Written evidence from the Construction Liveries Group

This evidence submission has been coordinated by Martin Gettings FIEMA CENV, Director Sustainability Canary Wharf Group, Chair WCoC Climate Action Group, and Chair Supply Chain Sustainability School Climate Action Group.

1. As a Past Master Constructor of the Worshipful Company of Constructors Livery Company, I now Chair the Construction Liveries Group (the CLG) which has 18 Livery Company members, who are all associated with the construction industry. The following responses from sector members result from our collaboration with the Worshipful Company of Constructors Climate Action Group, and its response to the call for evidence from the House of Commons Environmental Audit Committee (the EAC).

2. As a preface to the specific answers to questions that follow, I am also sharing some very relevant individual expressions that relate to but are not necessarily specific to the 10 questions posed by the EAC.

3. FURTHER EDUCATION (FE) :- as it relates to skills and apprenticeships in construction. The recent draft white paper is noted, but this equally has raised some serious concerns within the FE Education Sector, which I'm bringing to your attention and quoting below from:

4. John Taylor, an eminent Liveryman, Chairman of the Livery Company Skills Council, (the LCSC) and Past Principal of the Carpenters' Company Funded Building Crafts College at Stratford in East London writes to raise his comments and concerns:

5. "The long awaited Governments Skills White Paper was published in January, entitled 'Skills for Jobs'. This (appears) to be very largely a consolidation of recent announcements, with a welcome emphasis on higher-level technical qualifications, support for for adult learning throughout their careers, and a commitment to reforms in the allocation of funding. Employers are to be given a central role in the development of *new Local Skills Improvement Plans;* the danger here, as we have seen in the past, is that specialist skills, where only relatively small numbers are required nationally, will not feature in these local plans.

6. The phased roll-out of T- Levels continues. **A key concern for all T-levels remains the mandatory provision of 45 days' work experience. (How will this be practically achieved in the workplace, placing students into the working environment etc?)** This is an area where the connections of Livery Companies with industry and employers could be utilised to provide support.

7. A Government consultation on Post -16 qualifications at Level 3 was launched late last year. The main issues relate to the (limited) range of qualifications that will be publicly funded once T-Levels have been introduced. Certain Additional Specialist Qualifications will be funded, **but the future of Applied General Qualifications is in doubt.**

8. There has been much disquiet over earlier Government consultation on Level 2 Qualifications, also under threat. **There is a general consensus is that these provide a vital steppingstone for young people who have not been able to reach the entry requirements for progression to apprenticeships, or T-levels. This concern is reflected in a new City & Guilds research on Level 2 Qualifications**.

8. A further City & Guilds research report, *Building Bridges towards Future Jobs,* highlights issues at the heart of the post-Covid recovery and provides analysis on specific sector needs and skill sets. Additionally, it examines flexibility and ways in which individuals can move and transfer their skills practically from one sector to another. The report is available on the C&G website: *https://www.cityandguildsgroup.com/research/building-bridges-towards-future-jobs."*

9. CLG member and Past Master Builders Merchant Brian Blanchard writes in a similar vein:

"**Schools Curriculum**: At each of the Heads (of schools) annual conference with the Livery Companies, Teachers have been very vocal regarding this. It is very clear that the curriculum is too heavily focussed on academia, with little time developing those who will not attend University.

Particularly affected are those classed as low achievers (many of whom eventually progress through endeavour to become Captains of Industry!) Schools are bereft of developing skills for practical work, innovation, diversity and what is expected in terms of human values, ingenuity, creativity, responsibility, discipline, pride and timekeeping. One constant theme is the need for specific Career teachers in schools, which is an obvious 'must'.

10. **Teachers, schoolchildren and parents need knowledge of the world of work, including apprenticeship availability in all its trades and forms, and work experience availability for school leavers."**

11. CLG member Chris Chivers, Past President of the Chartered Institute of Building, and Immediate Past Master Joiner and Ceiler comments on training and skills: "Joiners and Ceilers are needed not only to maintain our heritage but to enhance our future buildings **when we finally realise** that we can successfully build regularly with replenish-able materials such as timber. Training our future designers to use materials that have naturally embodied carbon and reducing the need to use materials that emit carbon in their manufacturing process must be the way forward. *Refer to the following websites:* circularecology.com *or ukgbc.org.*

12. Brigadier Tim Gregson, Clerk to the Carpenters Company writes: "Please encourage the EAC to recognise wood /timber in the promotion of sustainable materials.... wood being the most sustainable material of all. The Carpenters Company are Promoting the excellence in the use of wood in their Annual Wood Awards competition exhibition. This year it will run for seven weeks at the Building Centre in Store Street, London, to coincide with COP26. Funding for skills is the subject of the Carpenters Company's recent letter to the Under Secretary of State for Apprenticeships, Gillian Keegan, as yet to receive a response."

13. I am also a member of the LCSC Sub-group for FE, focusing on the urgent need for increased vocational education for our future Apprentices, who will be so vital in this country's recovery from the skills shortage post Brexit and post Covid. There is an urgency in 'levelling-up' the FE funding to achieve this national goal, as discovered in our consultations with several FE College heads recently.

