



REPORT TO EXECUTIVE

Agenda Item 16(m)

PORTFOLIO AREA: FINANCE AND RESOURCES CORPORATE RESOURCES

Date of Meeting: 2ND SEPTEMBER 2002

Public

Key Decision: Yes

Recorded in Forward Plan: Yes

Inside Policy Framework

Title: A REVIEW OF THE WINDOW REPLACEMENT POLICY

Report of: DIRECTOR OF ENVIRONMENT AND DEVELOPMENT

Report reference: EN 091 02

Summary:

This report provides further background regarding the benefits and disbenefits of high performance softwood windows and PVC windows, particularly from an environmental perspective.

Recommendations:

That the Executive considers the information produced to resolve the window replacement policy.

M Battersby

Director of Environment and Development

Contact Officer: Mike Battersby

Ext: 7400

Note: in compliance with section 100d of the Local Government (Access to Information) Act 1985 the report has been prepared in part from the following papers: EN 078/02, H7/01, H98/2000

1. BACKGROUND INFORMATION AND OPTIONS

- 1.1 At its meeting on 8th July the Executive considered report EN 078/02 (copy included as Appendix A) which addressed a request from Denton Holme Community Centre to use UPVC windows in the current maintenance programme. A further report was requested to review the existing window replacement policy.
- 1.2 The policy has been the subject of review on a number of occasions, primarily by the Housing Committee and reports H7/01 (January 2001) and H98/2000 (October 2000) are included in Appendix B. The issues outlined in these reports remain valid.
- 1.3 In providing the context of the current review it should be noted that when the policy was developed and reviewed in the past it was on the basis of a major window replacement programme to the housing stock. This has been substantially completed and the houses scheduled to transfer from Council ownership in December 2002. The residual window replacement programme would apply to Municipal buildings and new projects undertaken by the Council directly and in partnership. The main Municipal building is the Civic Centre which is currently $\frac{3}{4}$ through a major window replacement programme.
- 1.4 The key consideration to direct this review relates to environmental considerations which form part of the Council's Local Agenda 21 Strategy.
- 1.5 As a result a report was commissioned from expert environmental consultants and their report is included as Appendix C. This includes a number of recommendations, the most relevant being:

"It is recommended that the Council continues its policy of replacing windows with high performance softwood windows. The weight of evidence continues to move away from the use of PVC, even with less damaging stabilisers"

2. CONSULTATION

- 2.1 Consultation to Date. Correspondence from Denton Holme Community Centre is included in Appendix A.
- 2.2 Consultation proposed. None proposed at this stage.

3. STAFFING/RESOURCES COMMENTS

- 3.1 There are no direct staffing implications to the Council created by a review of the current policy or reliant on the outcome of the review.

4. CITY TREASURER'S COMMENTS

Not applicable.

5. LEGAL COMMENTS

Not applicable.

6. CORPORATE COMMENTS

- 6.1 The Management Committee of Denton Holme Community Centre has expressed a preference to use UPVC; however, a change from the existing policy would be in contravention of the Council's Local Agenda 21 Strategy.

Once the existing policy has been reviewed this can be applied to Denton Holme Community Centre.

7. RISK MANAGEMENT ASSESSMENT

- 7.1 Should the use of UPVC windows be supported by the Executive the higher capital costs would either require an increased budget or reduced replacement programme. The costs are likely to be offset over time with reduced maintenance costs.
- 7.2 Works on the window replacement at Denton Holme Community Centre have been suspended pending the outcome of this review.

8. EQUALITY ISSUES

Not applicable.

9. ENVIRONMENTAL IMPLICATIONS

- 9.1 As set out within Appendix C.

10. CRIME AND DISORDER IMPLICATIONS

- 10.1 Reflected on the quality of windows used and associated security measures rather than the choice of window material.

11. RECOMMENDATIONS

- 11.1 The Executive considers the information produced to resolve the window replacement policy.

12. REASONS FOR RECOMMENDATIONS

- 12.1 The Executive considers the information produced to resolve the window replacement policy.

M BATTERSBY

Director of Environment and Development

16th August 2002

**PORTFOLIO AREA: FINANCE AND RESOURCES**

Date of Meeting: 8TH JULY 2002

Public

Key Decision: No

Recorded in Forward Plan: No

Inside Policy Framework

Title: DENTON HOLME COMMUNITY CENTRE
WINDOW REPLACEMENT

Report of: DIRECTOR OF ENVIRONMENT AND DEVELOPMENT

Report reference: EN 078/02

Summary:

To consider a request from Denton Holme Community Centre to vary the existing Council policy of using high performance softwood windows in any replacement schemes. They request that UPVC plastic windows be used for the phased window replacement at the Centre.

Recommendations:

It is recommended that the Executive considers the request to waive the existing window replacement policy to allow UPVC windows to be used at Denton Holme Community Centre.

