

NEW WAYS OF WORKING AND ACCOMMODATION STRATEGY

SUMMARY

- 1.1 New Ways of Working aims to deliver flexible and efficient working solutions which will adapt to the changing needs of the organisation. The Project will deliver significant efficiencies including sizeable reductions in our office accommodation as well as in the energy we use to operate our buildings. New Ways of Working will radically transform the way we work across the Council. The project has four key strands...
- **Where we work** – Council House refurbishment and the provision of a second building.
 - **How we work** – working styles (flexible-working, home working, mobile working), cultural change, and document management.
 - **Tools for the job** – infrastructure, telecommunications, information.
 - **Moving places** – decant strategy, planning and managing all office moves.
- 1.2 The Council's main administrative accommodation is in poor condition and unsuitable for modern working and a serious constraint on the Council's ability to re-engineer service delivery to achieve higher standards of customer focus and best value services.
- 1.3 By introducing New Ways of Working we will deliver at least 30% reductions in the amount of office accommodation we occupy within the city centre.
- 1.4 Delivering the proposed Accommodation Strategy overall will:
- further improve customer service
 - use space more effectively and, together with New Ways of Working, significantly reduce the amount of office space occupied with consequent cost efficiencies
 - improve the staff and member working environment
 - contribute towards the Council's commitment to tackling climate change
 - remove the maintenance backlog for administrative buildings
 - use accommodation more effectively and efficiently.
- 1.5 The Strategy is based on implementing New Ways of Working and broadly involves:
- the refurbishment and remodelling of the Council House as the main centre for public facing services
 - acquiring new or refurbished office accommodation in the city centre to accommodate those staff and services that cannot be accommodated in the Council House. Roman House may be retained depending on the solution adopted
 - disposing of St Mary's Gate offices, allowing redevelopment of St George's quarter in line with Cityscape's proposals
 - bringing some satellite and non-operational depot staff into central accommodation, facilitating further rationalisation of the building portfolio.

RECOMMENDATIONS

- 2.1 To approve the Accommodation Strategy as outlined in paragraphs 4.19 and 4.20.
- 2.2 To approve an allocation of £20.165m from within the approved Accommodation Strategy budget of £36.890m for the refurbishment and remodelling of the Council House, including the introduction of New Ways of Working.
- 2.3 To approve the refurbishment of the Council House to begin in Spring of 2009 subject to resolving site access, car parking and site compound issues, to achieve the benefits set out in paragraph 1.4 above.
- 2.4 To acquire the necessary office space for decant accommodation.
- 2.5 To begin the procurement process to acquire new or refurbished offices to accommodate remaining administrative staff by establishing availability and costs of accommodation available in the city, including advertising in the Official Journal of the European Union under the European Procurement Directive. The results of this process to be brought to a future Cabinet meeting.

REASONS FOR RECOMMENDATIONS

- 3.1 Approval of the Accommodation Strategy, including refurbishing the Council House, will realise the benefits outlined in paragraph 1.4.
- 3.2 Advertising for available accommodation that will meet the Council's need will ensure that current available options are explored and provide a best value approach.

SUPPORTING INFORMATION

Background

- 4.1 At Unitary Status in 1997, the Council 'bolted on' new services to the existing city services. Offices in St Mary's Gate were transferred and additional space in Heritage Gate was rented to accommodate the expanded services. Over the intervening period, services have been reviewed and re-engineered but the main administrative accommodation, which operates from three main sites, has not.
- 4.2 The existing accommodation, particularly the Council House and St Mary's Gate, has a number of suitability issues...
 - Significant maintenance backlog, (Council House in excess of £14 million and St Mary's Gate over £3 million) with many components having reached the end of their life. Considerable expenditure is essential in the near future if properties are to remain operational. For example, at the Council House the heating system could fail at any time, the electrical system has reached maximum capacity, some of the wiring is original and requires renewing in the near future, many windows are corroded beyond repair and part of the ground floor is suffering from subsidence.
 - Does not comply fully with the requirements for access for people with disabilities. St Mary's Gate, because of changes in floor level, cannot readily be made to comply.

