Spains Hall, Essex

Biodiversity net gain land management

Biodiversity net gain (BNG) is one way landowners can fund nature recovery on their land. This case study looks at how BNG fits with wider ecosystem services and other agricultural income streams.

BNG and wider ecosystem services

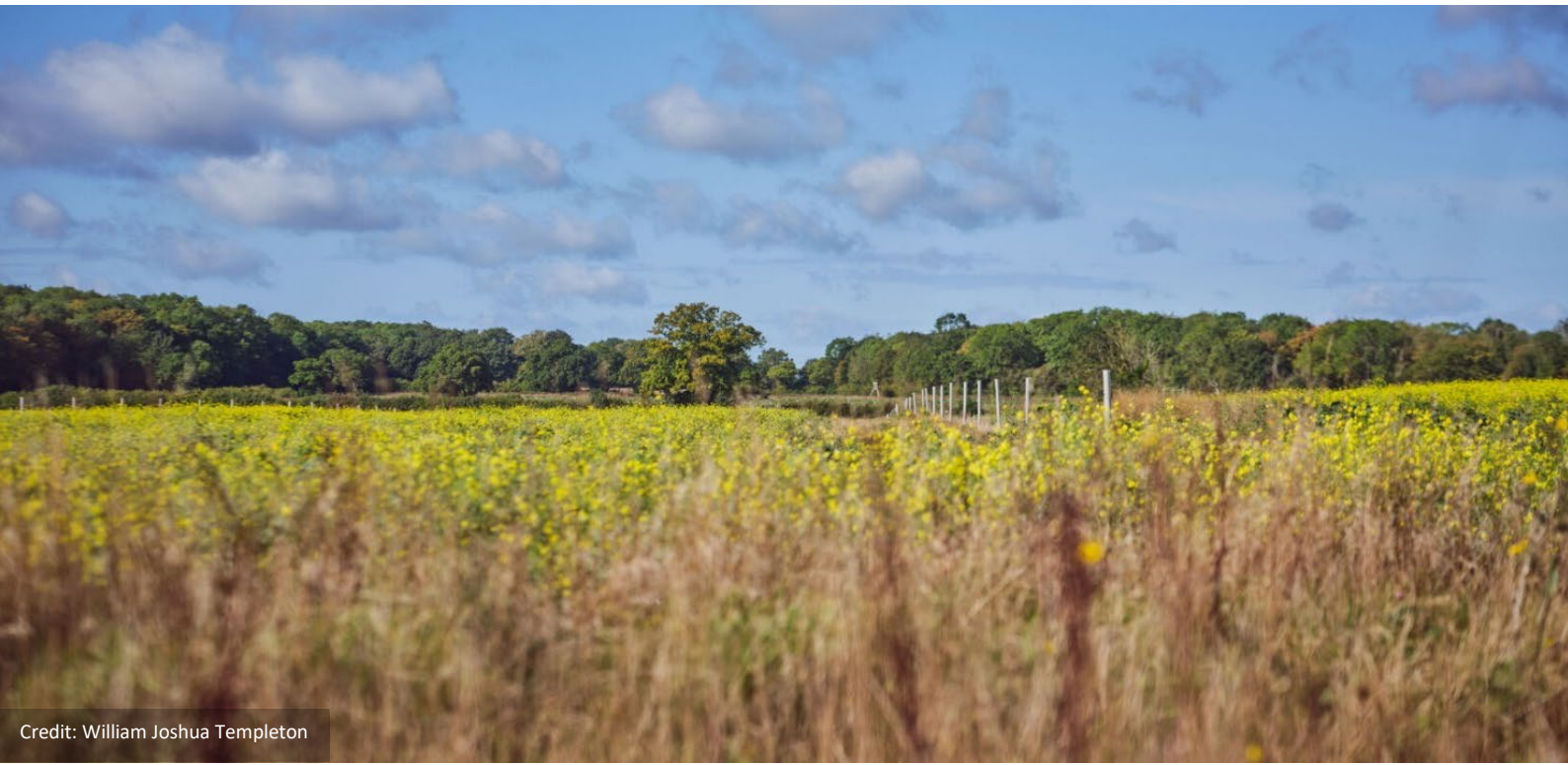
Spains Hall Estate in Essex has been in the hands of the Ruggles-Brise family for 11 generations, since 1760. Over the centuries it has been managed in what Archie Ruggles-Brise, Estate Manager, describes as “the traditional way”. This has meant that the family have largely been dependent on agriculture as the main source of income.

