Forest Research

Annual Report and Accounts 2020–21

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Performance Report

Overview

This Performance Report overview provides:

- the Chief Executive's views on our performance over the past year;
- information on our background, vision, strategic objectives, activities and resources;
- a performance summary.

Chief Executive's Statement

This year's Annual Report comes after a most turbulent period in our recent history, with unprecedented challenges for us all, both professionally and personally. As I reflect on the past year, my thoughts are with all those touched by the Coronavirus crisis. In all parts of society, people have adapted, pulled together and gone the extra mile in response. I am hugely proud that the staff of Forest Research are no exception. Throughout the ongoing situation, they have supported and looked out for their colleagues and have been both professional and resilient in their approach to their work.

In response to the pandemic, we quickly established a focused Response Management Team (RMT) to coordinate a series of business continuity plans and keep a constant review of the changing situation. The RMT meets regularly and brings together myself, colleagues from Human Resources, Communications, and Health and Safety. It covers all elements of agency business, including remote-working IT provision and an online, self-service system for granting staff safe site access or fieldwork permissions across the UK. With these new processes in place, we have been able to retain oversight of who is going onto our sites or into the field, to ensure the necessary risk assessments have been carried out, that numbers do not exceed site capacities, that our sites remain COVID-safe, that staff are supported and we continue to comply with national or local lockdown provisions. The RMT continues to produce regular, updated advice to staff on how they should – and how our organisation will – deal with the risks. The success of this approach in keeping people safe and yet operational has been welcomed and acknowledged by our staff and unions.

In addition to this operational support provided by the RMT and our Human Resources, Facilities, Information Technology and Finance teams, we have also focused specifically on supporting our staff's wellbeing in a variety of ways from providing a dedicated wellbeing hub, resilience training, pulse surveys and an online wellbeing tool called Welbot

This integrated response to the pandemic has allowed us to continue to deliver forest science, data and evidence for our clients across the UK. Our research on creating resilient rural and

urban forest landscapes also remains pivotal in supporting the sector's response to the challenges ahead and delivering all three administrations' tree-planting aspirations.

We have also restructured our Board during the year to reflect the new federal structure of the Forestry Commission and our specific need to reflect the support and involvement of the devolved administrations in Forest Research. The details of our new Board Members are given on page 28, but we are particularly delighted to have our first independent chair in Dr Matt Perkins, alongside dedicated country representatives from the Scottish Government, Welsh Government and the Department for Environment, Food and Rural Affairs (Defra).

We have delivered 21 out of 24 Key Actions planned for 2020–21 and have secured £8.0 million of non-core income. This achievement is the direct result of the reputation, dedication and hard work of our staff despite the limitations imposed by the pandemic. More details on some specific projects are detailed in our Research Highlights chapter pages 18 to 23.

As part of our developing focus on urban trees and the contribution they can make to pollution and noise reduction, biodiversity and wellbeing, this year we have specifically focused on improving good practice in the measurement of urban trees. Following initial engagement with stakeholders in 2019–20, a draft standard for Individual Tree Measurement has been consulted on, refined according to the feedback, and prepared for publication to support improved measurement and collation of urban-tree data. Such a standard is an essential step in improving data interoperability for urban-tree mapping and management.

From 2016 to 2021, Forest Research led the Payments for Ecosystem Services, Forests for Water (PESFOR-W) COST Action, a major research network with partners in 40 countries, which sought to improve the use of Payments for Ecosystem Services (PES) schemes to achieve EU Water Framework Directive targets and other policy objectives by providing incentives for planting woodlands to reduce agricultural diffuse pollution to watercourses (see **www.forestresearch.gov.uk/research/pesforw/**).

PESFOR-W is consolidating learning from existing woodlands for water PES schemes in Europe to help standardise approaches to evaluating their environmental effectiveness and cost-effectiveness. It is also creating an international network through which PES schemes can be facilitated, extended and improved, for example by incorporating other ecosystem services linking with the aims of the wider forests-carbon policy. Forest Research is leading the production of an end-user guide: Forests for Water – A step by step guide for payment schemes.

Our social scientists are leading three projects relating to the biosecurity risks associated with large tree-planting schemes in Scotland. This work is being funded by the Scottish Plant

Health Centre, with partners including the University of St Andrews, Scotland's Rural College, the James Hutton Institute, Fera Science Ltd (Fera), the UK Centre for Ecology & Hydrology, St Andrews Botanic Garden and the Royal Botanic Garden Edinburgh. The projects are assessing large-scale plant biosecurity risks to Scotland from non-specialist and online horticultural sales; the plant biosecurity risks to Scotland from large-scale plantings for landscaping and infrastructure projects; and the plant biosecurity risks to Scotland from large-scale tree plantings for environmental benefits. The work comprises desk-based reviews, online surveys and semi-structured interviews with major retailers and land managers to increase our understanding of the biosecurity risks associated with the selection, procurement and planting of trees. The work is due to be published in due course and will inform decision-making for large-scale woodland creation schemes in Scotland.

The large pine weevil (*Hylobius abietis*) is a highly damaging insect pest of conifer seedlings with an impact on the forest industry estimated at £40 million per year. An ongoing 10-year research programme led by Forest Research has identified two new insecticides as viable replacements for the broad-spectrum synthetic pyrethroid insecticides cypermethrin and alpha-cypermethrin, as well as some physical barriers that could be used to reduce insecticide usage. A series of scientific papers are being produced that outline the effectiveness of these different methods of control.

In addition, this year Forest Research is leading a new project, in collaboration with the Natural Resources Institute, University of Greenwich, and Sentomol, a company specialising in delivering pest-management solutions, funded by Forestry and Land Scotland and Scottish Enterprise, to develop novel ways to monitor and control this pest using biocontrol agents. The team has recently designed and produced a new prototype trap and attractant-lure system for *Hylobius*, which has been successfully tested in the field this year as a monitoring device. Next year it will be further tested as a catch-and-release device to lure *Hylobius* and infect them with biological control agents, such as nematodes or fungi, providing longer-term management of the weevils over wide areas with no lasting effects on the wider environment.

As part of our drive to focus on customer needs, we commissioned an independent review of the National Forest Inventory (NFI) under the chairmanship of Peter Whitfield BSc (For), FICFor, MRICS and this reported in December 2020. The review found that while there is clear support for the NFI and its strategic importance as a government-produced dataset that supports industry and public-policy development, there is a need for it to evolve and adapt if it is to continue to meet the diverse requirements of the current and future customer base.

The reviewers recommended that the NFI establish a more structured dialogue with a broader range of key stakeholders, rather than just the current funders of the service, and the report sets out several recommendations for doing this. Two key findings were the desire for the NFI

to be more responsive to the requirements of users and the opportunities to leverage greater value from the data itself. Overall it was gratifying to see the NFI receive such a positive renewed mandate for the future, along with some strong suggestions on how to improve the offering and the quality-assurance standards that underpin NFI outputs (data, models and results).

To help promote climate-change adaptation in forestry, we have drafted a Practice Guide: Forest and Woodland Management for the Changing Climate. This Practice Guide provides advice to forest owners, managers, practitioners, planners and policy-makers on how to adapt management and planning to prepare for the changing climate by offering a path through the complex process of choosing and implementing adaptation measures. It brings together and summarises the latest insights from research and practice, supplemented by case studies to show how adaptation measures are being applied. It supports the UK Forestry Standard guidelines on climate change.

We also launched four climate-change factsheets – the first in a series exploring the effects of climate change on our trees and woodlands. Aimed at practitioners, the factsheets showcase the breadth of research carried out by Forest Research, sometimes over decades. They demonstrate how trees and forests are facing the challenges of climate change and offer actionable mitigation strategies.

As part of our work to support the Nature for Climate Fund Programme (NCF), we secured funding for six major tree-health and strategy-related projects. Taken together, the projects will significantly improve our laboratory facilities and equipment, enhance our ability to respond to outbreaks and the considerable interest in tree-planting, and help to establish a new Centre for Forest Protection.

A new Memorandum of Understanding (MoU) with Defra was initiated for the delivery of international forestry work. In line with the MoU, we recruited a new International Forestry Advisor and delivered important research into tropical forestry. Further work is under way through a collaboration with St Andrews University to deliver international research under the Supporting Skills, Competencies And Learning for Engagement in sustainable forest management (SCALE) project. This will enhance our impact on the international stage and support Defra's international strategy.

Forest Research has also produced a comprehensive suite of new research programmes for implementation from April 2021, collaborating with the devolved administrations and Defra to align and prioritise activities to reflect the revised and Ministerially-endorsed Science and Innovation Strategy (SIS) for forestry. Science and innovation enables the UK to maintain its international reputation for sustainable forest management and ambitions for woodland

creation, ensuring that its trees, forests and woodlands can meet the challenges of providing a healthy future for the economy, society and the environment. A new refreshed five year SIS for forestry in Great Britain (GB) was agreed during the year and supports this vision in order to make a significant and long-term contribution to government priorities across England, Scotland and Wales. It builds upon the previous strategy (2014), taking into account the common objectives for all three nations, supported by the shared UK Forestry Standard, and underpinned by sound science and evidence.

With the support of Defra Property, we have continued to invest in both our Northern Research Station and Alice Holt sites and are on target to complete the build and handover of our new state-of-the-art tree-health quarantine facility at Alice Holt during 2021. In tandem with this work, and as part of a wider Forestry Commission project, we are also considering how we can best provide COVID-secure future working arrangements across all our sites.

In a world where our response to both the COVID-19 pandemic and climate change is critical, our staff, through their hard work, commitment and expertise, continue to deliver great science, innovation and data services to the sector and to Government. As well as thanking them, I would also like to thank our diverse range of stakeholders, partners and customers for their ongoing support and collaboration and understanding throughout the pandemic, which we really appreciate, and hope will continue in the future.

Professor James Pendlebury
Chief Executive and Agency Accounting Officer

Purpose and activities

Who we are

Forest Research (FR) is the research agency of the Forestry Commission (FC) and Great Britain's principal organisation for forestry and tree-related research. FR is internationally renowned for the provision of science, research, evidence, data and services in support of sustainable forestry.

Our vision

To be a world leader in applied forest science and a trusted and recognised provider of expertise, data, products and services for government and the tree, wood, forest and natural resources sectors.

Our key strategic themes

1. Engaging with customers

Our customers are our primary focus. We will conduct timely, rigorous and independent research to give our customers the quality science, evidence, data, products and services they need to make informed decisions, support policy development, or develop and grow their businesses.

2. Developing our science and data offer

Using and adapting new technology, techniques and approaches are fundamental to our provision of quality research and data services. Our interdisciplinary science and data provision will offer trusted and quality-assured insight and innovation.

3. Increasing our value

Through well-established connections across the forestry sector, we understand the issues facing our trees, woods and forests and those involved with them. We will continue to give the best research advice, information and data to our customers and to grow our business.

4. Working together

Forest Research's staff are fundamental to our success. Their expertise, pride and passion have made us the UK's leading provider of applied forest research. We recognise that our future reputation depends on the work we will do, not just on the work we have done.

As part of the wider Department for Environment, Food and Rural Affairs (Defra) family, FR will help to deliver Defra's Strategy, A Green Future: Our 25 Year Plan to Improve the Environment **(https://www.gov.uk/government/publications/25-year-environment-plan),** which sets out a shared vision and a set of objectives to improve the environment within a generation. At the heart of the Strategy is a shared vision for the Defra group: creating a great place for living. Defra goals are focused on four impact objectives: to make a positive difference to the UK by delivering a cleaner and healthier environment; supporting a world-class food and farming industry; supporting a thriving rural economy; and protecting the UK against environmental damage. More information on the Strategy is available in Defra's Annual Report and Accounts.

Research funding

From 1 April 2019, a new Cross-Border Memorandum of Understanding between FR and the UK, Welsh and Scottish governments funded core research and other services. This arrangement supports the Ministerially-endorsed Science and Innovation Strategy for Forestry in Great Britain and forestry policies of the UK, Scottish, Welsh and Northern Irish governments. In addition, Forestry England, Forestry and Land Scotland and Natural Resources Wales purchase research, data services and surveys specifically related to their respective forest estates. FR is also increasingly successful in securing funding from other government departments, the European Commission, UK research councils, commercial organisations, private individuals and charities. Collaborative bids with other research providers and consortium funding have become increasingly important, placing emphasis on effective partnership working.

Activities

Research and development are essential components in delivery of the benefits of sustainable forestry in a multifunctional landscape and in the wise management of trees in urban and rural settings. FR's research, surveys and related forestry data and scientific services address the social, economic and environmental components of sustainability and help respond to the climate and biodiversity crises and the need for green recovery. We focus on providing knowledge and practical solutions based on high-quality science, data provision and analysis.

Our projects provide understanding, policy advice and guidelines on the implementation of best practice on issues such as forest hydrology, silviculture and forest management, tree health, mitigation of and adaptation to climate change, carbon sequestration, well-being benefits of nature, public attitudes and behaviours, biodiversity and genetic conservation, timber quality, tree improvement, seed testing, remote sensing, crop inventory, yield modelling, production forecasting, forest statistics, surveys and monitoring.

Resources

FR employed 250 (full-time equivalent) staff during the year 2020–21 at sites across England, Scotland and Wales. Contact information for our main offices is provided on the back cover.

Issues and risks

The important issues and risks that could affect FR in delivering its objectives are reported within the Governance Statement on page 30, including the impact of COVID-19 and how the Agency is addressing the risks and issues.

Performance summary

Operating review

The Agency continued to successfully operate and deliver its important work despite the impact of COVID-19 on the business. Site access was rigorously controlled by the COVID-19 Response Management Team to ensure the protection of colleagues while delivering business activity continuity in line with UK and Devolved Government requirements.

The newly embedded IT infrastructure and capability upheld the remote working requirements of the majority of the workforce throughout the year and provided a platform for the continuation of corporate services and wider business activity. Across the whole organisation during the year, additional financial support of £0.5 million was provided by Defra to mitigate the financial impact of COVID-19 against the business plan for the year.

The Agency demonstrated significant resilience and agility through its delivery and contribution to the NCF Programme, establishing new sample plots and investing in facilities to undertake specific seed and biosecurity scientific research.

In particular, Forest Research has:

- successfully achieved revenue financial balance for the year with a net operating surplus of £469,000;
- finalised the core programme work relating to the new Cross-Border Ministerially-endorsed Science and Innovation Strategy, commencing in April 2021 for a period of five years;
- successfully embedded the IT capability to ensure remote working for the workforce;

- achieved or exceeded targets for 21 out of the 24 Key Actions for the Agency, with the remaining Key Actions due to be finalised in 2021–22, due to the impact of COVID-19 (pages 16 and 17);
- secured £8.0 million of non-core income;
- continued to implement its new Strategy for FR, *A Strategy for Growth*, and increased total operating income to £21.4 million;
- continued to support Defra colleagues in dealing with biosecurity outbreaks;
- expanded the volunteer network for the Observatree project;
- examined the risk of *Phytophthora* spread through nursery practices;
- explored natural solutions to reduce traffic incidents caused by flooding;
- delivered new and updated growth and yield models to underpin the 2021 Production Forecast;
- capitalised on long-term experiments to capture additional provenance information on timber stiffness of Sitka spruce;
- published a large range of UK National Statistics and Official Statistics on subjects including woodland carbon code statistics, timber price indices, Forestry Statistics 2020 and analyses from the National Forest Inventory.