- Is inflexible and cellular in nature leading to inefficient use of space and not fit for modern service delivery.
- Poor energy efficiency.
- The split location of the three sites, all of which have customer facing services with receptions (in some cases more than one) provides poor customer service and inefficient working.
- Dated technical infrastructure.
- Facilities are the subject of a common complaint from staff and our customers.

In addition, some staff are based in area ('satellite') offices although there is no practical or operational reason for this.

4.3 Due to the above issues, 'doing nothing' is not an option.

4.4 Consultants Donaldsons were appointed late in 2002 to appraise the Council's existing accommodation and to identify a preferred option to meet the Council's future needs. The context of the study was always that staff were to remain located in the city centre for the economic benefit of the city. Donaldsons' studies concluded (Cabinet Reports January and October 2004) that the best option was to build new accommodation in a single location at Becket Well and that this should be affordable.

4.5 Consultants were then commissioned to carry out a detailed feasibility study on the Becket Well site. At the conclusion of that study (April 2005) it became clear that the capital cost of this option was not affordable.

4.6 In the last few years, several further options have been considered by officers. These included various combinations of retaining and refurbishing existing offices and acquiring or building new offices, including:

- new building on a number of sites including those in Council ownership
- developer led construction
- purchase of proposed private sector developments
- inclusion within a bigger redevelopment
- purchase of existing office space.

4.7 Although some limited account had been taken of different ways of working, all of these proposals were either unaffordable or, at the time, the property to be acquired was not available.

4.8 It became clear that a further exercise was needed to ascertain if space requirements could be driven down by emerging New Ways of Working and technologies and consultants were appointed in July 2007 with a brief to:

- review of main administrative accommodation and some satellite offices with a view to minimising the space occupied by introducing New Ways of Working and storage and rationalising the accommodation ideally onto two sites including the Council House
- identify the costs of these proposals
- review depot accommodation, with the option of moving from two sites to one.

4.9 The main findings of the study were that:

- space is significantly underused – 30% increase in occupancy levels is achievable
- new ways of working could be introduced to improve efficiency and reduce space requirements

- storage space needs to be radically improved on the basis that too much space is being taken up with unnecessary storage
- office layouts, IT and telephone systems need to be improved to facilitate new ways of working and provide a modern and better office environment
- broad recommendations were made on depot accommodation which centred on retaining Stores Road and disposing of London Road.

In terms of the main buildings, they recommended retaining the Council House and Roman House and disposing of St Mary's Gate. A building would then need to be acquired to house displaced staff but this would be smaller in floor area than recent studies due to the introduction of new ways of working.

- 4.10 It was clear that, to meet the challenge of the continuing drive for improvement and efficiencies and the need to resolve the accommodation issues, a change in the way that the Council currently works is needed. To respond to this challenge, a New Ways of Working Project developed and a Project Team established. This was approved by Cabinet on 29 July 2008.

New Ways of Working

- 4.11 The overall aim of the New Ways of Working Project is to deliver flexible and efficient working solutions which will adapt to the changing needs of the organisation.

- 4.12 The project has four key strands...

- **Where we work** – Council House refurbishment and provision of a second building.
- **How we work** – working styles (flexible-working, home working, mobile working), cultural change, and document management.
- **Tools for the job** – infrastructure, telecommunications, information.
- **Moving places** – decant strategy, planning and managing all office moves.

- 4.13 The six principles of New Ways of Working are...

- 1 We will create a better working environment for all our employees and Members. This will help the Council's commitment to tackling climate change both in the buildings we create and the way we work.
- 2 We will create open-plan, flexible office and meeting accommodation for all our employees and Members. Flexible working will be a key element of the way we work in the future.
- 3 Technology will allow us to use any desk, computer or phone and will enable most of us to work flexibly in almost any location.
- 4 The Council House will be both the civic centre and the central point for customer services. We will encourage our partners to join us to provide multi-agency customer services.
- 5 Adopting New Ways of Working will increase the use of our office space by at least 30%.
- 6 We recognise that change is not easy and we will support our managers and employees through the change.

