

Annual Report and Accounts 2015–2016

Forest Research

Annual Report and Accounts 2015–2016

Presented to the House of Commons pursuant to Section 7
of The Government Resources and Accounts Act 2000

Ordered by the House of Commons to be printed on 14 July 2016



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Print ISBN 9781474128735

Web ISBN 9781474128742

ID 16021603 07/16 55492 19585

Printed on paper containing 75% recycled fibre content minimum

Printed in the UK by the Williams Lea Group on behalf of the Controller of Her Majesty's Stationery Office

FR(JD-JP)/WL-150/JUL16/0006

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Cover image: Chalara ash dieback resistance screening trial.

Performance Report: Adult Asian longhorn beetle (*Anoplophora glabripennis*).

Accountability Report: Corsican pine sample plot devastated by gales in the New Forest, England.

Financial Statements: Trees growing in an urban setting in Musselburgh, Midlothian, Scotland. © Glenn Brearley.

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Contents

Performance Report

Overview	6
Chief Executive's Statement.....	6
Introduction to Forest Research.....	8
Performance summary.....	9
Performance Analysis.....	12
Key Actions.....	12
Research highlights from the past year.....	14
Sustainability Report.....	17

Accountability Report

Corporate Governance.....	20
Directors' Report	20
Statement of Accounting Officer's responsibilities	21
Governance Statement.....	21
Remuneration and Staff Reports.....	26
Remuneration Report	26
Staff Report.....	30
Parliamentary Accountability Disclosures.....	32
Financial review.....	32
Fees and charges	32
Remote contingent liabilities	32
Long-term expenditure trends	32
Certificate and Report of the Comptroller and Auditor General to the House of Commons	33

Financial Statements

Statement of Comprehensive Income for the year ended 31 March 2016	36
Statement of Financial Position as at 31 March 2016.....	37
Statement of Cash Flows for the year ended 31 March 2016.....	38
Statement of Changes in Taxpayers' Equity for the year ended 31 March 2016	39
Notes to the Accounts	40



Performance
Report

Overview

Chief Executive's Statement

This has been a busy and successful year for Forest Research. During the year 'change' has been the one constant as we put in place plans for the transition of a number of staff, functions and shared services from the Forestry Commission into the Agency on 1 April 2016. This reconfiguration (which includes inventory and forecasting, publications and statistics colleagues) offers significant and exciting opportunities for Forest Research to grow its data services and knowledge transfer capabilities through provision of official forest statistics, national forest inventories and production forecasts. The synergy between much of this data provision and our existing science is readily apparent and we look forward to building upon it to better serve our governmental and industrial clients.

While accommodating these changes we have also achieved or exceeded 21 out of 22 Key Actions from our Corporate Plan for 2015–16 (see page 12) and in doing so have secured £5.0 million of non-core income, our highest ever total. This success is down to the hard work and commitment of our staff, their reputations and their ability to work with others to develop effective national and international partnerships and provide relevant research and services to our clients.

We shifted to a much greater level of interdisciplinary working

This has also been the first year of delivering the new Science and Innovation Strategy for Forestry in Great Britain. While this has been challenging, it has been enjoyable as we shifted to a much greater level of interdisciplinary working where, for example, our social scientists are working with our forest pathologists and entomologists on tree health issues. Indeed, our staff are now leading in this area internationally, having established a new International Union of Forest

Research Organizations (IUFRO) working group on the social dimensions of tree health. The benefits of this interdisciplinary approach and our emphasis on effective partnering is also shown by Forest Research's involvement in seven of the UK's Living with Environmental Change (LWEC) Tree Health and Plant Biosecurity Initiative (THAPBI) Phase 2 projects and two of the Phase 3 projects.

Forest Research and our Observatree citizen science volunteers won the Department for Environment, Food and Rural Affairs (Defra) 2016 Team Award in the Data Pioneer category. This was for work undertaken during the recent outbreak of Oriental chestnut gall wasp (*Dryocosmus kuriphilus*) where innovative sourcing and analysis of data were used to drive the formal response to prevent the spread of the pest and protect thousands of trees.

In October 2015 we released a new and improved version (2.5) of ForestGALES, our widely used wind risk decision tool. This new release was welcomed by the forestry sector and illustrates our ongoing relevance to the industry. You can read more on this on page 16.

As a result of the extreme rainfall and serious flooding experienced by communities in parts of England and Scotland last winter, our hydrologists have been much in demand as sources of advice on natural flood management and the prospects for woodland creation and management to contribute to flood mitigation. We are participating in several high-level enquiries and have hosted visits to the innovative 'Slowing the Flow' demonstration project at Pickering in North Yorkshire from a range of interested parties, including the

Our hydrologists have been much in demand as sources of advice on natural flood management

Secretary of State for the Environment. A joint analysis of the Boxing Day 2015 peak flow event at Pickering has been published (on 13 April 2016, just after the end of this financial year) showing that the combination of upstream land management measures and flood storage area prevented flooding of a number of homes in the town.

