

**ITEM No ...15.....**

**REPORT TO:** POLICY AND RESOURCES COMMITTEE – 22 NOVEMBER 2021

**REPORT ON:** ROOF TILE FIXINGS TO DOMESTIC PROPERTIES

**REPORT BY:** EXECUTIVE DIRECTORS OF CITY DEVELOPMENT AND NEIGHBOURHOOD SERVICES

**REPORT NO:** 335-2021

**1 PURPOSE OF REPORT**

1.1 The purpose of this report is to inform Committee on a review of working practices on roofs installed by Construction Services (CS) and inspected by the Council Clerk of Works (CoW) in the period 2015 to 2019. The report shall also provide recommendations for corrective action and future compliance monitoring measures.

**2 RECOMMENDATION**

2.1 It is recommended that the Committee:

- a notes the findings of the review, and that officers have concluded that the roof installations during this period did not meet best practice as set out in the British Standards;
- b approve works to be undertaken to bring the affected roofs up to the standard recommended in British Standards at an estimated cost of £4.4M, inclusive of an allowance for housing staff resourcing and professional fees;
- c notes the corrective action and compliance monitoring measures set in place to ensure specification, execution and managing of construction works are undertaken to appropriate industry standards;
- d notes that, as part of the corporate Legislative and Regulatory Updates assignment being carried out by Internal Audit, current arrangements in place, within the Design and Property Division, Construction Services and Housing, will be reviewed to ensure that relevant new or changed legislative and regulatory requirements are identified and, where appropriate, addressed timeously; and
- e Notes that this report will be referred to a future Scrutiny Committee.

**3 FINANCIAL IMPLICATIONS**

3.1 The net cost of the original works were reflected in the Housing (HRA) Capital Plan in the period they were undertaken. Construction Services provide the Council's General Fund with a return for their construction activities on an annual basis and do not hold any accumulated reserves. As appointed contractor Construction Services will be responsible to undertake the corrective works and will therefore require to absorb any loss associated with doing so in the period that these corrective works are undertaken.

3.2 The estimated overall costs for completion of the programme of corrective works is £4.4m and it is expected these works will be undertaken over a 30 month period. These costs include an allowance for professional fees and additional housing staff to undertake the works and have been calculated on a cost only basis.

3.3 This estimate includes a cumulative allowance of 6% in relation to pay inflation over the duration of the period that the works will be completed noting that the current pay award has yet to be agreed. In addition, specific allowance has been provided for the increase in employers

national insurance following the recently announced increase in contribution rates for 2022/23. Finally, an allowance has been provided for general price inflation, for costs such as materials and plant hire.

- 3.4 In preparing these estimated costs, Executive Directors of Neighbourhood Services and City Development have considered the key operational and financial risks associated with undertaking these works. The main factors considered were the:
- a inherent uncertainty surrounding matters such as pay and general price inflation;
  - b continued availability of supply of materials and plant;
  - c variations in the level of material wastage assumed;
  - d continuing impact of COVID-19 and any delays this may have on the duration of the works.

By way of exemplification, the following table shows the potential financial impact of any variations against the current key budget assumptions:

Risk Area	Current Assumption	Example Variation	Financial Impact
Pay Awards	2% per annum	1%	£21k
Material Costs	3%	1%	£6k
Plant Hire	3%	1%	£17k

- 3.5 Any impact on Construction Services future returns as a result of undertaking these corrective works will therefore be met by the Council's General Fund this would include any impact of their ability to recover their fixed overheads and profit margins noting that the works are being provided on a cost basis. Elected members will be regularly appraised of any specific movements as part of the established revenue budget monitoring process.

## 4 BACKGROUND

- 4.1 In 2015, the British Standard (BS) covering the installation of roof tiles (BS5534:2014) was revised to reflect the increasing frequency of wind events in the UK. One of the significant changes was for increased numbers of tile fixings to be incorporated into both new build and replacement roofs to ensure long term durability of the roof tiles. A significant number of British Standards are not legally binding including BS5534, but are recognised as best practice in the construction industry.
- 4.2 Although the appropriate code revision was incorporated into works specifications, the implications of the changes to BS5534 were not transferred to site by CS or picked up through site inspections by DCC CoW until the issue was identified late 2019. Corrective action was implemented in January 2020. This has resulted in 450 roofs not being installed to the full requirements of BS5534:2014, covering 262 owners and 894 tenants.
- 4.3 Since January 2020, all domestic roofs renewed by CS have been installed in accordance with the current required standards with inspections carried out by CoW to verify the works. Corrective action is required for roofs in the affected period ensuring consistency in enabling long term durability and integrity to these installations with full compliance with the current British Standard.
- 4.4 Council officers undertook investigations for construction compliance following an initial complaint from an owner about their property which had undergone a recent roof renewal. While this initial complaint was made in late 2019, a number of factors have meant that it has taken some time to bring this matter to committee for consideration. Upon receipt, the complaint was initially investigated by Council officers but this was significantly hampered by the restrictions placed on Council services by the introduction of the first COVID-19 lockdown when all non-essential activity was severely curtailed.