- 4.14 To achieve the proposed reductions in overall office accommodation requires transformational change in working practices which will be facilitated by improvements to property, information and communications technology (ICT). The New Ways of Working project is therefore a transformational change project rather than just an office refurbishment one.
- 4.15 Over the last three months an exercise has been completed to review the space requirements of all 1800 employees who currently work in the city centre, to determine the amount of space required going forward. This exercise has demonstrated that a 30% space saving is achievable and therefore the total space requirement of the organisation can be significantly reduced.

Document storage

- 4.16 The Council currently has significant amounts of storage in offices, the basements at the Council House and St Mary's Gate. To deliver New Ways of Working and achieve the expected efficiencies, paper currently held in offices needs to be significantly reduced and stored elsewhere. In the medium/longer term we need to consider moving to electronic storage. This will take time and investment to be put in place and will therefore not be delivered within the three-year timeframe of this project.
- 4.17 Whilst it is planned to waterproof the Council House basement to provide dry storage, additional offsite storage will be needed to provide the Council with an interim solution to its storage issues. Based on figures received from storage companies operating in the Derby area, we estimate that to provide 8000 linear metres of offsite storage (equivalent to approximately 24000 bankers boxes) including retrieval and delivery will cost approximately £70,000 per annum. Offsite storage costs are significantly cheaper than providing storage within the Council's office accommodation. The office space required for 8000 linear metres of filing could accommodate over 300 employees.
- 4.18 It is proposed that for the three-year duration of the project, the cost of offsite storage is met from project budgets. On completion of the project, costs will be allocated to Departments based on their usage, thus encouraging proper archiving practices that should generate savings.

Accommodation strategy

- 4.19 The proposed Accommodation Strategy overall will:
- improve customer service by concentrating customer-facing services in one location – The Council House – and providing improved reception, contact facilities and facilities for people with disabilities. The opportunity for co-locating other public services with partners will be explored with a possible 'one-stop shop' approach
 - use space more effectively and, together with New Ways of Working, significantly reduce the amount of office space occupied with consequent cost efficiencies, including savings in lease costs and running costs (See Appendix 2 - Efficiency Savings) and reduction in energy use
 - provide for more effective and efficient working practices by co-locating appropriate services and providing the opportunity for more rationalising / re-engineering service delivery. It will also facilitate the introduction of the Information and Communications Technology necessary for New Ways of Working
 - improve the staff and member working environment
 - contribute towards the Council's commitment to tackling climate change by improving insulation, heating and electrical installations including controls, using 'green technologies' and reducing the area of buildings occupied

- remove the maintenance backlog for administrative buildings.

4.20 The Strategy is...

- To retain, refurbish and remodel the Council House as the main centre for public facing services:
With New Ways of Working and the increased levels of occupation this will allow, the Council House can accommodate more than half the total of administrative staff who work in the city centre. The Council House is a landmark public building in Derby, and because of the amount of civic space, refurbishment, rather than replacement, is the most economic solution.
- To acquire new or existing office accommodation in the city centre for the approximate 870 staff that cannot be accommodated in the Council House:
This accommodation is to be in the city centre for the economic well-being of the city. Depending on the solution the accommodation may also provide regeneration opportunities.
- Roman House which the Council owns, may be retained, depending on the overall solution.
- To dispose of St Mary's Gate offices, allowing redevelopment of St George's quarter in line with Cityscape's proposals:
These offices are the most unsuitable and because the building is 'listed', would be difficult to adapt for flexible, modern working practices. There will be a requirement to re-house the Local Studies Library.
- To bring some satellite and non-operational depot staff into central accommodation, facilitating further rationalisation of the building portfolio including the depots, whilst recognising the need to retain that property needed for neighbourhood working.

