Centre for Sustainable Energy

'Park Homes Insulation Project'

Final Report by Ian Preston, Centre for Sustainable Energy and Lisa Jones, South Gloucestershire Council

This report was published in December 2004 by the Centre for Sustainable Energy (CSE), and you can read a short background to the project here.

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Ian Preston, Centre for Sustainable Energy
and Lisa Jones, South Gloucestershire Council

9 December 2004

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Park Homes Insulation Project – final report

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1 Project details

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3 Executive Summary

There are currently 757 park homes in South Gloucestershire centred across 6 mobile home sites. Previous research from an Innovation Programme feasibility study conducted by Marches Energy Agency show that park homes exhibit very low standards of energy efficiency and as such residents are at higher risk from fuel poverty. Indeed, many park home owners have a poor understanding of the insulation present and owners are more likely to be in the vulnerable category than a traditional dwelling i.e. elderly and low income.

South Gloucestershire Council decided to implement a project to provide insulation materials to park home residents that reduce the running costs, energy use and carbon emissions associated with these dwellings.

The review of previous research demonstrated that the feasibility of using flexible thermal lining for internal insulation of walls and floors had not been investigated. The project team successfully secured Innovations funding to investigate the feasibility of installing Sempatap Thermal and Sempafloor as a DIY measure in park homes.

The pilot programme focussed on three pilot sites to examine the feasibility of offering the innovative insulation material to park residents as a measure for DIY installation. The flexible thermal lining materials can be installed similarly to wallpaper on walls (STT) and like underlay (SF) below carpets, laminates and lino. The DIY installation reduces both cost and payback. Appendix VI contains the installation instructions provided to residents and example pictures of STT application.

The study has examined both the energy saving of the materials through technical analysis, and the perceived savings and ease of use through surveys and interviews. The scheme design and potential for implementation has then been assessed through a wider survey, which also provided residents with energy efficiency advice tailored to park homes.

To date the installation of Sempatap under this project has resulted in total yearly energy savings for all installations of 8,656 kWhs or 2.3 tonnes of CO_2, which equates to a lifetime saving of 259,680 kWhs or 69 tonnes of CO_2. The additional energy efficiency activity described in section 4.7.4 has led to further yearly energy savings of 7,384 kWhs or 1.42 tonnes of CO_2, with lifetime savings of 112,739 kWhs or 23.9 tonnes of CO_2.

To date the Innovations pilot programme has therefore resulted in a total yearly saving of 16,040 kWhs or 3.72 tonnes of CO_2, with lifetime savings of 372,419 kWhs or 92.9 tonnes of CO_2.

The study has shown that STT and SF are cost effective measures for installation in park homes built before the introduction of the British Standard for construction. Indeed, the payback of approximately 20 years is comparable with the majority of measures designed to treat HTTHs.

The analysis has shown that the installation of STT on the ceilings of park homes with flat roofs or inaccessible loft spaces is a cost effective measure with relatively low payback times i.e. 8 years. Indeed, STT offers residents a lower cost alternative to the installation of a new pitched DECRA roof.

However, the evaluation of take up and scheme design demonstrates that an internal insulation system may not be the most appropriate for this type of dwelling and this type of householder. This is due to the difficulties with space limitation whilst carrying out the work, lack of storage space for materials, internal surface finish applied at construction and the make up of the typical park homes household i.e. older people perhaps with disability or mobility issues.

Whilst the material has been successfully used by some householders the level of take up has been much lower than the council anticipated. Therefore, if such a project was rolled out on a wider basis the council would have to offer householders a grant aided installation service which would add a significant cost to the project.

Indeed, the council was attracted to the material due to the DIY application and associated reduction in costs. The private sector housing team has therefore decided not proceed to the implementation phase of the programme.

4 Description of the feasibility study

4.1 Background and scope of study

There are currently 757 park (mobile) homes in South Gloucestershire centred across 6 mobile home sites. These sites have residential planning status and are governed by the Mobile Homes Act 1983 residential agreements. The sites are also licensed by their local authority, which requires the park owner to observe a number of standards that apply to the park e.g. health and safety including fire safety.

Previous research from an Innovation Programme feasibility study conducted by Marches Energy Agency show that mobile homes exhibit very low standards of energy efficiency and are responsible for significant emissions of carbon dioxide. Indeed, many mobile home owners have a poor understanding of the insulation present and owners are more likely to be in the vulnerable category than a traditional dwelling i.e. elderly and low income.

The problems identified by the Marches study demonstrate that these vulnerable residents are at higher risk from fuel poverty. This is compounded further by the lack of grants available to park home owners, and their reliance on more expensive fuels such as LPG and solid fuel.

South Gloucestershire Council decided to implement a project to provide insulation materials to park home residents that reduce the running costs,

energy use and carbon emissions associated with these dwellings. The council reviewed the previous projects that have trialled energy efficiency measures in park homes. The review identified a good practice case study (GPCS 389) that examined the savings associated with the external wall insulation of mobile homes.

However, the feasibility of using flexible thermal lining for internal insulation of walls and floors had not been investigated. The council discounted the piloting of loft insulation as high numbers of park homes do not have lofts, and their own 'Warm and Well' scheme currently offers loft insulation to park residents.

The materials piloted were:

- Sempatap Thermal (STT) – 10mm latex foam insulating material with a durable fibreglass face, which is supplied in rolls and applied using a similar method to that of fitting wallpaper.
- Sempatap Floor (SF) – 4.5mm dense latex foam insulating material, which is supplied in rolls and fitted below floor coverings.

Both materials have been used in the UK and Europe for over 20 years. The products have been successfully installed in 1000's of flats and houses and have been specifically developed for energy conservation and prevention of mould growth from condensation dampness.

The materials are one example of an economical solution for reducing CO_2 emissions. Their application in traditional solid brick and non traditional (e.g. Cornish Units) properties has been proven to substantially reduces heat loss, make the property more energy efficient, provide warmer living conditions within the home and dramatically reduce the incidence of condensation. The material has been tested by the Building Research Establishment on different types and sizes of traditional properties; however the product has not been tested on park homes.

4.2 Approach

The pilot programme focussed on three pilot sites to examine the feasibility of offering the innovative insulation material to park residents as a measure for DIY installation. The flexible thermal lining materials can be installed similarly to wallpaper on walls (STT) and like underlay (SF) below carpets, laminates and lino. The DIY installation reduces both cost and payback. Appendix VI contains the installation instructions provided to residents and example pictures of STT application.

The study has examined both the energy saving of the materials through technical analysis, and the perceived savings and ease of use through surveys and interviews. The scheme design and potential for implementation has then been assessed through a wider survey, which also provided residents with energy efficiency advice tailored to park homes.

4.3 Purpose of the study

The purpose of the study was to:

- insulate 30 mobile homes of residents on low income with flexible thermal lining products (by providing grants and support for DIY installations)
- quantify the energy savings made after installation
- assess whether these are economically viable products for insulating this type of home
- assess whether the residents perceive improved comfort levels and general well-being as a result of this type of insulation
- provide mobile home residents with support and an understanding of energy efficiency
- to assess the take up of grants
- act as stimulus to provoke further CO_2 reduction in South Gloucestershire by providing advice to 140 mobile home owners at two of the existing sites.
- disseminate the results of the project to other local authorities and partner organisations

4.4 Aims and objectives for the lead organisations and any partners

This study aims to assess the performance, cost effectiveness and CO_2 savings associated with installing flexible thermal lining products in mobile homes and to perform community consultation to determine perceived improvements in thermal comfort.

4.5 Role of partners in feasibility study

Partner Organisation	Role
South Gloucestershire Council	Management of insulation grant approval process; identification of householders for the pilot study; marketing; promotion; coordination of demonstrations.
Centre for Sustainable Energy (CSE)	Project management; reporting to Innovations team; production of final report and coordination of meetings and liaison with project partners. Technical support, energy monitoring and energy audits of mobile homes before and after installation of innovative flexible thermal lining systems. Evaluation of implications of project outcomes. Provision of support, energy efficiency/renewable advice and information to client group.
Mould Growth Consultants Limited (MGC)	Supply and distribution of flexible thermal lining systems, equipment and application kit e.g. adhesives; provision of local storage and distribution for the products and equipment; demonstration DIY installation of products to client group; post installation checks.

4.6 Programme of work / methodology

4.6.1 Project brief

South Gloucestershire Council has several large park homes sites with a total of 757 homes. The council is aware that there is currently little provision for insulating these properties under existing grant schemes. Many existing EEC and government funded schemes are targeted at traditional properties with cavity walls and unfilled loft spaces. Furthermore, many park homes sites are off the gas network which means they are not eligible for schemes that only provide replacement 'A' rated gas boilers.

Furthermore, similarly to solid walled 'hard to treat' properties, park homes do not have a cavity wall that can be filled in the normal manner for brick built

homes. The construction of park homes walls has been examined in the technical analysis of energy savings; however, wall construction typically consists of plywood interior and exterior panelling (with or without rigid foam cavity insulation) with an exterior aluminium skin and stucco render finish.

The lack of provision of grants and measures for hard to treat homes is a common problem for local authority HECA officers throughout the UK. Therefore, the council identified the need to pilot the use of innovative flexible thermal lining in park homes as a grant assisted measure. The project brief was to examine both the energy saving of the materials through technical analysis, and the perceived savings and ease of use through surveys and interviews.

4.6.2 Rationale for the selection of flexible thermal lining products

The project brief has already identified the need for a grant programme supplying innovative insulation for the walls of park homes. The product was considered in preference to exterior cladding (e.g. Testa Teres) as this has already been investigated in GP Case study 389 and Marches Energy Agency Innovations feasibility and implementation project to address thermal efficiency of park homes.

STT and SF insulation was considered as both materials have low thermal resistivities that result in a low U-value and in turn improved thermal comfort. The cost per m^2 of the materials also compares favourably with dry lining e.g. £13.50 per m^2 compared to £37.00 per m^2 (see GPC 177). Furthermore, the potential application of materials as a DIY material reduces both costs and payback.

There are a number of other solid wall treatments that could have been selected as a potential measure to improve the thermal efficiency of park home walls. The application of a render based system offered the most innovative alternative to flexible thermal linings.

