

## 1. What development will we need to address climate change?

Zero Waste Scotland supports the Scottish Government's policies on Climate Change and its Net Zero Carbon target, and welcomes the opportunity to contribute to this consultation. We concentrate in particular on the critical role of the built environment in the mitigation and adaptation to Climate Change, as the sector contributes to 40% of the UK emissions and also uses over 50% of the UK's resources per annum<sup>i</sup>.

Zero Waste Scotland believes that there are two key issues to consider under this part of the consultation:

- Firstly, what types of development are needed and where;
- Secondly, the approaches used to deliver developments

On the first point, we recognise that the planning system has had a strong focus on environmental and sustainability issues for many years, including under NPF3, and that there has been progress as a result. There have, for example been long histories of policy promoting the re-use of vacant and derelict land, providing accessible green space in urban areas, reducing the need to travel by maximising the use of existing infrastructure and, more recently, accommodating renewable electricity development.

We appreciate that addressing climate change, and delivering the Scottish Government's target of net zero by 2045, will require continued focus on these policies and others. Immediate challenges, for example, include the role of planning in facilitating decarbonisation of heating and transport and ensuring infrastructure is resilient and adaptable to changing climatic conditions, particularly increased frequency and intensity of extreme weather events and the impacts associated with these.

We also believe that greater emphasis needs to be placed on delivery; at events our staff attended and hosted during this consultation, it was clear that policies clearly laid out in NPF3 were not always implemented consistently at the level of regions and local communities. Progress in addressing the concerns above depends at least as much on financial and other factors as on planning regimes, and we return to the need for integrated policies in our responses to questions below.

This leads to our second point: while spatial planning policies are absolutely necessary, they will not, on their own, be sufficient to address the scale of the climate and environmental challenge. Discussion on Scotland's climate change impacts generally focuses only on territorial emissions - those which occur within our national boundaries. However, the Scottish Government's Carbon Footprint indicator<sup>ii</sup> also includes the climate and wider environmental impacts of goods and materials we consume in Scotland, regardless of their country of origin. As such, it is a more accurate – and significantly more challenging – representation of impacts associated with consumption in Scotland.

To address this, NPF 4 needs explicitly to require consideration of the carbon impacts of materials used, including in particular their 'embodied' carbon, in developments over which the planning framework has influence, widening the focus from just the 'operational' carbon from associated power generation, heating and transport use. For this approach to be effective, it is essential that planning policy, detailed planning guidelines and other drivers, including Building Standards are robust and consistent with NPF4, and that wider Scottish Government policies, particularly on public procurement, are also interlinked.

The lifetime carbon footprint, or whole life carbon, of a building is made up of its lifetime operational carbon – energy used to heat and power it - and the embodied carbon of the materials and products used to construct it. Between 30% and 70% of lifetime carbon is, depending on building type, in the embodied carbon<sup>iii</sup> of a build after construction. However, this position is not static: as Scotland decarbonises its electricity grid and move more towards electrical heating, the

levels of operational carbon will continue to decrease, and the proportional importance of embodied carbon will increase.

The UK Green Building Council<sup>iv</sup> states that to meet the Net Zero Carbon target for buildings built in 2045 we will need to use predominantly materials we are currently using in infrastructure and buildings. As buildings and infrastructure constructed today can be expected to last at least until the time when net zero is to be achieved by 2045/50, to ensure these materials are available for re-use, buildings and infrastructure will need to be designed and constructed now in ways which facilitate recovery of materials at the end of their first life.

It also makes sense to build now with better materials, that can be maintained or repaired and that are built with flexibility and with adaptation in mind to extend their useful lifespan, in line with the Scottish Government Circular Economy strategy, *Making Things Last*<sup>v</sup>

To put these aims into practice, it is essential that NPF4 policies send clear messages to the construction sector to ensure that all developments are consistent with delivery of the 2045 net zero carbon target, as the industry is responsible for a substantial part of the UK's carbon emissions<sup>vi</sup>.

To achieve this, it will be necessary to consider and address the carbon emissions that arise from the sourcing, processing, transportation, manufacture, construction and deconstruction of the materials, products and built assets we use to create, use, maintain and remodel the places in which we live and work. Building construction methods, location, orientation, material choice and life span, adaptability and reusability can have a big impact on a building's carbon emissions and should be fully considered in the design stage.