M Battersby

Director of Environment and Development

Contact Officer: Michael Battersby**Ext:** 7400

Note: in compliance with section 100d of the Local Government (Access to Information) Act 1985 the report has been prepared in part from the following papers: None

1. BACKGROUND INFORMATION AND OPTIONS

- 1.1 Within the municipal maintenance budget for 2002/3 there is £8,000 allocated to begin the window replacement at Denton Holme Community Centre. It is anticipated the phased replacement programme would be completed over a 4-5 year period. Initial discussions have taken place with a view to starting the work using high performance softwood windows in accordance with the Council's policy.
- 1.2 The Council has received correspondence on behalf of the Community Centre Management Committee requesting that UPVC was their preferred choice of window. This is appended together with a request for the Council to consider, as an exception, the use of plastic windows at the Community Centre.
- 1.3 The existing Council policy on window replacements was defined in 1989 and whilst initially developed for Council housing has subsequently been used on all window replacement works. The policy has been reviewed on several occasions (in 1993 and again in 2001) and the existing policy maintained.
- 1.4 In cost terms there is probably nothing to choose between softwood and plastic. The provision and installation costs have been significantly higher for plastic, but this is considered to be balanced by reduced maintenance costs. As a result the lifetime costs are considered to be neutral. With the current review of funding for Community Centres, the ongoing maintenance costs may be an important issue for the Management Committee.
- 1.5 The main consideration needs to be based on environmental considerations. The view of Council officers is that high performance softwood windows remain the more environmentally friendly option. The main factors to judge the sustainability issue relate to the manufacturing process and probably more importantly the disposal of plastic windows at the end of their effective life.
- 1.6 The environmental credentials of the Community Centre are not being questioned, however the major case is based on comparison with the existing metal windows. Indeed within the existing budgets high performance softwood windows would enable a quicker replacement due to the lower provision/installation costs.

2. CONSULTATION

- 2.1 Consultation to Date. Community Centre Management.
- 2.2 Consultation proposed. Not applicable.

3. STAFFING/RESOURCES COMMENTS

- 3.1 The window replacement work has been included within the programme and the type of window material will not have any impact. However, the current request to change policy and the outcome of deliberations will delay the installation programme.

4. CITY TREASURER'S COMMENTS

Not applicable.

5. LEGAL COMMENTS

Not applicable.

6. CORPORATE COMMENTS

- 6.1 Should Members waive the existing policy in this instance it may create a precedent for other similar assets.

7. RISK MANAGEMENT ASSESSMENT

- 7.1 Any further delay is likely to result in the phased window replacement work slipping into the autumn/winter period.

8. EQUALITY ISSUES

Not applicable.

9. ENVIRONMENTAL IMPLICATIONS

- 9.1 As set out within the body of the report, the Environment Officer supports the existing window replacement policy.

10. CRIME AND DISORDER IMPLICATIONS

- 10.1 Not dependant upon the choice of materials, with the new windows incorporating enhanced security provision.

11. RECOMMENDATIONS

- 11.1 It is **recommended** that the Executive considers the request to waive the existing window replacement policy to allow UPVC windows to be used at Denton Holme Community Centre.

12. REASONS FOR RECOMMENDATIONS

- 12.1 To consider the request from Denton Holme Community Centre Management Committee.

Denton Holme

Community Centre

12th June 2002

M. Battersby,
Director of Environment & Development,
Civic Centre,
Carlisle.

Dear Mr. Battersby,

Window Replacement

I enclose a letter from the Chairman of the Management Committee and would request that this matter be dealt with as an emergency item at the next meeting of the Executive.

The subject of window replacement was discussed in the Community Centre at the last Management Committee and all members were in agreement that UPVC windows would be their preferred choice. In these circumstances we would request that the Council's current policy be waived and white UPVC windows be fitted in the Centre.

Yours faithfully,

Margaret Mulvan

Centre Support Worker.

DEPT. ENV & DEV.	
CENTRAL UNIT	
FILE	
17 JUN 2002	
PASSED TO	
ANSD	



The Centre is owned by Carlisle City Council and managed in partnership with the local community.
Morley Street, Denton Holme, Carlisle. CA2 5HQ. - (01228) 625355
Registered Charity No. 1086927

Denton Holme

Community Centre

12th June 2002

M. Battersby,
Director of Environment & Development,
Civic Centre,
Carlisle.

Dear Mr. Battersby,

Window Replacement

I refer to your letter dated 28th May regarding the above.

We have waited 20 years for new windows. With an allocation of only £8,000 to enable us to start replacing windows, any softwood windows put in now could easily require replacement before the entire building has new windows. The 23 new houses and Conservative Club on either side have UPVC windows and doors so UPVC would blend in with them.