Wall transform can be applied externally as a render or internally as a plaster skim. The product has a thermal conductivity that is comparably superior to STT insulation for a 10mm application e.g. 0.055w/mk compared to 0.063w/mk. However, an internal coat of wall reform would not have a comparable thickness to STT e.g. 6mm in comparison to 10mm. This means that the resultant U-value for Wall transform when applied internally is similar to that for STT. Furthermore, the application of plaster is a skilled trade that makes the measure redundant as a DIY technology.

4.6.3 Project methodology

The project methodology can be broken down into the following stages, which have been discussed further in the detailed methodology.

1. Run energy road shows at selected park homes sites in South Gloucestershire to promote the insulation products to be trialled

2. Insulate 30 mobile homes of residents on low income with flexible thermal lining products (by providing grants and support for DIY installations)
3. Evaluate the energy savings made after installation and assess the products' viability for use in park homes
4. Survey those residents that installed the insulation to assess whether they perceived improved comfort levels and increased general well-being as a result of installing the insulation. Assess the take up of grants and identify any implications for the implementation phase
5. Conduct a wider survey to all those residents that were targeted by the feasibility study, which obtains feedback for future scheme design and also provides park home residents with support and an understanding of energy efficiency
6. Dissemination of the results of this study to other local authorities and partner organisations

4.6.4 Detailed methodology

The pilot study operated in 6 phases to evaluate the feasibility of providing Sempatap as a DIY measure for park home residents in South Gloucestershire.

Phase 1

The first phase of the project involved the meeting of partners to finalise scheme design and set up. The meeting allowed partners to clarify their roles and objectives for the pilot study. However, the problems associated with take up and park home site demographics led to a second meeting of partners to investigate potential installation services (see section 4.7.1).

The application process

Lisa Jones at South Gloucestershire Council administered the application process. Householders either applied at the energy efficiency road show or subsequently by post. In order to qualify for a grant the applicants had to meet one of the eligibility criteria shown in Appendix I.

Evidence of qualification e.g. passport, benefits papers etc. could either be shown in person or photocopied and posted to the council. Once accepted applicants were contacted to arrange the quantity of materials to be delivered and a time for the delivery. Following receipt, residents were given a total of 6 months to install the materials, with written confirmation to this effect. This 6 month period mirrors the councils general grants policy for housing renewal. Once installed, residents were asked to return a 'completion certificate'.

Phase 2

During the second phase of the project CSE and South Gloucestershire performed an energy efficiency road show at the largest park home site (Woodlands Park) in the district. This road show followed two previous

exhibitions at two sites (Kingsway and Greenacres Park) during which the Bristol and Somerset EEAC, CSE and South Gloucestershire Council had investigated the potential for the pilot project.

The three road shows were open to approximately 300 residents in total. The road shows featured a demonstration of STT and SF from MGC Ltd, a stand manned by the EEAC providing advice, Home Energy Checks and CFLs, a stand manned by South Gloucestershire Council providing housing and energy efficiency advice, and cakes and refreshments for visitors. CSE and South Gloucestershire Council recorded expressions of interest from residents at the two earlier events, and took applications from residents at the Woodlands Park event.

Phase 3

Following installation of Sempatap Thermal, Sempafloor or a combination of the two, a sample of park homes was assessed to evaluate the thermal performance of these insulating products. The sample was designed to be representative of the range of ages and sizes of park homes on the three sites. CSE explained the need to survey the park homes to the residents whose homes were chosen, and also their future inclusion in the final report.

The project identified 1996 as a critical year for the selection of park homes for the technical surveys. The British Standard for Residential Park Homes (BS 3632: 1995) for the construction of park homes was introduced in this year. Prior to the BS there was no standard for the construction of park homes, which means that the U-values of construction and thermal efficiency of homes built before 1996 is substantially lower than those built post-1996.

Table 1: Comparative U-values

Elements	BS 3632	Part L Building Regs.
Walls	0.6	0.35
Floor	0.35	0.25
Roof	0.35	0.16 / 0.2

The table 1 shows the target U-values from BS 3632 and the current building regulation Part L elemental standards. The table shows the standards for park homes are lower than those for new domestic properties. However, the standard is currently under review and it is hoped the results of this study may encourage the National Caravan Council to lobby for improved U-values in the impending update.

Therefore, the study selected the properties as shown in table 2. The study did not select any single units built in 1996 or later as there were no applications from a unit of this type. Indeed, CSE's experience of the 3 park homes sites visited suggests that the newer homes are generally double units or larger, with many of the older units being single units.

Table 2: Profile of park homes selected

Property	Type	Year Built	Pre-BS Standard
Single Theoretical	Sg	1985	Y
35 Kingsway	Sg	1985	Y
15 Greenacres	Db	1936	Y
93 Greenacres	Db	1997	N
92 Greenacres	Db	1996	N

The property 'single theoretical' was created from 35 Kingsway. The unit at 35 Kingsway is typical of single units built before 1996, but the homeowner had added a DIY pitched roof at a later date with an inbuilt 6 inches of mineral loft quilt. The addition of a new well insulated roof meant that the property was no longer comparable with standard flat roof single units (see figure 1 below). Therefore, 'single theoretical was modelled with a flat unmodified roof to evaluate savings in this type of dwelling.

Figure 1: Uninsulated single unit[1]

The evaluation used NHER Builder software to model energy consumption prior to and following installation. This also allowed us to estimate reductions in fuel bills and CO_2 emissions and changes in wall U-value and SAP rating to be calculated. These findings provided the project team and partners with simple paybacks figures to inform any future implementation project.

Additional Energy Modelling

The study also investigated the savings associated with the installation of Testa Teres external wall cladding systems (see GPG 389 for further details). The project team modelled the savings associated with this measure as South Gloucestershire Council felt it offered a useful comparison with Sempatap, and the technical analysis may help other park homes project seek EEC funding for this measure.

[1] Pre-insulated park home from Testa Teres

EEC funding can only be applied for and claimed where a technology performance has been analysed and quantified. The EST's technical team is responsible for co-ordinating the collection of this data for a variety of measures and applications. However, the innovative use of both Sempatap and Testa Teres in park homes had not previously been analysed using NHER software.

The project team decided that modelling both these technologies would allow any future implementation project in South Gloucestershire to use both or either technology. Furthermore, the results would prove useful to a similar Innovations project implemented by Marches Energy Agency and Hereford District Council.

Phase 4

The technical analysis of the thermal performance of materials provides an important indicator of the products feasibility for implementation. However, the residents' experiences of DIY installation and perceived improvements in thermal comfort are equally important.

Therefore, CSE surveyed by telephone those residents that had submitted a 'completion certificate'. Respondents were told that their responses would be used in the production of this publication. The survey was designed to ascertain if residents perceived improved comfort levels and well being, lower fuel bills and how easy the product was to fit.

Phase 5

The final part of the study was a wider survey of residents living in park homes that had been previously visited by an energy efficiency road show demonstrating Sempatap and providing general advice. The wider survey was designed to assess the take up of grants for DIY installation of flexible thermal lining products in mobile homes, and act as a stimulus for further CO_2 reduction in mobile homes in South Gloucestershire.

The project originally planned to send the questionnaire to 140 residents across 2 sites, which was extended to 3 sites with 275 residents following the event at Woodlands Park (see Appendix II for the final design and structure). The survey also contained the latest EEAC newsletter and a grants summary sheet, a Warm and Well (the council's main energy efficiency scheme for private sector households) leaflet, Fridge savers leaflet and information on low cost measures such as radiator foil.

In total 34 residents responded to the survey which equates to an excellent response rate of 12%, with postal surveys usually experiencing response rates 2 to 5%. The survey encouraged residents to respond by offering a free prize draw to win a solar radio and two light bulbs. The Bristol and Somerset EEAC contacted all respondents twice via the phone to offer residents further advice on energy efficiency or renewable energy.

Phase 6

The final phase of the project is the dissemination of the results of the study to other local authorities and partner organisations, and the consideration of the project's implementation.

CSE has performed on-going publicity of the project via its website and e-news. The team has also visited the launch of the implementation phase of Marches Energy Agency's Park Homes Project. The project team met a key policy officer from the National Caravan Council and as stated previously it is hoped the results of this study will help inform the current review of the BS for park homes.

Further to previous dissemination activities CSE plans to publish this report on its website, and hopes that the findings of the technical analysis may lead to a future project assessing low energy construction options for new park homes.

The implications for implementation and probable future scheme design have been discussed in the results section.

4.6.5 Scope, assumptions and limitations of the energy modelling

The NHER Builder software is primarily designed to use the information contained in architect's plans to evaluate the thermal performance of new buildings. NHER indicated that the software could be used to evaluate the improved thermal efficiency of park homes, if the information collected contained accurate information concerning dimensions and the structure of key elements.

The NHER models for the park homes assessed are based on site surveys of the properties and feedback from home owners and manufacturers. As it is not possible to look inside the structure of key elements, such as the walls, the modelled U-values must be taken as approximate values.

4.7 Results

The results of the feasibility study are presented as follows:

- Total installations and an analysis of issues that effected scheme uptake
- Findings from the technical evaluation of the fixed thermal insulation
- Findings of the survey of residents who have installed the fixed thermal insulation
- Summary of the energy efficiency advice delivered during the feasibility study

The findings from the wider consultation with residents that were targeted by the study have been discussed in the appropriate sections of the report.

4.7.1 Scheme Installations and Uptake

Total Installations and Predicted Energy, Financial and CO_2 Savings

To date the project has received completion certificates from 9 residents. These 9 installations included 7 installations of SF and STT, with one installation of SF only and one installation of STT only. The application of STT varied between households with materials applied to the walls, the ceilings and walls and in one case the ceiling only. CSE has used the results of the NHER energy modelling shown in section 4.7.2 to provide indicative figures for energy and financial savings.

The scheme has currently resulted in total energy savings of 8,656 kWhs which equates to 2.3 tonnes of CO_2, which equates to a lifetime saving of 259,680 kWhs or 69 tonnes of CO_2. Residents that installed the materials have saved an average of 962 kWhs or £35 per year which equates to 0.3 tonnes of CO_2 per household. The financial savings achieved are proportionally lower for the Woodlands site as homes are supplied by mains gas.