Financial review

Forest Research successfully ensured that its business plan and associated revenue position were delivered in 2020–21. In addition, the financial position was further enhanced through securing additional funding during the year, particularly in relation to the Defra-funded NCF Programme. This investment resulted in Forest Research being able to initially respond to the UK Government's Woodland Creation programme through enhancement of the equipment and facilities required to underpin a robust science and evidence base.

Despite the impact of COVID-19 and restricted access to the main research station sites during the year, Forest Research ensured total income increased to £21.4 million during 2020–21 and received significant capital funding of £7.63 million to enable critical investment in its main sites and research capability. In particular, excellent progress was made on the construction of the new world class Tree Health laboratories, which was substantially complete at the end of March 2021 at the Alice Holt site. This world-class facility will enhance the future biosecurity capability in Forest Research and Defra.

This unprecedented revenue growth and secured capital investment was a key success for the organisation and ensured that financial balance for the year was achieved with a net operating income reported of £469,000 (2019–20: £22,000).

A comparison of income and expenditure with the previous year's results shows that:

- other management costs decreased by £220,000 (3.8%), mainly as a result of the expected reduction in depreciation expenditure associated with services at the Alice Holt site;
- materials and services costs increased by £796,000 (38%), mainly as a result of additional commissioned research work contracted out to other providers by the Agency in accordance with contractual arrangements associated with successful bids for new work. In addition, a significant historical EU project write-off action occurred amounting to £478,000 in relation to a collaborative Thermolidar EU project undertaken between 2012 and 2015. The write-off occurred through no fault of Forest Research and Defra approval was sought and obtained for the write-off action;
- income from external sources (non-core income) during the year amounted to £8.0 million, which is an increase on the level achieved in 2019–20 (£7.9 million).

In 2020–21, Forest Research recognised total operating income of £21.4 million, significantly exceeding the level achieved during 2019–20 (£19.5 million), and reported net operating income of £469,000 (2019–20: £22,000). The increase in the level of income was mainly related to the NCF Programme and the new Natural Capital Ecosystems Assessment pilot work.

Additions to Property, Plant and Equipment (PPE) and intangible assets during the year amounted to £7,631,000 (2019–20: £1,651,000) and included the construction of the new world class Tree Health laboratories at the Alice Holt site, laboratory enhancements at the Alice Holt and Northern Research Station sites and investment in scientific equipment.

Financial objective – Key Actions

Forest Research's primary financial objective set out in the Framework Document is to recover the full economic costs of its operations from the sale of services to customers. In 2020–21 the recovery rate was 101.5%, which reflects an increase on the 100.1% recovery rate achieved in 2019–20. This is due to the surplus achieved in 2020–21 of £469,000.

Performance against other operational and scientific Key Actions is reported in the Performance Analysis section on pages 16 and 17.

The future

Our work is founded on the principle that applied research and reliable evidence are at the heart of informed policy-making and sustainable land management practices. We have demonstrated our resilience and agility during this challenging year and will need to continue our agile approach in order to adapt and remain resilient in the future, particularly in a

COVID-19 world. The Agency's executive team has deployed its business continuity plans to mitigate the COVID-19 impact and will continue to review these plans and assess the longer-term challenges, working closely with stakeholders, including customers and our supply chain, to identify risks, threats and opportunities to our internal and external strategies. While our approach is constantly reviewed, the current focus has enabled us to shape our future priorities and develop our existing focus in providing the science and evidence to:

- protect our trees and forests;
- ensure that the Westminster Government's and Devolved Administrations' woodland creation and management agenda is underpinned by relevant scientific research, building on the initial platform developed in 2020–21;
- The England Tree Action Plan will be published in May 2021 addressing the need for new trees, woodland and forests more than ever before. The plan will map out how trees will be part of the solution to achieving Net Zero and Forest Research will play an important part through significant contributions to the underpinning science and evidence base;
- enhance forest ecosystem resilience and service provision;
- ensure sustainable management and adaptation of our forests to climate change;
- effect knowledge exchange;
- grow our business.

Some of the activities that Forest Research will be undertaking to support the delivery of the Science and Innovation Strategy for Forestry in Great Britain, and to fulfil our own corporate objectives for 2021–22, are as follows:

- undertake international forestry technical support for Defra, to include biodiversity, climate change, timber trade and sustainable forest management policy areas in an international forestry context;
- contribute to the 26th meeting of the Conference of the Parties (COP26) on climate change;
- continue to participate in and support the NCF Programme through provision of relevant science and evidence;
- carry out surveys and monitoring across the country as required under the EU Plant Health Directive to ensure that the UK retains protected zone status against regulated tree pests and diseases, and provide a report on these activities to the UK and EU statutory bodies;
- ensure that the new world class Tree Health laboratories is finalised and becomes fully operational during the year;
- survey 1,500 hectares of forested land as required by the National Forest Inventory (NFI) and publish reports on woodland ownership and woodland habitat condition;

- evolve and develop our Environmental Management System and other associated quality management systems;
- publish UK National Statistics and Official Statistics releases on subjects including forestry statistics, timber price indices, UK wood production and analyses from the NFI.

Supplier payment policy

Forest Research complies with the Government's Better Payment Practice Code. Unless otherwise stated in the contract, we aim to pay within five days from the receipt of goods and services or the presentation of a valid invoice, whichever is the later. An analysis for 2020–21 indicates that 96.1% were paid within the due date. Arrangements for handling complaints on payment performance are notified to suppliers on contracts.

Auditors

These accounts are prepared in accordance with a direction given by HM Treasury in pursuance of Section 7 of the Government Resources and Accounts Act 2000. They are audited by the Comptroller and Auditor General, who is the statutory appointed auditor. The notional fee for statutory audit services in respect of these accounts was £41,000 (2019–20: £39,000). No further non-audit services were provided in 2020–21 or 2019–20.

Performance Analysis

The performance of Forest Research is closely monitored throughout the year by the Board and a new corporate dashboard was introduced during the year to assist with performance monitoring. Performance is measured through the identification of desired outcomes and Key Actions against each of our science and business priorities, which are to provide the science and evidence to:

- protect our trees and forests;
- ensure that the Westminster Government's new planting and woodland creation agenda is underpinned by relevant scientific research;
- enhance forest ecosystem resilience and service provision;
- ensure sustainable management and adaptation of our forests to climate change;
- effect knowledge exchange;
- conduct research, lay out experiments, and publish results and analysis to the highest standards;
- grow our business.

The Board ensures that progress against Key Actions is appropriately measured and reported, including consideration of risks and uncertainties that potentially have an impact on

performance, through our risk management procedures. In addition, regular monitoring of the financial position in comparison to the approved budgetary targets is undertaken. This financial monitoring is critical to the success of our primary financial objective of recovering the full economic costs of our operations from the sale of services to customers.

A financial review and analysis of long-term expenditure trends have been included within the Parliamentary Accountability Disclosures section on page 48. Operating and financial reviews describing our key financial results for the year have been included on pages 12 to 14.

We also recognise the importance of non-financial performance information and a Fraud Policy Statement is available for staff to access across the organisation. We continue to work closely with the Forestry Commission and Defra in line with the Defra Counter Fraud Policy and Strategy, publicised on our intranet for all staff to access.

The environment is at the heart of our activities and the impact of our business on the environment is measured and reported within the Sustainability Report on pages 24 to 27.

The Board has concluded that our achievements against our corporate Key Actions for 2020–21 are a strong indicator of performance and are listed below. A full commentary with details of our work on each Key Action is available at **www.forestresearch.gov.uk/keyactions**

Key Actions

Key Action	**Progress**
Publish the Practice Guide: forest and woodland management for the changing climate.	**Achieved**
Initiate the development of a web-based Resilience Knowledge Hub for the forestry sector.	**Achieved**
Develop seed phenotyping software to automatically differentiate between seed quality categories using digital X-ray images.	**Achieved**
Publish results from six years of research into non-chemical and chemical alternatives to the use of conventional insecticides for the protection of young trees from damage by the large pine weevil Hylobius abietis.	**Achieved**
Improve good practice in the measurement of urban trees.	**Achieved**
Development of payments schemes to improve water quality through woodland planting.	**Achieved**
Assess biosecurity risks associated with large tree planting schemes in Scotland.	**Achieved**
Produce key national forestry statistics.	**Achieved**
Increase uptake of Remote Sensing/Earth Observation products and services.	**Achieved**
Undertake an independent review of the National Forest Inventory.	**Achieved**

Deliver a comprehensive, multi-channel Climate Change Campaign showcasing FR's science and emerging communications capability.	**Achieved**
Deliver an improved FR website to provide an enhanced customer experience and an improved direct route to FR products and services.	**Partially achieved and will complete in 2021–22**
Implement a comprehensive support structure for FR for the purpose of streamlining business development activities.	**Achieved**
Expand the pipeline of potential work to ensure that we meet income targets during COVID-19 timeframes.	**Achieved**
Review and identify potential alternatives to Independent Research Organisation (IRO) eligibility, should it not be successful.	**Partially achieved and will complete in 2021–22 subject to research council decisions**
Comprehensively scope and design a suite of new research programmes for implementation from April 2021, collaborating with the Welsh Government, Defra and Scottish Government to align and prioritise activities to reflect the revised Science and Innovation Strategy for Forestry.	**Achieved**
Evolve our Environment Management System (EMS) by implementing procedures and documenting progress, setting targets and monitoring with respect to resource use, and continuing to develop strategies (including investment) to tackle the highest environmental risks.	**Achieved**
Design and develop a quality management system for the new world class Tree Health laboratories consistent with the requirements of ISO 17025:2017.	**Partially achieved and will complete in 2021–22 in line with building completion and handover**
Focus on health and wellbeing of staff, through the actions of the RMT response to COVID-19 and the delivery of the FR Wellbeing Strategy.	**Achieved**
Deliver the FR Wellbeing Strategy.	**Achieved**
Deliver the FR Learning and Development long-term plan, integrating with Defra for scientific development, promotion of Learning Platform for Government (LPG) resources and scoping FC Management and Leadership programme.	**Achieved**
Continue to develop and promote the use of technologies that support home-working.	**Achieved**
Develop FR's Digital Strategy.	**Achieved**
Ensure that financial balance is achieved for the Agency by meeting the revenue break-even target.	**Achieved**

Research highlights from the past year

Throughout the past year our scientists have continued their work on a wide array of research topics. These have ranged from very topical research into whether the pandemic has impacted the way people engage with nature, to continuing our work on climate change and revisiting long-term species trials to help inform the choice of tree species for the future. These, and some of our other activities from the year, are summarised below. Further information on our work is available at **www.forestresearch.gov.uk**

Assessing trends in urban tree canopy cover

Trees in towns and cities provide a wide range of benefits to those that live and work there. They make urban areas safer, more pleasant and healthier places to be. They also help cities cope better with the effects of climate change. With more than 80% of Great Britain's population living in urban areas, it is important to consider whether the extent of tree cover is changing.

In 2020, Forest Research conducted and published research that explored changes in tree cover since the 1940s for 10 urban areas across Great Britain. By examining aerial photography, our study revealed that all 10 areas had a predominant trend of increasing tree cover from the 1940s through to 2018. However, when we considered the past two decades alone, we found that six locations showed no change in canopy cover and three locations had a tentative shift towards a decline in cover. Ongoing monitoring is required to confirm these trends, but such declines would need to be reversed if the benefits of trees are to be enjoyed by future generations.

Many local authorities across Great Britain have established tree-planting or tree-canopy-cover targets in response to the climate emergency. This study also identified those geographic areas where photographic imagery exists, providing an opportunity to expand this research. There is also a need for new, low-cost ways of calculating historic urban tree cover to enable a wider range of locations to be included in analyses. Such low-cost methods could also enable a wider range of historical image types to be assessed, thereby increasing the robustness of the trends identified. It is hoped that the findings from this research will lead to better protection and management of existing tree cover and improved planning for future cover, for example by setting meaningful and realistic canopy-cover targets.

For more information visit **www.forestresearch.gov.uk/news/study-reveals-changes-in-tree-canopy-cover-in-britains-urban-areas/**

How nature, trees and woodland have supported people during COVID-19

The COVID-19 pandemic has had a major impact on society. Restrictions on what people could do and where they could go have been unprecedented. In response, Forest Research's social and economic scientists quickly decided to develop a piece of research to understand whether the restrictions had an impact on people's engagement with nature.

From late spring to early autumn 2020, we carried out an online survey of 2,115 people and conducted 25 interviews. The survey was publicised by Forestry England through its website and newsletters, so those who completed the survey were already interested in nature and, specifically, trees and woodlands.

The survey results showed that two thirds of people reported an increase in time 'taken to appreciate nature', 'levels of happiness when in nature' and 'feelings of connection to nature'. The main benefit identified from engagement with nature was a 'feeling of escape and freedom', not surprising given the restrictions people faced. We found younger people (aged 16–34) were significantly more motivated to visit nature for 'mental health and wellbeing' benefits, 'exercise', 'exploration' and 'to take a break from work or from electronic devices'.

Our findings are detailed in a report that highlights the important role that trees, woodlands and wider nature can play as part of people's everyday lives and in supporting their wellbeing in the very difficult circumstances of a global pandemic. This report and further details of the study are available from our website, **www.forestresearch.gov.uk/research/engagement-nature-and-during-covid-19-restrictions**. We will be reporting on our interview data soon.

This research builds on much of our work in recent years on how people engage with trees and woodlands and any benefits they gain or barriers they face to access. It has been undertaken under the umbrella of the Active Forests Programme Evaluation, supported by Forestry England and Sport England. Active Forests is a partnership between Forestry England and Sport England supported by the National Lottery.

Revitalising forest garden species trials

Long-term forest experiments often experience neglect when the objective of an experiment ceases to be a research priority, followed by renewed interest when the research agenda changes. This is exemplified by the history of three major forest gardens, with collections of species plots, at Kilmun in Scotland, Brechfa in Wales and Bedgebury in England. All three were first planted in the early to mid-twentieth century to trial potential non-native species for use in British forestry.

They played a key role in identifying Sitka spruce, now the dominant productive forestry species in Britain. However, climate change and increasing threats from pests and diseases make reliance on a single species risky. Collectively, Kilmun, Bedgebury and Brechfa contain 194 species in 291 plots and provide invaluable demonstrations of alternative species that could be used to diversify British forests and increase their resilience in a changing world.

Forest Research has been working with Forestry and Land Scotland (FLS), the Welsh Government, Natural Resources Wales and Forestry England to maintain these important trials and publish results to inform the debate about species choice in British forestry. This year, we have prepared a management plan for the future direction of Kilmun and have grown new species at our Roslin nursery for planting out in plots by local FLS staff at Kilmun. We have also carried out a full audit of the plots at Bedgebury and will produce a review detailing future directions for them. We have begun a similar process at Brechfa where we aim to remeasure all existing plots.

