Intro
Hello everyone

I'm going to talk to you about the **Climate and Nature Crises**, a brief overview of some of the key general issues as an introduction to this section of the conference. Obviously since I work for NatureScot I'm going to emphasise the Nature side of this but hopefully I'll give you a sense of the importance of the issues, how the planning system plays a part and more importantly must change to tackle some of these issues where it can.

Pigeon
Firstly I thought I'd warm you up with a bit of audience participation by asking everyone here to put their hand up if they can name the species and I'm not accepting "A Pigeon".

Okay this is a Passenger pigeon and you can be forgiven for not knowing what they look like, they're from America.

Pigeon
In the 1850s, as you can see from this illustration it wasn't uncommon to have vast flocks flying over, often taking whole days to pass.

I want you to imagine a sky full of birds that took days to pass,
The population has been variously estimated at between **3-5 billion birds**.

The last one died in Cincinnati Zoo in 1914.

So you can be forgiven for not knowing what the picture is because you'll never see one alive – unless of course someone creates a Jurassic Park style arrangement for pigeons.

Nature Crisis
Why is that relevant to Scotland and planning? Well we are less dramatic in our losses but the figures in this slide speak for themselves (broadly speaking measuring since the 1970s).

There's a reasonable comparison between the **passenger pigeon and our starling** - now reduced by 70% since the mid 70s.

At the risk of sounding like Grandpa Simpson , some of you may remember what big starling murmurations looked like – some of you may think what we have now is how it's supposed to be.

The passenger pigeon story tells us that it is very easy for us to slip into extinguishing biodiversity, even when it's initially abundant, either deliberately or through neglect and oversight.

Nature is in trouble, and so is the climate but the two are inextricably linked and nature can also be a major ally in our fight to combat climate change.

It has been one of the factors that has stopped it's effect being an awful lot worse.

Nature is an efficient service provider in locking up carbon. For instance peatlands store vast quantities of carbon – 'locking in' an estimated 3.2 billion tonnes in the UK alone, and where peat continues to form this helps to offset the effects of human activities that are raising CO2 levels in the atmosphere, leading to climate change.

Climate Crisis
I'm not getting into the detailed science of climate change in 15 minutes but some of the symptoms we will experience are detailed here on the outer edge of this graphic, courtesy of the met office. Most on this list are self-explanatory but a few worth highlighting in relation to planning and nature; include

- **Increased flooding (coastal and flash flooding),**
- **Temperature extremes**
- **increased risk of wildfire and**
- **associated damage to infrastructure from more extreme weather events, meaning we have to design in resilience and adaptation measures.**

But in particular a "**weakening of the carbon cycle"** means that less Co2 gets taken up by land and ocean carbon sinks such as trees and peatland. We need those natural carbon sinks and we need to improve them to help provide the services they do for us. Estimated 50% of the savings we need to make relate to land emission and locking carbon in ecosystems.

There are critical unknowns here – thawing permafrosts release billions more additional tonnes of CO2 per 1 degree heating.

Peatland degredation emits carbon as it dries out creating a positive feedback loop. **Think of bananas in a bag – as they ripen the gases given off by the ripening banana speeds up the process.** The most cost effective way to prevent this is to restore peatlands. I can't help you with the bananas.

Our ability to fight climate change is tied into our management of natureand some of that is encompassed by the planning system and development in general.

Some of you will be aware of the **most recent IPCC report from March** – which on one hand makes for stark reading. It is easy to be overwhelmed by the size and complexity of the task here – it is literally everything everywhere all at once, but.

The report makes it very clear that we have the tools that will allow us to tackle the issue but it is down to us making hard choices now.

In particular dealing with them in flexible, multi-sectoral, inclusive, ways. The planning system can help us in long-term planning and implementation of adaptation actions, that flex with nature.

Opportunity

These **problems** have the potential to be **opportunities** if we can grasp the nettle of required change accordingly. And we must do that. At all scales decision makers and developers can move to a more sustainable set of actions to

- reduce emissions,
- adapt to the effects of climate change and
- improve the state of nature.

All of these involve combining what has often been the norm of engineering and technological solutions with valuing the services that nature is already providing for us in the form of natural capital, and enhancing those services where we can. **Investment in nature-based solutions can deliver carbon reductions at a fraction of the cost of engineered solutions**, at the same time as enhancing natural assets and delivering a range of ecosystem services[1]. Specific opportunities for investing in nature-based solutions include Peatland restoration, Woodland creation, Natural wetlands flood risk management, and Natural coastal defences.

Effective climate action is enabled by political commitment, well-aligned multilevel governance, institutional frameworks, laws, policies and strategies and enhanced access to finance and technology. NPF4 is a strong step in that direction.