Incorporating of these stages into our current carbon accounting and targets, alongside the policies traditionally covered by the planning system, will be essential to ensure we can be confident in meeting the target of net zero emissions by 2045. In our view a circular economy approach to planning is one which brings together all of the above issues, and promotes the development of places in ways which prioritises the whole life value to wider society, the economy, and the local and global ecosystem.

Without this approach, there is a risk that Scotland exports both its emissions, and the associated economic and employment opportunities.

## **2. How can planning best support our quality of life, health and wellbeing in the future?**

As has always been the case, planning needs to balance the needs of society within ever-clearer ecosystem limits, through robust assessment of impacts. In some ways, the headline aims may not change significantly for many members of our society; the system will still need to provide access for people to economic opportunity, and social, cultural and environmental services, and to do this in locations accessible by walking, cycling and public transport.

Good neighbourhood design can have a positive impact on physical activity levels, travel patterns, access to economic opportunities, social connectivity, quality of life and mental and physical health outcomes. Utilising circular design principles in the location and integration of residential, work and leisure developments, can result in a reduction of transport infrastructure needs and require less travel. With reduced dependence on road transport comes less emissions and improvements in local air quality which will benefit the health and wellbeing of the local community. Proximity also encourages walking and cycling which also contributes to health and wellbeing.

However, it is clear from the consultation material that the context in which planning will operate is changing significantly. While climate change is arguably the defining long term issue for the coming decades, planning needs to consider responses against challenging circumstances which include

increasingly rapid economic change, increasing moves to on-line businesses and services, concern about equalities and wellbeing, an aging population, and the impacts of globalisation.

There are clearly high degrees of uncertainty around all of these individually and their combination adds complexity. In response, the planning system needs to consider and promote infrastructure and buildings which are more flexible in use, and therefore capable of meeting these changing needs, than has been the case in the past.

For example, flexible designs for houses which include adaptable spaces and higher accessibility standards would mean that homes can, with minimal adaption, be made suitable for a young family, multiple lodgers or older occupants. This flexible approach could also be applied to workspaces, schools, nurseries and community/leisure facilities to provide opportunities for greater utilisation of built assets. Greater flexibility adds value and will result in extending the life of the building in line with Scottish Government's circular economy goals.

Material choice is also important. Natural materials and biophilic design have been proven to provide greater wellbeing<sup>vii</sup>. Natural materials give off less or no VOCs. Poor air quality and poor ventilation in modern houses (1980s onwards) is one of the reasons why we have an increase in asthma and allergies in the population<sup>viii</sup>. The use of more natural materials and natural light has also been demonstrated<sup>x</sup> to have positive effects on occupants not just in health and wellbeing but in terms of productivity.

By improving the design of buildings in this way we will also reduce our carbon impact, reduce pollution, improve security of material supply and reduce lifetime costs. Energy efficiency also contributes to energy security and reduces fuel poverty. Reuse and recycling of materials is also important in other areas; it protects our natural capital and important ecosystems which in turn also support our wellbeing. Further, using natural, local materials supports local economies.

Wider use of quality accreditation or performance standards such as BREEAM<sup>x</sup>, CEEQUAL<sup>xi</sup>, Home Quality Mark ONE<sup>xii</sup>, WELL<sup>xiii</sup> and Passivhaus<sup>xiv</sup> will help achieve the above aims. In line with our earlier comments on delivery, it is also important to assess performance post build and/or occupation to ensure compliance with theoretical standards.

We also recognise the need – highlighted by the covid-19 restrictions in place at the end of this consultation period – to continue to improve digital connectivity throughout Scotland.

### **3. What does planning need to do to enable development and investment in our economy so that it benefits everyone?**

Following from the discussion above, we believe that the planning system needs to play a central role in the shift away from the current focus on capital expenditure and narrow measures of economic benefit when considering development. A new focus on whole life costs and benefits, and greater emphasis on wider measures of success is required to meet both wellbeing and low carbon aims.