Table 3: Calculate Yearly Scheme Savings for Park Homes Installations

	Park Home	Installed Areas	Pre-1996	kWh/yr Saving	£/yr Saving	CO_2/yr Saving
1	15 Greenacres	All W & F	Y	1,750	£74	0.5
2	93 Greenacres	Majority W & F	N	417	£18	0.1
3	92 Greenacres	All W & F	N	361	£14	0.1
4	108 Woodlands	C	Y	1,194	£23	0.3
5	22 Kingsway	Majority C, W & F	Y	2,111	£86	0.5
6	4 Woodlands	F Only	Y	250	£5	0.1
7	13 Greenacres	C & W	Y	1,972	£80	0.5
8	37 Woodlands	Lounge W & F	Y	350	£7	0.1
9	92 Woodlands	F Only	Y	250	£5	0.1
	Total Savings			**8,656**	**£311**	**2.3**
	Av. Savings			**962**	**£35**	**0.3**

The project currently has an additional 6 park homes that have received materials, but currently not returned their completion certificate. These installations include 3 of both materials, 2 installations of STT and 1 installation of SF. CSE has estimated that the installations could lead to an additional saving of approximately 8,000 kWhs and 1.8 tonnes of CO_2.

Project Installations

The Innovations pilot scheme started at the end of February 2004 and was due to finish in September 2004. However, the project was handed an extension due to the grant criteria and low levels of take up. The grant criteria allowed residents 6 months to install materials from the date of receipt, which meant that their deadline was immediately outside of the original Innovation project timescales.

The scheme originally planned to install STT, SF or a combination of both in 30 park homes. However, to date the pilot project has resulted in 9 completed installations with a further 6 householders currently installing materials.

The scheme has provided materials to half the number of park homes expected, which has resulted in the distribution of approximately 2/3rds of the materials purchased from MGC Ltd. The ratio between the number of applications and the predicted quantity of materials has differed, due to the majority of residents applying both STT and SF insulation throughout double units (see Appendix V).

The project team has estimated that the remaining 55 rolls of STT and 47 rolls of SF are sufficient to insulate a further 9 properties. The methodology detailed the scheme's promotional activities across 3 sites, however, South Gloucestershire Council conducted a further mail out promoting the scheme to the remaining park home sites. This mail out targeted 5 park homes sites which support approximately 400 homes. The table in Appendix V shows that the mail out has resulted in a new application from Rustic C Park.

In addition to the 15 park homes that received materials, 6 residents that applied subsequently cancelled due to reasons discussed in the analysis of scheme design and take up. A further 20 residents expressed an interest in the scheme and were sent an application form, however, despite follow up letters from the council, they have failed to take up the scheme.

Scheme Design and Uptake

Appendix V shows the qualifying eligibility criteria for those that have installed or received materials to date. The table shows that 14 of the 15 that received materials qualified due to the receipt of a pensioner benefit or their age e.g. over 70. The remaining application was from a resident claiming incapacity benefit.

The suitability of Sempatap as a DIY measure to be installed in traditional solid walled properties has been demonstrated by Crewe and Nantwich Borough Council's Innovations Programme. However, the analysis of eligibility criteria for this project has shown that the majority of applicants are elderly, which means that the application of materials is likely to be more difficult than that experienced in the Crewe and Nantwich study.

Age and Ill Health

The evaluation of the results of the wider survey shown in section 4.7.4 supports this hypothesis. Table 4 and figure 2 show that 6 respondents identified 'ill health' as a factor in installing materials, which equates to 15% of the total factors identified. Although the questionnaire did not ask responders to expand upon these health factors, both CSE and South Gloucestershire Councils experience suggests these conditions were related to ill health.

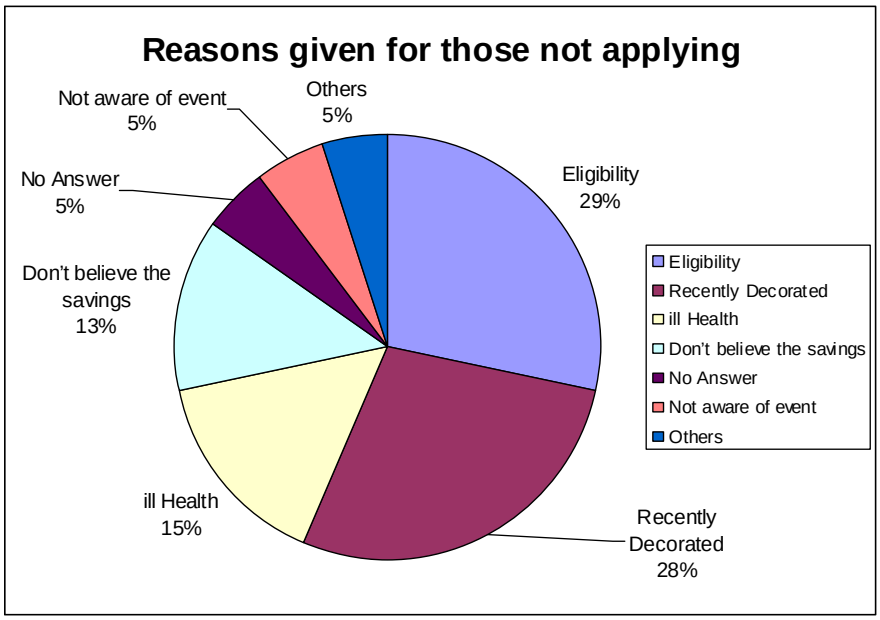
Table 4: Factors for not applying to the scheme

Factors for not applying	Number	Percentage
Eligibility	11	28%
Recently Decorated	11	28%
ill Health	6	15%
Don't believe the savings	5	13%
No Answer	2	5%
Not aware of event	2	5%
Others	2	5%

Indeed, South Gloucestershire Council received 6 applications that were subsequently terminated prior to or following the delivery of materials. The problems of ill health and subsequent installation problems were cited by 4 of the 6 cancellations. The remaining 2 cancellations cited difficulties in arranging delivery of materials i.e. arranging a relative / able helper to assist them in storing and moving the materials.

The analysis of applicant eligibility criteria i.e. 93% being of pensionable age, cancellations and the wider survey has shown that scheme take up was affected by the age of those applying and their ability to install the materials as a DIY measure. Indeed, the characteristics of park homes in South Gloucestershire sites mean that the population is generally older than the district average. For example, the three park homes sites targeted all have a minimum age limit of approximately 45 to 50 years of age for those applying for residency.

Figure 2: Reasons given for not applying



Eligibility Criteria

Figure 2 shows that eligibility criteria and having recently decorated were the most frequently identified factor e.g. 11 each (33% of respondents) or 28.5% of all factors. The scheme eligibility criteria are shown in Appendix I. The eligibility criteria of those applying suggests that those residents that are under 65 do not receive means tested benefits such as housing benefit or council tax benefit.

CSE and South Gloucestershire Council's scheme experience suggests that the residents whose age falls between the minimum required for residents and 65 are generally reasonably affluent. The park homes sites are often seen as a lifestyle change for retirement, with residents down sizing from larger family homes to a smaller home in a genuine community.

The economics of down sizing properties mean that many residents are able to purchase their homes outright and secure funds for their retirement. Therefore, approximately 1/3 of all residents may not be eligible for a grant under the current scheme criteria i.e. they no longer qualify for a means tested benefit.

However, as demonstrated by both the ACE report 'FP' and the Warm Zone analysis of Warm Front approximately 50% of the fuel poor are not eligible for Warm Front. Although the addition of Pension Credit to eligibility criteria may to some extent address this, there will still be many fuel poor households that are ineligible.

The fuel poverty status of park homes residents was not assessed by the government's income definition e.g. 10% of net income is spent on fuel. Thus

the receipt of a means tested benefit was used as a proxy for residents' fuel poverty status. However, the use of LPG as a heating fuel and poor thermal efficiency of park homes means that fuel bills are likely to be far higher than those of householders in traditional properties.

An additional factor in the high running costs of park homes is the retired status of many residents, which means that the demand temperature is higher and the home is occupied for longer hours. Therefore, residents that do not qualify for a means tested benefit with modest earnings and savings may be in fuel poverty.

Recently Decorated

The resident having recently decorated was the joint most frequently identified factor e.g. 11 (33% of respondents) or 28.5% of all factors. The re-decoration and improvement of houses has become increasingly more frequent in the last 10 years with the proliferation of home DIY programmes such as 'Changing Rooms'.

Furthermore, park homes sites are genuine communities populated by residents who are proud of their home's interior and exterior appearance. The age of residents and the difficulties of decorating in confined areas mean that people also decorate with the long term in mind. The recent decoration of properties may have reduced the potential scheme audience by a further third.

Overcoming Barriers to Scheme Uptake

Eligibility Criteria

The scheme eligibility criteria have been identified as a key factor in scheme uptake. South Gloucestershire Council has recently standardised their grant eligibility criteria for all housing schemes. Following discussion between the council's home energy coordinator and private sector housing manager the scheme introduced eligibility for the over 70s. This was agreed as studies have demonstrated that high proportions of the fuel poor are over 70. Incapacity benefit was also introduced following interest from an incapacitated resident at an energy road show at Woodlands Park.

Following the poor take up of grants the project team contacted the private sector housing manager to request that the age qualifier for over 70s be dropped to 60. This would allow those fit over 60 year olds ineligible for means tested and pension related benefits to apply to the scheme. The private sector housing manager felt that the scheme should contact the remaining park homes sites and offer the audience grants at their existing eligibility prior to adjusting design.

This led to the further mail out to the remaining sites which generated 3 additional applications (1 resident received materials to date). The low uptake from the remaining sites may also be related to scheme eligibility, recent

decoration and park demographics. The project team hopes that the private sector housing team leader will review the project and relax the eligibility criteria in the New Year.

Installation Service

The project team identified the potential for an installation services within the first two months of operation. Feedback from applicants and residents suggested that installation assistance may be required, which has subsequently been corroborated by the wider survey.

The project partners met at South Gloucestershire Council's offices to discuss options available. The council was unable to install the materials themselves or provide the funds for external contractors. Therefore the team decided to contact local care agencies, insulation contractors and general handy persons.

Due to the high proportion of elderly applicants the team contacted both South Gloucestershire Care and Repair and Age Concern. Unfortunately neither organisation had the resources available to install their materials. Care and Repair supplied a list of handy persons who were subsequently contacted by MGC Ltd and offered free training in the installation of materials.