Funding the work in these long-term trials has always been a challenge but now that their contribution is being widely acknowledged it is hoped this will no longer be a problem. Detailed management plans for all three sites and new planting will help to ensure provision of an important demonstration and quantitative resource for foresters for the next 50 years across Scotland, Wales and England.

Improving stiffness in Sitka spruce

The grading of construction timber is governed by three mechanical properties: strength, density and stiffness. The majority of British spruce timber is graded as C16 but has density and strength characteristics that could usually achieve higher grades. The factor limiting a greater proportion of sawn spruce from achieving higher construction grades is stiffness.

Since 2019, Forest Research has been engaged in a study to evaluate stiffness in Sitka spruce trees. The goal is to find trees with excellent stiffness properties that can be infused into the general breeding population to provide a major boost to the quality of domestic timber and bring positive impacts for the whole supply chain.

For this work, we made use of an existing 45-year-old provenance trial that had been established as part of an international effort by the International Union of Forest Research Organizations (IUFRO). The provenance trial gave us access to seeds collected from across 25 Pacific Northwest seed sources, covering the native range of the species. We compared trees grown from these seeds.

Early work within the general breeding population of Sitka spruce shows that the stiffness trait is highly heritable, which means that improvement of stiffness through selection and testing should work well.

Our initial results found that some provenances, on average, had better stiffness values than others but there was no geographical pattern of variation. Most variation was held within, rather than between, provenances, suggesting that trees with good stiffness values can be found throughout the range of Sitka spruce.

Trees with the highest stiffness score were grafted onto young rootstock to create an elite population. After five years, these trees will be planted out and, once they have flowered, their genetic material can be introduced by controlled pollination into the current breeding population of Sitka spruce. Because of the high heritability of stiffness, this will increase the stiffness of the subsequent generation. Introducing genetic diversity from a wider range of provenances will be a valuable source of traits other than stiffness. Additionally, broadening the genetic variation will in theory increase the resilience of genetically improved Sitka spruce to changes in climate.
For more information visit **www.forestresearch.gov.uk/research/tree-improvement/selection-and-testing-of-conifers/improving-stiffness-sitka-spruce**

New top height models for major commercial species

Accurately forecasting standing timber stock in our forests is essential for the timber industry and policy-makers. These predictions support decisions across a number of areas, ranging from timber supply to sawmills, to the net-zero-target strategy for climate-change mitigation.

Timber stock is predicted using growth simulators that work in a similar way to meteorological models: given the current situation, a forecast is provided of what is expected to happen in the future. In the case of timber, our simulators are reliable over periods of several decades.

Forest Research holds a privileged position to develop these simulators, with an extensive network of permanent sample plots across Britain available to fit our models. We have previously developed a growth simulator for the main commercial species in Britain. However, this simulator needed some important updates.

Growth simulators usually consist of several modules. When it comes to typical British commercial forests, it is the top-height module that is of greatest importance. It is commonly accepted that silvicultural treatments have little effect on increments in tree height. Consequently, tree height is considered to be a good indicator of site quality. By modelling

top height – the average height of the 100 largest diameter trees per hectare – we are building the 'growth engine' of our simulators.

Through a collaboration between two of our Science Groups, we developed a set of new top-height models, which are dynamic, robust and accurate. These are now included in our new growth simulator, which is already being used to project timber production at the national level.

This work was reported on in the scientific journal *Forestry* (**https://doi.org/10.1093/foresj/cpaa036**) and was awarded the Editor's Choice, in recognition of its relevance.

Connecting trees and forest to the Internet of Things

Over the past few years, the use of Internet of Things (IoT) technology has revolutionised the way that data is captured and analysed across a range of sectors and is providing information at speeds and resolution previously unobtainable. Yet in environmental monitoring and forestry, and despite its potential to transform the way that data is collected, viewed and analysed, this technology has not been adopted as quickly as in other sectors.

In 2020, Forest Research worked in partnership with Defra and Vodafone to explore how this new technology can be used to improve environmental and forest monitoring and to test its suitability at remote rural locations. A pilot study which ran at Forest Research's two long-term carbon flux sites, Alice Holt in Hampshire and Harwood in Northumberland, used IoT technology to monitor tree growth along with a range of associated environmental variables. Specialist sensors attached to the trees and in the soil were connected to the Vodafone Narrowband-IoT (NB-IoT) network and the data transmitted every 15 minutes to an online web portal.

The trial at the Alice Holt site was very successful, demonstrating that this technology has the potential to deliver continuous, high-quality data from forest sites. Although data capture was not as high at the Harwood site, valuable lessons were learned, especially about NB-IoT network penetration in dense conifer stands that will help to inform future research.

This work is now being extended with a Defra-funded follow-on project planned for 2021. The aim of this study is to test how IoT sensors can be used to improve hydrological monitoring and will be based on the Forest Research natural flood management (NFM) trial site in the Pickering catchment, North Yorkshire.

New climate-matching tool

Over the coming decades, climate change is expected to have major impacts on our trees and forests. It is therefore critical that we plan, manage and expand forests appropriately for both current and future climates. To do this we need to carefully consider the choice of tree species and appropriate silvicultural systems.

Over the past year, Forest Research has worked collaboratively with UK and international partners, including partners in the EU H2020 B4EST project, to develop a new climate-matching tool (CMT). This uses UKCP18 European-scale (RCP8.5) climate projections to provide a visualisation of regions with a similar climate to the projected future climate for user-selected locations in Europe and the Pacific Northwest. The goal is to help practitioners to choose better-suited material and silviculture for use in environments that match projected future climates in England, Scotland, Wales, Northern Ireland, all of Europe, and the Pacific Northwest.

This is not a simple matter of matching future climate equivalents 20–50 years from now. It is important that forest resilience under climate change is carefully considered. The early establishment period of forests and woodlands, up to and including canopy closure, is of paramount importance. If material is unsuited to current environmental pressures, there is a risk of large-scale crop failure and the effort and cost of establishment will be wasted. Therefore, the CMT allows users to examine the near climate future to select sources of material better able to establish and form resilient woodlands and forests. It also provides a longer-term view of climate change, which is intended to help policy-makers and practitioners prepare for more extreme climate pressures in the future. In addition, the CMT can match climates where forest pests and pathogens cause tree-health problems, to show users where in the future similar climatic conditions might cause tree-health issues.

The CMT complements our existing Ecological Site Classification tree selection tool, which shows how trees will perform in a future climate. The advanced version of the CMT also extends to the Pacific Northwest, allowing an exploration of site types associated with the exotic species widely used in British forestry.

Further details are available at **www.forestresearch.gov.uk/tools-and-resources/climate-matching-tool**

Sustainability Report

This report is subject to an audit review for consistency purposes.

Forest Research seeks to reduce its environmental impact wherever possible. Our commitment to the environment through our internal Environmental Management System was formally recognised in 2020–21, as we successfully maintained our independent ISO 14001 certification following a rigorous audit process that included a review of our sustainability performance.

Business sustainability remains a standing item at the Site and Environment Management Committee meetings at Alice Holt and at our Northern Research Station. We monitor environmental performance as part of our day-to-day activities – for example, by reducing travel and choosing the most cost-effective travel options wherever possible. In addition, due to the COVID-19 pandemic situation, our business travel requirements were significantly reduced and we continue to assess smarter ways of working, in conjunction with the Forestry Commission, to ensure that we adopt new practices and achieve longer-term environmental benefits from the way we operate. Our IT capability now provides us with a suitable platform to conduct business remotely for many areas of our work and this approach is being embraced by senior management and colleagues throughout the business. Our staff also support recycling initiatives, turn off unused lighting and are energy aware. We are trialling more energy-efficient vehicles and continue to explore the suitability of electric and hybrid (fuel/battery) vehicles.

Clearly, the consumption figures included in the table on page 27 must be viewed in the context of operating under conditions that were significantly impacted by the COVID-19 pandemic, lockdown restrictions and limited access to sites throughout the year. Therefore, the general consumption trend across all categories resulted in a consumption decrease. While our water usage is lower than the previous year, we continue to explore investment in sub-metering other operational efficiencies to maximise our impact and further improve our consumption efficiency.

Further consumption data for our travel, energy usage, waste and water for 2020–21 is detailed in the table on page 27, along with comparison data for the previous three years. As usual, we rigorously monitored our electricity, gas and water consumption throughout the year and our executive team and all staff remain committed to their pledge to reduce usage as far as practically possible.

Staff travel on official business was greatly reduced during 2020–21, to just 31% of the total undertaken during 2019–20. There was no travel by air and a negligible amount of travel via

other forms of public transport. Almost all travel was undertaken via fleet, private or hire vehicles in respect of essential fieldwork and management purposes. The position was closely monitored by our COVID-19 Response Management Team to ensure that any travel was deemed necessary in the context of emerging government guidance throughout the year. Road mileage remained relatively high, despite lockdown, for the beginning of 2020–21, as staff travelled more due to overnight stays being prohibited. In addition, no car sharing was permitted, so more vehicles were used which contributed to the relatively high mileage outturn position. While the majority of the overall reduction was due to COVID-19 restrictions, Forest Research has continued to make substantial cultural changes with regard to online meeting and networking technologies, the benefits of which are expected to continue after COVID-19.

On-site electricity consumption remained stable, relative to previous years, but on-site gas consumption for heating was reduced by 20% compared with 2019–20, due to the reduced occupancy at both main research stations caused by COVID-19 restrictions. Acknowledging that much of the associated CO_2e emissions has been relocated rather than reduced, Forest Research has adopted the EcoAct Home-Working Carbon Calculation Methodology in order to ensure that these emissions have been accurately accounted for.

As part of our ongoing de-carbonisation planning process, we have transferred our electricity contract for the Alice Holt Research Station to a 100% 'clean renewables' supply, which has reduced our energy carbon footprint by some 140 tonnes annually and removed about 30% of our total energy emissions. We are also transferring the Northern Research Station to the same 'clean renewables' tariff for 2021–22, which will achieve further reductions in the future. During 2020–21 we also increased our in-house renewables capacity by 30%, via investment in additional solar-PV generation at the Alice Holt Research Station.

In terms of our waste consumption, the normal waste arising remained similar to previous years. While 'office' waste was reduced due to lower occupancy, we have made substantial capital investments in enhancements and new builds during 2020–21, which has increased levels of construction and demolition waste. We have managed to maintain most of our normal laboratory and operations functions during the year, so the associated waste streams have remained relatively similar. Tankered sewage waste has remained high during the year due to high maintenance required for a minor sewage treatment facility at Alice Holt. This is approaching the end of its expected service-life and is now scheduled for enhancement. We continue to work closely with the Forestry Commission and Defra to identify funding for this enhancement.

As a public sector body, we adhere to the Public Contracts Regulations 2015 for our procurement. We are also mindful of sustainable procurement. Where significant quantities of

goods and services are required, including the procurement of electricity, gas and water, these are obtained through a system of national framework contracts. Other purchases are made within the requirements of our Environmental Management System, which is certified to ISO 14001. In terms of the construction of our new world class Tree Health laboratories building, the key sustainable design elements include external timber cladding, Scotlarch, which is an FSC-certified product sourced from sustainable forests in Scotland, and all internal timber is to be locally sourced from FSC-certified forests, with Chain of Custody (CoC) certification.

Forest Research does not have business-specific biodiversity action plans or climate-change adaptation policies. However, we do undertake, contribute to and publish expert research and evidence with regard to these matters as they relate to trees, woods and forests. Our research informs the policies and practices that relate to biodiversity and climate-change action plans in our sector.

This report and data reflect the energy purchased and consumed by Forest Research and has been prepared with reference to *Public sector annual reports: sustainability reporting guidance 2020 to 2021*.

Performance Measurement					
Area	**Units**	**2020–21**	**2019–20**	**2018–19**	**2017–18**
Travel on official business					
Owned fleet/leased vehicles	Miles	336,621	408,566	436,719	540,558
All other travel	Miles	41,420	799,043	895,862	915,570
Owned fleet/leased vehicles	£	143,905	174,662	186,697	288,150
All other travel	£	10,825	164,882	186,968	199,078
Owned fleet/leased vehicles	GHG emissions in tonnes CO_2e scope 1	79	85	95	116
All other travel	GHG emissions in tonnes CO_2e scope 3	10	161	293	295
Energy bought and consumed (after deducting PV panels and supplies to tenants)					
Electricity	kWh (includes home-working)	981,523	1,051,150	1,211,392	1,101,095
	£	147,613	170,388	181,618	151,061
	GHG emissions in tonnes CO_2e scope 2 and 3 (includes home-working)	90	352	370	528
Gas	kWh (includes home-working)	1,665,175	1,405,452	1,605,248	1,355,120
	£	46,507	50,010	53,744	39,818
	GHG emissions in tonnes CO_2e scope 1 and 3 (includes home-working)	306	243	294	246
Oil burned	kWh	-	-	6,445	6,426
	£	-	-	375	328
	GHG emissions in tonnes CO_2e scope 1	-	-	2	2
Energy generated from renewables					
Total generated from solar PV	kWh	42,156	22,865	25,830	24,115
GHG emission avoided	GHG emissions in tonnes CO_2e scope 2 and 3	10	6	7	8
F-gas fugitive emissions					
Refrigeration and air conditioning topped up	Kg carbon dioxide equivalent (CO_2e)	-	-	NA	NA
Waste minimisation and management (non-sewage)					
Total waste arising	**Tonnes**	**84**	**67**	**97**	**72**
Waste to landfill	Tonnes	1	2	6	12
Waste re-used or recycled	Tonnes	81	61	84	60
Waste incinerated	Tonnes	2	4	7	-
Total waste arising	**£**	**32,447**	**33,559**	**37,424**	**22,750**
Waste to landfill	£	3,983	4,108	6,732	5,563
Waste re-used or recycled	£	26,616	26,810	21,902	17,385
Waste incinerated	£	1,848	2,641	8,734	-
Waste minimisation and management (sewage)					
Waste re-used or recycled	Tonnes	548	712	321	109
Waste re-used or recycled	£	12,782	16,255	6,613	2,040
Water consumption					
Total water consumption	m^3	11,626	14,693	7,350	13,725
Total water consumption	£	16,946	22,558	9,272	18,329

Professor James Pendlebury
Chief Executive and Accounting Officer
3 June 2021

Accountability Report

Corporate Governance

The Corporate Governance Report describes Forest Research's governance structures. It comprises the Directors' Report, the Statement of Accounting Officer's Responsibilities and the Governance Statement. This meets accountability requirements to Parliament as set out in Chapter 5 of Part 15 of the Companies Act 2006 and Schedule 7 of SI 2008 No 410 and amended by the *Government Financial Reporting Manual*.