We believe the capacity exists within the construction industry to meet this challenge, but there is a lack of demand, driven by a 'race to the bottom line' in least cost procurement, design and delivery. At strategic level, planning can help facilitate this change by upping the ambitions of spatial plans and making new requests of the construction industry to deliver infrastructure in line with circular economy aims and wider Scottish Government policies, strategies and targets on climate change, health, and wellbeing.

More specifically, planning has a central and critical role in requiring greater use of reused or recycled materials across the construction sector to reduce waste, retain the value of the resources, protect our natural capital, increase resource security, and reduce our embedded net zero impacts.

Further, setting higher standards will trigger investment across the traditional construction supply chain (trades, suppliers) and beyond (digital), to ensure that new innovative materials, services and skills are in place. In addition, encouraging greater reuse of materials and valuable secondary recycled materials and minerals, will reduce waste, avoid environmental impacts associated with virgin material production, and cut carbon. Infrastructure to facilitate new approaches may be required. Encouraging the use of natural materials that sequester carbon, especially timber and particularly if locally sourced, can have a positive impact on reducing carbon in our built environment, and also supports local communities, jobs, and as outlined above, health and wellbeing aims.

#### **4. What policies are needed to improve, protect and strengthen the special character of our places?**

While the planning system has always had a role in protecting the environment, it is increasingly clear that the economy and society exists within environmental limits, and we welcome the emphasis on both climate change and wider environmental protection in the consultation material.

It is, however, important to recognise that these environmental limits are under pressure both from extraction of materials for consumption, and in terms of the ability of the environment to absorb the wastes our economy creates at present.

Moves towards a more circular economy address both of these concerns at the same time. Approaches which promote the re-use of existing infrastructure, buildings and materials now, and design to facilitate recovery and re-use in the future, have both local and global benefits, in the same way that energy efficiency within individual buildings reduces both carbon emissions and the impacts of sourcing fuels in the first place. Planning policy could set re-use targets at regional, local, corporate and project levels along with a requirement for monitoring and reporting processes.

There are additional benefits in relation to resilience: re-using materials reduces Scotland's dependency on imported materials which, in addition to their associated environmental impacts, may become scarce, expensive or both as global conditions change. Further, by making greater use of local renewable materials and using materials with high recycled content or low lifetime carbon impacts, we can create new, low carbon business opportunities. Case studies of businesses in Scotland with which Zero Waste Scotland works, show that many are already taking these approaches. Their work demonstrates that these benefits are real and practical, and not just theoretical<sup>xv</sup>.

We also recognise that significant environmental concerns exist in Scotland, which go beyond the ability of the planning system alone to influence. The issue of vacant and derelict land is an example of this; the planning system has for decades promoted its re-use, but the scale of the challenge remains, and costs of redevelopment are typically higher than for greenfield sites. Stronger approaches through planning, while welcome, will therefore need to be accompanied by wider resource shifts across other areas.

At a more local level, materials historically used to construct buildings would reflect the resources available at the time, and therefore help form the character of our historic built environments. A circular economy approach reinforces this, creating opportunities for the enhancement of local character through the prioritisation of local natural materials and resources. Much of our built heritage is of a high quality in terms of structure and materials, and can be adapted successfully time and time again as use requirements change.

While we appreciate this is beyond the remit of the planning system, complementary policies are also a linked part of driving demand. To give two examples:

Firstly, we consider that measures are also needed to provide consumers and users with better information relating to the performance and impacts of the built assets they are using or purchasing. In addition to the information on energy performance currently available, performance information could also cover aspects like flood risk, water use, building material life spans, maintenance schedules and costs, air quality, and operating instructions of any technology or systems.

Secondly, there is a central role for public procurement, as recognised in the 2019 Programme for Government<sup>xvi</sup>. In line with this, all public bodies and all development using public funding should adopt a rigorous sustainable procurement approach, where development and decisions are not price driven or economically driven but prioritise an ecosystem / whole-systems approach; the planning system, and wider linked policies can reinforce this.

One way to deliver this whole life approach is through business models which provide services for consumers through lease rather than purchase. These encourage the use of quality materials and products that are easy to maintain, have a long life or can be easily repurposed. In addition, there are associated opportunities for SME's for servicing and maintenance of products.