Softwood may be environmentally friendly now, but energy and materials required to maintain these windows and replace them again in approximately 10 years time could use up more of the earth's energy and resources than fitting virtually maintenance free windows now. The bill for maintenance would fall on the City Council who own the building.

The fact that the metal framed windows in the Centre neither open nor close properly, makes it virtually impossible to heat the building in the winter and keep it cool in the summer. This is a drain on energy through heating in winter and fans in summer as doors cannot be left open for ventilation for child safety reasons.

The faster existing windows can be replaced and the less maintenance in materials and manpower required, the less drain there will be on the world's resources.



The Centre is owned by Carlisle City Council and managed in partnership with the local community.
Morley Street, Denton Holme, Carlisle. CA2 5HQ. - (01228) 625355
Registered Charity No. 1086927

We have always run an environmentally friendly Centre where we recycle all glass, cans and cardboard, and ensure heating and lighting are off when the building is not in use (as proved by our bills) and do not feel that UPVC windows will alter that position.

Yours faithfully,



Mrs. A. C. Hannah
Chairman.

CARLISLE CITY COUNCIL

Report to:- Housing & Care Services Committee

Date of Meeting:- 23 January 2001

Agenda Item No:-

Public	Policy	Delegated: Yes
--------	--------	----------------

Accompanying Comments and Statements	Required	Included
Environmental Impact Statement:	No	No
Corporate Management Team Comments:	No	No
City Treasurers Comments:	No	No
City Solicitor & Secretary Comments:	No	No
Head of Personnel Services Comments:	No	No

Title:- SUPPLEMENTARY REVIEW OF WINDOW
REPLACEMENT POLICY - INTO THE 21ST CENTURY

Report of:- Director of Housing

Report reference:- H.007/01

Summary:-

This Report provides more information on the impact of moving from a timber window replacement policy to the use of uPVC

Recommendation:-

Members are requested to consider the additional information on the environmental merits of timber and uPVC windows and decide whether the existing window replacement policy should continue.

Contact Officer: John Hughes

Ext: 7580

Note: in compliance with section 100d of the Local Government (Access to Information) Act 1985 the report has been prepared in part from the following papers: as before & Report H098/2000 Review of Window Replacement Policy - Into the 21st Century

**To the Chairman & Members of
The Housing & Care Services Committee**

**Supplementary Review of Window Replacement Policy –
Into the 21st Century**

1. Introduction

- 1.1. Following consideration of Report H.098/2000 at the last cycle of this Committee, Members requested the detailed implications of moving to a programme of uPVC as opposed to timber window replacement.
- 1.2. As previously noted, the issue with both uPVC and timber windows is not one of cost as over the likely lifespan of both products, based on a life cycle of thirty years, the cost differential would be negligible. This argument is based on the assumption of painting or re-staining being carried out at five yearly intervals in the case of timber windows, which is the recommendation by paint manufacturers.
- 1.3. On a point of note, the stain finish to the windows has traditionally been one of a range of brown stains and on some occasions white stain has been used. There is no technical reason for this choice of colour and the use of a brown shade of stain is historical. The stain is a micro-porous material and is compatible with the wood preservative treatment applied at the manufacturing stage. The full range of British Standard colours could be used on the finished product although it should be noted that use of the lighter range of colours usually necessitates the application of an additional full coat after fixing of the window unit.
- 1.4. However, should there be an alteration to the original colour applied then, although technically possible, there will be some difficulty in masking the brown stain effect, although this problem is by no means insurmountable.
- 1.5. The issue therefore comes down to the environmental impact of using timber or uPVC and the implications on the local economy if there was a move to uPVC, which is not currently manufactured locally and the loss of work to the cyclical painting programme should uPVC be preferred to timber.
- 1.6. It should be noted that although uPVC is not produced locally, the extrusions can be assembled locally into doors and window units creating direct employment thus

offsetting any losses from a cyclical painting programme.

2. Environmental and Economic Considerations

- 2.1. As stated in paragraphs 2 and 3 of Report H.098/2000 substantial research has been undertaken in comparing the impact of using timber and uPVC products on large scale window replacement programmes.
- 2.2. Timber is a sustainable material from managed resources. It has good mechanical and thermal properties allowing it to move with the structure without imposing adverse stresses and strains on the material. It can be repaired frequently if necessary but new processes in vacuum-applied preservatives and regular maintenance ensure long, trouble-free use. At the end of its useful life it can be disposed of safely including landfill, as it is biodegradable.
- 2.3. There have been significant advances in the manufacture of the polymers used in the frames of uPVC products and the industry can now offer a lifespan of upwards of thirty years although this has only been anticipated through testing rather than on-site use. uPVC extrusions, within reason can be moulded into any shape and, with internal bracing, windows can be manufactured to relatively large sizes. uPVC has good thermal properties although its mechanical nature can be affected by extremes of temperature. Repairs to damaged frames can be undertaken, but not easily, as all joints are welded, normally under factory conditions. There is no need to treat the frames in any way during their lifespan although ultra-violet light and airborne pollution have been known to cause discoloration of frames and loss of the gloss finish. uPVC gives off extremely toxic gases during fires which remains problematic for both occupants and the Fire Service. uPVC is not biodegradable and if landfilled can leach chemicals into watercourses. If incinerated, toxic gases are released.
- 2.4. The British Plastics Federation is continuing to research recycling of both uPVC off-cuts and disposal of frames that are at the end of their economic life. As noted in the previous Report to this Committee the use of off-cuts is British Standard approved and currently recycled uPVC is being used as the core for some extrusions with a new uPVC outer finish. The uPVC industry has made a voluntary commitment to recycle 50% of old uPVC components within four years and a factory has been established in Germany to handle this process. Other factories may be established if the trials are successful.