Directors' Report

Relationship with Defra and the wider Defra network

The Department for Environment, Food and Rural Affairs (Defra) Ministers who had responsibility for the Forestry Commission, including Forest Research, during the year were:

- George Eustice MP, Secretary of State from 13 February 2020
- Lord Zac Goldsmith, Minister of State from 10 September 2019
- Lord Gardiner, Parliamentary Under Secretary of State from 9 January 2018

Composition of the Board

Members of the Board of Forest Research during the year were:

Professor James Pendlebury*	*Chief Executive*
Professor Chris Quine*	*Chief Scientist*
Meirion Nelson	*Finance Director*
Sir William Worsley	*Forestry Commissioner and FC Chair*
Dr Matt Perkins	*Non-Executive Director*
Dr Ian Gambles*	*Forestry Commission Chief Executive*
Dr Mary Barkham	*Forestry Commissioner (until October 2020)*
Professor Julian Evans	*Forestry Commissioner (from June 2020)*
Professor Nicola Spence*	*Defra Chief Plant Health Officer*
Ceri Witchard	*Welsh Government*
Keith Connal	*Scottish Government (until December 2020)*
Simon Fuller	*Scottish Government (from December 2020)*

* These Board Members have related party interests that are disclosed in Note 15.

The Chief Executive is appointed following public advertising of the post. The term of the appointment and provision for its termination are governed by the Civil Service Commission Recruitment Code.

Further details on remuneration are set out in the Remuneration Report.

Register of interests

A register of interests of all Board Members is maintained by Forest Research and published on its website, **www.forestresearch.gov.uk**

Incidents related to personal data

There were no incidents related to protected personal data reported for Forest Research in 2020–21 (2019–20: nil).

Forest Research will continue to monitor and assess its information risks in order to identify and address any weaknesses and ensure continued improvement of its systems. Further information on the handling of information risk is contained in the Governance Statement.

Statement of Accounting Officer's Responsibilities

Under Section 7 of the Government Resources and Accounts Act 2000, HM Treasury has directed Forest Research to prepare for each financial year a statement of accounts in the form and on the basis set out in the Accounts Direction. The accounts are prepared on an accruals basis and must give a true and fair view of the Forest Research state of affairs at the year-end and of its income and expenditure, changes in taxpayers' equity and cash flows for the financial year.

In preparing the accounts the Accounting Officer is required to comply with the requirements of the *Government Financial Reporting Manual* and in particular to:

- observe the Accounts Direction issued by HM Treasury, including the relevant accounting and disclosure requirements, and apply suitable accounting policies on a consistent basis;
- make judgements and estimates on a reasonable basis;
- state whether applicable accounting standards, as set out in the *Government Financial Reporting Manual*, have been followed, and disclose and explain any material departures in the accounts;
- prepare the accounts on the going-concern basis.

The FC Chief Executive Officer, in his role as Accounting Officer for the Forestry Commission, has designated Forest Research's Chief Executive as Accounting Officer for the Agency. The

Chief Executive's responsibilities as Forest Research Accounting Officer (including responsibility for the propriety and regularity of the public finances for which an Accounting Officer is answerable, for keeping proper records, and for safeguarding Forest Research's assets) are set out in *Managing Public Money* produced by HM Treasury.

As Accounting Officer, I confirm that as far as I am aware there is no relevant audit information of which our auditors are unaware. I have taken all necessary steps to make myself aware of all such information and to establish that our auditors are equally informed. I take personal responsibility for the Annual Report and Accounts and the judgements required for determining that they are fair, balanced and understandable, which I confirm they are.

Governance Statement

Introduction and scope of responsibility

As Agency Accounting Officer for Forest Research, I have responsibility for ensuring that its business is conducted in accordance with the law and proper standards, and that public money is safeguarded and properly accounted for, and used economically, efficiently and effectively in accordance with *Managing Public Money.*

In discharging this overall responsibility, I am responsible for putting in place appropriate arrangements for the governance of its affairs, facilitating the effective exercise of its functions, which includes ensuring a sound system of control is maintained through the year and that arrangements are in place for the management of risk.

The purpose of the governance framework

The governance framework comprises the systems and processes, and culture and values, by which Forest Research is directed, controlled and led. It enables the Agency to monitor the achievement of its strategic objectives and to consider whether those objectives have led to the delivery of appropriate, cost-effective outcomes that are also compliant with the law and with policy.

The system of internal control is a significant part of that framework and is designed to manage risk to a reasonable level. It cannot eliminate all risk and can therefore only provide reasonable and not absolute assurance of effectiveness. The system of internal control is based on an ongoing process designed to identify and prioritise the risks to the achievement of the Agency's policies, aims and objectives, to evaluate the likelihood of those risks being realised and the impact should they be realised, and to manage them efficiently, effectively and economically.

The governance framework has been in place at Forest Research throughout 2020–21 and up to the date of approval of the Annual Report and Accounts, and complies with HM Treasury guidance.

The governance framework

Forest Research is an Executive Agency of the Forestry Commission. The Agency's Framework Document sets out my responsibilities as Agency Accounting Officer. I am a member of the Forestry Commission's Executive Board and am responsible to the Forestry Commissioners for the management of the Agency. I have a right of direct access to the Forestry Commissioners and to the relevant Ministers, and a right to meet them at least once a year.

Forest Research Board

The Forest Research Board (FRB) was established to manage the day-to-day operations and performance of Forest Research, within the policy framework set by Ministers and the Forestry Commissioners. The Board meets regularly and met six times during 2020–21. The Board discussed a wide range of forest research and related issues, including:

- future science;
- Digital Strategy and Knowledge Information Hub;
- implementing Forest Research's new Strategy: *A Strategy for Growth*;
- communications;
- business planning;
- corporate Key Actions;
- health and safety;
- business development, including external income;
- new Science and Innovation Strategy;
- risk management and business continuity.

At each of the meetings during 2020–21 the Board routinely discussed reports from the Chief Executive, Chief Scientist and Finance Director. In addition, the Board received various presentations and papers from executive colleagues representing scientific research and corporate services.

Further information about the FRB, including membership and attendance, is available on our website, **www.forestresearch.gov.uk**

Audit and Risk Assurance Committee

The FRB established an Audit and Risk Assurance Committee (ARAC) to support it in its responsibilities for the effective management of risk, control and governance. From 1

November 2020, the Forestry Commissioners decided to disband the Forest Research ARAC, replacing its responsibilities through the Forestry Commission ARAC. This ensured that all Forestry Commission entities were covered by a single ARAC from 1 November 2020.

Forest Research has a risk register that is overseen by the ARAC. Through its work, the ARAC provides independent assurance to the FRB on those key activities that support the achievement of the Agency's objectives. Assurance is also provided through the findings from work carried out by the Government Internal Audit Agency (GIAA). The ARAC operates in accordance with the principles contained in HM Treasury's *Audit and Risk Assurance Committee Handbook*.

During the year the Committee discussed a wide range of issues, including:

- COVID-19 pandemic response and strategy;
- risk management;
- Annual Report and Accounts 2019–20;
- Internal and External Audit strategies and reports;
- information security;
- Corporate Services Transition Programme and establishment of services post-transition;
- research commissioning and progress on the development of the revised Science and Innovation Strategy;
- Governance Statement;
- the Committee's structure and effectiveness.

The former Forest Research ARAC met once during 2020–21. The meeting was held in May 2020 and was attended by Judith Webb (Chair), Shireen Chambers and Mary Barkham. The Forestry Commission ARAC met in November 2020 and February 2021. Further information on the Forestry Commission ARAC, including membership and attendance, is available on **www.gov.uk**.

Review of effectiveness

As Agency Accounting Officer, I have responsibility for conducting, at least annually, a review of the effectiveness of the governance framework. My review is informed by the work of Internal Audit and the executive managers across Forest Research and the Forestry Commission who have responsibility for the development and maintenance of the governance and control framework, and by comments made by the external auditors in their management letter and other reports.

The Head of Internal Audit has prepared an annual report and assurance statement to me as Agency Accounting Officer. The report includes an overall assessment of the adequacy and effectiveness of risk management, control and governance within Forest Research. The overall opinion is that internal control within Forest Research continues to provide moderate assurance. Some improvements are required to enhance the adequacy and effectiveness of the framework of governance, risk management and control.

Forest Research applies the principles of HM Treasury's *Code of Good Practice* for corporate governance in the context of its own circumstances, where relevant and practical.

The former Forest Research ARAC reviewed its effectiveness in line with best practice as set out in HM Treasury's *Audit and Risk Assurance Committee Handbook.* The Forestry Commission ARAC also reviews its effectiveness in line with the same best practice guidance.

Work to date has not identified any significant control weaknesses and has supported findings from financial control visits and the work of internal and external auditors.

Risk management

The Forest Research Board (FRB) recognises that risk must be managed, but management of risk is not the same as risk aversion, i.e. an unwillingness to accept any risk. Resources available for managing risk are finite so the aim is to achieve an optimum response to the risk. Forest Research evaluates the amount of risk that it is prepared to accept before taking action (risk appetite), using a risk-scoring matrix of likelihood and impact for inherent and residual risk. This is subject to ongoing management review.

The Board ensures that the risk management policy is implemented and that it strategically reviews key risks. Each risk identified in the risk register has a corresponding Senior Risk Owner who is a Board-level officer with the authority to take effective action. The revised approach to risk management received a Substantial Assurance rating from GIAA, as part of a wider Forestry Commission Strategic Risk Management review during the year.

The Forestry Commission ARAC supports the Accounting Officer and the FRB in their responsibilities for the effective management of risk, control and governance (see section above).

Whistleblowing

Forest Research is committed to ensuring a high standard of conduct in all that it does and has a duty to identify and remedy any area of malpractice. A whistleblowing awareness

campaign was carried out, in line with Defra's approach. We also have a dedicated Whistleblowing Officer.

Ministerial direction

No ministerial directions affecting Forest Research were given during the year.

Significant governance and risk issues

Key governance and risk issues are as follows.

COVID-19

Forest Research continues to adapt to ensure that it is resilient throughout the COVID-19 pandemic and is appropriately placed in the post-COVID-19 world. The Agency's executive team continues to assess the near-term and longer-term challenges in order to achieve this resilience, working closely with stakeholders, including customers and our supply chain, to identify risks, threats and opportunities to our internal and external strategies. This approach has helped to shape our future priorities and operations to ensure we continue to provide our critical science, data and evidence. Our initial assessments undertaken in 2020–21 to understand the impact on income, expenditure, liquidity and the associated budgetary position have been further developed throughout the year. This has resulted in management determining that the going-concern basis of accounting remains appropriate in the preparation of the financial statements.

Business continuity management

Forest Research has business continuity plans to ensure that there are procedures in place to facilitate the recovery of business activities. The successful implementation of the new IT platform and infrastructure ensured minimal disruption to services during the pandemic. While the disaster recovery and business continuity plans were tested in the final quarter of the previous financial year, confirming resilience and providing necessary assurance, further work will be undertaken to enhance the position in 2021–22.

Information risk management

Forest Research continues to make steady progress to identify and address information risks. Compared with government departments, we hold comparatively little sensitive information and our information holdings are relatively small. We continue with regular online training, such as 'Responsible for Information' for all staff and 'Information Asset Owner training' for selected staff identified by the work they carry out. The requirements of the General Data Protection Regulation are embedded into the organisation's practices and we introduced a

new Forest Research Information Asset Register (FRIAR) system early in the 2020–21 financial year. The FRIAR system will continue to be reviewed and updated periodically in 2021–22. We continue to work with the Forestry Commission on policy and guidance as part of the newly established Security Risk Management Forum. A four-year project was approved by the FC Executive Board in November 2020 to further help our understanding of the value of knowledge and information management in supporting our decision-making, and to identify and introduce necessary improvements including the use of the latest technologies.

Modelling and quality assurance

A sensible and proportionate approach to quality assurance has been adopted across Forest Research in terms of business-critical models, and the associated risks are being managed properly. Business-critical models include yield models and all connected elements of the production forecasting system, and carbon models. These are a suite of models that a) underpin timber production forecasting on the public and private sector forest estate, b) provide the data for UK forestry's contribution to Land Use, Land Use Change and Forestry (LULUCF) carbon figures, and c) aid long-term forest planning on the public forest estate.

Wider circumstances and future challenges

The main challenges for Forest Research during 2021–22 and beyond are:

- ensuring the Agency is resilient throughout the COVID-19 pandemic and in the post-COVID-19 world;
- continuing to embed our new corporate IT, HR and Finance capabilities while maintaining business continuity;
- adapting to new post-COVID-19 working arrangements through support for more blended working between the office environment and home-working;
- maintaining Agency relevance to an increasingly devolved governmental client base and changing evidence-commissioning arrangements;
- responding to new and unforeseen tree-health disease outbreaks (for example, *Ips typographus*) or other issues;
- ensuring that the Westminster Government's and Devolved Administrations' woodland creation and management agenda is underpinned by relevant scientific research;
- delivering the interdisciplinary science programmes as per the new Science and Innovation Strategy;
- planning for and securing the Agency's non-core income requirements;
- enhancing our scientific capability and research offer through effective and strategic partnerships;
- growing our international profile, activities and business;

- continuing to develop an appropriate response to the increasing threat of cyber security attacks.

In 2021–22 Forest Research will remain focused on managing these challenges either directly or in partnership with other bodies across the Defra network, wider government and devolved administrations, while continuing to maintain business continuity across the broad range of its operations and meeting stakeholder expectations.

Remuneration and Staff Reports

This information is audited by the Comptroller and Auditor General.

Remuneration Report

Employment contracts

The Constitutional Reform and Governance Act 2010 requires Civil Service appointments to be made on merit on the basis of fair and open competition. The Recruitment Principles published by the Civil Service Commission specify the circumstances when appointments may be made otherwise. All senior staff covered in this report hold appointments that are open-ended until they decide to retire or leave. Professor James Pendlebury's notice period is 13 weeks, and for other senior staff it is three months. Early termination in situations of redundancy would result in the individual receiving compensation as set out in the Civil Service Compensation Scheme.

Further information about the work of the Civil Service Commissioners can be found at **www.civilservicecommission.org.uk**

Remuneration policy

Remuneration of Forest Research Board Members who hold senior staff group posts is determined by the Forestry Commission's Senior Pay Committee in accordance with guidelines prescribed by the Cabinet Office. Details of membership of the Pay Committee are provided in the Remuneration Report of the Forestry Commission's Annual Report and Accounts. Other Board Members' remuneration is determined by the standard processes set out in the Forestry Commission's pay and grading system.

Remuneration (salary, benefits in kind and pensions) – subject to audit

The following sections provide details of the remuneration and pension interests of the civil servants who are executive members of the Forest Research Board. The full composition of the Board of Forest Research is included on page 28.