Forest Research has also continued to play a role in developing the work of the Edinburgh Consortium for Giant Panda Conservation and Forest Landscape Restoration. This consortium (involving Forest Research, the Royal Zoological Society of Scotland, the Royal Botanic Garden Edinburgh and the University of Edinburgh) aims to deliver a 10-year research programme in partnership with Chinese colleagues from Wolong and the wider Sichuan Giant Panda Sanctuaries to promote forest landscape restoration for giant panda conservation. More information on this work is available at www.forestry.gov.uk/fr/giantpandas

Perhaps our least recognised and most pleasing success is the role we continue to play in developing the next cohort of forest scientists. Forest Research currently funds and/or co-funds and undertakes supervisory work of 42 PhD students and five post-doctoral scientists. The recent report *Animal and Plant Health in the UK: Building our Science Capability* by Sir Mark Walport and Professor Ian Boyd highlighted skills shortages in forest pathology and entomology. With a number of our PhDs being tree health related, Forest Research is playing a valuable part in addressing these shortages.

As always, many people have contributed to our success during the past year, and I would like to take this opportunity to thank our many partners and customers for their continued and positive support and all my Forest Research colleagues for their efforts and achievements during the year.

A handwritten signature in black ink, reading "A. J. Pendlebury". The signature is written in a cursive, flowing style with a large, sweeping flourish at the end.

Professor James Pendlebury
Chief Executive

Introduction to Forest Research

Forest Research is the Forestry Commission's Research Agency and is the UK's foremost body for forest and tree-related research.

Background

The overall objective of the Forestry Commission (FC) is to lead the development and promotion of sustainable forest management and to support its achievement internationally. Forest Research (FR) is the FC's Research Agency and main research provider.

FR's Aim

To be a robust, market-relevant and flexible research organisation with a reputation for innovative applied science.

FR's Strategic Objectives

1. To provide high-quality science to inform the development and delivery of UK government and devolved administration forest policies.
2. To provide innovative applied research, development, monitoring and scientific services to UK, European and international forestry stakeholders.
3. To transfer research knowledge directly, or in partnership with others, to UK and international audiences.

As part of the wider Department for Food, Environment and Rural Affairs (Defra) family, FR will help to deliver the Defra shared vision of creating a great place for living. This vision is at the heart of Defra's Strategy to make a positive difference to the UK by 2020 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 Defra Strategy and its strategic objectives is available at www.gov.uk/government/publications/defras-strategy-to-2020-creating-a-great-place-for-living

Research funding

Much of FR's work is funded by the FC with Corporate and Forestry Support (CFS) acting as purchaser of research and other services in support of 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. FR 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.

Activities

Research and development are essential components in delivery of the benefits of sustainable forestry in a multifunctional landscape. FR's research, surveys and related scientific services address the social, economic and environmental components of sustainability. There is a focus on providing knowledge and practical solutions based on high-quality science.

Our projects provide understanding, policy advice and guidelines on the implementation of best practice (on issues such as forest hydrology, tree health, adaptation to climate change, continuous cover forestry, timber quality, land reclamation and the restoration of native woodlands). Much of the research is directed at increasing the many benefits of woodlands and their inherent resilience.

FR works closely with the FC, the European Commission and other international bodies to ensure compliance with international agreements on the sustainable management of forests and the delivery of social,

environmental and economic objectives. The Agency also carries out work on genetic conservation, tree improvement, seed testing, method studies, product evaluation, crop inventory, surveys and monitoring.

Resources

FR employed 178 (full-time equivalent) staff during the year 2015–16 at Alice Holt Lodge in Hampshire, the Northern Research Station near Edinburgh, our office in Aberystwyth, and at field stations across England, Scotland and Wales. Contact information is given on the back cover.

Performance summary

Operating review

During the past exceptionally busy year, Forest Research has:

- achieved or exceeded targets for 21 out of our 22 Key Actions in our 2015–16 Corporate Plan;
- secured £5.0 million of non-core income, our highest ever total;
- continued to provide expert advice to underpin the UK pest risk register and new shared contingency plans on priority tree pests;
- published findings of a study into the incorporation of biodiversity into the modelling of rotation length;
- coordinated and co-authored a Guidance Note for the forestry sector on avoiding disturbance to woodland birds;
- disseminated results of a collaborative project on the future management of the native pinewood at Black Wood of Rannoch;
- ranked the ash seedling populations for Chalara resistance at the ash trials established in East Anglia;
- identified seed origins of birch and silver fir that are suitable choices for future climates;
- released a new version of the ForestGALES decision support tool to assist managers minimise wind damage through woodland design and management;
- provided the FC with documentation and a quality assurance system for the forest land component of greenhouse gas inventories;
- supported training opportunities in forestry research through funding and/or co-funding and undertaking supervisory work for 48 PhD/MSc/post-doctorate students;
- provided research input to the Outbreak Management Teams and control strategies for established pests and pathogens *Chalara fraxinea*, Dothistroma needle blight, *Phytophthora ramorum* and *Phytophthora austrocedrae*;
- continued to support the UK-wide response to the Chalara dieback of ash – this included our field research staff inspecting and sampling trees across the UK;
- continued to collaborate in seven projects funded by Phase 2 and two funded by Phase 3 of the Living with Environmental Change Tree Health and Plant Biosecurity Initiative;
- continued to represent UK interests by playing an active role in the European Forest Institute and International Union of Forest Research Organizations.