“This is just normal farmland,” Archie Ruggles-Brise explains, subject to the usual pressures and opportunities that face farmers across England. “If we can do it, anyone can do it.”

In 2020, the Estate was selected to be one of Natural England’s statutory biodiversity credits pilots, in preparation for mandatory BNG. Monies from sale of statutory biodiversity credits will be invested in habitat delivery in England. Together with Defra, Natural England is investigating the potential projects in which the Secretary of State may choose to invest in future.

BNG on “normal" farmland

By “normal farmland”, Archie Ruggles-Brise is referring to the lack of National Parks, AONBs, or any other designated land. There is some good woodland, but “no SSSI or amazing meadows. We have an opportunity to deliver a great deal of net biodiversity gain because there is relatively little here to start.”



Credit: William Joshua Templeton

Working with specialists


Credit: Simon Hurwitz

Archie Ruggles-Brise emphasises the value of having an expert ecologist on site. “Without strong ecological expertise, the temptation is to maximise the unit gain without realising that some habitats won’t work in certain places.”

He also notes the opportunity comes with a financial cost required to deliver enhanced habitat, but remains optimistic about the return on investment.

The estate has been working for the environment for many years. However, following a Natural Capital appraisal in 2019 it became clear that the risks associated with the current arable system couldn’t be ignored.

Soil loss, nutrient export, water availability and carbon emissions were all factors in stimulating a change in direction. The appraisal also highlighted opportunities for ecosystem service delivery and markets that the Estate has since explored. Spains Hall Estate has been delivering nature-based solutions since 2018.

”Building on an award-winning natural flood management project we are now one of the most advanced mixed land use projects in East Anglia,” Archie Ruggles-Brise notes. “BNG is a key component to an overarching Ecological Masterplan, but our model goes well beyond offsetting, with opportunities for wider voluntary Environmental and Social Impact, risk reduction, water and climate resilience, and sustainable agriculture.”

“Our approach is to see what would work best for the land,” explains Sarah Brockless, resident ecologist. “We then look at which schemes, and revenue sources might support the work we want to do. Often, we do find we have to make some compromise in the grander holistic vision to fit our work to a specific scheme, which can be frustrating. However, focusing on the land first, we have a greater chance at successfully delivering the full range of positive outcomes.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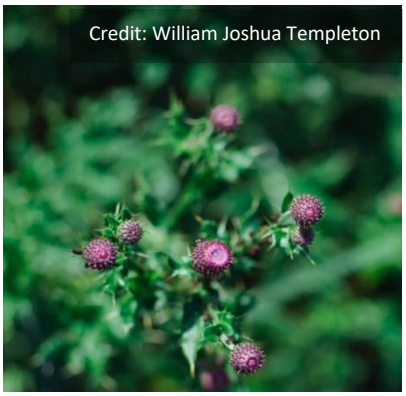

Credit: William Joshua Templeton

“In 2022 we embarked on an ambitious 50 plus year programme of habitat creation of a large area of biodiversity-focused land management change. Working with Natural England allows us to generate high quality BNG units, suitable for use in both mandatory and voluntary markets.”

Giving an example on a smaller scale, Archie Ruggles-Brise refers to a field in the middle of wider woodland. “Currently it is not a great field, and it splits up other sections of woodland. We have old maps which mark this field as woodland, and it makes so much sense to restore it.”