South Gloucestershire Council contacted local contractors and identified two companies that were willing to quote for installation (Hawkins Insulation and D&G). D&G has a HTTHs team that are trained in the installation of Sempatap. Based on discussions with these two companies and approximate floor areas of park homes, the team estimated installation costs of £250 for a single unit and £500 for a double unit. In reality the costs quoted to householders have been a minimum of £500.

CSE contacted the local pathways to work agency and the Princes Trust to identify the projects suitability for these programmes. The local pathways to work programme was interested in the scheme, but they did not currently have a client whose employment preference was painting or decorating. The Princes Trust was also interested in the scheme, but stated that the team would need a defined block of installations to form part of the personal development programme. Thus, allowing a future implementation programme to involve members of the scheme.

The scheme provided the details of the identified contractors and Age Concern handy persons to both new and previous applicants. Furthermore the details of installation costs were used in the wider survey of residents to inform future scheme design.

When asked if residents would be happy to use an installation service if they felt unable to put the insulation up due to health or mobility issues, 12 of the 34 (35%) respondents said yes. Of those respondents that were prepared to use an installation service none were prepared to pay the full cost, 7 (58%) require a free service, and 5 (42%) were prepared to pay half the costs.

Subsidies for Ineligible Residents

The wider survey also investigated the potential to target those residents previously ineligible by offering the product at a subsidised cost. The questionnaire provided the supplied costs of £13.50 per m^2 for walls (including adhesive) and £10 per m^2 for floors. In order to provide residents with an indication of total cost, the questionnaire estimated single units to have a floor area of approximately 40m^2 and a wall area of 60 m^2 with dimensions of 80 m^2 (floor) and 75 m^2 (wall) for a double unit.

The survey asked those ineligible respondents to identify if they would be happy to pay for the insulation at a subsidised cost. From the 11 respondents that stated they were ineligible 9 replied, with 5 (56%) stating they would not be prepared to pay. Two of the remaining 4 were prepared to pay half the costs and 2 prepared to pay 25%. Therefore a possible adaptation to the pilot design and the implementation phase may be to offer materials to all residents at a subsidised cost.

4.7.2 Findings from the technical evaluation of the fixed thermal insulation

The individual results for the park homes analysed are shown in Appendix III. As discussed in the methodology, the profile of park homes selected was designed to match the overall composition of sites. The technical analysis commenced before the production of a site profile by the wider survey of park homes. Therefore, the selection was based on a visual survey of the targeted sites and discussions with residents conducted during the demonstration events.

Although not part of this study, CSE evaluated the thermal performance of Teste Teres and a combined package of STT, SF and Teste Teres. The technical findings for these scenarios in each dwelling are shown in Appendix III, with further information regarding their cost and payback.

The report has not investigated these additional scenarios in depth as this falls outside the scope of the project. However, Appendix III shows that the payback for Sempatap and Testa Teres are comparable for pre and post 1996 park homes. As stated in the methodology the technical findings will provide South Gloucestershire Council with a wider knowledge of savings associated with potential products for implementation, and also help inform the EST's technical team.

The project has seen residents install a range of materials e.g. STT, SF or both. The analysis of total and outstanding installations has demonstrated that the majority of residents installed both materials throughout the majority or the entire park home. The homes shown in table 5 applied the materials on the walls and floors throughout the majority of their homes, with the exception of small inaccessible areas or recently floored areas e.g. where laminate had

been laid. The homes surveyed as part of the technical evaluation are all 'off the gas' network and as such use LPG as their main heating fuel.

Table 5: Savings and Payback Associated with the Installation of STT and SF insulation

Property	Type	Pre-BS	Wall Area (m^2)	Floor Area (m^2)	Cost of Materials	Financial Savings	Payback
Single Theoretical	Sg	Y	60.5	29.7	£1,113	£30	37
35 Kingsway	Sg	Y	60.5	29.7	£1,113	£50	22
15 Greenacres	Db	Y	59.7	42.4	£1,230	£74	17
93 Greenacres	Db	N	58.0	82.3	£1,606	£18	89
92 Greenacres	Db	N	54.0	86.0	£1,589	£14	113

Prior to commenting on the costs and savings shown above it is worth examining the total running costs for all energy use experienced by residents in park homes (see Appendix III). The running costs shown vary from £649 (35 Kingsway – single unit built pre-1996) to £917 (15 Greenacres – double unit built pre-1996) for the park homes shown in the table above, with space and water heating demands representing approximately 85% of the total running costs.

The SAP values of these two properties of 6 and 1 (35 Kingsway and 15 Greenacres) are extremely low. SAP values are derived from the ratio of running costs to floor area, which indicates that these properties are extremely inefficient with high running costs. It is important to highlight this as the residents of park homes are at higher risk of fuel poverty than residents in traditionally constructed dwellings. This problem is exacerbated further as the sites are 'off gas' and as such rely on LPG i.e. a higher cost fuel.

Indeed, the results for 'single theoretical' show that once the modified roof added by the resident is removed SAP decreases to 0 and running costs increase to £802. Prior to the roof's addition, the unit at 35 Kingsway was a typical example of a single unit built prior to 1996. The roof was removed and the property modelled as 'single theoretical' to enable the analysis of running costs in these properties and the additional benefits of new well insulated DECRA[2] roof systems.

The table detailing payback and costs demonstrates that the installation of Sempatap is a cost effective measure for both the homes built prior to 1996 e.g. 35 Kingsway and 15 Greenacres. However, the payback of approximately 20 years is reduced when the modified roof is removed from 35 Kingsway. The running costs for the theoretical unit increase dramatically as the roof is removed, with the benefit of the wall insulation offset by heat loss through the roof. Therefore, we would recommend any future implementation

[2] DECRA roofs are wood framed roofs covered with light weight steel tiles. These roofs are commonly fitted to new park homes or retrospectively fitted to flat roofed homes. The retrospective installation of a DECRA roof includes the addition of 200mm of mineral wool quilt.

scheme ensures that adequate insulation of the roof is installed prior to insulation of the walls.

The paybacks of 89 and 113 years for the park homes built after 1996 show that the measure is not cost effective in purely financial terms. However, these properties are HTTH without cavity walls that can be easily insulated. Thus the high running costs can only be reduced by the insulation of properties regardless of economic constraints.

The results in Appendix III for 93 Greenacres show the savings associated with 'INSULATE AND SEMPATAP'. These results show the impact of installing STT and SF throughout and increasing loft insulation from 50mm to 250mm. The additional saving of £115 reduces the payback for a combined package of STT, SF and loft insulation to approximately 17 years.

The savings associated with loft top up demonstrate the importance of addressing the thermal efficiency of the roof space prior to the walls. Indeed the project team referred the residents to the councils EEC scheme 'Warm and Well', but due to resident illness the measure has yet to be installed.

Table 6: SAP ratings prior to and following installation of STT and SF

Property	Original	SEMPTAP
Single Theoretical	0	0
35 Kingsway	6	11
15 Greenacres	1	6
93 Greenacres	17	19
92 Greenacres	39	40
Avs Park Homes	**13**	**15**

Table 6 shows the relative change in SAP due to the installation of STT and SF. The average SAP improvement was 2 points, with a minimum improvement of 0 for the least thermally efficient property 'single theoretical' and a maximum of 5 for 35 Kingsway and 15 Greenacres. The lack of improvement for 'single theoretical' proves that the running costs per m^2 are still too high to result in the achievement of a minimum SAP value of 1.

Table 7: Total energy use prior to and following installation of STT and SF

Property	Original SHD* (kWh)	SEMPTAP SHD (kWh)	Reduction (kWh)	% Change
Single Theoretical	14,500	13,750	750	-5%
35 Kingsway	10,750	9,500	1,250	-12%
15 Greenacres	14,583	12,833	1,750	-12%
93 Greenacres	16,389	15,972	417	-3%
92 Greenacres	8,306	7,945	361	-4%
Avs Park Homes	**12,906**	**12,000**	**906**	**-7%**

** SHD – Space heating demand*

The table 7 shows that the highest total reduction in space heating demand of 12% occurred in the two park homes built prior to 1996. Although the overall running costs for these properties shown in Appendix III are still relatively high, the 12% decrease represents a significant fall in demand. The removal of the roof added to 35 Kingsway results in a 7% increase in space heating demand i.e. an overall decrease of 5%, which means the effects of installing STT and SF are then comparable to those for the units built post-1996.

Table 8 shows the impact of STT on the overall U-value of walls when applied. The table demonstrates that STT improves the U-value of walls in pre-1996 homes by approximately 21% and 10% for post-1996 homes. These two figures represent a significant improvement; with the percentage improvement for pre-1996 homes similar to that when STT is applied to solid brick walled HTTHs.

Table 8: Change in wall U-value following the installation of STT

Property	Original Wall U-value (Wm-2K)	SEMPTAP Wall U-value (Wm-2K)	% Change
Single Theoretical	1.55	1.24	-20%
35 Kingsway	1.55	1.24	-20%
15 Greenacres	1.87	1.45	-22%
93 Greenacres	0.66	0.61	-8%
92 Greenacres	0.75	0.66	-12%
Av. Park Homes	**1.28**	**1.04**	**-16%**

Interestingly the table shows that the NHER model created by CSE calculated overall wall U-values that are higher than the current BS target. The discrepancy is either due to substandard wall construction or inaccurate modelling based on the limited information supplied.

The two park homes built after 1996 were constructed by Linden homes (93 Greenacres) and Tingdene (92 Greenacres). The level of information provided by Linden was relatively comprehensive given that the home was built 7 years ago. Indeed the manufacturer's technical department was interested in the study and its implications for future park home design. However, the level of information supplied by Tingdene was comparatively poor with the manufacturer expressing no interest in the energy efficiency of their homes, the new BS or the study. The pride shown by Linden in their product is reflected in the Sap score of 39 compared to 17 for a park home built at a similar time by a competitor.

The results of the NHER modelling for the installation of Testa Teres and a combined package may have serious implications for the revision of the BS for park homes. The results in Appendix III for the park homes built post-1996

show that external cladding is needed for 93 Greenacres to reach a similar standard to new homes under Part L Building Regulations, with a combined package of both measures needed for 92 Greenacres.