		Salary	Benefits in kind (to the nearest £100)	Pension benefits	Total
		£000	£	£000	£000
James Pendlebury	2020-21	75-80	700	22	100-105
Chief Executive	2019-20	75-80	1,100	18	95-100
Chris Quine	2020-21	75-80	-	26	100-105
Chief Scientist	2019-20	75-80	-	56	135-140
Meirion Nelson	2020-21	70-75	1,600	31	100-105
Finance Director	2019-20	65-70	8,500	27	100-105

All other Board Members are Non-Executive Directors, with the exception of Dr Ian Gambles (Forestry Commission Chief Executive) whose remuneration is disclosed in the Forestry Commission Annual Report and Accounts.

The value of pension benefits accrued during the year is calculated as (the real increase in pension multiplied by 20) plus (the real increase in any lump sum) less (the contributions made by the individual). The real increases exclude increases due to inflation or any increase or decrease due to a transfer of pension rights.

No bonuses were payable in either 2020–21 or 2019–20.

Salary

'Salary' includes gross salary, overtime and any allowances subject to UK taxation.

Benefits in kind

The monetary value of benefits in kind covers any benefits provided by the employer and treated by HM Revenue and Customs (HMRC) as taxable income. Benefits in kind are given in the form of the private use of a car, house purchase loans or taxable travel and expenses incurred in the performance of duties.

Fair pay disclosure – subject to audit

Reporting bodies are required to disclose the relationship between the remuneration of the highest-paid director in their organisation and the median remuneration of the organisation's workforce.

The banded remuneration of the highest-paid director of Forest Research in the financial year 2020–21 was £75,000–£80,000 (2019–20: £75,000–£80,000). This was 2.54 times (2019–

20: 2.43) the median remuneration of the workforce, which was £30,533 (2019–20: £31,940). In 2020–21 no employees (2019–20: nil) received remuneration in excess of the highest-paid director. Remuneration ranged from £19,000 to £78,000 (2019-20: £17,000 to £79,000).

Total remuneration includes salary and benefits in kind. It does not include severance payments, employer pension contributions and the Cash Equivalent Transfer Value (CETV) of pensions.

Pension benefits 2020–21 – subject to audit

Name	**Accrued pension at age 60 at 31/3/21 and related lump sum (LS)** £000	**Real increase (decrease) in pension and related lump sum (LS)** £000	**CETV at 31 March 2021** £000	**CETV at 31 March 2020*** £000	**Real increase (decrease) in CETV** £000
James Pendlebury	20 - 25 plus lump sum of 60 - 65	0-2.5 plus a lump sum of 2.5 - 5	482	451	23
Chris Quine	35 - 40 plus lump sum of 110 - 115	0-2.5 plus a lump sum of 0-2.5	889	872	27
Meirion Nelson	20 - 25 plus a lump sum of 35 - 40	0 - 2.5 plus a lump sum of 0 - 2.5	336	305	15

* The figure may be different from the closing balance in last year's accounts. This is due to the Cash Equivalent Transfer Value (CETV) factors being updated to comply with the Occupational Pension Scheme (Transfer Values) (Amendment) Regulations 2008.

Civil Service pensions

Pension benefits are provided through the Civil Service pension arrangements. From 1 April 2015 a new pension scheme for civil servants was introduced – the Civil Servants and Others Pension Scheme or alpha, which provides benefits on a career average basis with a normal pension age equal to the member's State Pension Age (or 65 if higher). From that date all newly appointed civil servants and the majority of those already in service joined alpha. Prior to that date, civil servants participated in the Principal Civil Service Pension Scheme (PCSPS).

The PCSPS has four sections: three providing benefits on a final salary basis (classic, premium or classic plus) with a normal pension age of 60; and one providing benefits on a whole career basis (nuvos) with a normal pension age of 65.

These statutory arrangements are unfunded with the cost of benefits met by monies voted by Parliament each year. Pensions payable under classic, premium, classic plus, nuvos and alpha are increased annually in line with Pensions Increase legislation. Existing members of the PCSPS who were within 10 years of their normal pension age on 1 April 2012 remained in the PCSPS after 1 April 2015. Those who were between 10 years and 13 years and 5 months from their normal pension age on 1 April 2012 switch into alpha sometime between 1 June 2015 and 1 February 2022. Because the Government plans to remove discrimination identified by the courts in the way that the 2015 pension reforms were introduced for some members, it is expected that, in due course, eligible members with relevant service between 1 April 2015 and 31 March 2022 may be entitled to different pension benefits in relation to that period (and this may affect the Cash Equivalent Transfer Values shown in this report – see below). All members who switch to alpha have their PCSPS benefits 'banked', with those with earlier benefits in one of the final salary sections of the PCSPS having those benefits based on their final salary when they leave alpha. (The pension figures quoted for officials show pension earned in PCSPS or alpha – as appropriate. Where the official has benefits in both the PCSPS and alpha the figure quoted is the combined value of their benefits in the two schemes.) Members joining from October 2002 may opt for either the appropriate defined benefit arrangement or a defined contribution (money purchase) pension with an employer contribution (partnership pension account).

Employee contributions are salary-related and range between 4.6% and 8.05% for members of classic, premium, classic plus, nuvos and alpha. Benefits in classic accrue at the rate of 1/80th of final pensionable earnings for each year of service. In addition, a lump sum equivalent to three years' initial pension is payable on retirement. For premium, benefits accrue at the rate of 1/60th of final pensionable earnings for each year of service. Unlike classic, there is no automatic lump sum. Classic plus is essentially a hybrid with benefits for service before 1 October 2002 calculated broadly as per classic and benefits for service from October 2002 worked out as in premium. In nuvos a member builds up a pension based on their pensionable earnings during their period of scheme membership. At the end of the scheme year (31 March) the member's earned pension account is credited with 2.3% of their pensionable earnings in that scheme year and the accrued pension is uprated in line with Pensions Increase legislation. Benefits in alpha build up in a similar way to nuvos, except that the accrual rate in 2.32%. In all cases members may opt to give up (commute) pension for a lump sum up to the limits set by the Finance Act 2004.

The partnership pension account is an occupational defined contribution pension arrangement which is part of the Legal & General Mastertrust. The employer makes a basic contribution of between 8% and 14.75% (depending on the age of the member). The employee does not have to contribute, but where they do make contributions, the employer will match these up to a limit of 3% of pensionable salary (in addition to the employer's basic contribution). Employers also contribute a further 0.5% of pensionable salary to cover the cost of centrally provided risk benefit cover (death in service and ill health retirement).

The accrued pension quoted is the pension the member is entitled to receive when they reach pension age, or immediately on ceasing to be an active member of the scheme if they are already at or over pension age. Pension age is 60 for members of classic, premium and classic plus, 65 for members of nuvos, and the higher of 65 or State Pension Age for members of alpha. (The pension figures quoted for officials show pension earned in PCSPS or alpha – as appropriate. Where the official has benefits in both the PCSPS and alpha the figure quoted is the combined value of their benefits in the two schemes, but note that part of that pension may be payable from different ages.)

Further details about the Civil Service pension arrangements can be found at the website **www.civilservicepensionscheme.org.uk**

Cash Equivalent Transfer Values

A Cash Equivalent Transfer Value (CETV) is the actuarially assessed capitalised value of the pension scheme benefits accrued by a member at a particular point in time. The benefits valued are the member's accrued benefits and any contingent spouse's pension payable from the scheme. A CETV is a payment made by a pension scheme or arrangement to secure pension benefits in another pension scheme or arrangement when the member leaves a scheme and chooses to transfer the benefits accrued in their former scheme. The pension figures shown relate to the benefits that the individual has accrued as a consequence of their total membership of the pension scheme, not just their service in a senior capacity to which disclosure applies.

The figures include the value of any pension benefit in another scheme or arrangement which the member has transferred to the Civil Service pension arrangements. They also include any additional pension benefit accrued to the member as a result of their buying additional pension benefits at their own cost. CETVs are worked out in accordance with The Occupational Pension Schemes (Transfer Values) (Amendment) Regulations 2008 and do not take account of any actual or potential reduction to benefits resulting from Lifetime Allowance Tax which may be due when pension benefits are taken.

Real increase in CETV

This reflects the increase in CETV that is funded by the employer. It does not include the increase in accrued pension due to inflation, contributions paid by the employee (including the value of any benefits transferred from another pension scheme or arrangement) and uses common market valuation factors for the start and end of the period.

Remuneration of non-executives (information subject to audit)

The non-executive members of the former Forest Research Audit and Risk Assurance Committee received the following remuneration for their services:

Name	**2020–21 £000**	**2019–20 £000**
Mary Barkham*	0	0
Shireen Chambers~	0	0
Judith Webb#	0	2

* Mary Barkham's appointment commenced November 2016; she was a Forestry Commissioner and no fees are payable to her by Forest Research. Mary's term ended in October 2020.

~ Shireen Chambers received fees of Nil (2019–20: £409) during the year and her term ended in October 2020.

Judith Webb's term ended in October 2020.

Staff Report

Number of Senior Civil Servants by band

Band	Number of Senior Civil Servants
1/1A	2

Average number of persons employed (full-time equivalents) – subject to audit

	2020–21	2019–20
Permanent staff – male (3 Board Members)	**130**	133
Permanent staff – female	**95**	88
Total permanent	**225**	221
Others – male	**12**	11
Others – female	**13**	9
Total others	**25**	20
Total staff	**250**	241

Staff costs – subject to audit

			2020–21	2019–20
	Permanent staff	**Other staff**	**Total**	Total
	£000	**£000**	**£000**	£000
Wages and salaries	**8,440**	**607**	**9,047**	8,429
Social security costs	**893**	**55**	**948**	855
Employer's superannuation costs	**2,177**	**152**	**2,329**	2,205
Apprenticeship levy	**41**	–	**41**	39
Agency staff costs	–	**175**	**175**	113
Total	**11,551**	**989**	**12,540**	11,641

The Principal Civil Service Pension Scheme (PCSPS) is an unfunded multi-employer defined benefit pension scheme, but the Forestry Commission is unable to identify its share of the underlying assets and liabilities. The scheme actuary valued the scheme as at 31 March 2012. Details can be found in the resource accounts of the Cabinet Office: Civil Superannuation (**www.civilservice.gov.uk/pensions**).

For 2020–21, employer contributions of £2,312,000 were payable to the PCSPS (2019–20: £2,187,000) at one of four rates in the range 26.6% to 30.3% of pensionable pay, based on salary bands. The scheme actuary reviews employer contributions every four years following a full scheme valuation. The contribution rates reflect benefits accruing during 2020–21 to be paid to the member when they retire and not the benefits paid during this period to existing pensioners.

Employees can opt to open a partnership pension account, a stakeholder pension with an employer contribution. Employer contributions of £15,099 (2019–20: £16,935) were paid to one or more of a panel of three appointed stakeholder pension providers. Employer contributions are age-related and range from 8% to 14.75%. Employers also match employee contributions up to 3% of pensionable pay. In addition, employer contributions of £582, 0.5% of pensionable pay (2019–20: £657, 0.5%), were payable to the PCSPS to cover the cost of the future provision of lump sum benefits on death in service or ill-health retirement of these employees.

Contributions due to the partnership pension providers at the Statement of Financial Position date were £nil (2019–20: £nil). Contributions prepaid at that date were £nil.

Sickness absence

The Forestry Commission has one common sickness absence management policy that covers Forest Research and provides a consistent framework approach to management. The policy is underpinned by an externally provided occupational health service and employee support programme that is available 24 hours a day. The average number of working days lost to sickness absence in Forest Research in 2020–21 was 2.8 per employee (2019–20: 5.3).

Staff turnover

During the year, Forest Research had 21 leavers relevant to the staff turnover calculations with a closing staff turnover ratio of 9.9%.

Early departure costs

During 2020–21, two people left under Compulsory or Voluntary Redundancy terms (2019–20: one). They received a total compensation payment of £14,605 (2019–20: £5,000) with each exit package costs of less than £10,000.

Expenditure on consultancy

During the year, Forest Research incurred £nil on consultancy services (2019–20: £nil).

Off-payroll engagements

Defra is required to disclose information in its Annual Report and Accounts relating to the review of tax arrangements for public sector employees. There were no off-payroll engagements, as of 31 March 2021, of more than £245 per day that lasted more than six months.

People

Forest Research follows the Forestry Commission's employment policies and values. Our values determine how we behave in fulfilling our objectives. They are:

- **Communicative**
  We will be honest, professional, impartial and objective with each other and our customers.

- **Open**
  We will act with integrity, take pride in our work and be inclusive and welcoming in our approach, treating everyone with respect.

- **Customer-focused**
  We will focus on our customers' interests and provide them with the best possible service, support, information and advice.

- **Collaborative**
  We will work in an interdisciplinary way, and be cooperative and collaborative in our approach to our science, data provision and business development.

- **Creative**
  We will champion scientific challenge, debate and innovation.

- **Safe**
  We will identify, assess, communicate and appropriately manage risks to the health, safety and wellbeing of our staff.

Priority	Progress over the last year	Looking forward
	This year, working with our trade unions and staff, we developed the staff engagement plan based on the feedback from the biennial staff engagement survey results. We have	Continue to make improvements as detailed in the agreed plan.

Creating a positive working culture	introduced a digital platform that enables us to conduct quarterly 'pulse' surveys to measure staff engagement and respond to key issues identified by staff in a timely manner. Having an inclusive working environment is important in creating a positive working culture and we have been actively involved in development of and participation in FC-wide networks such as Women in Forestry, BAME+R and LGBT. Within FR we have continued to support and develop our Mental Health First Aider and BHD networks. Policies form the bedrock of how we shape our employment relationship and we are involved in the FC project to modernise workforce policies and the development of an FC Inclusion strategy.	Conduct a full biennial staff survey in November 2021. Continue to participate in and support the networks.
 Increasing the capability and effectiveness of our people	We have continued to enhance our staff development offering. In 2020 we launched the FR career and development hub – a range of resources, encompassing an enhanced induction programme, a one-stop-shop for all the mandatory and role-related training linking to wider learning resources made available through Civil Service Learning and the Forestry Commission. Within the hub, we have signposted staff to the Civil Service professions that offer resources and peer support from the professional community. This year, building on our involvement with the career framework for the Government Science and Engineering profession, we participated in developing the GSE Skills Assessment Tool.	We will continue to embed the new learning and development standards, systems and career frameworks. We will build on this year's progress and link with Defra Science to further enhance our resources. Working with the wider FC we will continue to participate in the development of the new FC Management Development programme.

	Working with FC we are involved in the scoping and development of an FC-wide management programme.	
 Creating a digitally enabled organisation	2020 was the year where remote working become the norm and our systems and services were tested like never before in the face of the COVID-19 pandemic. FR's IT systems stood up well to this test, allowing our staff to continue to work from home with little to no interruption. Since the first lockdown, we have continued to develop and improve upon our service offering – including a rapid (albeit pre-planned) roll-out of MS Teams, the introduction of a new and more flexible remote access solution, and a renewed focus on digital wellbeing to help mitigate the challenges brought about by home-working. Despite COVID-19, we have continued to work on the digital enablement of our organisation. We have established a cross-discipline Digital Strategy Group to help understand where we are – but primarily to determine where we want to be in five years' time. The group is also looking at how we can position our business to take full advantage of new and emerging technologies and opportunities in the digital arena – while delivering on our corporate goals.	We will continue to transform our impact and how we work, simplifying processes, generating efficiencies and reducing time and costs. Through our Digital Strategy we will continue to build a digital culture and integration through various established working groups.
	Working with MIND, FR took part in the Workplace Wellbeing Index and achieved a Bronze Award in April 2020. Building on the recommendations, our Mental Health First Aider network developed the FR Wellbeing framework, which outlined our ambition,	We will deliver FR's Health Safety and Mental Health Wellbeing action plan.