Traditional farming

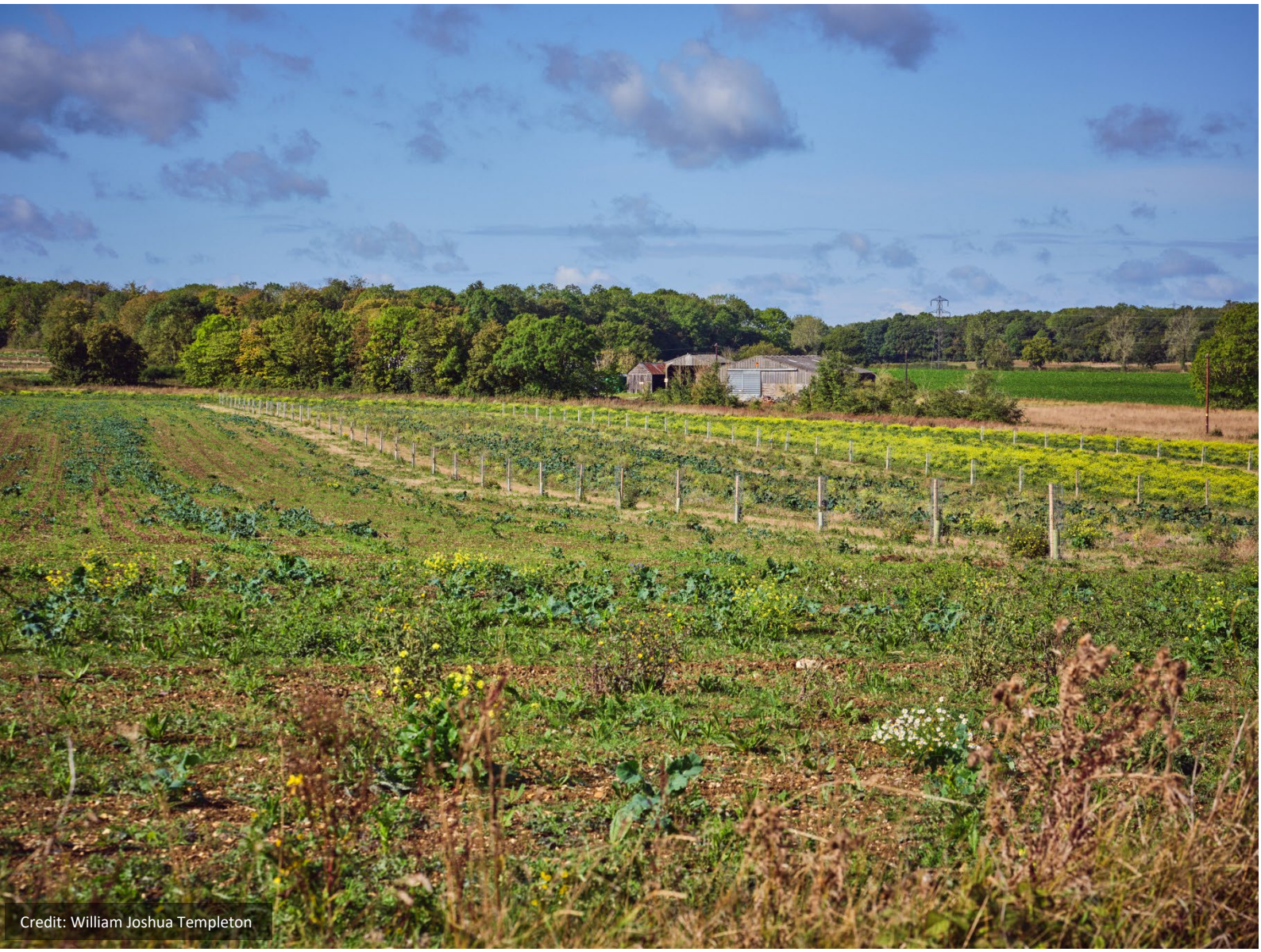
With a strong history of farming, Archie is keen to explain that around half the estate will remain traditionally farmed, managed by the long-term farming tenant families.