There are a number of criteria by which a park home is defined, but there is a maximum built size of 46 by 20 feet. Therefore an increase in the overall U-value standard for walls will have implications for wall construction and home floor space. Park homes providers will need to review wall construction as a result of a change to the BS.

Table 9: Change in wall U-value following the installation of STT

Property	Original CO_2 (t)	SEMPTAP CO_2 (t)	Reduction CO_2 (t)	% Change
Single Theoretical	5.30	5.10	0.20	-4%
35 Kingsway	4.40	4.10	0.30	-7%
15 Greenacres	6.00	5.50	0.50	-8%
93 Greenacres	6.30	6.20	0.10	-2%
92 Greenacres	4.40	4.30	0.10	-2%
Avs Park Homes	**5.28**	**5.04**	**0.24**	**-5%**

Table 9 demonstrates that the highest total reduction in CO_2 of 0.3 and 0.5 tonnes occurred in the two park homes built prior to 1996, which equates to an overall reduction of 7 to 8%. The removal of the roof added to 35 Kingsway results in a 0.1 tonne increase to the total CO_2 saving. The installation of materials in the homes built post-1996 resulted in small decrease in 0.1 tonnes or 2% of overall emissions.

Application STT to Single Theoretical Ceiling

Appendix III shows the savings achieved due to the installation of Sempatap on all surfaces (SEMP inc C) and the ceiling only (SEMP only C) for single theoretical. The modelling shows that the installation of STT to the ceiling alone results in higher savings than that achieved by installing Sempatap to the walls and floor i.e. £48 compared to £30. NHER analysis of roof U-value shows that the roof U-value falls to 2.18 from 3.32 i.e. a 34% improvement.

The total roof area of single theoretical was 29 m^2 which results in a DIY cost for ceiling insulation of £392. This results in a simple payback of approximately 8 years based on a saving of £48. The addition of an insulated pitched roof to single theoretical reduced running costs from £802 to £649 (see 35 Kingsway). Based on feedback from South Gloucestershire Council's private sector housing team new DECRA roofs for single units would cost approximately £1,500, which results in a payback of 10 years.

Thus based on energy savings alone the use of STT to insulate ceilings of park homes that have flat roofs, or do not have access to their loft space represents an extremely cost effective measure to reduce running costs.

However, the addition of a new pitched roof (e.g. DECRA roof system) also provides additional weather proofing.

The analysis also demonstrates that the installation of STT to all surfaces results in a savings of £86. The additional cost of insulating the ceiling results in a system cost of £1,505 with a simple payback of 17.5 years. The new payback is significantly lower than that for a combined package of STT (walls) and SF i.e. 37 years. Thus the use of STT to insulate park home ceilings offers a solution to the previously identified need to insulate ceilings prior to the treatment of walls and floors.

4.7.3 Findings of the survey of residents that have installed the fixed thermal insulation

Survey Questions for Residents

1. Where in your home did you install Sempatap e.g. walls, floors, both, a single room?
2. Do you feel that the material has made a difference to the thermal comfort of your home?

   If it has, do you have an idea / feel for the level of financial saving?
3. What DIY skills do you feel were required to install Sempatap?
4. How long did it take you to install the materials?
5. Were there any issues with preparing the surfaces or rooms?
6. How easy did you find it to handle and install the materials?

   Do you have any tips for other people who may install the materials in the future?

The telephone survey obtained responses from 8 of the 9 residents that had completed and returned their completion certificate. The remaining resident to be interviewed is currently in Spain and will not return until 2005. The survey of park home age demonstrated that 6 of the 8 respondents had homes built before the BS was introduced in 1996, and 2 had homes built following its introduction. The average age of those properties built prior to the BS's introduction was 1980, with those post BS built in 1997 and 1998 (see summary table in Appendix IV).

The first question asked residents where in the home they installed the materials. Both those park homes built following the BS's introduction installed STT and SF throughout their homes, with the exception of a small area of floor and wall at 92 Greenacres.

The remaining 6 park homes built prior to 1996 installed STT and SF in a variety of areas. Appendix IV shows that the materials have been installed on; all surfaces; both walls and floors; both ceiling and walls; the ceiling only; floor only and a living room. The analysis of its application to the ceiling of 'single theoretical' demonstrated that significant savings can be achieved.

The insulation of park homes roofs and loft spaces is a key issue for park home owners. The wider survey of residents (see table 10) demonstrates that 5 (15%) of those surveyed knew the current level of insulation in their loft. The majority of respondents (21 or 62%) did not provide an answer with a further 7 (21%) commenting that they had none or no loft.

Table 10: Summary of responses for wider survey question on levels of loft insulation

Size of Home	10cm	15cm	Higher	No answer	No loft	None	Total
Double	2	2		13		3	20
Larger than Double				2			2
Not given				1			
Single		1	1	5	1	3	11
Grand Total	**2**	**3**	**1**	**21**	**1**	**6**	**34**

The residents were asked if they felt that the materials made a difference to the thermal comfort of their homes. Appendix IV shows that 6 of the 8 (75%) residents surveyed noticed an improvement in the thermal comfort of their home. These residents noted that their homes were either warmer or warmed up faster, but stated that it was too early to judge financial savings. The remaining two residents stated that it was too early to judge if the materials improved thermal comfort or reduced running costs.

Figure 4: Residents from 92 Greenacres holding a piece of STT

The age of the park home, e.g. built before or after the BS introduction, had no effect on the residents' perception of thermal comfort. Indeed, both those residents' park homes built post-1996 noted that their homes are warmer. Mr Hussey (92 Greenacres) stated that condensation now formed on the windows, which is a classic symptom of HTTH that are insulated and subsequently require improved ventilation, e.g. heat recovery units in the kitchen and bathroom.

The perception of improved thermal comfort does not seem to be affected by area of application. Appendix IV shows that Janet Rew noticed that her park home was warmer, but she only applied the materials to her lounge floor and walls. In contrast Mr Pincott insulated his floor and ceiling and felt that it was too early to judge if the home as warmer. Indeed, the technical analysis has shown that the insulation of ceilings has a greater effect on energy use than the insulation of floors and walls, but Mr Griffiths and Suddell (insulated walls and floors) stated their home was warmer.

A key component of the study was to examine the product's suitability as a DIY measure. The previous analysis of scheme take up has demonstrated that residents' health and age had been a factor in low uptake. Three (38%) of those responding found it relatively easy to install, however, one of these had to cut the materials in half due to their weight.

Indeed, half of those that responded stated that the weight of the materials was an issue, with 3 indicating that this made the materials difficult to install. Indeed, one resident had to hire professional help and still needed to cut the materials into 1 m^2 squares to install them. The issues surrounding the weight of materials may be related to the age and fitness of residents installing materials. Residents came up with a range of solutions for installation, which included:

- Application of the materials horizontally as it was too heavy to apply vertically (similarly to cross-lining wallpaper)
- Cutting the materials into 1m^2 sections so that they were easier to apply.
- Cutting the materials in half

The materials application was compared to wall paper during the demonstration road show. In total 3 residents indicated that the application was similar to wall paper, with 2 of these not noting a difficulty with installation. One resident indicated that the installation of Sempatap was not as simple as it appeared when demonstrated, with difficulties moving the material once applied. It is worth noting that half of the respondents indicated that they needed 2 people to install materials e.g. employing support or enlisting additional help from family and friends.

The time required to install materials is also an important consideration for the potential implementation project, with residents given 6 months to install the materials following delivery. The limited storage space in park homes means that the time taken to install materials will have an impact on disruption to residents.

The responses varied with regard to the length of time taken to install Sempatap due to the different internal applications. The majority of respondents indicated that the materials took 2 to 4 days to install; however, 2 residents took a couple of months to install materials due to age (over 80) and illness.

The preparation of surfaces could have been a potential issue for residents installing materials; however, no residents identified major problems. A total of 5 residents applied materials to their walls, with 4 (80%) of these indicating that they removed wall paper or wall coverings.

In total 6 residents installed materials on their floor with only 2 (33%) indicating the movement of furniture as an issue. Three residents installed STT on their ceilings, with one resident needing to take down a seam and install materials over it and another needing to paint their walls.

The final question asked residents how easy they found the material to handle, and also if they had any tips for other future DIY installers. The synopsis of answers to the third question covering the DIY skills required has incorporated a number of residents' responses. The main suggestions included:

- Use scissors to cut the material, rather than a knife. Scissors don't shear the edges and foam.
- The installation of Sempatap is physically beyond most 70 year olds, and the over-70s was a qualifying characteristic for those to receive it free as a DIY measure.
- The adhesive is easier to apply with a brush.
- The material was very hard to trim around corners and edges, even with a new knife and spare blades.
- We also had the cut the material into 1m² squares because it fell down when trying to glue it to the ceiling.
- The material is easier to handle if you cut it into 1m² squares. It's also better to get the size and shape right before being put on the walls. Also, you should use decorating scissors to cut the material as it gives a cleaner cut.

4.7.4 Summary of the energy efficiency advice delivered during the feasibility study

The additional scheme savings associated with the energy efficiency advice delivered have been calculated using the Innovations Implementation Programme funding guidance 'E3 Energy Efficiency Measures' to determine energy usage, and DEFRA's Guidelines for Company Reporting on Greenhouse Gas Emissions[3] to determine CO_2 reduction.

The road show at Woodlands Park Social Club on the 24th May led to the completion of 17 Home Energy Checks and distribution of CFLs to a similar number of residents. The CFLs distributed at the Woodlands park event led to yearly savings of 995 kWhs and 0.43 tonnes of CO_2, which equates to a lifetime saving of 16,907 kWhs and 4.28 tonnes of CO_2.

The additional road shows that were performed outside of the Innovations project led to the completion of a further 33 HECs and distribution of a further

[3] http://www.defra.gov.uk/environment/envrp/gas/05.htm

23 CFLs, however, the savings associated with these measures have not been counted.

The 15 current applications that have led to the installation or delivery of materials have resulted in the installation of additional measures. Two residents have installed new condensing boilers (1 LPG and 1 gas) through the council's Warm and Well scheme and housing renewal grants. Based on the average Innovation's savings for the fuel types, these boilers will save 2,134 kWhs a year offsetting 0.41 and 0.45 tonnes of CO_2 respectively. This equates to a lifetime saving of 64,014 kWhs and 12.8 tonnes of CO_2.