Focus on health and wellbeing	commitment and plan to bring wellbeing into the core of our day-to-day activities. In response to the COVID-19 pandemic, staff health, safety and wellbeing are central to our response: we implemented a plan that encompassed increased communication across the organisation, and we developed more wellbeing resources and published them on the FR wellbeing hub. In addition, we rolled out personal resilience sessions for all staff, introduced a wellbeing desktop tool and developed health and safety protocols to limit risks for staff working at our main sites.	Working with the wider FC, we will support and participate in the review of our policies.
 Workforce planning	Workforce planning and organisation development continue to be a high priority for FR. This year, we have focused on the recruitment of critical posts identified as part of the workforce plan. With a lens on future skill requirements, we have recruited three new Data Scientist apprentices.	We will continue to monitor and adapt our plans to the requirements of the organisation.

Equality and diversity

We continue to strive towards building a diverse and inclusive environment for all our staff and we published our annual Equality Monitoring Report in March 2021.

Employee relations

We continue to have a strong relationship with the Forestry Commission trade unions (FCTU) and encourage employee consultation and communication with the FCTU representatives and through the Forest Research Staff Council. Key issues raised and discussed have included the decentralisation of work from FC Shared Services to Forest Research, introduction of the new Enterprise Resource Planning system, the potential pay and reward project, training, absence, mental health, developing our culture, and high levels of compliance on health and safety matters.

Recruitment, succession planning and job evaluation

We have successfully gained a Tier 2 visa to ensure that we have the opportunity to secure staff from overseas with the necessary knowledge, skills and experience to fill business-

critical posts. We have also undertaken some initial work in scoping succession planning and identifying the future impacts. Our HR team is now trained to undertake job evaluation assessments, work that was previously undertaken by FC Shared Services.

Full details of our People Strategy, Equality and Diversity Strategy and Objectives are available on the Forestry Commission's website.

Parliamentary Accountability Disclosures

Financial review

From April 2019, Forest Research is part funded through a Cross-Border Memorandum of Understanding between FR and the UK, Welsh and Scottish governments to provide core research and other services. This new arrangement supports the Ministerially-endorsed Science and Innovation Strategy for Forestry in Great Britain and forestry policies of the UK, Scottish, Welsh and Northern Irish governments.

In addition, FC England, FC Scotland and Natural Resources Wales purchase research, development and surveys specifically related to their respective forest estates. Forest Research has also been increasingly successful in securing funding from other government departments, the European Commission, UK research councils, commercial organisations, private individuals and charities. Collaborative bids with other research providers and consortium funding have become increasingly important, placing emphasis on effective partnership working. The most significant of these was the Bac-Stop project (Bacteria: Advancement of Control and Knowledge to Save Threatened Oak and Protect them for Future Generations), which will generate approximately £2 million funding over the life of the project.

Regularity of expenditure

There were five losses during 2020–21 with a total cost of £567,000 (2019–20: £17,000). These losses were as a result of movements in the Euro/GB£ exchange rates, a road traffic accident, write-down of obsolete stock and write-off action for a historical European Commission (EC) project where the lead partner failed to pay Forest Research for the work project work undertaken. Following an EC review into the project, it was concluded that the EC was not liable for the outstanding funding due to Forest Research amounting to £478,000. Defra write-off approval action was obtained and the value was removed from the accounts receivable balance during the year and recognised as a loss. An additional exercise was undertaken to review all other EC project receivables in advance of 31 March 2021.

No special payments were made during the year (2019-20: £nil).

Fees and charges

Forest Research's primary financial objective is to recover full economic costs of operations from the sale of services to customers. It has complied with the principles of cost allocation and charging requirements in HM Treasury and Office of Public Sector Information guidance.

Remote contingent liabilities

In addition to contingent liabilities reported within the meaning of IAS 37, Forest Research also reports liabilities for which the likelihood of a transfer of economic benefit in settlement is too remote to meet the definition of contingent liability. There are currently no remote contingent liabilities.

Long-term expenditure trends

	2020–21* £000	2019–20 £000	2018–19~ £000	2017–18 £000	2016–17# £000
Staff costs	12,540	11,641	10,772	10,248	10,114
Other management costs	5,501	5,721	5,088	3,608	3,235
Materials and services	2,890	2,094	3,584	3,811	3,602
Total expenditure	20,931	19,456	19,444	17,667	16,951

* The increase in expenditure in 2020–21 primarily relates to the additional funding secured under the NCF and the Natural Capital Ecosystems Assessment Pilot work. Additional staff were required to deliver these programmes, increasing overall staff costs alongside an annual Civil Service pay award.

~ The increase in expenditure in 2018–19 mainly reflects the costs attributed to the Corporate Services Transition Programme.

2016–17 figures include costs of the transfer of FC staff and associated work to FR on 1 April 2016.

Professor James Pendlebury

Chief Executive and Accounting Officer

3 June 2021

THE CERTIFICATE AND REPORT OF THE COMPTROLLER AND AUDITOR GENERAL TO THE HOUSE OF COMMONS

Opinion on financial statements

I certify that I have audited the financial statements of the Forest Research for the year ended 31 March 2021 under the Government Resources and Accounts Act 2000. The financial statements comprise: Statements of Comprehensive Income, Financial Position, Cash Flows, Changes in Taxpayers' Equity; and the related notes, including the significant accounting policies. These financial statements have been prepared under the accounting policies set out within them. The financial reporting framework that has been applied in their preparation is applicable law and international accounting standards as interpreted by HM Treasury's Government Financial Reporting Manual.

I have also audited the information in the Accountability Report that is described in that report as having been audited.

In my opinion, the financial statements:

- give a true and fair view of the state of the Forest Research's affairs as at 31 March 2021 and of the net operating income for the year then ended; and
- have been properly prepared in accordance with the Government Resources and Accounts Act 2000 and HM Treasury directions issued thereunder.

Opinion on regularity

In my opinion, in all material respects the income and expenditure recorded in the financial statements have been applied to the purposes intended by Parliament and the financial transactions recorded in the financial statements conform to the authorities which govern them.

Basis for opinions

I conducted my audit in accordance with International Standards on Auditing (ISAs) (UK), applicable law and Practice Note 10 'Audit of Financial Statements of Public Sector Entities in the United Kingdom'. My responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the financial statements section of my certificate. Those standards require me and my staff to comply with the Financial Reporting Council's Revised Ethical Standard 2019. I have also elected to apply the ethical standards relevant to listed entities/ public interest entities. I am independent of Forest Research in accordance with the ethical requirements that are relevant to my audit of the financial statements in the UK. My staff and I have fulfilled our other ethical responsibilities in accordance with these requirements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Conclusions relating to going concern

In auditing the financial statements, I have concluded that Forest Research's use of the going concern basis of accounting in the preparation of the financial statements is appropriate.

Based on the work I have performed, I have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on Forest Research's ability to continue as a going concern for a period of at least twelve months from when the financial statements are authorised for issue.

My responsibilities and the responsibilities of the Accounting Officer with respect to going concern are described in the relevant sections of this certificate.

The going concern basis of accounting is adopted in consideration of the requirements set out in HM Treasury's Government Reporting Manual, which require entities to adopt the going concern basis of accounting in the preparation of the financial statements where it anticipated that the services which they provide will continue into the future.

Other Information

The other information comprises information included in the Annual Report, but does not include the parts of the Accountability Report described in that report as having been audited, the financial statements and my auditor's certificate thereon. The Accounting Officer is responsible for the other information. My opinion on the financial statements does not cover the other information and except to the extent otherwise explicitly stated in my certificate, I do not express any form of assurance conclusion thereon. In connection with my audit of the financial statements, my responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or my knowledge obtained in the audit or otherwise appears to be materially misstated. If I identify such material inconsistencies or apparent material misstatements, I am required to determine whether this gives rise to a material misstatement in the financial statements themselves. If, based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact.

I have nothing to report in this regard.

Opinion on other matters

In my opinion, based on the work undertaken in the course of the audit:

- the parts of the Accountability Report to be audited have been properly prepared in accordance with HM Treasury directions made under the Government Resources and Accounts Act 2000; and
- the information given in the Performance and Accountability Reports for the financial year for which the financial statements are prepared is consistent with the financial statements.

Matters on which I report by exception

In the light of the knowledge and understanding of Forest Research and its environment obtained in the course of the audit, I have not identified material misstatements in the Performance and Accountability Report. I have nothing to report in respect of the following matters which I report to you if, in my opinion:

- adequate accounting records have not been kept or returns adequate for my audit have not been received from branches not visited by my staff; or
- the financial statements and the parts of the Accountability Report to be audited are not in agreement with the accounting records and returns; or

- certain disclosures of remuneration specified by HM Treasury's Government Financial Reporting Manual are not made; or
- I have not received all of the information and explanations I require for my audit; or
- the Governance Statement does not reflect compliance with HM Treasury's guidance.

Responsibilities of the Accounting Officer for the financial statements

As explained more fully in the Statement of Accounting Officer's Responsibilities, the Chief Executive as Accounting Officer is responsible for:

- the preparation of the financial statements in accordance with the applicable financial reporting framework and for being satisfied that they give a true and fair view;
- internal controls as the Chief Executive as Accounting Officer determines is necessary to enable the preparation of financial statement to be free from material misstatement, whether due to fraud or error.
- assessing Forest Research's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Accounting Officer anticipates that the services provided by Forest Research will not continue to be provided in the future.

Auditor's responsibilities for the audit of the financial statements

My responsibility is to audit, certify and report on the financial statements in accordance with the Government Resources and Accounts Act 2000. My objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue a certificate that includes my opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

I design procedures in line with my responsibilities, outlined above, to detect material misstatements in respect of non-compliance with laws and regulation, including fraud.

My procedures included the following:

- inquiring of management, Forest Research's head of internal audit and those charged with governance, including obtaining and reviewing supporting documentation relating to Forest Research's policies and procedures relating to:
    - identifying, evaluating and complying with laws and regulations and whether they were aware of any instances of non-compliance;
    - detecting and responding to the risks of fraud and whether they have knowledge of any actual, suspected or alleged fraud; and
    - the internal controls established to mitigate risks related to fraud or non-compliance with laws and regulations including Forest Research's controls relating to the Forestry Act 1967;
- discussing among the engagement team and involving relevant internal and or external specialists, including regarding how and where fraud might occur in the financial statements and any potential indicators of fraud. As part of this discussion, I identified potential for fraud in the following areas: revenue recognition, and the posting of unusual journals;
- obtaining an understanding of Forest Research's framework of authority as well as other legal and regulatory frameworks that Forest Research operates in, focusing on those laws and regulations that had a direct effect on the financial statements or that had a fundamental effect on the operations of Forest Research. The key laws and

regulations I considered in this context included the Government Resources and Accounts Act 2000, Managing Public Money, and employment, taxation and pensions legislation.

In addition to the above, my procedures to respond to identified risks included the following:

- reviewing the financial statement disclosures and testing to supporting documentation to assess compliance with relevant laws and regulations discussed above;
- enquiring of management, the Audit Committee and in-house legal counsel concerning actual and potential litigation and claims;
- reading minutes of meetings of those charged with governance and the Board;
- in addressing the risk of fraud through management override of controls, testing the appropriateness of journal entries and other adjustments; assessing whether the judgements made in making accounting estimates are indicative of a potential bias; and evaluating the business rationale of any significant transactions that are unusual or outside the normal course of business; and

I also communicated relevant identified laws and regulations and potential fraud risks to all engagement team members including internal specialists and remained alert to any indications of fraud or non-compliance with laws and regulations throughout the audit.

A further description of my responsibilities for the audit of the financial statements is located on the Financial Reporting Council's website at: www.frc.org.uk/auditorsresponsibilities. This description forms part of my certificate.

In addition, I am required to obtain evidence sufficient to give reasonable assurance that the income and expenditure reported in the financial statements have been applied to the purposes intended by Parliament and the financial transactions conform to the authorities which govern them.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

Report

I have no observations to make on these financial statements.

Gareth Davies
Comptroller and Auditor General
National Audit Office
157-197 Buckingham Palace Road
Victoria
London
SW1W 9SP

10 June 2021

Financial Statements

Statement of Comprehensive Income for the year ended 31 March 2021

	Notes	2020–21 £000	2019–20 £000
Income			
Core income	6.1	**(13,412)**	(11,566)
Non-core income	6.2	**(7,988)**	(7,912)
Total operating income		**(21,400)**	(19,478)
Expenditure			
Staff costs	3	**12,540**	11,641
Other management costs	4	**5,501**	5,721
Materials and services	5	**2,890**	2,094
Total operating expenditure		**20,931**	19,456
Net operating income		**(469)**	(22)
Other comprehensive net income			
Net loss/(gain) on revaluation of property, plant and equipment	7	**100**	(26)
Net loss/(gain) on foreign currency receivable		**–**	(15)
Total comprehensive net expenditure/(income) for the year		**(369)**	(63)

All income and expenditure are derived from continuing operations.

The notes on pages 58 to 78 form part of these accounts.

Statement of Financial Position as at 31 March 2021

	Notes	31 March 2021 £000	31 March 2020 £000
Non-current assets			
Property, plant and equipment	7	**19,936**	13,372
Intangible assets		**37**	–
Financial assets	8	**75**	75
Trade and other receivables	9	**18**	13
Total non-current assets		**20,066**	13,460
Current assets			
Inventories		**57**	110
Trade and other receivables	9	**2,143**	4,971
Cash and cash equivalents	10	**4,536**	1,894
Total current assets		**6,736**	6,975
Total assets		**26,802**	20,435
Current liabilities			
Provisions		**(10)**	–
Trade and other payables	11	**(3,552)**	(2,434)
Total current liabilities		**(3,562)**	(2,434)
Total assets less current liabilities		**23,240**	18,001
Non-current liabilities			
Trade and other payables	11	**–**	(99)
Total assets less total liabilities		**23,240**	17,902
Taxpayers' equity			
General Fund		**15,925**	10,340
Revaluation Reserve		**7,315**	7,562
Total equity		**23,240**	17,902

Professor James Pendlebury
Chief Executive and Accounting Officer
3 June 2021
The notes on pages 58 to 78 form part of these accounts.