- 2.5. In terms of economic considerations the effect of a change of policy will have greater consequences in the long term than in the short to medium term.
- 2.6. In the long term this would have an impact on a section of Carlisle Works operation. In 2000/2001 there is a revenue budget provision of £922,198 for pre-painting repairs and painting, which equates to approximately 20% of the total repairs and maintenance contract sum. It is recognised that not all of this revenue would be lost as there would still be a need to repair and paint timber fascias and eaves and external timber doors but the reduction, eventually would be significant to both joiners and painters. This, of course, extends to local suppliers of timber and paint materials.
- 2.7. Members should note that several other Local Authorities who are reviewing their current policy of uPVC window installations have contacted the Housing Department to obtain information on the policy of installing high performance, double-glazed timber windows following a short article in a recent Greenpeace publication.

3. Comments by Director of Environment and Development

- 3.1. The report clearly identifies that to move away from the current window replacement policy in favour of uPVC units will offer no long term financial benefit and will result in a short term additional cost. The Council has recently adopted a Local Agenda 21 Strategy which has as its foundation the need to operate in a more sustainable manner in order to minimise pollution and limit the use of natural resources. Timber windows are capable of final disposal with minimal environmental impact and are produced from renewable resources. The same cannot be said for uPVC. A move to less environmentally friendly systems would not present a very good message at a time when all local authorities are trying to promote the adoption of sustainable practices.

4. Conclusions

- 4.1. As has been stated in previous Reports to this Committee the issue over the lifespan of the windows is not one of cost, but of the environmental impact of uPVC and timber windows.

4.2. As noted in paragraph 2 of this Report there is likely to be an impact on the local economy if there was a move from a timber window specification to that of uPVC.

4.3. In addition it has to be recognised that savings from a change of policy will be effective in the long term, but the initial capital costs of uPVC windows will be greater than for timber windows and therefore less units would be installed initially or a greater proportion of the available budget resource would be required to maintain the current rate of installations.

5. Recommendation

5.1. Members are requested to consider the additional information provided in relation to timber and uPVC windows and decide whether the existing window replacement policy should continue or there should be a move to uPVC window installations.

T Bramley
Director of Housing

CARLISLE CITY COUNCIL**Report to:- Housing and Care Services Committee****Date of Meeting:- 5th October 2000****Agenda Item No:-**

Public	Policy	Delegated: Yes
--------	--------	----------------

Accompanying Comments and Statements	Required	Included
Tenant Consultation:	No	No
Environmental Impact Statement:	Yes	Yes
City Treasurers Comments:	No	No
City Solicitor & Secretary Comments:	No	No
Head of Personnel Services Comments:	No	No

Title:- REVIEW OF WINDOW REPLACEMENT POLICY - INTO THE 21ST CENTURY

Report of:- Director of Housing

Report reference:- H098/2000

Summary:-

This report reviews the performance of timber windows since the formation of the current Council policy and explores the relative merits of high performance softwood windows and white uPVC windows.

Recommendation:-

Members are requested to consider the information provided on the environmental merits of timber and uPVC windows, not only in their use but also in the manufacturing process and their safe disposal at the end of their operational life and decide whether the existing window replacement policy should continue.

Contact Officer: John Hughes

Ext: 7580

Note: in compliance with section 100d of the Local Government (Access to Information) Act 1985 the report has been prepared in part from the following papers: TS.15/89 and H19/98 Replacement Windows - Into the 1990's; Report TS.40/93 Replacement Windows - A Review of Current Policy; Report H46/98 - Window Replacement Policy

**To the Chair and Members
of the Housing and Care Services Committee**

**REVIEW OF WINDOW REPLACEMENT POLICY –
INTO THE 21ST CENTURY**

1. Introduction

- 1.1. As can be seen from previous Reports to Housing Committee the issue of the materials used in our window replacement programme has been debated for more than ten years.
- 1.2. The early Reports investigated the merits of four materials – timber, steel, aluminium and uPVC – and both of the metal options were rejected on the grounds of poor thermal insulation properties leading to the potential for condensation and the high costs.
- 1.3. The focus since the early 1990's has been between the relative merits of high performance softwood double glazed, stained, windows, which is the Authority's current specification and uPVC windows.
- 1.4. The most recent Report in 1998 (H46/98) looked at the unit cost between timber and uPVC and over an upper limit lifespan of thirty years for both products the cost differential was found to be negligible.
- 1.5. The main issue therefore was on the environmental impact that both products create in terms of Carlisle City Council's commitment to reducing energy consumption and carbon dioxide emissions by using materials of lower embodied energy as embraced in the Local Agenda 21 Strategy.
- 1.6. The other key issue was the disposal of both types of material at the end of their useful life.