Council House

- 4.21 Although the solution for a second building has not been fully established, the Council House is in need of major refurbishment because many of its building elements have reached the end of their life and, in its current form, it is unsuitable for modern service delivery. Following a detailed feasibility study earlier this year, the scheme is now ready to move to the full design stage with a view to commencing construction work in Spring/Summer 2009. Initial expenditure on the Council House was approved as part of the Public Realm Strategy reported to Cabinet on 17 April 2007.
- 4.22 By removing internal walls and adopting a modern, open plan office layout the capacity of the building will be increased from approximately 560 to 780 workstations. Introducing new ways of working will allow the occupancy of the building to be increased further with approximately 1100 employees able to work in the building. Work to the Council House will also involve a full refurbishment programme; resolving the long standing building maintenance backlog at an estimated cost of £14million that has been reported over a number of years. The work includes:
- general repairs and refurbishment
 - alterations, including the demolition of many internal walls, to provide flexible open plan office accommodation, new customer reception area
 - new mechanical and electrical services installations including a bio-mass boiler (subject to air quality assessment)
 - new windows

- energy conservation measures including wall and roof insulation. Further details of energy conservation measures are given in Appendix 3
- new DDA compliant lift
- refurbished toilets including showers and changing areas for cyclists etc
- replacement flat-roofs and repairs to the main roof
- ICT infrastructure to support the new technology employed in the offices
- new and improved customer reception and service areas
- tanking of the basement to provide dry storage

This work will not only resolve the entire maintenance backlog but will create a far more efficient building both as a workspace and with energy usage, thus reducing its carbon footprint and its annual running costs.

- 4.23 The current estimated costs of refurbishing and remodelling the Council House and introducing New Ways of Working including IT, decant (temporarily relocating staff) and furniture is approximately £20.165 million, broken down as follows:

Item	£000
Repairs and Refurbishment	14 480
Structural alterations for New Ways of Working	1 770
Decant Accommodation	1 700
Decant – Removal Costs	150
Off-site storage	210
ICT	945
Furniture	
• Workstations	800
• Breakout areas	60
• Meeting room equipment	50
Total	20 165

- 4.24 The estimate at this stage allows for mainly new furniture and IT equipment throughout but it is possible that some of the existing assets can be re-used. It also allows for the fee element of introducing NWW. The cost includes (only) general refurbishment of civic areas. At this stage they do not include for provision of a sprinkler system, the need for which will be based on risk analysis.
- 4.25 The refurbishment programme will take approximately two and a half years to complete with the works carried out in five phases. Staff will need to move from all floors of each 'wing' - Riverside, Car Park side, Corporation Street, Bridge link, Civic Area - for approximately six months whilst the work is carried out. Further work needs to be carried out on the phasing but, subject to resolving constraints in paragraph 4.27, a start is planned for July 2009 with completion in late 2011.
- 4.26 It is intended that the Council House will remain in use throughout the period of refurbishment and this will be challenging. Careful planning of decant arrangements

and phasing of services alterations will be needed to ensure continuing operation in acceptable conditions. Some civic and member meetings will need to be relocated during refurbishment of the civic wing.

- 4.27 Issues which will need to be resolved before any construction work can start include the location of a compound area as well as parking and cycle storage facilities. The temporary bus station located in the Council House car park adds to these issues. We will need to ensure that there is safe access to and from the car park for existing users and site delivery vehicles. Scaffolding will need to be erected to external elevations, further reducing the space available in the car park. Detailed work to establish workable solutions needs to be completed and it may be necessary to delay the start of the work until after completion of the new bus station which is scheduled to be completed by October 2009. It is likely that part of the River Gardens will need to be used for site storage / compound.
- 4.28 Consultants for the project have been appointed using the Nottinghamshire County Council Framework Agreement following mini-competition and they have satisfactorily completed the feasibility stage. It is intended to continue their appointment for the procurement and contract management stages subject to the approval of the project.
- 4.29 A significant element of the project will be moving staff to alternative accommodation (known as decant accommodation) while refurbishment work is completed and this is likely to involve acquiring temporary accommodation. The extent of this will depend on the solution for additional accommodation and the timing of the work. A Decant Strategy is currently being finalised. The Strategy aims to minimise disruption to service delivery, minimise the number of office moves per employee, encourage New Ways of Working in the decant accommodation and to support staff and members through regular communication and consultation.

