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Timber Cladding in Scotland

INFORMATION NOTE

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SUMMARY

- **There is evidence of strong historical precedents for the use of external timber cladding throughout urban and rural Scotland.**
- **The technical risks of using timber cladding in Scotland's maritime climate are manageable and no greater than in similar climates such as the western coastal zones of Norway and Canada where the use of timber cladding is widespread.**
- **The planning and building control systems are in principle sympathetic to the use of timber cladding providing that the designs are well conceived and of a sufficiently high technical standard.**
- **Timber cladding has a unique combination of cost, performance and aesthetic features that could be of benefit in both urban and rural Scotland.**
- **Over the past five years the use of timber cladding has started to increase in Scotland as a result of an increased awareness of sustainability issues.**

INTRODUCTION

This research was commissioned by the Scottish Executive Environment Group Countryside and Natural Heritage Unit in collaboration with the Forestry Commission to review the history, current practice and potential of external timber cladding in Scotland. The study outlines the development of timber cladding in Scotland, describes the range of historical timber clad buildings that currently exist and provides practical information on the specification and detailing of external timber cladding for Scottish conditions. The technical issues covered include: design for durability, choice of timber species, suitable coatings, and energy efficiency. The study also identifies opportunities for growth and innovation in the future including the ways in which an increase in the use of timber cladding could contribute to sustainability and to the development of rural Scotland.

BACKGROUND

External cladding is the outermost envelope of a building and normally carries no loading beyond its own weight plus the loads imposed by rain, snow, wind and during maintenance. External cladding thus functions purely as a protective and decorative envelope for the structure and contents of a building. Unlike some other north Atlantic countries such as Norway or Canada the use of timber as an external cladding is not currently a common practice in Scotland. Therefore timber cladding is an unfamiliar material to many people, including some planning authorities, who may be reluctant to recognise timber cladding either as a traditional finish or as a material that is appropriate for today.

The past five years have seen a small but significant growth in the use of external timber cladding in Scotland. However, it can be argued that the lack of accurate and up to date historical and technical information is constraining this growth or resulting in designs that may not be appropriate to Scottish conditions.

METHODOLOGY

The study comprises a desk based literature review supplemented by around 60 telephone discussions and a small number of face to face interviews with relevant experts in Scotland and overseas. The range of people contacted during the research included: planners, building

control officers, architects, quantity surveyors, housing association officers and advisers, wood scientists, timber cladding manufacturers, architectural historians, archaeologists and academics. In addition to the desk research a limited amount of new primary research was undertaken into the history of timber cladding in Scotland.

The historical sections of the study are virtually the first published research into this field and as such are necessarily only a preliminary review of the evidence for the use of timber cladding in Scotland. The technical sections of the report are based on a comparative review of best practice in the exposed maritime climates of Scotland, the western coastal zones of Norway and British Columbia in Canada.

MAIN FINDINGS

The main findings of the study are as follows:

There is evidence of strong historical precedents for the use of external timber cladding throughout urban and rural Scotland:

- Timber cladding was an important external wall finish in the royal burghs of medieval Scotland.
- The use of timber cladding continued in urban Scotland up to the 17th century.
- During the 18th and 19th centuries timber cladding was used for a wide range of non domestic buildings along with occasional use in housing.
- During the 20th century timber cladding was used extensively for social housing.
- The oldest timber clad building in Scotland, where the date is known, was built in 1820 though it is believed that older examples exist.

The technical risks of using timber cladding in Scotland's maritime climate are manageable and no greater than in similar climates abroad where the use of timber cladding is widespread:

- The climate of Scotland is comparable to the western coasts of Norway and Canada both of which are areas where the use of timber cladding is commonplace.
- Providing that timber cladding is designed for durability there is no reason why its performance in Scotland should not be comparable to that achieved in western Norway or similar maritime climates.
- In exposed maritime climates such as Scotland the control of moisture due to wind driven rain is the most important factor to consider in cladding design.
- Moisture penetration into a wall assembly can lead to decay risks and other problems that need to be managed through appropriate design, specification and detailing. Consequently cladding designs developed in areas not exposed to a maritime climate should be used with caution in Scotland.