Examples – NPF4 puts climate and nature at the heart of the planning system for the first time, but what does that look like? . Many will be struggling with how that vision can be transformed into practical action and how the "inertia of business as usual" can be resisted.

There are good examples out there already and all of them rest on multiple rather than single benefits. At all scales green blue infrastructure can be used to provide services that are cost effective. The example here is an urban one in **Sheffields "Grey to Green**" project providing combined water management, amenity, summer shade, and pollinator service – from something that was originally tasked with simply preventing the flooding that had cost Sheffield business 30 million in damage.

Some of you may be aware of the work being carried out on **Eddlestone Water in the Borders as part of the Tweed Forums activity**, which demonstrates the cost effectiveness of some of these nature based solutions. Using natural process to alleviate some of the impacts of climate change – slowing the flow of water, creating natural flood storage and improving biodiversity into the bargain. **Calculations on the project indicate a 950k of flood damage avoided, an estimated £4.2 million benefits in total delivered and the potential £17 million in maximum benefits.**

These kinds of measures and benefits should be being incorporated into development at all scales, and could be part of wider offset opportunity mapping and nature networks associated with development, helping to improve place where people live and provide these other services too.

Examples – **Renewables and peatlands restoration**– An example of larger scale work is the renewables industry represents an opportunity to really maximise

contribution. By tackling both emergencies not just favouring one over the other, some in the industry are beginning to lead with peatland restoration augmenting man-made infrastructure with nature-based solutions, making efficient use of land to tackle the twin crises.

We need to make sure this becomes the norm.

A brief discussion on tools – Everyone loves a map. What tools do we use to steer decision making beyond Policy and into adaptive spatial guidance.

At present High level constraints mapping can help direct development away from the most sensitive areas through a combination of mapping and good policy using tools such as the **national soil map of Scotland, or the Dynamic Coast mapping**.

Advances in future developments in AI technology, remote sensing and drone use could give further definition to finer scales for some constraints. **BUT we shouldn't just be talking about constraints we should be talking about how all these mapping tools and policies will be used to provide opportunities for nature enhancement and adaptations to climate change.**

We are already seeing a new generation of AI processes being applied which on the one hand will facilitate decision making but we'll need to endure a period of proliferation and competition which may be uncomfortable.

Positive Effects NPF4 has specific requirements on biodiversity enhancement in policy 3 and we're aware that many will be wanting to know how to translate into practical action.

Some of you will be aware of our **Developing with Nature guidance** that was published in its text only form alongside NPF4 aimed at helping to interpet policy 3c on appropriate local biodiversity measures.

Key things to consider are the

- nature scale and location of the development,
- future management needed,
- certainty of delivery and
- what the opportunity is at the location .

An updated version on its way in the next few months that includes more visuals and these slides show examples of the sort of thing that will be incorporated.

Even without current guidance in place on major developments aspect of the policy we believe the principles of the appropriate measures format can be extrapolated from the local upward, until such time as Scottish Government are able to put guidance in place

SG have formed a Technical Advisory Group on the subject and we will be engage with the group. Scottish Government set the timescales on developing more detailed approaches and guidance.

The elephant in the room is finance.

Das Gupta and the "debt" from not valuing nature. We've been at the bar for a while racking up a tab and at some point we'll need to pay it.

However we require a step change in approach at all scales and there is evidence out there that a place based approach is financially sound. **Every £1 invested in GI can generate up to £20 of benefits and savings[2]. Living near publically accessible green and blue space added (on average) £2,438 to property prices in Scotland in 2016 prices.** We need to move away from single function to multi-purpose spaces that give us more bang for our buck and we need finance models that help that happen at all scales.

Finance

The potential for Natural Capital Finance is significant but creating investible opportunities is difficult. Blended (public/private) finance is likely to be needed –but we need to start placing natural capital on an equal and interlinked footing with social, economic and human capital. Change is starting to happen - natural infrastructure is now included in SG's definition of infrastructure in various policy documents.

However public funding alone will not be sufficient to deliver the investment in natural assets needed to achieve net zero greenhouse emissions in Scotland by 2045.

Summary - In summary "**when you're in a hole stop digging**". Business as usual has left us with the emergencies we face and so we have to adapt the decisions we now make accordingly. To be blunt, many of our problems stem from how we've planned for much of the 20th C. If we change how we do it now, it WILL deliver the positive effects for nature, climate and people that we need.

Hope - The aim is to avoid this scenario, and with the right decision making and financial support structure it is possible to not destroy the planet and keep shareholders happy. It is possible to come back from the brink if we work at it.

Going back to the passenger pigeon story, in the same year as that last bird in Cincinnatti died, the last native sea eagle in Scotland was shot, but here we are today with a healthy reintroduced population, one that contributes to the tourism economy of our country and has become an international symbol of biodiversity recovery .

Thank you