Other office accommodation

- 4.30 There are a number of possible options to acquire offices for staff that cannot to be accommodated in the Council House. These include existing offices in need of refurbishment and new / conversion office developments planned. Should the Council input into the design / specification of the accommodation to any extent, procurement will have to follow the European Procurement Directive including advertising in the Official Journal of the European Union. It is proposed, therefore, to begin 'stage 1' of a procurement process which will potentially involve reviewing existing accommodation which may be available for the Council to refurbish itself and advertising, in accordance with the European Procurement Directive, for the provision of office accommodation to meet the Council's needs. This will allow all current options to be explored, costs to be firmed up and will ensure that best value is obtained. A report on the outcomes of this will be brought to a future Cabinet meeting. Further details of options currently under consideration are given in the report in the confidential part of this Agenda.

Depot accommodation

- 4.31 Environmental Services currently operate from two depots, London Road and Stores Road and from Celtic House where leisure and environmental health officers are based. In addition, the external highways maintenance contractor operates from Stores Road Depot and there is insufficient space for expansion of this service. Accommodation on both depot sites is generally very poor. The Accommodation Strategy within this Report does not seek to address these issues other than accommodating the 118 employees that have been identified as not needing to be based with operational staff. A separate officer working group is currently reviewing depot accommodation with a view to rationalisation.

Local Studies Library

4.32 The Local Studies Library is currently housed within the St Mary's Gate complex and will need to be relocated as part of the Accommodation Strategy. Whilst the accommodation needs of the service require further development, an option appraisal has been carried out and identified a number of options for relocation, depending on the solution for the main office accommodation.

OTHER OPTIONS CONSIDERED

5.1 Other options considered are shown in Section 4.

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Background papers: Council House Feasibility study
List of appendices: Appendix 1 – Implications
Appendix 2 – Efficiency savings
Appendix 3 – Council House – Energy Conservation Measures

IMPLICATIONS

Financial

- 1.1 The Council has set aside a capital budget of £36.89m for the accommodation strategy including the Council House. Commitment to the Council House refurbishment at a cost of £20.165m would leave funding of up to £16.725m available for the second phase of the strategy. This is funded as follows:

Council House	Borrowing	£11.335m	
	Capital Receipts	£ 8.830m	£20.165m
Phase 2	Borrowing	£11.069m	
	Capital Receipts	£ 5.656m	£16.725m
Total	Borrowing	£22.404m	
	Capital Receipts	£14.486m	£36.890m

- 1.2 Last year's capital strategy included £5.5m within the total for borrowing, to be funded from savings on running costs from moving out of surplus buildings. This would require £567,000 of annual revenue savings. The current position of the Treasury Management budget, however, is such that the total borrowing required can be funded without depending on future savings. When these are more certain, they could be used to fund additional costs of Phase 2, or to support the Council's overall revenue budget.
- 1.3 Of the total capital receipts of £14.486m, £11.378m is already available from existing capital receipts, with the balance coming from anticipated receipts up to 2010/11.
- 1.4 The split between receipts and borrowing has changed since previous approvals, following a review of all capital schemes funded by borrowing. This was noted in the capital update report approved by Cabinet on 29 July 2008 and has arisen because of new regulations which mean that borrowing costs have to be spread over the asset life of each scheme funded by borrowing. The annual revenue costs of borrowing will be significantly lower for schemes with long asset lives such as new buildings than for expenditure on assets with short lives, such as ICT equipment. The funding for a number of schemes has, therefore, been switched to minimise the ongoing costs of borrowing. The effect on the overall capital programme will be included in the updated Capital Strategy report which will be presented to Cabinet on 30 September 2008.

Legal

2. Procurement of construction work will have to comply with the European Procurement Directive. This will include acquisition of offices under development if the Council inputs into the design to any extent.

Personnel

3. Trade Unions are represented on the New Ways of Working Board and regular communication and consultation with all staff affected by the proposed changes are planned as part of the project.

Equalities Impact

4. A full Equalities Impact Assessment will be completed as part of the project management arrangements.

Corporate objectives and priorities for change

5. The introduction of new ways of working and the accommodation strategy will support the Council's corporate priorities of 'giving you excellent services and value for money' and 'leading Derby towards a better environment'.