The other half, managed directly by the estate, will transition from commodity-based agricultural production to a system of perennial crops planted within and alongside a wide range of high impact permanent and rotational environmental options.

The transition throws up lots of new questions. “Our family owned a pedigree herd of Jersey cows before being sold in the 1950s as it was no longer profitable.” Archie Ruggles-Brise reflects, “grazing hasn’t been part of our system for quite some time, but now we have a plan to restore cattle to these fields as part of our conservation work.

“We are currently not planning to own our own livestock, but instead are looking to work with local graziers. It is a big cultural shift we’re navigating if you want specific outcomes from grazing, for example, specific conservation activities.”

He adds that the reintroduction of livestock as a result of pursuing BNG was an unexpected but welcome addition to the wider whole-estate approach. “Quality food production and serious nature restoration can happen hand-in-hand, it is a win-win.”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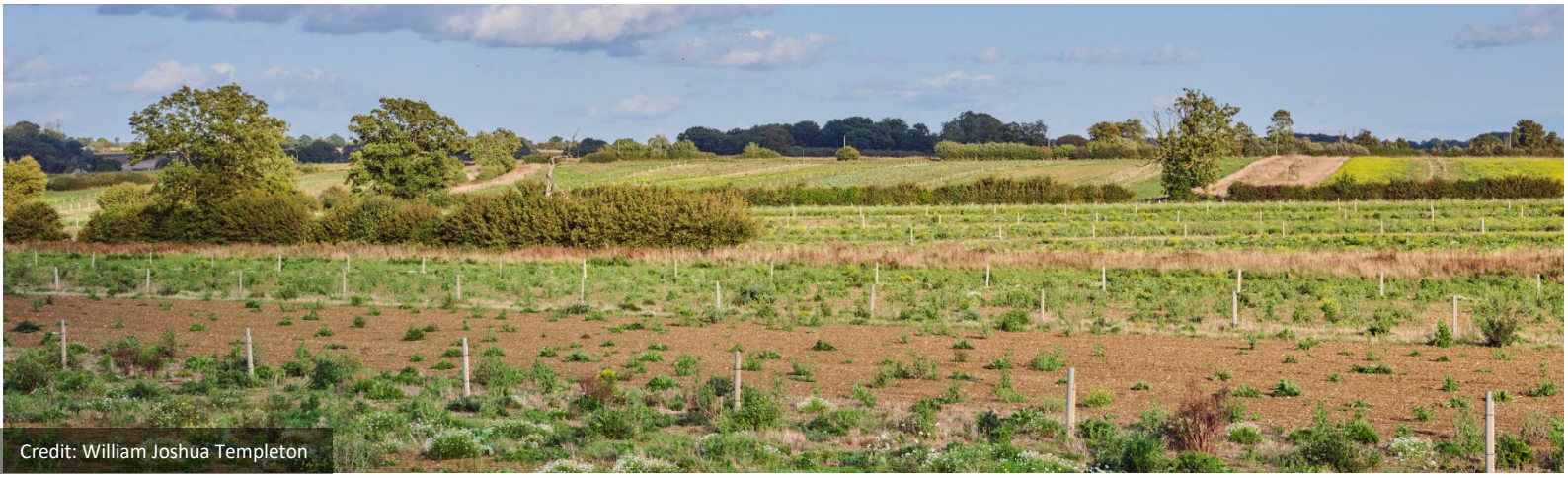
Agroforestry

Alongside exploring BNG and other funding schemes, Spains Hall Estate is also trialling other activities like beavers and agroforestry. “We’re looking at alternatives outside of the norm, a new way of managing land on a whole-scale approach,” explains Archie Ruggles-Brise.

Agroforestry represents a model of land use that enables tree planting to fit into the farmed environment. It offers a delivery model to achieve government or corporate tree-planting targets whilst supporting (rather than displacing) other productive land uses.