Timber cladding has a unique combination of environmental, social and economic benefits that are of value to both urban and rural Scotland:

- **Improved energy efficiency:**

  The main technical advantage of lightweight external claddings such as timber is that the heavy and bulky masonry wall can be eliminated from the outside of the building. With suitable design a lightweight cladding, when combined with a lightweight roof covering and a lightweight wall structure, can produce very significant weight savings over masonry cladding. This allows the foundation depth of a typical house to be reduced and could offer savings of between 20–40% of the below ground costs. The money saved can then be allocated to increasing the insulation of the building so that, for no additional cost relative to masonry cladding, a much more energy efficient building envelope can be created.

- **The prudent use of natural resources:**

  Timber is a renewable and environmentally friendly raw material. Providing the forest operation has official approval, homegrown or European timber is generally accepted as a low environmental impact raw material. Its environmental impact certainly compares favourably with most other raw materials such as stone, metals or plastics.

- **Supporting greater use of local raw materials:**

  Historically the majority of timber cladding used in Scotland was imported and this continues to be the case today. These is, however, a growing interest in using products that have been manufactured locally thereby minimising the energy used in transportation.

The use of homegrown European larch for cladding is particularly popular.

- **Supporting local economic development:**

  Timber cladding is being manufactured in Scotland and this practice looks set to grow.

- **Promoting good design and siting:**

  Timber cladding complements current thinking on the design of rural housing. When combined with the best of timber framed house design it can offer the flexibility required for the kinds of long-life loose-fit approaches now being increasingly advocated for modern housing design.

- **Encouraging originality and innovation:**

  Timber cladding has caught the attention of modern designers. It can have a bright and vibrant finish, alternatively it can have a natural appearance that complements many other materials. Timber cladding offers considerable design flexibility and can easily accommodate both traditional and contemporary styles of building.

- **Overcoming the disadvantages of remoteness such as high building costs:**

  Timber cladding can offer lower transport costs and may not be as weather dependant to erect as masonry. For example Hjlatland Housing Association on Shetland have found that, given their location, painted timber is the most cost effective wall cladding available.

These findings enable two future opportunities to be identified.

- **The increased use of lightweight timber cladding on housing:**

  This can offer cost, performance and sustainability benefits particularly when used as part of an integrated energy conscious design in combination with a lightweight roof covering and structural system. When used in this way, timber is an efficient replacement for masonry cladding on timber frame kit houses. This cladding would generally be painted and designed and detailed to maximise the performance of the coating. In most cases this would involve a light coloured opaque coating that, in addition to its performance advantages, offers brightness and vibrancy. If timber cladding were marketed properly and given good industry support it could be equally relevant to the private house builder, to developers and to housing associations.

- **The increased use of timber as a high status cladding material:**

  Timber cladding can compete on cost, performance, and sustainability grounds when used as a part of large budget architectural schemes. When used in this way, timber is a viable and desirable alternative to other prestigious cladding materials such as precast concrete, stone, stainless steel or glazed brick. In many cases timber could co-exist along side these other claddings and would be valued for its natural qualities, texture, and design flexibility. With sufficient marketing and industry support this approach could appeal to many architects and their clients, particularly in the leisure, commercial, and public building sector and for architect designed private housing.

CONCLUSIONS

The study has shown that there is strong historical precedent for timber cladding throughout urban and rural Scotland, and that well designed timber cladding is demonstrably suitable for an exposed maritime climate. This gives timber cladding a number of advantages which, if taken together, would appear to offer considerable potential for further growth in the use of timber as an external cladding material.

ABOUT THE STUDY

The study was carried out in 2001 by Ivor Davies and Dr James Pendlebury, then of Highland Birchwoods, and Dr Bruce Walker, then of the University of Dundee. The study involved a literature review, field visits and expert consultation.

For a copy of the full report, *Timber Cladding in Scotland*, which is summarised in this Note, please contact:

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A copy of the full Report and the Research Findings (reproduced in this Note) can also be found in the publications section of the Scottish Executive's website at: **www.scotland.gov.uk**

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