2. Current Position

- 2.1. Annually, the Housing Department are committing upwards of £0.6m on timber window replacement contracts undertaken by Carlisle Works and it remains both our most successful initiative in terms of quality of workmanship and tenant

satisfaction and the most requested improvement by tenants.

- 2.2. To date, approximately 64% of the housing stock have full window replacement, almost all pre-war properties have been completed and the programme is now progressing through post-war properties.
- 2.3. In preparing this Report contact was made with organisations representing both the uPVC and timber industries and independent environmental organisations such as Greenpeace.
- 2.4. The British Plastics Federation stated that developments in manufacturing and the polymers used was improving to the extent that the lifespan of a uPVC unit was moving towards forty years although this claim was still being tested. British Standards approval had been given to re-use the off-cuts of components at the manufacturing stage which amounted to between two and three thousand tonnes per year. However, no such commitment has been given to the recycling of uPVC units beyond their useful life and these would be disposed of in the normal manner of landfill sites.
- 2.5. As stated in Report H46/98 such disposal can lead to land and ground water contamination. The production and disposal of uPVC windows involves six of the fifteen most hazardous chemicals listed by European governments for priority elimination.
- 2.6. Research has also identified that the amount of energy used in the manufacture of uPVC components is not recouped within the lifetime of the window.
- 2.7. The British Woodworking Federation (BWF) are introducing a Timber Window Accreditation Scheme which sets out a range of criteria that any window covered by the Scheme must comply with to obtain approval. This ranges from the quality of timber used in the window through manufacturing and performance of the unit to stain and paint finishes.
- 2.8. The current timber window specification used by Carlisle City Council either matches or exceeds the criteria required to comply with the Window Accreditation Scheme although the window manufacturer used at present, Geddes, is not a member of the British Woodworking Federation.
- 2.9. BWF Accredited Timber Window Manufacturers have also pledged that by 2004 all of the materials used in timber windows will be obtained from independently

certificated timber sources such as the Forest Stewardship Council (FSC) or the Pan European Forest Certification Council.

- 2.10. The British Woodworking Federation also state that growing trees is essential to absorb carbon dioxide and give out oxygen, timber is the only renewable material for window frames and promoting recycling wood waste to reduce energy costs (both environmental and financial).

3. Additional Information

- 3.1. The European Commission Environment Directorate undertook an Economic Evaluation of uPVC Waste Management and while this lengthy document (193 pages) focuses mainly on an assessment of the waste management costs of incineration of uPVC products it does highlight the issue of problems associated with hazardous chemicals and their effect on the environment.
- 3.2. These concerns are very much in line with the statement issued by the Fire Brigade Union in 1996 who are concerned about the combustion of organochlorine products such as uPVC in house fires and the release, particularly of dioxins, into the atmosphere. Dioxins are one of the most toxic chemicals known.
- 3.3. The Timber Trade Federation (TTF) have launched a campaign for wood entitled "Forests Forever" to help safeguard the forests of the world by encouraging improved forest management, responsible trading and promoting the positive environmental aspects of using timber.
- 3.4. The TTF state that "the economic imperative to improve the efficiency and cost effectiveness of the building industry, underlined by the Egan Report is leading to a search for building methods such as prefabrication and factory controlled construction for which timber is an ideal material".
- 3.5. There is a project funded by the Department of Transport and the Regions (DETR) and undertaken by the Building Research Establishment (BRE) working in partnership with twenty-five trade organisations representing a wide range of manufacturers of construction materials. This project is looking specifically at the Life Cycle Assessment of materials and products including the comparison between uPVC and timber windows and the first stage is nearing completion. These environmental profiles are aimed at cutting through the confusion of claims and counterclaims about the performance of building materials.

3.6. And finally for this Report, Greenpeace have produced a briefing paper entitled "Look Out" which looks specifically at the installation of new windows and compares uPVC directly with timber.

4. Conclusions

4.1. Members will note from this Report that there is a considerable amount of information about the use of uPVC and timber in window manufacture and while it is widely recognised that the cost differential is minimal over the lifespan of each product the concern remains about the environmental impact of uPVC during the manufacturing process, in use and at the end of its life cycle and subsequent disposal.