14. A final, telling comment from Journalist James Kirkup, published in the Times, pre the recent Hartlepool by-election, was as follows:

15. "FE is hugely important to (Hartlepool), and hugely important to the British economy. The workplace skills it delivers aren't just the ladder that many (mostly poorer) people climb to a better working life. They're one of the keys to unlocking the productivity growth that is our *only* long-term path to greater prosperity."

16. **"The country can't afford to go on neglecting and undervaluing the people who don't go to university."**

17. "Britain has had a skills problem for generations, because of our cultural bias towards graduate generalists which has led to neglect and even contempt for technical and vocational education."

Anthony Ward
CEng FIStructE
Past Master Constructor and Chairman of the CLG

How can materials be employed to reduce the carbon impact of new buildings, including efficient heating and cooling, and which materials are most effective at reducing embodied carbon?

[Horners Company]

18. Plastics play an important role in the future of sustainable building. Because plastics products are generally lighter than their alternatives, they require less energy in their transportation. In use, plastics building products are relatively low conductors of heat and consequently have excellent insulating properties. Additionally, the tightly precise seals which are achievable, for example on PVC windows and doors are important in retaining heat in buildings, providing improved insulation against external noise, keeping premises cooler in summer while still reducing the carbon footprint. In fact PVC windows account for the majority of the British Fenestration Rating Council's 'A' rated energy efficient windows, contributing to a more energy efficient building envelope.

19. Expanded Polystyrene insulation for commercial applications scores the highest possible A+ summary rating in the Building Research Establishment's (BRE's) Global Green Guide to Specification, in use it reduces CO2 emissions by up to 50%. As it is constituted of 95% air its light weight has a particularly telling effect on energy required in transportation.

20. Plastic pipe systems also deliver significant energy savings. Over time and use they retain their smooth inner surfaces. Hence, they require less energy in pumping water through their systems. A study carried out by the University of Catalonia on this specific aspect demonstrated that PVC pipe used 49% less energy than that used in iron pipes. Additionally, plastics are the optimal materials for use in underfloor heating systems which are themselves relatively low energy heat forms, Plastics pipes are also used to convey hydrogen, a replacement fuel of the future. These benefits are enhanced by their more rapid installation than heavier and less flexible pipes made from other materials.

21. The plastics industry manufactures much of new underground drainage components and in particular, the SUDS (Sustainable Urban Drainage Systems) that are a requirement of all Local and Water Authorities in all new residential and commercial construction projects and developments. This has directly evolved in recent years as part of the industries response to the global warming and climate change challenge.

What role can nature-based materials can play in achieving the Government's net zero ambition?

[Masons' Company]

22. Stone masonry construction is inherently 'green'; while some energy is used in extraction, working and transport to build location, once in place a well-designed and properly maintained stone building can remain in pace for many hundreds of years. Cathedrals and other historic buildings built from locally sourced stone and timber are testament to this.

23. The comparison with cement-based construction is telling. For the latter, energy is used to take limestone out of the ground, energy is used to crush it, a lot of energy is used to heat it to a high temperature to turn it into cement, and then it is incorporated with high energy steel. When the time comes for demolition, a lot of energy is needed to break up the concrete. Worldwide, about 10% of CO_2 comes from cement production.

What role can the planning system, permitted development and building regulations play in delivering a sustainable built environment? How can these policies incentivise developers to use low carbon materials and sustainable design?

[Masons' Company]

24. A relaxation of regulations to permit quarrying of important stone for construction would be helpful.

25. It is understood that new housing developments will be required to submit a Circular Economy Statement (CES) which will require all energy used in procuring, construction, life use and demolition to be considered. Careful and imaginative drafting of these regulations encouraging the use of natural materials will be important.

26. The suppression of imaginative design in the reuse of existing by the arbitrary approach of the planning system to preserve instead of conserve should be removed. Old buildings survived by adaptation to the changing needs of the generations of the time unencumbered by excessive regulation. Buildings are conserved successfully by the sensitive management of change.

27. Proposals are subjected to current construction regulations which contain obligations 'one to fit all'. Not all buildings are the same due to nature, constructional techniques and usage. The objective must be to set aside the established approach and create a new discipline of calculation of the impacts and the benefits that derive from the proposal to result in a minimum that can be offset by other activities as industry now provides. An offset approach already exists within the Building Regulations and should be expanded to achieve this new objective and avoid the damage of applying requirements that are inappropriate to the construction of the past which is leading to expensive failure of new construction.

28. Developers need encouragement to see a benefit in reuse avoiding the cost of clearance and that an historic building has a value to them in the market that attracts buyers.

Should the embodied carbon impact of alternative building materials take into account the carbon cost of manufacture and delivery to site, enabling customers to assess the relative impact of imported versus domestically sourced materials?

[Horners Company]

29. The selection of alternative building materials should certainly take into account the whole picture of the carbon costs of manufacturing and delivery to site, ideally in the form of Life Cycle Assessments.