POTENTIAL ESTIMATED EFFICIENCY SAVINGS**Council House only**

Note: the minimum savings are based on vacating St Mary's Gate and a proportion of rented accommodation. The maximum saving is based on vacating all rented accommodation

	Item	£000s Value/pa		Comment
		Min	Max	
	Cashable			
1	Reduction in office space required (fewer buildings): <ul style="list-style-type: none"> Rent and service charges Rates and running costs 	560	900 300	. Based on costs of currently rented accommodation which could be vacated Based on vacating St Mary's Gate plus proportion of rented accommodation (1)
2	Introduction of new IT and telephony system	300	300	Based on Council-wide implementation
3	Energy efficiency savings <ul style="list-style-type: none"> Building IT 	55 20	55 20	Council House only, no allowance for increased occupancy
4	Bottled Water – provision for drinking water in break out space	20	20	Replaced by fixed provision in break out areas
	Range of total cashable savings – Council House only	955	1595	Note 1 No account taken of capital receipt from disposal of St Mary's Gate 2 A proportion of these savings will need to be recycled into operating the Council House at increased occupancy levels and no account has been taken of this at this stage

Wider accommodation strategy

Further savings will accrue as a result of the overall strategy. Those relating to buildings cannot be quantified until the solution for the alternative accommodation is established. These savings relate to rationalising the buildings and the figures below represent a conservative estimate based mainly on a Capita study (see Appendix 2(1))

	Non cashable	£000s/pa	
5	Staff efficiencies <ul style="list-style-type: none"> Fewer buildings and co-location of services, reduced travel time between buildings. Fewer receptions Further savings for NWW based on a Capita study 		Council services are delivered from a number of buildings across the city, with public receptions in several locations causing customers confusion. In addition, this leads to inefficient working as relevant services are not co-located and officers travel between buildings. Considered initially non-cashable but business process re-engineering may lead to cashable savings in some areas Reception duties are only part of a job in some buildings These savings are difficult to quantify and will depend on the building solution adopted, for example two or three buildings. An estimate of £120 000 is considered conservative.
	Total non-cashable		120

New Ways of Working – Potential cost benefits

Capita have produced a document called 'Understanding Agile Work Styles' in which they have suggested a number of potential cost benefits that arise from adopting flexible working.

Saving time

Capita suggest that 15-20% of time can be saved by employees going straight to site or client address instead of coming into the office. The recent workspace planning exercise identified approximately 200 employees who could benefit from mobile working in this way. If 200 employees each earning an average of £20k per annum saved 15% of their time by working in this way this would provide an efficiency of £600k per annum. Many Council staff already enjoy this flexibility. Assume 10% additional take up = ***£60 000**

Reduced travel time between buildings for meetings (not part of Capita study)

Co-locating in less buildings and reducing travel time between buildings should result in significant time/cost savings

Assume that there are 100 managers based in City Centre buildings who travel between buildings for meetings each week.

These managers lose an hour each week travelling to and from meetings.

These managers are paid £25k per annum or £13 per hour.

On these assumptions to following can be deduced...

If 100 hours are lost each week then the salary costs for this travel time is ***£62 400** per annum

If 150 hours are lost then it is £93 600 per annum

If 200 hours are lost then it is £124 800 per annum

If 250 hours are lost then it is £156 000 per annum

The time wasted means these salaries could be invested in carrying out work.

Team desking

Capita have suggested that team desking saves £2k per person per annum as opposed to having a desk for every person in each team. 1900 employees are potentially implicated in New Ways of Working. The reduction in desks is approximately 30% - 1380 desks. If we saved £2k for every person this would equate to a saving of **£3.8 million per annum**. If we saved £2k per desks reduced (1900-1380=520) then we would save **£1million per annum**. This figure is mainly taken account of in the reduced space /rent /running costs figures and therefore ignored for this purpose.

Lower absenteeism

Capita suggest that absenteeism reduces by 20% with flexible working. Last year absenteeism corporately was 3.7%. If the affected staff (1900) had an average sickness of 3.7% and the average salary was £20k per annum then £1.4 million per annum is lost in salary costs through sickness. Reducing this by 20% would provide an improvement of £281k per annum. Many Council staff already have flexible working and therefore this saving has been ignored for these purposes.