In addition to the new boilers an applicant has also applied to fridge savers for a new 'A' rated fridge freezer. The telephone survey to residents that responded to the wider survey also resulted in a referral to fridge savers. Thus the scheme has resulted in the installation of 2 new 'A' rated fridge freezers. Based on fridge savers savings of £35 at 6.6 p/kWh, this equates to a saving of 2,121 kWhs per year for both fridges or 0.13 tonnes of CO_2. Assuming an appliance lifetime of 15 years this equates to a total saving of 31,818 kWhs or 6.84 tonnes of CO_2.

Table 11: Outcome of Call backs to Wider Survey Residents

Outcome of call back	Total
Advice not required	11
Message left	10
Sent information	2
Unobtainable	5
Verbal advice	6
Total	**34**

The table above details the outcome of call backs to residents that responded to the wider survey. In total 8 (24%) residents received verbal advice with 2 of these requesting additional information. The survey contacted 11 residents that did not require further advice with several commenting that the EEAC newsletter was of interest.

The energy efficiency road show and EEAC calls to wider survey respondents also provided general advice to approximately 48 residents with 17 subsequently receiving home energy checks. The additional activity and savings generated by these activities is difficult to quantify. Indeed, the EST has recently published indicative savings associated with HECs for traditional homes e.g. cavity wall uptake, however, for these figures are not suitable for use with park homes. This survey has therefore been unable to quantify these savings.

4.7.5 Dissemination of results

The project team hope that the results of this study may be used to encourage the National Caravan Council to lobby for improved U-values in the impending update of the British Standard for park homes construction.

CSE plan to publish this report on their website in PDF format. The report will be linked from a project profile that summarises the key details of the project i.e. location, aims and objectives, partners methodology and main conclusions. CSE will also publish key findings from the feasibility study in via its monthly email bulletin.

The results of the study have already been disseminated to the Energy Saving Trusts technical team. It is hoped the projects findings will facilitate the products recognition for future funding schemes e.g. EEC.

5. Key Issues

The analysis of scheme take up has demonstrated that the eligibility criteria and the demographics of park homes residents were the key issues for the pilot project. The combination of residents' ineligibility and having recently decorated could have reduced the potential client base by approximately 2/3rds. The potential client base is then further reduced by the possible ill health of those typically elderly residents that are eligible.

The council's home energy coordinator has managed the grants process and as such received detailed feedback from applicants that both received materials, and following initial interest declined materials. The availability of space within park homes to store materials prior to installation has been cited as key issue for residents. However, similarly to the issues surrounding difficulties of installation due to ill heath or poor mobility, an installation service would overcome these issues. Furthermore, an installation service would encourage residents to apply that felt the surface preparation would be to difficult i.e. plywood park home wall surfaces are more difficult to strip than a traditional plaster finish.

The council's home energy coordinator does not usually manage grant administration. The administration process has been considerably time consuming due to difficulties in arranging the delivery of materials and collection of unused materials e.g. part rolls and cancellations.

Summary of key issues:

- Eligibility criteria: The existing age range for eligibility is too narrow which has led to the exclusion of residents that may have been more capable of installing the materials as a DIY measure.
- Eligibility criteria: The technical analysis and feedback from residents has demonstrated extremely high fuel bills which may mean that they are in fuel poverty regardless of ineligibility for means tested benefits.
- DIY Installation: Under the existing eligibility criteria the materials are not necessarily an appropriate DIY measure for the park homes market.
- Installation service: The provision of an installation services may overcome the issues of materials storage and the ability of residents to install materials. The market survey has shown that the contractor

costs identified that the majority of residents needed free installation with 42% prepared to pay 50%.

- Grant processing procedures: The council's private sector housing administrator needs to administer grant applications in future feasibility projects.
- Estimating energy savings: The estimation of potential energy savings for a wider implementation project would be complex due to the variations in park homes age, size, construction and areas insulated. For example, the completion of scheme reports and HECA returns summarising energy and CO_2 savings would require more complex technical analysis.
- Advocacy: The involvement of Care & Repair or another agency to facilitate the whole project may prove more cost effective for the delivery of a potential implementation project.
- Marketing: Future projects with park homes may benefit from further market research to identify the optimum eligibility criteria for scheme take up, and the realistic fuel poverty levels of those living in fuel poverty.
- Storage and delivery costs: The additional costs of storage and delivery need to be built into the overall funding arrangements e.g. part of revenue funding.
- Communication: Good communication between project partners enabled the early identification of low take up rates, which facilitated an additional meeting to discuss future options for installation services.

6. Recommendations

1. STT and SF are cost effective measures for installation in park homes built before 1996. The payback of approximately 20 years is comparable with the majority of measures designed to treat HTTHs.

2. For park homes with flat roofs or inaccessible loft spaces, applying STT to the ceiling is a cost effective measure to reduce fuel bills. Furthermore, STT offers residents a lower cost alternative to the installation of a new pitched DECRA roof. However, in some cases a new roof can be applied for as part of a housing renewal grant to address weather proofing.

3. The technical analysis has suggested that the insulation of roof spaces is a priority for those park homes that currently have uninsulated roofs. This is a common scenario for older single units with flat roofs.

4. The project team would recommend that future projects targeting a new audience undertake market research first to identify the audience demographics and the logistics of measures installation.

5. The pilot project and any future implementation project need as wide a range of eligibility criteria as possible. The site demographics e.g. age and eligibility coupled with the trend for decoration mean that the existing design has constrained possible installations.

6. Future projects need to be designed and sized according to the market research. This will reduce additional overheads incurred by storage, transport and collection of materials.

7. The identification of potential clients should begin at an earlier market research stage which would inform demand for materials and storage space, and reduce the delay between scheme start up and the beginning of installations

8. The supply of STT and SF to eligible residents (e.g. elderly) under the current scheme may not represent the most appropriate solution for park homes. The relaxation of eligibility criteria to the under 60s and the provision of an installation service may overcome this. However, the storage of materials upon delivery and prior to installation will still be an issue for those installing the materials as a DIY measure.

9. Both the technical analysis of park homes and scheme dialogue with residents has demonstrated that residents experience extremely high fuel bills (i.e. heating and appliances), which are exacerbated for residents using LPG as a main heating fuel e.g. £110 per month in the heating season. The EEP for Homes Fuel Poverty sub-group is particularly interested in the impact of non traditional homes on fuel poverty. Therefore, the project team would suggest that research to assess the levels of and risk of fuel poverty in this sector. Indeed, South Gloucestershire Council has indicated that it may need to consider this as part of their future review of HECA Strategy.

7. Conclusions

To date the installation of Sempatap under this project has resulted in total yearly energy savings for all installations of 8,656 kWhs or 2.3 tonnes of CO_2, which equates to a lifetime saving of 259,680 kWhs or 69 tonnes of CO_2. The additional energy efficiency activity described in section 4.7.4 has led to further yearly energy savings of 7,384 kWhs or 1.42 tonnes of CO_2, with lifetime savings of 112,739 kWhs or 23.9 tonnes of CO_2.

To date the Innovations pilot programme has therefore resulted in a total yearly saving of 16,040 kWhs or 3.72 tonnes of CO_2, with lifetime savings of 372,419 kWhs or 92.9 tonnes of CO_2.

The study has shown that STT and SF are cost effective measures for installation in park homes built before the introduction of the British Standard for construction. Indeed, the payback of approximately 20 years is comparable with the majority of measures designed to treat HTTHs.

The analysis has shown that the installation of STT on the ceilings of park homes with flat roofs or inaccessible loft spaces is a cost effective measure with relatively low payback times i.e. 8 years. Indeed, STT offers residents a lower cost alternative to the installation of a new pitched DECRA roof.

However, the evaluation of take up and scheme design demonstrates that an internal insulation system may not be the most appropriate for this type of dwelling and this type of householder. This is due to the difficulties with space limitation whilst carrying out the work, lack of storage space for materials, internal surface finish applied at construction and the make up of the typical park homes household i.e. older people perhaps with disability or mobility issues.

Whilst the material has been successfully used by some householders the level of take up has been much lower than the council anticipated. Therefore, if such a project was rolled out on a wider basis the council would have to offer householders a grant aided installation service which would add a significant cost to the project.

Indeed, the council was attracted to the material due to the DIY application and associated reduction in costs. The private sector housing team has therefore decided not proceed to the implementation phase of the programme.

Appendix I: Eligibility Criteria

In order to be eligible for a full grant residents need to be either 70 or over, or themselves or their partner would need to be claiming one of the following means tested benefits.

- Income Support
- Income-based jobseeker's allowance
- Housing Benefit - Including disability premium
- Council Tax Benefit - Including disability premium
- Pension Credit
- Working Tax Credit*
- Child Tax Credit**
- Attendance Allowance
- Disability Living Allowance
- War Disablement Pension***
- Industrial Injuries Disablement Benefit (including constant attendance allowance)
- Long term Incapacity Benefit

* = with an income of less than £14,200 pa and which includes a disability element
** = with an income of less than £14,200 pa
*** = including a mobility supplement / constant attendance allowance

Appendix II: Wider Survey Questionnaire

SOUTH GLOUCESTERSHIRE COUNCIL
SURVEY OF PARK HOME OWNERS AND PRIZE DRAW

By completing this questionnaire, you will be entered into a free prize draw to win a solar-powered radio and 2 low-energy light bulbs!

ABOUT YOU

Title (Mr/Mrs/Miss/Ms/Other): ……..…….. Name: ……..……

Address: <MAILMERGE>

Make of Home ……..……..……

Size of Home ☐ Single Unit ☐ Double Unit ☐ Larger than these

Year Home Built ……..……..……

Tel: ……..……..……

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1. South Gloucestershire held an energy roadshow at Woodlands Park Social Club on 24 May 2004. The event demonstrated free insulation that you could apply for to help reduce your fuel bills and make your home warmer.

   Did you attend the event? ☐ Yes ☐ No

   If not, had you heard about the event? ☐ Yes ☐ No

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2. The event supplied cakes and refreshments to those attending. If you didn't attend, what incentives could have been offered to encourage you to attend?