30. Some commentators on the government's Net Zero Carbon Emissions target, notably Dieter Helm of the University of Oxford, have pointed to the futility of a unilateral national targets, if carbon is imported from economies powered by coal such as China and India. The fact that coal is still a significant source of energy in the German economy has also been alluded to.

How should we take into account the use of materials to minimise carbon footprint, such as use of water harvesting from the roof, grey water circulation, porous surfaces for hardstanding, energy generation systems such as solar panels?

[Horners Company]

31. Carbon savings achieved by products in use can legitimately offset their embodied carbon. The offsets can be increased by selecting plastics construction products which have long life-spans.

32. A key property of plastics is their durability and resistance to abrasion and weathering. For example, PVC membranes are a principal solution for the waterproofing of roofs and foundations. Their strength combines with their resistance to building movements, their atmospheric and chemical resistance properties and100% water resistance. These qualities also enable PVC to be used in thin film pv cells for solar panels.

33. In 2006, the UK's Building Research Establishment assessed the history of PVC windows 'in situ' and certified that, in their judgement, the life-span of PVC windows was at least 35 years.

34. For plastics pipes durability combined with smooth bores which prevent lime-scale accumulation, provide a long service life. For example, TNO (a Dutch technical institute), concluded that 'the lifetime of PVC sewer pipes will exceed 100 years in most service conditions'. For Polyethylene pipes, TEPPFA, the European plastic pipe industry association and the PE100 association, jointly confirmed an expected service life in excess of 100 years.

35. Offsetting can also be extended further by recycling. The most commonly used plastics materials in construction are recyclable. The extent to which recycling actually takes place is largely a function

of logistics.

36. PVC is perhaps the most widely used plastics material in construction applications. Under the aegis of the European PVC industry's sustainability programme, VinylPlus, a PVC building product recycling programme is underway and in 2019, 769,234 tonnes of PVC were recycled in Europe. Of this figure 47% were windows and related building products. With the incorporation of 70% recyclate into a PVC product savings of up to 50% in energy, and over 60% in air emissions can be achieved.

How should re-use and refurbishment of buildings be balanced with new developments?

[Masons' Company]

37. While it may be difficult to encapsulate into legislation, there should be a presumption for repair and/or refurbishment of existing buildings. That said, the balance of 'new against old' may come down to finance. If it's deemed to be more cost effective (to a developer) to demolish and rebuild then regardless of other weighted arguments, then demolition could be a more attractive option. Zero rating of VAT for repairs or refurbishment (see also response to Q10) could be a key - and positive - determinant for repair in such decision making.

38. 'Heritage Counts' has confirmed that UK committee on climate change has identified retrofitting as a priority and the embodied carbon (that emitted when construction takes place) is addressed.

39. It is essential that the approved standards and codes for life cycle carbon are suitable and appropriate for a stone/lime built building.

What can the Government do to incentivise more repair, maintenance and retrofit of existing buildings?

[Masons' Company]

40. The first step of any project is the business case. A disincentive is the inequality of the taxation system which penalises repair and maintenance of old buildings in particular Designated Heritage assets (Listed Buildings) with the imposition of a positive rate of VAT that regularly negates the benefits of retention and repair. A return to the zero rating of VAT is long overdue. The recent extension of the Listed Places of Worship Scheme by the Government is a welcome development.

42. The Government should also be armed with the facts on the life cycle of a stone building. There should be approved codes in place before buildings are torn down needlessly; listing may help with this. Historic England/Scotland/CADW should be encouraged to present this case, supported by appropriate craft and professional construction federations - HE/HS/CADW/SPAB/SFGB etc.

[KW, CIPHE]

43. A particular concern for us is the skills shortage within the plumbing and heating industry, especially regarding low carbon technologies. The industry, including manufacturers, installers and lecturers, need long term commitment to policies and any future initiatives should focus on quality products being installed by competent installers. Some years ago, many colleges invested significant finances in renewable and sustainable technologies. However, a change in Government policy, (closure of the Green Deal Scheme), demand for training plummeted resulting in the technology being removed. Nowadays only a handful of colleges have the necessary equipment available to undertake low carbon training, it is arguable that if it was not for manufacturers and bona fide private training centres we would be in an even greater mess! More recently the Government was promoting the Green Homes Voucher Scheme, but this had an emphasis on business probity rather than technical competence and the administration of it was nothing short of disastrous. Little wonder that many installers are reluctant to commit to Government's call for help

44. Industry statistics show that the rollout of low carbon heating across Britain's homes and buildings is happening although not to the extent that Government has pledged to achieve. Ministers and

officials need to appreciate what is required to ensure that engineers are properly trained and qualified and that they have the confidence to fit low carbon heating systems.

45. The CIPHE has been working with industry to help find solutions to the current problems and I'm pleased to confirm that we will soon be launching a short course on low temperature heating & hot water systems in domestic dwellings. I accept that as there is no compulsion to attend such training it will be difficult to upskill the everyone in the industry but, if such initiatives are to be taken seriously, mandatory CPD should be introduced.

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