4.2. If Committee is minded to change its approach from the current policy, officers would recommend that a much more detailed cost benefit analysis is undertaken which would also take into account tenant attitudes, employment implications and surface treatment alternatives.

5. Recommendation

5.1. Members are requested to consider the information provided on the merits of both uPVC and timber windows, not only in their use and subsequent disposal but also in the manufacturing process, and decide whether the existing window replacement policy should continue or there should be a move to uPVC window installations.

T. Bramley
Director of Housing

Environmental Impact Matrix for Policy Report –

Review of Window Replacement Policy

Committee: Housing and Care Services – 5th October 2000

	Positive	Negative
Energy: What impact is the policy expected to have on the consumption of non-renewable energy sources such as fossil fuels? (eg increased road transport)	<u>Wood:</u> Softwood timber windows use a fraction of energy in manufacture compared with uPVC.	<u>uPVC:</u> Energy consumption of non-renewable materials is extremely high in composition and manufacturing.
Pollution: What impact is the policy expected to have on emissions of pollutants and wastes to air, land and water?	<u>Wood:</u> Timber is both recyclable and biodegradable. Preservatives used in manufacture and subsequent decorative staining are water based to limit environmental damage.	<u>uPVC:</u> Disposal of waste and recycling both still present significant difficulties in terms of pollution control.
Physical Environment: What impact is the policy expected to have on the local (or global) physical environment and the health of the community?	<u>Wood:</u> Provided wood is sourced from legitimate renewable reserves environmental impacts should be minimised.	<u>Wood:</u> May be sourced at some distance from both manufacturing and installation requiring significant transportation. <u>uPVC:</u> Inappropriate disposal can severely damage the environment.
Economy: What impact is the policy expected to have on the local economy.	<u>uPVC:</u> Can be manufactured locally. <u>Wood:</u> Can also be manufactured locally and generate long-term	<u>Wood:</u> Manufacturing and finishing can be undertaken locally, but production of wood will often be remote.

Economy (contd)	local employment through ongoing painting and maintenance requirements;	
-----------------	---	--

Appendix C



Review

of

Carlisle City Council's Window Replacement Policy

Campbell Palmer Partnership
Office 6, 8/10 Glasgow Road
Kirkintilloch
G66 1SH

August 2002



Introduction

The Campbell Palmer Partnership Ltd. was contracted by Carlisle City Council to undertake a review of their windows replacement policy. The remit for the work was contained in CPP proposal, Reference A.

Methodology

Timber. The references in the documents supplied by the Buildings and Contract Services Manager for the Council were used to identify key source material. Information from the Timber Trade Federation and the Forests Forever environmental awareness initiative was examined from which the majority of the information on the uses and environmental issues surrounding timber manufacturing and its application was sourced. The second main source of information on the environmental impact of timber was Greenpeace. Although it was not possible to source a copy of the Greenpeace briefing paper mentioned in paragraph 3.6 of Report H098/2000, Reference B, the organisation did offer much in the way of further information to the support of the use of timber. European and British Governmental sources did not offer a lot of information on the environmental affects of environmental effects of the uses of timber either in reports, or in legislation. However, Government guidelines on public sector procurement were found for the procurement of timber.

Timber Finishes. In respect of the environmental impacts of low toxicity timber finishes, useful information was hard to find. Although organisations such as Greenpeace and the Timber Trade Federation advocated the use of timber over uPVC there was no information specifically about wood treatments and finishes. Also, there was little in the way of reports or legislation from government bodies, with the exception of an EU eco-label, Reference C, on the production of paints and varnishes. However, this publication focused solely on the higher toxicity finishes and did not take into consideration water based finishes. Nonetheless, pertinent bodies habitually advocated and promoted the use of water based timber finishes.

PVC. More abundant information was available relating to the environmental affects of the production and uses of PVC and uPVC. Again, initial research stemmed from the reference material. After consultation with the Building Research Establishment (BRE) it was found that the results of the Life Cycle Analysis (LCA) project mentioned in paragraph 3.5 of Reference A have been incorporated into commercial software. Advice received from the BRE Centre for Sustainable Construction is that timber has lower impacts over the whole life than PVC. Greenpeace had much information to offer about the environmental affects of the uses of PVC and uPVC. It should be noted that Greenpeace, in their active discouragement of the use of PVC and uPVC, have produced a comprehensive list of possible and recommended alternatives for the uses of the plastic and have detailed how high profile bodies such as the Sidney 2000 Olympic Committee purposely went out of their way to avoid the use of the material. Finally, the information from European and British Government sources produced much useful information. The European Community Council (ECC) Green Paper, Reference D, provides a great deal of information crucial to an informed assessment of the Council's window replacement policy. Researching the European Union's (EU) 'eco-label' award scheme produced useful material on the general stance the EU is taking towards products containing PVCs and their additive materials.