Statement of Cash Flows for the year ended 31 March 2021

	Notes	**2020–21** **£000**	2019–20 £000
Net cash inflow from operating activities			
Net operating income		**469**	22
Adjustments for non-cash transactions			
Depreciation	4	**917**	1,235
Amortisation	4	**–**	1
Loss on disposal of property, plant and equipment	4	**12**	27
Notional audit fee	4	**41**	39
Movement in provisions		**18**	–
Decrease in inventories		**54**	19
Decrease/(Increase) in trade and other receivables	9	**2,823**	(1,901)
(Decrease)/Increase in trade and other payables	11	**1,019**	(40)
Movements in receivables to items not passing through the SCI		**–**	15
Use of provisions		**(8)**	(16)
Net cash (outflow)/inflow from operating activities		**5,345**	(599)
Cash flows from investing activities			
Purchase of property, plant and equipment	7	**(7,593)**	(1,651)
Purchase of intangible assets		**(38)**	–
Net cash (outflow) from investing activities		**(7,631)**	(1,651)
Cash flows from financing activities			
Net cash transfer from the Forestry Commission		**4,928**	1,920
Net financing		**4,928**	1,920
Net (decrease)/increase in cash and cash equivalents in the period		**2,642**	(330)
Cash and cash equivalents at the beginning of the period		**1,894**	2,224
Cash and cash equivalents at the end of the period		**4,536**	1,894

The notes on pages 58 to 78 form part of these accounts.

Statement of Changes in Taxpayers' Equity for the year ended 31 March 2021

	Notes	General Fund £000	Revaluation Reserve £000	Total Reserves £000
Balance at 1 April 2020		**10,340**	**7,562**	**17,902**
Changes in taxpayers' equity for 2020–21				
Net gain on revaluation of property, plant and equipment	7	–	(100)	(100)
Net gain on foreign currency receivable		–	–	–
Transfer from Revaluation Reserve		147	(147)	–
Notional audit fee	4	41	–	41
Comprehensive net income		469	–	469
Cash transferred from the Forestry Commission		4,928	–	4,928
Balance at 31 March 2021		15,925	7,315	23,240
Balance at 1 April 2019		**8,349**	**7,531**	**15,880**
Changes in taxpayers' equity for 2019–20				
Net gain on revaluation of property, plant and equipment		–	26	26
Net gain on foreign currency receivable		–	15	15
Transfer from Revaluation Reserve		10	(10)	–
Notional audit fee		39	–	39
Comprehensive net income		22	–	22
Cash transferred from the Forestry Commission		1,920	–	1,920
Balance at 31 March 2020		10,340	7,562	17,902

The notes on pages 58 to 78 form part of these accounts.

Notes to the Accounts

Note 1. Statement of accounting policies

The Covid-19 pandemic provided Forest Research with many challenges, although going concern of the entity is not at risk in Management's view, which is presented on the assumption that Forest Research will continue to provide existing services in the future. This position is underpinned by the Westminster, Scottish and Welsh Governments with Ministerial endorsement of a new five year Science and Innovation Strategy for forestry in Great Britain, covering the period 1 April 2021 to 31 March 2026. This important milestone for Forest Research underpins the financial commitment in the Ministerially endorsed cross border Memorandum of Understanding, amounting annually to c£9m.

The strength of the Agency's Statement of Financial Position as at 31 March 2021, with Taxpayers' equity of £23.2m and a robust future Business Development pipeline, provides a compelling platform for future delivery of scientific research and data services to stakeholders. The annual budget for 2021-22 was approved at the March 2021 Forest Research Board meeting and will be monitored and reviewed during the 2021-22 financial year to ensure the organisation continues to successfully operate. For the twelve months from the date of Comptroller and Auditor General (C&AG) signing of the 2020-21 accounts, all expected expenditure items are covered through expected income. This assessment is intended to relate to the twelve months from the date of C&AG signing of this ARA. Based on the above information it has therefore been considered appropriate to adopt a going concern basis for the preparation of these financial statements.

These accounts are prepared in accordance with a direction given by HM Treasury in pursuance of Section 7 of the Government Resources and Accounts Act 2000.

These financial statements have been prepared on a going-concern basis and in accordance with International Financial Reporting Standards (IFRS) as adapted and interpreted by the 2020–21 *Government Financial Reporting Manual* (FReM) issued by HM Treasury. Where the FReM permits a choice of accounting policy, the accounting policy which is judged to be most appropriate to the particular circumstances of Forest Research for the purpose of giving a true and fair view has been selected. The particular policies selected by Forest Research are described below. They have been applied consistently in dealing with items considered material in relation to the accounts.

The preparation of financial statements in conformity with IFRS requires the use of certain critical accounting estimates. It also requires management to exercise its judgement in the process of applying the accounting policies. There are no estimates, assumptions and

judgements that are deemed to have a significant risk of causing a material adjustment to the carrying amounts of Forest Research's assets and liabilities.

1.1 Accounting convention

These accounts have been prepared under the historical cost convention modified to account for the revaluation of property, plant and equipment, and available-for-sale financial assets.

1.2 Value Added Tax (VAT)

Forest Research is covered under the Forestry Commission's registration for VAT. In order to comply with the government accounting regulations and normal commercial practice, income and expenditure shown in the Statement of Comprehensive Income is net of VAT. Irrecoverable VAT is charged to the Statement of Comprehensive Income in the year in which it is incurred.

1.3 Revenue recognition

Income comprises the fair value of the consideration received or receivable from forestry and related activities. Revenue is shown net of VAT, returns, rebates and discounts.

Income is accounted for in accordance with the five-stage model set out in IFRS 15, Revenue from Contracts with Customers, and is recognised when performance obligations are satisfied.

1.4 Foreign currency translation

Functional and presentation currency

Items included in the financial statements are measured using the currency of the primary economic environment in which Forest Research operates ('the functional currency'). The functional currency and the presentation currency of the financial statements is pounds sterling.

Transactions and balances

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the transactions or valuation where items are re-measured. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the Statement of Comprehensive Income.

1.5 Employee benefits

Pensions

Past and present employees are covered by the provisions of the Principal Civil Service Pension Scheme (PCSPS). PCSPS is an unfunded, defined benefit, contributory, public service occupational pension scheme. Forest Research accounts for the PCSPS as a defined contribution plan and recognises the expected cost of these elements on a systematic and rational basis over the period during which it benefits from an employee's services by payment to the PCSPS of amounts calculated on an accruing basis. Liability for payment of future benefits is a charge on the PCSPS. In respect of the defined contribution schemes, Forest Research recognises the contributions payable for the year. Prepaid contributions are recognised as an asset to the extent that a cash refund or a reduction in the future payments is available.

Short-term employee benefits

Liabilities and expenses are recognised for holiday entitlements earned to 31 March but not yet taken.

1.6 Property, plant and equipment

Where Forest Research is the principal beneficial user of assets of the Forestry Commission estate, they are treated as a non-current asset of Forest Research although legal ownership is vested in the Forestry Ministers.

The normal threshold for the capitalisation of assets is £2,000.

Dwellings and other buildings

Dwellings and other buildings are shown at fair value less accumulated depreciation.

Professionally qualified staff employed by the Forestry Commission undertake a full revaluation of dwellings and other buildings at five-yearly intervals coinciding with that for the non-forest land. They follow the principles set out in the RICS Red Book and value on the basis of Open Market Value, Existing Use Value, Depreciated Replacement Cost or Discounted Cash Flow, as appropriate under the RICS Standards for determining fair value. Suitably qualified external valuers review the work of internal professional valuers. A full valuation took place on 31 March 2018 and Savills, Chartered Surveyors, reviewed this.

In the intervening years between professional revaluations, property is revalued annually as at 31 March using indices provided by Savills and the Valuation Office Agency as required.

Subsequent expenditure

Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to Forest Research and the cost of the item can be measured reliably. The carrying amount of the replaced part is derecognised. All other repairs and maintenance are charged to the Statement of Comprehensive Income during the financial period in which they are incurred.

Plant and machinery

Forestry vehicles, machinery and equipment are shown at fair value less accumulated depreciation. Plant and machinery values are restated to current value each year using indices provided by the Office for National Statistics.

Assets under construction

Assets under construction are carried at the costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Assets under construction are transferred to the appropriate property, plant and equipment category when completed and ready for use.

Revaluation Reserve

Increases in the carrying amount arising on revaluation of property, plant, equipment and intangible assets are credited to the Revaluation Reserve in taxpayers' equity. Decreases that offset previous increases of the same asset are charged against the Revaluation Reserve directly; all other decreases are charged to the Statement of Comprehensive Income. Each year the difference between depreciation based on the revalued carrying amount of the asset charged to the Statement of Comprehensive Income and depreciation based on the asset's original cost is transferred from the Revaluation Reserve to the General Fund.

1.7 Depreciation

Depreciation is provided on all tangible non-current assets (except land) at rates calculated to write off the valuation, less estimated residual values, of each asset evenly over its expected useful life. Asset lives are as follows:

- freehold buildings: up to 80 years;
- scientific equipment: over 5 to 20 years;
- other machinery and equipment: over 5 to 20 years.

The assets' residual values and useful lives are reviewed, and adjusted if appropriate, at each reporting date. An asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount. Gains and losses on disposals are determined by comparing the proceeds with the carrying amount and are recognised within the Statement of Comprehensive Income. When revalued assets are sold, the amounts included in the Revaluation Reserve are transferred to the General Fund.

1.8 Intangible assets

Intangible assets are valued initially at cost and subsequently at fair value using the revaluation model.

Where an active market does not exist, income-generating assets are valued at the lower of depreciated replacement cost and value in use. Non-income-generating assets are carried at depreciated replacement cost. These valuation methods are considered to be a proxy for fair value.

Computer software

Acquired computer software licences are initially capitalised on the basis of the costs incurred to acquire and bring to use the specific software and subsequently revalued to depreciated replacement cost. Acquired computer software licences are amortised over the life of their licence.

1.9 Impairment of non-financial assets

Assets subject to depreciation and amortisation are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use. Where an asset is not held for the purpose of generating cash flows, value in use is assumed to equal the cost of replacing the service potential provided by the asset, unless there has been a reduction in service potential. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows (cash-generating units). Non-financial assets that suffer impairment are reviewed for possible reversal of the impairment at each reporting date.

1.10 Financial assets

Classification

Forest Research classifies its financial assets in the following categories: Amortised Costs or Fair Value through Other Comprehensive Income (FVOCI). The classification depends on the business model for which the financial assets were acquired. Management determines the classification of its financial assets at initial recognition.

Recognition and measurement

Financial assets are recognised when Forest Research becomes party to the contractual provisions of the financial instrument and derecognised when the rights to receive cash flows from the asset have expired or have been transferred and Forest Research has transferred substantially all risks and rewards of ownership.

(a) Financial assets held to collect contractual cash flow only are measured at Amortised Costs, initially recognised at fair value. Any subsequent gains or losses arising from changes in the fair value are presented in the Statement of Comprehensive Income. Where necessary, receivables have been impaired in accordance with the IFRS 9 lifetime expected credit losses model.

(b) Financial assets held to collect contractual cash flow and to sell are measured at Fair Value through Other Comprehensive Income.

1.11 Financial liabilities

Classification

Forest Research classifies its financial liabilities in the following categories: at fair value through profit or loss, and other financial liabilities. The classification depends on the purpose for which the financial liabilities were issued. Management determines the classification of its financial liabilities at initial recognition.

Recognition and measurement

Financial liabilities are recognised when Forest Research becomes party to the contractual provisions of the financial instrument. A financial liability is removed from the Statement of Financial Position when the obligation is discharged, cancelled or expired.

(a) Financial liabilities at fair value through profit or loss

Financial liabilities carried at fair value through profit or loss are initially recognised at fair value. Any subsequent changes in the fair value are presented in the Statement of Comprehensive Income.

(b) Other financial liabilities
Other financial liabilities are initially recognised at fair value and subsequently measured at amortised cost using the effective interest method.

1.12 Cash and cash equivalents

Cash and cash equivalents includes cash in hand, deposits held at call with banks, cash balances held by the Government Banking Service and other short-term highly liquid investments with original maturities of three months or less, and bank overdrafts. Bank overdrafts are shown within borrowings in current liabilities on the Statement of Financial Position.

1.13 Provisions

Forest Research provides for present legal and constructive obligations which are of uncertain timing or amount at the reporting date on the basis of the best estimate of the expenditure required to settle the obligation. Where the effect of the time value of money is significant, the estimated risk-adjusted cash flows are discounted using the real rate set by HM Treasury. The increase in the provision due to passage of time is recognised in the Statement of Comprehensive Income.

1.14 Contingent liabilities

Where the time value of money is material, contingent liabilities which are required to be disclosed under IAS 37 are stated at discounted amounts.

1.15 Effective in these financial statements

All International Financial Reporting Standards, interpretations and amendments effective at 31 March 2021 have been adopted in these statements, taking account of the specific interpretations and adaptations included within the FReM.

No new standards were adopted in the 2020–21 Annual Report and Accounts following the postponement of application in the public sector to 1 April 2022.

1.16 Effective for future financial years

IAS 8, Accounting Policies, Changes in Accounting Estimates and Errors, requires disclosures in respect of new IFRSs, amendments and interpretations that are, or will be, applicable after the reporting period. There are a number of IFRSs, amendments and interpretations that have been issued by the International Accounting Standards Board that are effective for future reporting periods. Those with relevance to Forest Research are outlined below. None have been adopted early.

IFRS 16 – Leases. This standard will be applied in the public sector from 1 April 2022. It will supersede all existing IFRS standards on leases. It is likely to result in a uniform accounting treatment for all leases, with the distinction between operating and finance leases removed.

Forest Research will apply the standards upon formal adoption in the FReM. It is not anticipated that material adjustments to the financial statements will be required following the introduction of these standards.

Note 2. Segmental reporting

Forest Research's aim is to support and enhance the role of trees, woodlands and forests in sustainable development, by providing high-quality research, development and knowledge transfer. Management has determined that Forest Research operates as one operating segment, with results reviewed by the Chief Executive, as the chief operating decision-maker for Forest Research as a whole.

Note 3. Staff costs

	2020–21	2019–20
	£000	£000
Wages and salaries	**9,047**	8,429
Social security costs	**948**	855
Employer's superannuation costs	**2,329**	2,205
Apprenticeship levy	**41**	39
Agency staff costs	**175**	113
Total	**12,540**	11,641

More details on staff costs can be found in the Remuneration and Staff Reports.

Note 4. Other management costs

	Notes	2020–21 £000	2019–20 £000
Travel and subsistence		**63**	612
Building maintenance		**1,249**	1,376
Utilities		**316**	337
Training		**39**	78
Other expenditure		**802**	275
Computer supplies		**2,044**	1,741
***Non-cash costs**:*			
Provisions – provided in year		**18**	–
Depreciation of property, plant and equipment	7	**917**	1,235
Amortisation of intangible assets		–	1
Loss on disposal of property, plant and equipment		**12**	27
Auditors' remuneration – notional cost		**41**	39
Total		**5,501**	5,721

Other expenditure for 2020–21 includes write-off action in relation to a historical EU project that is described in the Financial Review and Regularity of expenditure section.