- 4.5 Upon the easing of the first national lockdown, the investigation was recommenced and further information gathering undertaken. During the investigation officers recommended that an independent expert opinion should be sought on the DCC method of fixing for roof tiles and the Building Research Establishment (BRE) were engaged to research the issues and report back. Once BRE's report was to hand this and other available information was considered to identify options for action and potential funding streams (where appropriate) and to allow a Report to be prepared for consideration by the Council Management Team and then the Policy and Resources Committee

## **5 MAIN REPORT**

### **5.1 Background to BS5534**

- 5.1.1 BS 5534 was introduced in 1978 and underwent a major revision in 2015, the purpose of which was to address the increasing occurrence of extreme weather conditions in the UK, and to align the British Standard more closely with the current European Standards. Changes in building practices and a better understanding of how roofs perform in given circumstances were also contributory factors to the update.
- 5.1.2 Whilst there were significant changes across the entire BS, there were 5 key changes in the 2015 update:
- a All cement bedded ridge and hip tiles must be mechanically fixed;
  - b Roof underlay meeting British Standards will be classified as to where in the country, and at what maximum batten gauge, it may be installed;
  - c Laps in underlay should be secured by a naturally occurring batten course. Where necessary, the lap of the underlay should be adjusted to coincide with the nearest slating or tiling batten. Laps may alternatively be sealed with a manufacturer approved glue strip/tape;
  - d All single lap tiles must be mechanically fixed (e.g. clip or nail) with two fixings at the verge (one of which may be an adhesive); and
  - e Timber battens and counter battens should be factory graded to BS 5534.

### **5.2 Investigation into Roof Fixings**

- 5.2.1 Council officers undertook initial investigations for construction compliance following reports from an owner about their property which had undergone a recent roof renewal.
- 5.2.2 Following further investigations and research work carried out by Council officers it was established that the investigated roofs do not fully comply with BS 5534 in respect of how the tiles are fixed to the roof structure, not meeting the requirements of point d in Section 5.1.2.
- The research established that 100% of these concrete roof tiles were not mechanically fixed. Instead, an industry/trade recognised nailing pattern had continued to be adopted, which retains a degree of movement in the first row of tiles to allow gutter brackets to be fixed after the roof is complete, allows vent terminals and roof vents (where required) to be installed in the third and fourth courses and fixes the remainder of the roof at alternate courses. This is the only aspect of the roofing installations not in accordance with BS 5534.
- 5.2.3 An independent report was also commissioned into the roof fixings and this reporting, undertaken by the BRE, confirmed the roof fixings were not in accordance with the full requirements of the current version of BS5534 and required remedial attention to the fixing strategy for compliance.
- 5.2.4 As part of the investigations both by Council Officers and the BRE, wind speed data was obtained from the Tay Road Bridge records to determine wind loading experienced by roofs in

service since 2015 that were not installed to the current requirements of BS5534. The data indicated that there had been significant wind events during the period in question that may have resulted in anticipated roof damage. Notwithstanding the non-compliance with BS5534 for fixings requirements, the affected roofs had not experienced consequential tile loss during this period. Reported individual roof tile defects on the affected roofs are tabulated below for information.

Year	2015	2016	2017	2018	2019	2020	2021
Recorded Roof Tile Defects	1	1	0	0	0	4	0

The opinion is that the non-compliance in fixings presents no short term integrity concerns. However, it is recognised that these roofs will require remedial works to bring them to full compliance for long-term integrity.

