an assessment of the ratio of cavity to non-cavity walls (approximately 70% cavity wall)

14.1.6 Wall insulation – Acoustic

Taken to flats only, allowance has been made to apply acoustically insulated dry lining to all party walls on one side. The costs allow for all associated works to the internal space.

14.1.7 Ceiling insulation – Acoustic

Taken to flats only, this item has been calculated from the GIFA of each dwelling.

14.1.8 Paths/ hard standings

Taken to houses only, a uniform allowance has been taken to each dwelling types irrespective of types or number of bedrooms.

14.1.9 External wall – Re-pointing

Allowance has been made to prepare and re-point entire dwelling external wall areas.

14.1.10 External walls – Re-rendering

Allowance has been made to remove existing render and apply new to entire dwelling external wall areas. These works exclude structural repairs.

14.1.11 Roof structure

Allowance has been made to remove roof coverings and make carpentry repairs to 20% of each dwelling's roof area.

14.1.12 Chimney stacks

Allowance has been made to remove a chimney stack from each dwelling at a variable rate dependant on the number of fire places to be blocked up internally. Each chimney to be removed is taken to below roof level and infill void with appropriate roof coverings.

14.1.13 Damp proof course

A uniform allowance to inject DPC into external walls from outside each dwelling.

14.1.14 Rainwater goods

Allowance to replace all above ground rainwater drainage goods per dwelling. Special allowances made for flats, whereby costs for replacing rainwater goods on/ in a building are split between the quantities of flats per building

14.1.15 Roof coverings

Allowance made to remove all roof coverings and replace with new. All quantities measured on slope based on plan area times 1.5 to account for gradient and overhang.

14.1.16 Internal redecoration and repairs

Allowance to prepare, make good walls & joinery and repaint dwellings throughout (excluding kitchens and bathrooms which are measured

elsewhere and settlement cracks which are excluded). Associated furniture relocation during the works is also considered on a £/ GIFA basis.

Additional allowance outside dwelling GIFAs are made for communal areas in buildings containing flats.

N.B This rate is excluded from all model calculations

14.1.17 Painting external elevations

Allowance to apply external paint to all external walls to dwellings.

14.1.18 Stairs

Allowance to replace treads and risers to timber staircases (and if applicable, divided by the number of dwellings a single staircase serves) and repairs per floor to concrete staircases in medium and high rise flat developments. Reinstatement of existing floor finishes is covered i.e. replacement is excluded.

14.1.19 Balustrades

Allowance to replace all balustrades & associated handrails, making good and painting (and if applicable, divided by the number of dwellings a single timber staircase serves). Repair costs per floor to concrete staircase balustrades and associated handrails for medium to high rise flat developments with costs split by the number of flats within one building.

14.1.20 Fire alarms and equipment

Allowance to provide each individual dwelling with loose fire fighting equipment and fire alarms to all flats. These are based on a rate per m^2 of GIFA. Communal areas are assumed to constitute an additional 20% of GIFA of flats and are included.

14.1.21 Smoke detection

Allowance to provide smoke detection based on a rate per m^2 of GIFA in all dwellings (excluding communal areas).

14.1.22 Rear garden fencing

A uniform allowance per dwelling provides for the replacement of an average length of garden fence panelling.

14.1.23 Entry phone

A uniform allowance per flat (other dwelling types excluded) to provide a means of secure ingress and egress for visitors.

14.1.24 Boiler

A uniform allowance to replace boilers within each dwelling excluding high rise flats that have the cost of replacing a central boiler split between the assumed quantities of flats within a building.

14.1.25 Central heating system

Allowance to replace all radiators and associated distribution pipe-work in each room of every dwelling type. Includes for builder's work in connection with services.

14.1.26 Living room separation from front door

Uniform allowance for all dwelling types to provide an enclosure within each dwelling comprising an internal door, other joinery and finishes which match the existing.

14.1.27 Mechanical extract from kitchens and bathrooms

Allowance to provide new extractor fans through external walls in each kitchen, bathroom and WC area.

14.1.28 Kitchen

Allowance to remove existing and replace to a modern standard all kitchen fixtures & fittings, internal wall, floor & ceiling finishes and upgrade all mechanical & electrical service provisions. New double oven, but excluding white goods, mechanical extract, new loose furniture and equipment. All quantities are based on indicative plans.

14.1.29 Bathrooms

Allowance to remove existing and replace to a modern standard all sanitary installations & associated fixtures & fittings, internal wall, floor & ceiling finishes and upgrade all mechanical & electrical service provisions. A shower is to be provided over the bath in all dwelling types. Excludes new loose furniture and equipment. All quantities are based on indicative plans.

Additional allowances have been made to upgrade WC rooms in line with that described above. These rooms are indicated on the example plans for larger house types only.

14.1.30 Non traditional house type repairs

A uniform allowance to make major or minor repairs which are undefined.

14.1.31 Asbestos removal

Uniform rates for five types of asbestos removal have been estimated. An average cost related to their likely frequency of occurrence has been assumed and relates directly to WHQS questionnaire responses.

14.1.32 Garages

Uniform allowances for garage repairs including new doors, new roofs, new pedestrian doors and structural repair have been estimated. The quantities required will relate directly to the WHQS questionnaire responses.

14.1.33 Summary

In summary the above process has been developed to facilitate the assessment of the cost implications of implementing the Welsh Housing Quality Standard from the Questionnaire issued to Wales's Unitary Authorities. It is clear from reading the above assumptions that best judgement was used to reasonably predict the likely works required and in reality the actual specification of works will be defined on a site by site basis where dwelling layout and types vary tremendously. However the production of the cost model along with questionnaire responses will allow at least a reality based indication of what the likely cost for WHQS implementation will be at today's prices.