Note 5. Materials and services

	2020–21 £000	2019–20 £000
Materials and supplies	**792**	621
Vehicle charges from the Forestry Commission	**361**	304
Contracted research services	**1,516**	1,025
Publications	**75**	28
Protective clothing	**44**	12
Miscellaneous expenditure	**102**	104
Total	**2,890**	2,094

Note 6. Income

6.1 Core income

From 1 April 2019, a new Cross-Border Memorandum of Understanding (MOU) between Forest Research and the UK, Welsh and Scottish governments funded core research and other services. This new arrangement supports the Ministerially-endorsed Science and Innovation Strategy for Forestry in Great Britain and forestry policies of the UK, Scottish, Welsh and

Northern Irish governments. In addition, Forestry England, Forestry and Land Scotland and Natural Resources Wales purchase research, data services and surveys specifically related to their respective forest estates. FR continues to be successful in securing funding from other government departments, the European Commission, UK research councils, commercial organisations, private individuals and charities. Income has been categorised below demonstrating Core income provided under the Cross Border MOU plus additional Defra funding provided via the Forestry Commission and Non-core income from customers.

	2020–21	2019–20
Core income:	**£000**	£000
Defra	**4,079**	4,079
Scottish Government	**4,079**	4,079
Welsh Government	**906**	907
Forestry Commission	**4,348**	2,501
	13,412	11,566

6.2 Non-core income

	2020–21	2019–21
Non-core income:	**£000**	£000
European Union	**(17)**	182
Forestry Commission	**866**	661
Forestry England	**1,319**	1,293
Welsh Government	**597**	316
Scottish Government	**941**	901
Forestry and Land Scotland	**1,563**	1,721
Contracts for research and services	**2,557**	2,595
Ad hoc – sample analysis, supply of seeds, conferences, advisory	**162**	243
	7,988	7,912

Note 7. Tangible non-current assets

	Freehold land	Buildings	Scientific equipment	Other machinery and equipment	Assets under construction	Total
	£000	£000	£000	£000	£000	£000
Valuation:						
At 1 April 2020	**1,417**	**18,731**	**4,084**	**1,541**	**1,899**	**27,672**
Additions	–	–	1,699	231	5,663	7,593
Transfers	–	4	146	–	(150)	0
Disposals	–	–	(208)	–	–	(208)
Write-off	–	–	–	–	–	–
Revaluation to current prices	26	(335)	(23)	34	–	(298)
At 31 March 2021	**1,443**	**18,400**	**5,698**	**1,806**	**7,412**	**34,759**
Depreciation:						
At 1 April 2020	**–**	**11,075**	**2,234**	**991**	–	**14,300**
Provided in year	–	403	364	150	–	917
Disposals	–	–	(206)	–	–	(206)
Revaluation to current prices	–	(199)	(10)	21	–	(188)
At 31 March 2021	–	**11,279**	**2,382**	**1,162**	–	**14,823**
Net book value:						
At 31 March 2021	**1,443**	**7,121**	**3,316**	**644**	**7,412**	**19,936**
At 31 March 2020	**1,417**	**7,656**	**1,850**	**550**	**1,899**	**13,372**
Valuation:						
At 1 April 2019	**1,380**	**18,360**	**3,776**	**1,516**	**1,170**	**26,202**
Additions	–	–	529	–	1,122	1,651
Transfers	–	380	13	–	(393)	0
Disposals	–	(115)	(136)	(6)	–	(257)
Revaluation to current prices	37	106	(98)	31	–	76
At 31 March 2020	**1,417**	**18,731**	**4,084**	**1,541**	**1,899**	**27,672**

Depreciation:						
At 1 April 2019	**–**	**10,318**	**2,100**	**827**	–	**13,245**
Provided in year	–	773	311	151	–	1,235
Disposals	–	(25)	(133)	(5)	–	(163)
Revaluation to current prices	–	9	(44)	18	–	(17)
At 31 March 2020	–	**11,075**	**2,234**	**991**	–	**14,300**
Net book value:						
At 31 March 2020	**1,417**	**7,656**	**1,850**	**550**	**1,899**	**13,372**
At 31 March 2019	**1,380**	**8,042**	**1,676**	**689**	**1,170**	**12,957**

Fixed assets were revalued as at 31 March 2021 in accordance with accounting policies. The valuation includes the principal research stations at Alice Holt Lodge near Farnham in Surrey and the Northern Research Station, Roslin, near Edinburgh, with net book values (excluding land) of £3.9 million and £3.2 million, respectively, at 31 March 2021.

Capital estates project within Assets under construction classification includes the new Holt quarantine facility at Alice Holt and significant capital enhancement at the Northern Research station.

Note 8. Financial instruments

8.1 Financial instruments by category

All financial assets on the Statement of Financial Position are assets held at Amortised Costs, except for £75,000 (31 March 2020: £75,000) which is classified as FVOCI and is available for sale. The available-for-sale asset is Forest Research's share of C-Cure Solutions Ltd.

All financial liabilities on the Statement of Financial Position are classified as other financial liabilities, except for £46,000 (31 March 2020: £335,000) taxation and social security costs and £394,000 (31 March 2020: £459,000) deferred income.

8.2 Exposure to risk

Credit risk

Forest Research is exposed to credit risk to the extent of non-payment by its counterparties in respect of financial assets receivable. The majority of assets relate to services provided to other public sector bodies and the risk of non-payment is considered low.

Liquidity risk

As the cash requirements of Forest Research are met primarily through funding from the Forestry Commission and devolved forestry bodies, it is not exposed to significant liquidity risks.

Interest rate risk

Forest Research has no significant interest-bearing assets or liabilities and as such income and expenditure cash flows are substantially independent of changes in market interest rates.

Foreign currency risk

Forest Research's only exposures to foreign exchange rates are through a bank account denominated in Euros and through receipt of EU funding for contracts which are denominated in Euros and New Zealand Dollars.

Contracts denominated in Euros and New Zealand Dollars form less than 1% of Forest Research's total income. Therefore, fluctuations in exchange rates do not have a significant impact on Forest Research.

Note 9. Receivables

9.1 Analysis by type

	2020–21	2019–20
	£000	£000
EU trade receivables	1	145
Other trade receivables	**1,551**	3,970
Total trade receivables	**1,552**	4,115
Other receivables	**4**	4
House purchase loans to employees	**10**	11
Prepayments and accrued income – EU	**–**	478
Prepayments and accrued income – non-EU	**595**	376
Total receivables	**2,161**	4,984

The carrying amounts of trade and other receivables are a reasonable approximation of their fair value.

As of 31 March 2021, £1,416,000 (2019–20: £624,000) were fully performing and not overdue or impaired and provided for.

As of 31 March 2021, trade receivables of £136,000 (2019–20: £3,031,000) were overdue and regular exercises to assess recoverability have been undertaken post 31 March, resulting in the majority of the balance either being settled or where outstanding determined low risk, as due from public sector customers or the EU. The age analysis of these trade receivables is as follows:

	2020–21	2019–20
	£000	£000
Months overdue		
Less than one month	**–**	1,211
One to two months	**39**	510
Two to three months	**8**	387
More than three months	**89**	923
	136	3,031

The other classes within trade and other receivables do not contain impaired assets.

The maximum exposure to credit risk at the reporting date is the carrying value of each class of receivable mentioned above. Forest Research does not hold any collateral as security.

The carrying amounts of trade and other receivables are denominated in the following currencies:

	2020–21	2019–20
	£000	£000
Current		
Pounds sterling	**2,160**	4,360
Euros	**1**	624
Total	**2,161**	4,984

Note 10. Cash and cash equivalents

The following balances at 31 March are held at Government Banking Service banks and as cash in hand:

	2020–21	2019–20
	£000	£000
Opening balance at 1 April	**1,894**	2,224
Net change in balances	**2,642**	(330)
Balance at 31 March	**4,536**	1,894

Forest Research had neither bank overdraft nor short-term investments as at 31 March for either of the two years.

Forest Research maintains Euro bank accounts for sums held on behalf of partners in European Commission projects, which are treated as third-party assets and not included in the balances shown (see Note 16).

Note 11. Trade and other payables

	2020–21	2019–20
	£000	£000
Current		
Payments received on account	**404**	242
Trade payables	**1,036**	287
Taxation and social security costs	**46**	355
Other payables	**3**	10
Current part of finance leases	**20**	50
Accrued expenses	**1,649**	1,031
Contract liabilities	**394**	459
Total	**3,552**	2,434
Non-current		
Non-current part of finance leases	–	99
Total	–	99
Total	**3,552**	2,533

The carrying amounts of trade and other payables are a reasonable approximation of their fair value.

All payables are to bodies external to central government and local authorities as at 31 March 2021 and 31 March 2020, with the exception of taxation and social security costs and £83,000 (31 March 2020: £230,000) due to central government bodies. Funds held on behalf of partners in European Commission projects are treated as third-party assets (see Note 16). At 31 March 2021 the amount held in Forest Research bank accounts on behalf of partners was £34,000 (31 March 2020: £59,000).

The carrying amounts of trade and other payables are denominated in the following currencies:

	2020–21	2019–20
	£000	£000
Current		
Pounds sterling	3,374	2,417
Euros	134	105
US Dollars	30	–
New Zealand Dollars	14	11
	3,552	2,533

Note 12. Capital commitments

There were £426,000 contracted capital commitments as at 31 March 2021 (31 March 2020: £3,077,000).

Note 13. Commitments and receivables under operating leases

Total future minimum lease payments under operating leases are given in the tables below for each of the following periods.

Obligations under operating leases comprise:

	2020–21	2019–20
	£000	£000
Land and buildings:		
Not later than one year	**7**	7
Later than one year and not later than five years	**22**	26
More than five years	**–**	4
Total	**29**	37

Total minimum lease payments under operating leases for land due to Forest Research are:

	2020–21	2019–20
	£000	£000
Not later than one year	**5**	5
Later than one year and not later than five years	**20**	20
Later than five years	**58**	63
Total	**83**	88

During 2012–13, the Environment Agency had a building constructed at Alice Holt and under the Memorandum of Terms of Occupancy has an obligation to pay Forest Research an annual capital allowance for occupation of the land for the 25-year term.

Note 14. Other financial commitments

There were no other financial commitments at 31 March 2021 (31 March 2020: £nil).

Note 15. Related party transactions

During the year, Forest Research has had a significant number of material transactions with the Forestry Commission and Defra, who are regarded as related parties. In addition, Forest Research has had operational transactions with other government departments and other central government bodies.

15.1 Transactions with C-Cure Solutions Ltd

	2020–21	2019–20
	£000	£000
Sales	**–**	1

The above relates to charges to C-Cure in respect of accommodation used at Alice Holt. There was no outstanding balance at 31 March 2021 (31 March 2020: £nil). This is disclosed as, under the Agreement to form the company, James Pendlebury was appointed as the Forestry Commission Director of the company.

15.2 Transactions with the University of Stirling

	2020–21	2019–20
	£000	£000
Sales	**14**	27
Purchases	**22**	21

The above transactions, for student stipend and a collaboration agreement, occurred on an arm's length basis. These transactions are disclosed as Chris Quine holds a visiting professorship at the University of Stirling.

There was balances outstanding of sales £9,000 (31 March 2020: £4,999) and purchase £7,174 at 31 March 2021 (31 March 2020: £nil).

15.3 Forestry Publications Ltd

	2020–21	2019–20
	£000	£000
Sales	**13**	11

The above transactions, for journal editing, occurred on an arm's length basis. These transactions are disclosed as Shireen Chambers is a Director of Forestry Publications Ltd. There was an outstanding balance of £3,246 at 31 March 2021 (31 March 2020: £3,152).

15.4 Transactions with the Scottish Natural Heritage

	2020–21	2019–20
	£000	£000
Sales	**–**	13

The above transactions, for research contracts, occurred on an arm's length basis. These transactions are disclosed as Chris Quine is a member of an expert panel with Scottish Natural Heritage. There was no outstanding balance at 31 March 2021 (31 March 2020: £nil).

15.5 Transactions with British Society for Plant Pathology

	2020–21	2019–20
	£000	£000
Sales	**–**	3

The above transactions, for a contribution to an undergraduate bursary, occurred on an arm's length basis. These transactions are disclosed as Nicola Spence is a director of the British Society for Plant Pathology. There was no balance outstanding at 31 March 2021 (31 March 2020: £nil).

15.6 Transactions with the Institut Europeen de la Foret Cultivee (IEFC)

	2020–21	2019–20
	£000	£000
Purchases	**9**	**–**

The above transactions, for European networking support, occurred on an arm's length basis. These transactions are disclosed as James Pendlebury is a member of the Board of IEFC and received no renumeration for this role. There was a £nil balance outstanding at 31 March 2021 (31 March 2020: £nil).

15.7 Transactions with the Oxford University

	2020–21	2019–20
	£000	£000
Sales	**83**	68
Purchases	**–**	60

The above transactions, for a contribution to a studentship and a research project, occurred on an arm's length basis. These transactions are disclosed as Matthew Perkins is on the board of three wholly owned subsidiaries of Oxford University, Forest Research had no direct

transactions with the subsidiary but for transparency all transactions with Oxford University are disclosed. There was an outstanding balance of £15,466 as at 31 March 2021 (31 March 2020: £68,273).

15.8 Transactions with the James Hutton Institute

	2020–21	2019–20
	£000	£000
Sales	**78**	152
Purchases	**17**	26

The transactions above are disclosed as Ian Gambles, Chief Executive during 2020-21, is a director of the James Hutton Institute, a charitable company limited by guarantee, which delivers fundamental and applied science to drive the sustainable use of land and natural resources.

Forest Research made purchases of £17,000 from James Hutton Institute in relation to a project focussing on global threats from Phytophthora (2019 20: £26,000). Sales invoices for £78,000 (2019-20: £152,000) were raised for grants for Plant Health Centre projects and a review of evidence summaries. As at 31 March 2021 there was an outstanding balance due to Forest Research of £5,000 (2019-20: £nil) and a balance due to James Hutton Institute £nil (2019-20: £15,059).

15.9 Transactions with the Institute of Chartered Foresters

	2020–21	2019–20
	£000	£000
Sales	**–**	1
Purchases	**5**	2

The above transactions, for conference and membership fees, occurred on an arm's length basis. These transactions are disclosed as Shireen Chambers is employed as an executive director for ICF. There was a £nil balance outstanding at 31 March 2021 (31 March 2020: £nil).

Note 16. Third-party assets

As a coordinator for a number of projects partially funded by the European Commission in Euros, Forest Research receives funds on behalf of partners for onward transmission once work programmes have been approved. These third-party assets are not recognised in the accounts.

	2019–20	Gross inflows	Gross outflows	2020–21
	£000	£000	£000	£000
Monetary third-party assets – Government Banking Service balances	56	–	(22)	**34**

Note 17. Events after the reporting date

There have been no events after the reporting date requiring an adjustment to the accounts.

In accordance with the requirements of IAS 10, events after 31 March 2021 are considered up to the date on which the accounts are authorised for issue by the Accounting Officer. This is interpreted as the date of the Comptroller and Auditor General's Audit Certificate.

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