Findings

Timber



Research into the use of timber in windows shows that there is significant overall support for the application. Organisations such as the Timber Trade Federation, and its associates in the Forests Forever initiative, and more importantly environmental campaigners such as Greenpeace, show a strong inclination towards the use of high quality timber for windows over any of its competitor products. It should be noted that not only does Greenpeace support wood over its alternatives, but it specifically advises the use of timber over uPVC for window frames.

In terms of its environmental issues, timber is the only material for this application that is renewable. Timber also has the property of being a fully recyclable material. It can be either renovated or recycled with low levels of waste when timber is reused. Timber also has good insulating properties.

Two main criticisms have been identified in the timber debate. Firstly, many uninformed environmental protesters link the current deforestation in some areas of the world, such as the South American rain forests, with the timber industries, when the opposite is often true. In areas where proper attention is paid to sustainability the timber industry is actually responsible for a great increase in forestation. Current trends¹ show that in a five year period towards the end of the 20th century the land mass of forests in temperate and boreal regions, the source of 92% of annually used British timber, increased by 8.8 million hectares. Secondly, environmentalists believe that cutting down 'old growth' forests reduces bio-diversity. However, there are many examples of old growth forest being protected. The careful management of forests helps, in many cases, to prolong the life of old growth forests where naturally they are periodically disturbed.

Timber Finishes

As outlined in the methodology, information regarding the environmental issues of low toxicity timber finishes such as the Council currently employ was scarce. The eco-label concerning paints and finishes made no reference to water based finishes. In addition, the Department for the Environment, Food and Rural Affairs (DEFRA), in their environmentally preferable purchasing guide titled the 'Green Guide for Buyers', specify that "If painting or varnishing is required... preference [should be] given to low solvent or water based media where technically suitable."

PVC

In relation to the issues surrounding PVC and uPVC² the recent ECC Green Paper provides a valuable source of scientific information. Pure, or unplasticised PVC, is a rigid plastic which is durable with fairly good weather resistant properties. Chemically it has the same structure as polythene, such as is found in plastic shopping bags, except for the presence of chlorine which accounts for 57% of the weight of the pure polymer. However, despite its weather resistant properties, the plastic is unstable to heat and light, which lead to the loss of chlorine through the release of hydrogen chloride into the atmosphere. This is combated by the addition of stabilisers³.

In respect of plasticised PVC, additives are used as plasticisers in order to give products flexibility. These plasticisers are inherently toxic, releasing a number of chemicals into the surrounding environment including excessive amounts of carcinogenic gases and phthalates which are both eco and organotoxic. Some phthalates have been classified by the ECC as

¹ Taken from the United Nations Food and Agriculture Organisation (UN FAO) report 'The Status of World Forests' 1997.

² Although this report focuses on the impact and issues surrounding the use of unplasticised Polyvinyl Chloride (uPVC) attention must also be paid to the issues surrounding plasticised Polyvinyl Chloride (PVC). Recycled uPVC could be used in the manufacture of PVC which contain plasticisers, so that Council windows could, potentially, become incorporated in PVC products. Thus the material's future effects on the surrounding environment and eco-systems must be fully understood.

³ Such as lead, barium, calcium, cadmium or organotin compounds. Stabilisers are discussed later with the environmental issues of uPVC.



immunotoxic (harmful to the immune system) harmful to reproduction of organisms and aqua eco-toxic. Recently the ECC has passed legislation banning the use of PVC in children's toys and in the production of footwear due to its implications for human health. UPVC from recycled Council windows could end up in such products.

Two environmental issues exist concerning the use of uPVC for window replacement. Firstly, the stabilisers used by the industry are extremely controversial at best. Heavy metals, specifically lead and cadmium, are abundant in the chemical structure of PVCs, with 70% of all PVC stabilisers being either lead based or containing significant amounts of lead; many also contain similar amounts of cadmium⁴. Note that cadmium is on the EU Black list and the UK Red list and that lead is on the EU Grey list, and are prescribed substances under the Environmental Protection Act 1990. As a result the industry has committed itself to phasing out the use of lead and cadmium in the production of PVCs. A commonly used alternative are organotin compounds, one of which, dioctyltin, is known to be immunotoxic and aqua-ecotoxic.

Secondly, the potential hazards of the product throughout its entire life cycle are significant. During the production stage, various toxins are emitted into the surrounding atmosphere. Not only has this a detrimental affect on the surrounding environment and eco-systems, but also on the human health of the people producing it. In the case of uPVC, during its product life it emits few, if any, toxins because the harmful substances are bonded to the chemical chain, whereas in the case of PVC the product constantly leaks carcinogenic, eco, organo and immunotoxins.