Productivity Improvement

Capita suggest that productivity for home workers increases by 5-10% per annum. Working from home on an ad hoc basis is difficult to estimate – as this will be based on type of work and business need. The benefits in salary costs will be small but the level of quality should improve.

Total potential saving (* items – conservative estimate) £122 400

COUNCIL HOUSE ENERGY EFFICIENCY MEASURES

Sustainability Agenda

As part of the feasibility study for the refurbishment of the Council House, the consultants undertook an initial overview of the main areas where sustainability and renewal energy could be incorporated within the scheme and prioritised them by their effectiveness and cost efficiency. Their findings, which will be reviewed as part of the detailed design process, were:

1. The principle of the refurbishment was to first seek to design out energy requirements by optimising certain design elements of the building (insulation values, solar shading and solar control glass) to minimise heating and cooling requirements and maximise natural ventilation. An open plan office with exposed ceilings and adequate control of natural ventilation (including night cooling) was considered the most efficient. Once the building design had been considered the building services were reviewed to identify where they could be improved or renewed with more efficient heat generation systems, insulated distribution systems and intelligent controls using BEMS systems and maintaining a monitoring & targeting strategy. The rest of the energy requirements were then considered and an assessment of what renewable energy systems may be suitable to the project.
2. The electricity generated from the proposed Longbridge Weir hydro electric scheme is planned to supply the Council House with any surplus power being sold to the grid or used in other Council buildings. As the hydro electric plant would generate electricity on a large scale and at relatively constant output, other renewable energy systems that generate electricity, photovoltaic panels, wind turbines etc were considered to be uneconomical. A wind turbine requires a constant air flow with a minimum 5m/s wind speed. Within an urban environment, wind turbines do not work very efficiently due to the disturbed air flow caused by adjacent buildings. Therefore these are not very efficient or cost effective. While photovoltaic panels could be installed on the south facing roof slopes and any surplus electricity produced could be sold to the grid the payback period for an installation of a beneficial size would be well in excess of a 15-year payback period.
3. An initial pre-assessment of renewable energy options shows that biomass boilers would be the option with greatest potential for reducing CO₂ emissions by reducing the amount of gas used. Subject to possible air quality issues, it is proposed that a biomass boiler be run on wood chips which could be made from waste timber from the municipal tip or chippings from the Parks department in due course. The biomass boiler would provide the majority of the heating and hot water in the winter. In the summer a hot water heat pump would use the heat which collects within the roof void of the main roof (using the existing roof as a large solar collector) to heat the hot water. From the heat generating renewable energy systems, biomass systems could be an ideal complement to the hydropower plant as biomass could satisfy a very substantial part of the heating and hot water demand. The other area where effective sustainable measures could be introduced is the use of water by the introduction of waterless urinals, ultra low flush toilets and PIR taps.

The most effective and cost efficient measures (those with a reasonable payback over 15 years maximum) were found to be:

- natural ventilation
- daylight sensing and PIR controlled lighting
- building management system and controls
- biomass boiler (installation subject to possible air quality issues)
- hot water heat pump
- increasing the insulation of the roof void and flat roofs
- double glazing of the windows
- ultra low flush toilets
- waterless urinals
- PIR taps

4 The insulation of the external walls, costing an estimated £660 000 has been allowed for but has a poor payback.

5 The following were also considered but at this stage were not considered to be as cost efficient as those above:

- photo voltaic cells
- wind turbines
- green roofs
- ground source heat pumps
- triple glazing
- solar water heating
- rain water recycling
- water cooling
- water source heat pumps (river)

6 The estimated savings are...

- **For the building envelope** – wall and roof insulation, windows and lighting controls: £17 600 fuel saving, 117 tons CO₂ (43% reduction) per annum
- **For the woodchip biomass boiler:** £38 800 fuel saving, 257 tons CO₂ (89% reduction) per annum

7 Once the project brief is firmed up, we will be able to review the services the Council will be providing in the Council House. From this information we will be able to calculate the maximum staff density and prepare more detailed information on heat gains and energy consumption from staff, customers and equipment etc. Having established the design parameters we will reconsider the options for sustainable and energy efficiency measures and present a final list of options with costs and possible savings for client consideration.