## **5. What infrastructure do we need to plan and build to realise our long-term aspirations?**

Our responses to questions above have concentrated on physical infrastructure and buildings. Before returning to the detail of these, it is important also to emphasise the need for appropriate soft infrastructure - organisational structures, administrative and management systems and robust assessment criteria, which reflect shared aspirations and involve appropriate expertise in decisions relating to planning. For such systems to be effective, stakeholders involved need to have with similar levels of expertise and resource to participate in the system, across environmental and social as well as economic outcomes.

More widely, one of the key components of a successful circular economy approach is collaboration, both across sectors and through supply chains. The policies we have outlined above would, if adopted as part of Scotland's planning system, help make those connections and unite sectors, Councils and regulatory bodies and private companies around a common goal, driving local projects for and with the engagement of communities, which in total deliver national outcomes.

There are also specific infrastructure requirements to enable a circular economy to flourish:

- An infrastructure that supports renewable energy generation and distribution is needed. This should include district heating systems, district energy storage solutions and appropriate local energy generation technologies. We currently have an over reliance on large scale developments that have significant visual and resource impacts and require huge infrastructure investment.
- Enhanced infrastructure that supports the collection of high-quality recycled materials for sorting, reprocessing and domestic manufacture will be required. The Deposit Return Scheme approved by Parliament for drinks containers, commencing in 2022, is perhaps the first example of more policies or schemes to follow which require new infrastructure in Scotland to service a more circular economy. Currently millions of tonnes of materials are disposed of each year through the export of low quality recyclates, or into landfill, or through energy from waste facilities. In the future more sorting, processing and manufacturing facilities will be required to collect this material and optimise its true value for the Scottish economy.
- We also recognise the requirement for, and opportunities associated with use of, digital infrastructure. The construction industry is now rapidly adopting new technologies such as Building Information Modelling (BIM), digital twins, materials and buildings passports, augmented and virtual reality, robotics, drones, and modular off-site manufacture, all of

which facilitate maintenance, adaptation and long-term recovery of materials. As we move forward over the next 25 years the way we plan, design and deliver our infrastructure in Scotland will change significantly from where we are today.

- As future policy and practice move to minimise waste and extraction in favour of maximising re-use of materials, handling and storage of materials will become a bigger issue. Planning and associated policies can support this shift in two ways:
  - Firstly, by requiring the use of the techniques such as pre-demolition audits, materials and buildings passports and collaboration between designers/clients and deconstruction contractors and facility managers; and
  - Secondly, though, these future changes highlight the need to plan now to provide infrastructure that enables and promotes a flourishing reuse industry. This is likely to incorporate both through digital platforms and physical sites, to facilitate storage and transport.

---

<sup>i</sup> UK Green Building Council, <https://www.ukgbc.org/climate-change/>  
<https://www.ukgbc.org/resource-use/>

<sup>ii</sup> <https://www2.gov.scot/Topics/Statistics/Browse/Environment/TrendCarbonFootprint>

<sup>iii</sup> UK Green Building Council, Tackling embodied carbon in buildings, Feb 2015

<sup>iv</sup> <https://www.ukgbc.org/>

<sup>v</sup> <https://www.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/>

<sup>vi</sup> UK Green Building Council, <https://www.ukgbc.org/climate-change/> ,

<sup>vii</sup> The Practice of Biophilic Design by Stephen R. Kellert, Elizabeth F. Calabrese

<sup>viii</sup> <https://www.theguardian.com/society/2015/sep/20/energy-efficient-homes-could-worsen-asthma>

<sup>ix</sup> Building and Environment, Volume 89, July 2015, Pages 118-133

<sup>x</sup> <https://www.breeam.com/>

<sup>xi</sup> <https://www.ceequal.com/>

<sup>xii</sup> <https://www.homequalitymark.com/>

<sup>xiii</sup> <https://www.wellcertified.com/>

<sup>xiv</sup> <https://www.passivhaustrust.org.uk/>

<sup>xv</sup> <https://ceaccelerator.zerowastescotland.org.uk/circular-stories/>

<sup>xvi</sup> <https://www.gov.scot/programme-for-government/>