Archie Ruggles-Brise has invested in hazelnuts and walnuts as the main crop but is experimenting with truffles too. He explains that they are developing a permanent cropping system in the fields and the trees will be in place for at least 20-50 years before being replaced with new trees. Alongside this will be more grassland agroforestry with trees providing fodder and shelter.

From an ecology perspective, Sarah Brockless is keen to stress that between the lines of trees, “the field surface will be available to grow flower-rich swards and weedy fallows alongside winter seed bi-annual and perennial mixes, providing a habitat mosaic which not only supports year-round biodiversity, but will also build soil, sequester carbon, trap and clean water and help mitigate drought. This is a new approach beyond the more widely adopted ‘alley cropping’. We are doing eco-alleys instead!”



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Ecosystem services

Historically the Estate has been focused on food production. Archie Ruggles-Brise acknowledges that, “over time, this has led to other ecosystem services being marginalised as they are unable to generate income to support the business.

“We are not unique in this respect, most agricultural land across the globe suffers the same issue.

“Our new system aims to rebalance this situation by modelling how each ecosystem service (such as water quantity, water quality, flood risk, wildlife, climate regulation, food and fibre) will be affected by the planned land use changes.

“We then use this information to inform delivery plans, but also to reveal the value to society (and private interests) of de-intensifying land use.”

Looking at water specifically, “tackling both ends of the water resource spectrum together allows us to link times of too much water, to times when we don't have enough. We call this our 'Whole Farm Reservoir' approach, and it allows us to better understand how the Estate water stores might be managed in the future to retain and attenuate water, for the benefit of agriculture, the environment and local communities downstream.”


Credit: William Joshua Templeton

Archie Ruggles-Brise is proud that the local village hadn’t flooded since they started their water management plan. Initially, there was some scepticism at the proposed changes on the estate, but having regular public tours through the land and seeing the changes happen in real time has been key to bringing the community onboard.


Credit: William Joshua Templeton

Where next?

“The biodiversity metric has been developed iteratively over the last 10 plus years with input from a wide range of experts. It is a great starting point, but I’m excited to see how it develops as there are undoubtedly areas where it doesn’t support more dynamic or complex systems very well,” Sarah Brockless reflects.

“We’re trying so many different things out here, the BNG metric will be a useful tool to help us monitor change and report outcomes.”

Included in the plethora of avenues being explored at Spains Hall Estate is work with Kings College London, University of Essex and Anglia Ruskin amongst others.

Trying out so many different approaches warrants research into how the schemes all compare. The results are already fascinating; in a recent heatwave, the Estate was seven degrees Celsius cooler than London, despite being so geographically close. The impact of greenery and the beaver wetlands, perhaps?

Further research will help guide Archie Ruggles-Brise as he sets the future course for Spains Hall Estate.


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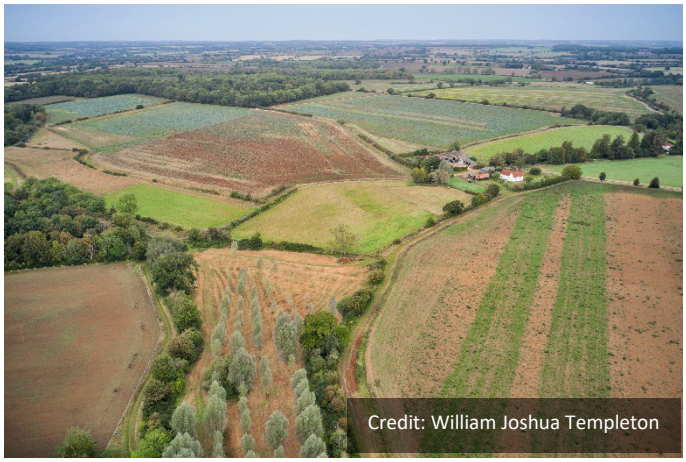
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Natural England seeks to achieve thriving Nature for people and planet by building partnerships for Nature’s recovery.

Biodiversity net gain is part of the government’s Environment Act 2021. Natural England is working closely with and advising Defra on the design and development.