   ☐ A prize draw or raffle

   ☐ Entertainments, e.g. energy efficiency bingo

   ☐ Other ……..……..……

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3. What were the main factors that discouraged you from applying for the free thermal insulation? *(Tick all that apply)*

   ☐ Eligibility criteria (see eligibility list)

   ☐ Have recently decorated

☐ Ill health or mobility problems

☐ Do not believe it would have saved money or increased comfort levels

☐ Reduction of space, e.g. reduced room size

☐ Other ……..……..……

4a. If you felt unable to put the insulation up due to health or mobility issues, then would you have been happy to use an installation service? ☐ Yes ☐ No

4b. If yes, then would you have been prepared to pay a fee for installation?

☐ No, I would need the insulation installed for free

☐ I would be willing to pay half the cost (approximately £250 for a double unit)

☐ I would be willing to pay the full cost (approximately £500 for a double unit)

5a. If you weren't eligible then would you have purchased the materials at a subsidised cost? ☐ Yes ☐ No

5b. If yes, then what level of subsidy would have been acceptable?
(Based on a cost of £13.50 per m^2 for walls (including adhesive) and £10 per m^2 for floors)
A single unit may have a floor area of approximately 40m^2 and a wall area of 60m^2 & a double unit may have a floor area of approximately 80m^2 and a wall area of 75m^2)

☐ 75% ☐ 50% ☐ 25%

There may be some key areas within your home where you could save money on your fuel bills. Answer the questions below and return the questionnaire, then we can inform you of other grants and energy-saving measures.

6a. If you have a loft, what is your current level of loft insulation?

☐ None ☐ 5 cm ☐ 10 cm ☐ 15 cm ☐ Higher than these

6b. Do you have any low-energy light bulbs in your home?

☐ None ☐ A few ☐ Some ☐ Most

6c. Do you have an old fridge that needs replacing soon or is faulty?

☐ Yes ☐ No

6d. Can you describe your heating system, i.e. age, type and what fuel you use?

Age (years) ……..……. Type (e.g. boiler) ……

Fuel (e.g. gas, LPG, oil) ……..……

6e. If you have radiators, do you have valves to control the heat emitted? e.g. 1 to 6

☐ Yes ☐ No

Please find enclosed further information about grants and energy efficiency measures that you may be eligible for. Please take the time to read through this information, as you may be eligible for free or half-price loft insulation!

The Energy Saving Trust, the data controller, is collecting your data for the purpose of supplying you with energy efficiency advice that will help you reduce your energy use. The Trust will also retain your data for the purpose of carrying out research and statistical analysis into the energy efficiency of UK housing stock. Your local Energy Conservation Authority will also receive your data for the purposes of energy efficiency monitoring, targeting and reporting. In the future, the Trust may wish to send you further relevant information on energy efficiency and sustainable energy use. It may also disclose your details to other appropriate organisations who may wish to send you similar information. If you are happy to receive this further information please tick here. ☐

Appendix III: Results of modelling the impact of fixed thermal insulation on energy efficiency and running costs

Single Unit Built pre-1996 - Single Theoretical

Scenario	SAP rating	NHER rating	Space Heating Energy Demand kWh	% change in Space Heating energy demand	Total Bills (£)	Financial Saving	Wall U-value	% Change in U-value	Total CO2 as modelled by NHER	% change in CO2 emissions	Carbon Emissions t per m2
Base case	0	0.4	14,500	n/a	£802.00	n/a	1.6	n/a	5.3	n/a	0.178
SEMPATAP	0	0.5	13,750	-5.2%	£772.00	£30.00	1.24	-20.0%	5.1	-3.8%	0.172
SEMP (inc C)	0	0.8	12,389	-14.6%	£716.00	£86.00	1.24	-20.0%	4.8	-9.4%	0.162
SEMP (only C)	0	0.6	13,306	-8.2%	£754.00	£48.00	1.24	-20.0%	5.0	-5.7%	0.168
EXTERNAL	1	0.9	12,083	-16.7%	£704.00	£98.00	0.51	-67.1%	4.7	-11.3%	0.158
SUPER	2	0.9	11,806	-18.6%	£692.00	£110.00	0.47	-69.7%	4.6	-13.2%	0.155

Single Unit Built pre-1996 - 35 Kingsway

Scenario	SAP rating	NHER rating	Space Heating Energy Demand kWh	% change in Space Heating energy demand	Total Bills (£)	Financial Saving	Wall U-value	% Change in U-value	Total CO2 as modelled by NHER	% change in CO2 emissions	Carbon Emissions t per m2
Base case	6	1.2	10,750	n/a	£649.00	n/a	1.6	n/a	4.4	n/a	0.148
SEMPATAP	11	1.6	9,500	-11.6%	£599.00	£50.00	1.24	-20.0%	4.1	-6.8%	0.138
EXTERNAL	21	2.9	6,722	-37.5%	£485.00	£164.00	0.47	-69.7%	3.4	-22.7%	0.114
SUPER	23	3.1	6,444	-40.1%	£474.00	£175.00	0.47	-69.7%	3.3	-25.0%	0.111

Double Unit Built pre-1996 - 15 Greenacres

Scenario	SAP rating	NHER rating	Space Heating Energy Demand kWh	% change in Space Heating energy demand	Total Bills (£)	Financial Saving	Wall U-value	% Change in U-value	Total CO2 as modelled by NHER	% change in CO2 emissions	Carbon Emissions t per m2
Base case	1	0.6	14,583	n/a	£917.00	n/a	1.9	n/a	6.0	n/a	0.142
SEMPATAP	6	0.8	12,833	-12.0%	£843.00	£74.00	1.45	-22.5%	5.5	-8.3%	0.130
EXTERNAL	15	1.5	9,583	-34.3%	£708.00	£209.00	0.54	-71.1%	4.6	-23.3%	0.108
SUPER	17	1.6	9,056	-37.9%	£687.00	£230.00	0.50	-73.3%	4.5	-25.0%	0.106

Double Unit Built post-1996 - 92 Greenacres

Scenario	SAP rating	NHER rating	Space Heating Energy Demand kWh	% change in Space Heating energy demand	Total Bills (£)	Financial Saving	Wall U-value	% Change in U-value	Total CO2 as modelled by NHER	% change in CO2 emissions	Carbon Emissions t per m2
Base case	39	5.7	8,306	n/a	£650.00	n/a	0.75	n/a	4.4	n/a	0.051
SEMPATAP	40	5.9	7,945	-4.3%	£636.00	£14.00	0.66	-12.0%	4.3	-2.3%	0.050
EXTERNAL	44	6.5	6,833	-17.7%	£591.00	£59.00	0.37	-50.7%	4.0	-9.1%	0.047
SUPER	45	6.6	6,722	-19.1%	£589.00	£61.00	0.35	-53.3%	3.9	-11.4%	0.045

Double Unit Built post-1996 - 93 Greenacres

Scenario	SAP rating	NHER rating	Space Heating Energy Demand kWh	% change in Space Heating energy demand	Total Bills (£)	Financial Saving	Wall U-value	% Change in U-value	Total CO2 as modelled by NHER	% change in CO2 emissions	Carbon Emissions t per m2
Base case	17	2.9	16,389	n/a	£971.00	n/a	0.66	n/a	6.3	n/a	0.077
SEMPATAP	19	3	15,972	-2.5%	£953.00	£18.00	0.61	-7.6%	6.2	-1.6%	0.075
EXTERNAL	20	3.2	15,222	-7.1%	£923.00	£48.00	0.35	-47.0%	6.0	-4.8%	0.073
SUPER	21	3.3	14,889	-9.2%	£909.00	£62.00	0.33	-50.0%	5.9	-6.3%	0.072
INSULATE & SEMPATAP	25	3.6	13,556	-17.3%	£856.00	£115.00	0.59	-10.6%	5.6	-11.1%	0.068

Appendix III: (continued) System costs, savings and paybacks

Modelled Costs for Installed Measures

Property	Type	Pre-BS Standard	Wall Area	Floor Area	Cost of STT & SF	Cost of Testa Teres	Cost of SUPER
Single Theoretical	Sg	Y	60.5	29.7	£1,113	£3,675	£4,788
35 Kingsway	Sg	Y	60.5	29.7	£1,113	£3,675	£4,788
15 Greenacres	Db	Y	59.7	42.4	£1,230	£3,675	£4,905
93 Greenacres	Db	N	58.0	82.3	£1,606	£3,675	£5,281
92 Greenacres	Db	N	54.0	86.0	£1,589	£3,675	£5,264

Modelled Total Savings for Insulation Scenarios

Property	Type	Pre-BS Standard	STT & SF	Testa Teres	SUPER
Single Theoretical	Sg	Y	£30	£98	£110
35 Kingsway	Sg	Y	£50	£164	£175
15 Greenacres	Db	Y	£74	£209	£230
93 Greenacres	Db	N	£18	£48	£62
92 Greenacres	Db	N	£14	£59	£61

Modelled Payback in years for Insulation Scenarios

Property	Type	Pre-BS Standard	STT & SF	Testa Teres	SUPER
Single Theoretical	Sg	Y	37	38	44
35 Kingsway	Sg	Y	22	22	27
15 Greenacres	Db	Y	17	18	21
93 Greenacres	Db	N	89	77	85
92 Greenacres	Db	N	113	62	86

Appendix IV: Survey of park Homes residents that installed the fixed thermal insulation

Summary of responses to Q1 and Q2

Resident	Home	Year Built	Pre-96	Installed Areas	Improved TC	Notes
Mrs Perrott	22 Kingsway	1986	N	Majority of all C, W & F	Yes	Warms up faster
Mr Glanvill	4 Woodlands	1972	N	All F	Yes	Warms up faster
Mr Griffiths	15 Greenacres	1970	N	All W & F	Yes	Feels warmer
My Dyer	108 Woodlands	1982	N	C only	Too early	
Mr Pincott	13 Greenacres	1984	N	C & W, plan F	Too early	
Janet Rew	37 Woodlands	1989	N	Lounge W & F	Yes	Feels warmer
Mr Suddell	93 Greenacres	1998	Y	Majority of all W & F	Yes	Feels warmer
Mr Hussey	92 Greenacres	1997	Y	All W & F	Yes	Warmer longer

Survey of PH Owners to Install Sempatap

Wider Survey Questions

1. Where in your home did you install Sempatap e.g. walls, floors, both, a single room?
2. Do you feel that the material has made a difference to the thermal comfort of your home?
   If it has, do you have an idea / feel for the level of financial saving?
3. What DIY skills do you feel were required to install Sempatap?
4. How long did it take you to install the materials?
5. Were there any issues with preparing the surfaces or rooms?
6. How easy did you find it to handle and install the materials?
   Do you have any tips for other people who may install the materials in the future?