### 5.3 Immediate Corrective Actions

- 5.3.1 Since this issue came to light CS install all roofs in accordance with the manufacturers' recommendation referring to BS5534 and mechanically fixing all tiles. A review of all roofing projects completed by CS since the major update of BS 5534 in 2015 shows there to be 450 roofs renewed across 47 developments, covering 262 owners and 894 tenants.
- 5.3.2 An Architectural Services review in conjunction with the City Engineers was carried out to examine previous processes and recommend improvements. The review covered the manufacturers' literature referring to BS5534 and the implications for specifying and installation. This review also confirmed that checking processes in place at the time were not as robust as those currently the case in the Design and Property Division. The professional diligence of individual officers in recognising and highlighting the information and responding to the code changes at that time was not effective and these errors appear to have been exacerbated by the same small core of staff administering the cycle of roof renewal projects.
- 5.3.3 The Council's design information has since been enhanced from referring to the British Standard to also highlighting the necessity for entire roof nailing and mechanical fixing of valley tiles, verge tiles and ridge tiles. The design information also covers standards in relation to underlay and battens. All design team members and clerk of works involved with these works have received briefings from team leaders and managers with further technical support being available direct from the tile manufacturer.
- 5.3.4 The Clerk of Works processes were further enhanced, involving checking over the specification and construction drawings prior to the site start and liaison with the Site Manager to discuss the planned inspections and progress of work meetings. Records and photos of each stage of the works are made ensuring that the work is in accordance with the design and specification. A final check on site with the site manager is undertaken to ensure any snagging has been rectified prior to sign off by the Architect.

### 5.4 Recommended Remedial Actions to Roofs

- 5.4.1 It is recommended that remedial works are undertaken to the affected roofs to bring these to the appropriate, current installation standards. The number and type of roofs installed during the affected period have been ascertained and it has been determined that remedial works can be undertaken over a 30 month period. Based on CS programming of the works the proposed commencement will be 16 weeks from date of approval.
- 5.4.2 To ensure that the programme for the remedial works is kept to the shortest period possible, officers will be working with CS to implement strategies to augment their current resource base. Utilising the private sector as sub-contractors to CS, dependent on market conditions could

assist in expediting the remedial works programme. Early dialogue with key material and plant suppliers will also be key to achieving the most efficient timescale for completing the works. Benchmark testing of costs in the private sector will identify whether there is an opportunity to speed up the delivery programme by utilising private sector capacity, in addition to the Construction Services resources being applied to this programme, while still delivering best value for the Council.

- 5.4.3 CS being responsible to undertake the corrective works will require to absorb any associated loss with total costs estimated to be £4.4m. Throughout the period of the contract City Development and Finance colleagues will be monitoring the expenditure for all activities contained within the remedial works. Benchmarking exercises will be undertaken at appropriate points throughout the programme to ensure that the works being carried out by CS are the most cost effective approach. If and when market conditions and tendering levels dictate, contract documentation will be produced for tendering work packages on the open market to ensure best value is achieved.
- 5.4.4 It is recommended that remedial works are undertaken by Construction Services to maintain the single point of responsibility and accountability for the entire works carried out to each roof.
- 5.4.5 In the interest of completeness, the Council is currently engaged with the principal contractor who undertook re-roofing works as part of the Housing External Wall Insulation programme during the period under consideration. The results of this engagement will be reported back to Committee in due course.

## **5.5 Communications Strategy**

- 5.5.1 It is essential that clear messaging is agreed and relayed to anyone impacted by the proposed works. It is, therefore, proposed that, subject to approval of this report and with support and input from the Communications Team, an appropriate briefing session is held for Elected Members to outline our communication and engagement strategy with affected Council tenants and the owners of ex Council stock whose homes are in the areas where remedial works are recommended.
- 5.5.2 Key information will be shared with Dundee Federation of Tenants Association (DFTA), Dundee Association of Council House Owners (DACHO), tenants and owners affected by the recommendations of the report, if approved.
- 5.5.3 It is proposed the most effective means of communicating with tenants and owners should be by direct letter where we will include a Frequently Asked Questions sheet which will also be available and continually updated on the Council's website.
- 5.5.4 Frontline staff have been briefed to answer enquiries received via our Customer Service and Housing Teams.

## **5.6 Design Procedural Changes**

- 5.6.1 Design disciplines within the Design and Property Division previously operated under separate management systems with more regimented checking processes in some areas than in others. This differential in management systems was the case when BS5534 was revised in 2015 and for a significant period subsequent.
- 5.6.2 Through recent organisational changes, the Design and Property Division has consolidated pre-dated practices within Architectural Services ensuring a common governance across all services within the division. Processes are in place to provide staff with appropriate awareness of such changes and controls for implementing changes to standards through various means such as access to electronic specification systems, online Standards libraries and focused training. These are backed up with annual employee performance and development reviews.