At the end-of-life stage the material can either be mechanically recycled, chemically recycled, landfilled or incinerated. Mechanical recycling of post-consumer PVCs⁵ is expensive. Chemical recycling, where the various chemicals are separated and reused leaving the toxic materials in a solid residue which is later landfilled, again, is very expensive. Two thirds of all the EU chemical recycling plants have shut down due to funding and supply problems. Landfilling causes problems in the surrounding environment in the event of an accidental fire. Incineration produces toxic gasses including hydrochloric acid and numerous sulphur oxides that require to be neutralised by agents such as lime. The remaining waste⁶ is subsequently landfilled where the various toxins enter the surrounding environment.

Whilst there is no current EU eco-label on uPVC windows or doors there are eco-labels for other products containing significant amounts of uPVC plastics and their additives. These can be used as an indication of the EU's attitude to PVCs in general. The use of PVC in shoes (with the exception of recycled PVC in the outer soles) has been totally banned. The ECC has banned the presence of any lead or cadmium in paints, and in televisions and vacuum cleaners plastic components must have no added lead or cadmium. Thus it can reasonably be anticipated that the EU will oppose the use of these metals in uPVC windows.

Summary

In summary, timber is environmentally friendly and trees increase the ability of the environment to combat increasing CO₂ emissions. Uniquely, timber presents potential sustainability and a better overall environment. The water based finishes currently used are less environmentally damaging than alternatives and their use is in line with DEFRA guidance. The uPVC alternative can offer none of the above qualities, and in any case will damage the environment and it's ecosystems in

⁴ It is notable that under Directive 67/548/EEC these compounds are classified as ecotoxic, organotoxic and carcinogenic.

⁵ However, the industry has committed itself to phase in recycling of 50% of post-consumer materials, as noted in Report H007/01 paragraph 2.4.

⁶ The remaining waste is mainly the stabilisers, now free from the chemical bonds of the PVC, and the remnant neutralisation agent; both of which at this stage are classified by the Directorate as 'Hazardous waste'.



at least two of its three life stages. Many of its properties are toxic to the surrounding environment, ecosystem and human life, especially to the producers, and disposal workers.

Recommendations

It is recommended that:

- Paragraph 1.6 of Council Report H007/01 refers to the local manufacture of door and window units. Care must be taken to avoid specific reference to the local manufacturing or sourcing of any type of window, as this is considered anti-competitive by the EU. Guidance on EU competitive tendering rules is contained in the EU Commission Interpretative Communication COM (2001) 274 final dated 4 July 2001.
- The most recent DEFRA guidance be followed in respect of public sector procurement. Specifically, environmentally preferable products should be specified whenever possible. "Environmentally preferable products are defined as ones which are less harmful to human health and the environment when compared with competing products which serve the same purpose."
- The Control of Substances Hazardous to Health (COSHH) regulations be followed in relation to their requirement to substitute hazardous substances with non-hazardous or less harmful materials.
- It is recommended that the Council continues its policy of replacing windows with high performance softwood windows. The weight of evidence continues to move away from the use of PVC, even with less damaging stabilisers

David Palmer BSc MSc MIEMA
Director

9 August 2002



References

Reference A: Letter to Alan Wood
Dated 1st August 2002

Reference B: Report to the Housing and Care Services Committee
'Supplementary Review of Window Replacement Policy – into the 21st Century'
Ref: H007/01
Dated: 23/01/01

Reference C: ECC Eco-labels
'Established product groups under Regulation (EC) No 1988/2000'
Paints (1999/10/EC) (18/12/98)

Reference D: ECC Green Paper
'Environmental issues of PVC'
COM(2000) 469 Final
Brussels, 26/07/2000

Memorandum to: Alan Wood,
From: Michael Battersby
cc. Gordon Nicolson,
Dated: 09/07/02

Report to Executive
Ref: EN 078/02
Dated: 08/07/02
Inc. annexed two letters
To: Michael Battersby
From: Denton Holme Community Centre
Both dated: 12/06/02

Report to the Housing and Care Services Committee
'Review of Window Replacement Policy – into the 21st Century'
Ref: H098/2000
Dated: 05/08/2000

Bibliography

DETR/DEFRA product procurement guidance
'Green Guide for Buyers'

ECC Commission Interpretative Communication
'Community law applicable to public procurement and the possibilities for integrating environmental considerations into public procurement.'
COM (2001) 274 final
Brussels, 04/07/2001

ECC Eco-labels
'Established product groups under Regulation (EC) No 1988/2000'
Footwear (1999/179/EC) (18/03/02)
Paints (1999/10/EC) (18/12/98)
Televisions (2002/255/EC) (25/03/02)
Vacuum Cleaners (Not Finalised) (22/07/02)

Greenpeace literature
'Greenpeace PVC free alternatives database'
25/04/01
'What's wrong with PVC?'
10/01

Timber Trade Federation's
Forests Forever initiative literature
'Timber and the environment'