Name:	Mr Griffiths
Address	15 Greenacres
Any comments:	An extremely fit & quite remarkable over 80 year old

Questions	
1	I installed Semptap floor and thermal throughout my home
2	Can definitely feel a difference on my feet, but still need to keep heating on. Although it feels noticeably warmer now esp. in the back room. Wouldn't know about financial savings until after the winter.
3	You need the right attitude for the job, it's the same skills as wallpaper but it's a lot heavier. After trying to cut the first drop of material for the wall, it was clear that the material was too heavy to apply vertically. Therefore, applied it horizontally which meant you didn't have to hold it up to set.
4	A couple of months doing a room at a time. It would have been better to have two people to do the job, like in the company's demonstration.
5	Had to empty the rooms of furniture as the floor was installed. I have a grand piano in the living room which can't be moved, so I had to slide it under a leg at a time. This was one of the hardest parts of the job. I also had to remove some thin insulation I had put on a wall some years ago as it would have reacted with the materials.
6	The glue is excellent, but it's too good – you can't slide it once its on! But gravity makes it drop slightly. A good tip is to use scissors to cut the material, rather than a knife. Scissors don't shear the edges and foam. I would say that the installation of Sempatap is physically beyond most 70 year olds, and the over-70s was a qualifying characteristic for those to receive it free as a DIY measure.

Name:	Mrs Perrott
Address	22 Kingsway
Any comments:	PH built approximately 1986
Questions	
1	I have installed the materials in the majority of the house. This has included; the living room ceiling and walls; kitchen walls, ceiling and floor; bedroom walls, floors and ceiling; and the porch.
2	Yes. It has made a big difference. The home doesn't take as long to heat up now. Can't tell the financial savings yet as this will be the first year it has been installed.
3	My son installed it with his partner. He found it very tricky and hard to install due to it being so heavy. He definitely would not have been able to install it on his own.
4	The living room, kitchen and porch took 4 evenings. But the floor insulation hasn't been put down in the living room yet.
5	After removing the wall paper, the Sempatap was applied straight onto the walls, which are coated with thin plastic.
6	The adhesive is easier to apply with a brush.

Name:	Mr Glanvill
Address	4 Woodlands
Any comments:	PH built 1972

Questions	
1	I have installed Sempatap on the floors throughout my park home.
2	I think the material is brilliant, and I have noticed a big improvement. The home now warms up quicker and is also sound proof. It's too early to tell how much I'll save.
3	Being in the building trade myself, I found it simple.
4	I had some help to move the furniture. In total the installation process took a couple of days.
5	I had no issues with regards to preparing the surfaces.
6	I found it simple. But I would suggest others put the insulation in before doing any decoration.

Name:	Mr Dyer
Address	108 Woodlands
Any comments:	PH built 1988

Questions	
1	I put the Sempatap on the ceiling throughout the park home
2	It's too early to tell its thermal efficiency as it's only been installed for a couple of weeks.
3	I had to hire professional help as the material was too heavy. We also had to cut the material into 1m² squares because it fell down when trying to glue it to the ceiling.
4	The total installation took about 40 hrs. Although I had a professional decorator to help me.
5	The only issue I faced was the seam that joins the park home in the kitchen. That had to be taken down and the area smoothed.
6	The material was very hard to trim around corners and edges. I even brought a new knife with spare blades.

Name:	Mr Pincott
Address	13 Greenacres
Any comments:	PH built 1984

Questions	
1	I put the materials on the walls and ceilings in my park home.
2	I'm not to sure yet, we only have only recently put the materials up.
3	I found it easy and did it myself. Due to the materials weight it was too heavy to put up one big piece, so I cut it in half.
4	It took me a day and a half to two days per room
5	All I did was to paint the walls white paint before putting up the Sempatap.
6	I didn't find the materials too difficult to handle.

Name:	Mr Suddell
Address	93 Greenacres
Any comments:	PH built 1998

Questions	
1	Sempatap was applied to the walls and floors in the majority of rooms, with the exception of the kitchen.
2	Yes I do actually, we seem to be using less gas for the heating and the place feels warm. The noise from outside has cut down too. Normally every winter we go through one bottle of gas a fortnight (£60). If we cut down on just one delivery, it will save us £60 a month.
3	I don't think you need specialist skills apart from patience and some DIY knowledge. If you can put up wall paper, you can put up Sempatap.
4	It took me a couple of months, but that was due to sickness. A well able bodied man can put up one roll in a day.
5	I just removed the existing wall paper.
6	It's easier to handle if you cut it into 1m² squares. It's also better to get the size and shape right before you put on the walls. Also, you should use decorating scissors to cut the material as it gives a cleaner cut.

Name:	Janet Rew
Address	37 Woodlands
Any comments:	PH built 1989

Questions	
1	Installed Sempatap in the lounge (floor and walls).
2	Sempatap has made a huge difference, it keeps the warmth in. I don't know about the financial savings yet.
3	None really, installation was quite easy.
4	It took 3 to 4 days to install the materials, with my son coming to help my husband and I when he had the time.
5	Just had to strip off the wallpaper.
6	I don't really have any suggestions, we just followed the instructions

Name:	Mr Hussey
Address	92 Greenacres
Any comments:	PH built 1997

Questions	
1	Installed on walls and floors throughout the park home.
2	It has made a difference. There is condensation on the windows and I've noticed it cools down a lot slower.
3	The material goes on like wall paper, but it has taken a few months to install.
4	It wasn't as easy as the demonstrators said it was. The material stuck straight to the walls and didn't slide. I was ok with installing it and I'm 66, but someone much older would find it difficult.
5	No preparation was needed. The only thing I needed to do was move the furniture.
6	I didn't find it was as easy as putting up wallpaper. It was hard work, but fine if you follow the instructions.

Appendix V: Materials Distributed to Park Homes

Address	Status	Sempa-Therm	Sempa-floor	Tenure	Proofs
22 Kingsway	Installed	5	3	O/occ	PC
15 Greenacres	Installed	1	1	O/occ	Over 70 / pension
92 Greenacres	Installed	4	4	O/occ	Pension only no savings
93 Greenacres	Installed	3	3	O/occ	PC
13 Greenacres	Installed	4	4	O/occ	Over 70
92 Woodlands	Installed	0	5	O/occ	AA
4 Woodlands	Installed	4	3	O/occ	PC/HB/CTB
37 Woodlands	Installed	5	6	O/occ	HB/CTB/PC/DLA
108 Woodlands	Installed	10	0	O/occ	Incapacity benefit
53 Kingsway	Not rtn CC	5	3	O/occ	PC
35 Kingsway	Not rtn CC	3	2	O/occ	Pension level
88 Woodlands	Not rtn CC	0	2	O/occ	PC / HB
124 Woodlands	Not rtn CC	7	5	O/occ	Over 70
10 Greenacres	Not rtn CC	4	0	O/occ	Over 70
10 Rustic C Pk	Not rtn CC	4	0	O/occ	Over 70 / PC / HB

PC – Pensioners Credit
AA – Attendance Allowance
HB – Housing Benefit
CTB – Council Tax Benefit
DLA – Disability Alliance

South Gloucestershire Council has a further 55 rolls Sempatap Thermal and 47 rolls Sempatap Floor to install.

Appendix VI: Installation Guidance Provided by MGC Ltd

How do I put it on ?

Remove any wallpaper and prepare the walls and ceilings as though you were going to decorate. Apply a liberal coat of SEMPATAP ADHESIVE to the wall or ceiling using the notched SEMPATAP ADHESIVE SPREADER. Only apply the adhesive to one drop length area at a time.

SEMPATAP THERMAL is applied foam side to the wall or ceiling. Cut SEMPATAP THERMAL to required length allowing 25mm overlap at each end then roll up with foam side facing out. Apply to wet adhesive on the top of the wall at the junction with the ceiling or to the ceiling at the junction with the wall then roll out and smooth with light level pressure.

SEMPATAP THERMAL can be repositioned by sliding into place. When in required position, apply firm hand pressure and using SEMPATAP SPATULA, smooth out any air pockets. Continue application of SEMPATAP THERMAL by applying subsequent lengths until the wall or ceiling is covered. Apply the adhesive to the open edge (butter) of the previously applied length and bring together but leaving a narrow gap of
1-2mm between each length. Using a Stanley knife or similar and then SEMPATAP SPATULA as a straight edge, cut off any excess at ceiling/wall level and at the junction with the skirting.

Gun the SEMPATAP SEALANT into all joints between the SEMPATAP THERMAL lengths where the adhesive has settled back during drying. Also, use to achieve a neat finish at the wall/ceiling junction and skirting. Wipe off any excess. When dry, if necessary, fill any sealant shrinkage with proprietary filler to totally hide joins.

Use SEMPATAP EDGING TAPE to achieve a neat finish on all outward facing corners, window reveals, window heads etc. Cut SEMPATAP EDGING TAPE to required length, fold along the aluminium crease line to form a right angle with the aluminium facing inside. Brush SEMPATAP ADHESIVE along aluminium and the paper and leave to soak for a couple of minutes. Locate over the corner of the SEMPATAP THERMAL and smooth out. Remove excess adhesive with a damp cloth and leave to dry

If your skirting is less than 10mm wide on the top edge you will need SEMPATAP THERMAL CHANNEL which is a white plastic channel and will give a neat finish to the bottom edge of SEMPATAP THERMAL. Fix the channel on the wall above the skirting using No Nails adhesive. Alternatively you can put a 10mm wood bead along the top of the skirting and butt joint the SEMPATAP THERMAL to it. For plug sockets, switches etc. star cut SEMPATAP THERMAL and refit using longer screws. Alternatively, butt join to edge of fitment.
SEMPATAP THERMAL can be decorated with any finish – emulsion, wallpaper, even tiles.
Redecoration :- Wallpaper can be removed using either a steam stripper or hot soapy water and a paper scraper without damage to SEMPATAP THERMAL