- 5.6.3 Across all areas, staff are progressing designs with the appropriate diligence, utilising standards, legislation and industry literature where appropriate. The Division strives to keep pace with any industry change or innovation and looks to embrace these for the benefit of the Council and the city. To do this, officers carry out technical research and design development on a project by project and day to day basis such that the issues surrounding the compliance with BS5534 should be an isolated incident.
- 5.6.4 To support this culture, and as part of the organisational changes mentioned above, the Design and Property Division also operates an accredited ISO9001/14001 Quality Management System that is both internally and externally audited. Within the system there are process driven design checks and peer reviews for output project information, including the level of checking to be undertaken depending on both the complexity of the project and the experience levels of the staff involved with each project. This QMS System originally encompassed the City Engineer based functions but now includes all design disciplines as well as other relevant areas of City Development. Third party external audit reviews are carried out twice yearly to ensure control procedures, consistent standards across the design division and a platform for continuous improvement are compliant in this area.
- 5.6.5 In tandem with the above practice now common across Design and Property, a corporate review by internal audit staff of the arrangements in place within Design and Property, Construction Services and Housing is being carried out, to ensure that relevant new or changed legislative and regulatory requirements and any further areas for improvements are identified and, where appropriate, addressed timeously.

## 5.7 CS Compliance Checks

In responding to the findings and issues associated with the non-compliance of BS 5534 in respect of roof tiling CS will enhance the areas noted below in order to re-enforce specification compliance and relevant practice. In addition continuous professional development and training learning within the work force will be implemented as well as enhanced communication with all other Partners involved to deliver a consistent, high-quality service and product.

- 5.7.1 Industry Sector Membership - within CS, building services-related sections such as electricians, gas and plumbing trades currently utilise and benefit from ongoing trade body best practice guidance and updates.

CS will review membership options across a number of other industry recognised trade organisations such as Chartered Institute of Building, Construction Products Associations, Federation of Master Builders and National Builders Association in order to provide a similar level of knowledge and understanding for all other work trades.

Information will be disseminated through direct project briefings, regular Trades Continual Professional Development and training sessions and conventional tool box talks. Management staff will also liaise with colleagues in City Development and Neighbourhood Services to share knowledge of any updates and amendments to industry practice.

In addition to these contractor-direct options CS will also develop closer links and work with colleagues in City Development and Neighbourhood Services to benefit from their related industry sector engagement and ultimately create a wider library of knowledge and understanding across the design and construction environment.

- 5.7.2 Reference Material - CS presently utilise reference materials and updates provided by building services bodies such as the National Inspection Council for Electrical Installation Contracting, Scottish & Northern Ireland Plumbing Employers Federation and Gas Safe for electrical, plumbing and gas engineers respectively. In addition, CS will look to avail of and use the Construction Information Service, currently used by City Development, to increase access to latest updates for all other work trades. City Development use the subscription-based National Building Specification (NBS) to develop technical specifications and CS will look to gain access

or share this on-line information service. This will enable project staff to better assess and analyse technical and specification information for compliance updates.

- 5.7.3 Training and Continued Professional Development (CPD) - CS currently use trade organisation training sessions for both management staff and key operative trades. CS also frequently use Tool Box Talks sessions to roll out and inform operatives on a wide range of subject matter. Moving forward CS will roll out a series of focused CPD product-based training and workshops for senior managers, site agents and office staff, reinforced through annual performance and development reviews. In addition, CS has now also commenced sharing related CPD sessions with City Development. CS will also look to use the Housing, Property and Construction Partnership Steering Group to co-ordinate and share compliance knowledge and amendments. This will help augment the current use of pre-start meetings by raising awareness and improving communication through all stages of projects. CS will also implement a quarterly meeting to work more closely with the corporate Health and Safety team to enhance compliance awareness.

## **6 POLICY IMPLICATIONS**

- 6.1 This report has been subject to an assessment of any impacts on Equality and Diversity, Fairness and Poverty, Environment and Corporate Risk. There are no major issues.

## **7 CONSULTATIONS**

- 7.1 The Council Management Team were consulted in the preparation of this report.

## **8 BACKGROUND PAPERS**

- 8.1 British Research Establishment Client Report – Roof Tile Wind Performance.

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