Financial review

Forest Research had net operating expenditure of £82,000 in 2015–16 (2014–15: £193,000 net operating income).

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

- other management costs increased by £138,000 (5.8%), mainly as a result of the write back of provisions not required during 2014–15 in respect of early departure costs;

- materials and services costs decreased by £289,000 (10.8%), mainly as a result of reduced requirement for external services and support for research contracts undertaken in year;
- income from external (non-CFS) customers during the year amounted to £5.0 million.

Additions to fixed assets in the year were £283,000 (2014–15: £218,000), on essential infrastructure work (replacement sewage plant at Alice Holt) and 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 2015–16 the recovery rate was 99.4%, compared with 101.5% in 2014–15.

Performance against other operational, scientific and financial Key Actions is reported in the Performance Analysis on page 12. Forest Research achieved £5.0 million income from non-CFS customers against the Key Action target of £4.6 million.

Events after the reporting date

On 23 June the UK voted to leave the EU. For further details see page 54.

The future

Our work is founded on the principle that research and evidence are at the heart of informed policy-making and sustainable land management practices. The government's Forestry and Woodlands Policy Statement (January 2013), the Welsh Government's Woodland Strategy 'Woodlands for Wales' (2009) and the Scottish Forestry Strategy (2006), and subsequent implementation plans, have helped shape our priorities, which are to provide the science and evidence to:

- protect our trees and forests;
- 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 Forest Research will be undertaking to support the delivery of the Forestry Commission's Science and Innovation Strategy for Forestry in GB and to fulfil its own Corporate Plan objectives for 2016–17 are as follows:

- Extend knowledge of the composition and condition of urban forests across the UK by carrying out at least two collaborative i-Tree Eco surveys.
- Analyse the diversity of *Phytophthora* species present at forest, woodland and public garden sites in Scotland and northern England.
- Deliver Phase 2 and Phase 3 projects in the Living with Environmental Change Tree Health and Plant Biosecurity Initiative.
- Produce a National Forest Inventory Report on the extent and condition of woodland habitats.
- Publish the results of collaborative work on genetic variation in Scottish provenances of Scots pine.
- Highlight Forest Research's expertise in hydrology by producing publications summarising our research into: a long-term study into the effects of conifer afforestation on water quality; managing riparian woodland for water; and modelling to predict the impacts of woodland creation and forest replanting on flood flows.
- Contribute to a special edition of the *Ecosystem Services* journal as part of the UK National Ecosystem Assessment dissemination.

- Survey 1,500 hectares of forested land as required by the National Forest Inventory.
- Provide guidance on how to control the invasive shrub *Gaultheria shallon*.
- Analyse the impact of policy, financial and operational interventions on wood mobilisation in Europe and produce summary reports.
- Lead the forestry input to the preparation of the Living with Environmental Change (LWEC) Report Card on the impact of climate change on UK agriculture and forestry.
- Publish datasets for the National Forest Inventory, Public Forest Estate and Research Experiment as our contribution to the Open Data and INSPIRE programmes.
- Increase Forest Research's online portfolio of information, publications and data.
- Publish UK National Statistics and Official Statistics releases on subjects including forestry statistics, timber price indices, UK wood production and analyses from the National Forest Inventory.
- Contribute to events including the Institute of Chartered Foresters Conference; Association of Professional Foresters Show; Royal Welsh Show; Scotland's Rural College and Scottish Environmental Protection Agency Conference; and International Union of Forest Research Organization Conference and European Forest Institute Annual Conference.
- Contribute to the updated UK Forestry Standard to be published in 2016–17.
- Work with research partners to disseminate the results of national soil re-surveys that were undertaken to establish the effects of woodland creation and replanting on soil carbon.
- Lead a new EU Cost Action regarding 'Payments for Ecosystem Services – Forest for Water' involving partners from 17 countries.
- Secure external income, with a target of £4.6 million from non-CFS customers.

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 10 days from the receipt of goods and services or the presentation of a valid invoice, whichever is the later. A sample analysis for 2015–16 indicates that 99.5% 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 £35,000 (2014–15: £35,000). No further non-audit services were provided in 2015–16 or 2014–15.

Disclosure of audit information to the auditors

So far as I am aware, there is no relevant audit information of which the Forest Research auditors are unaware. I have taken all the steps that I ought to have taken to make myself aware of any relevant audit information and to establish that the Forest Research auditors are aware of that information.



Professor James Pendlebury
Chief Executive and Accounting Officer

29 June 2016

Performance Analysis

Key Actions

Forest Research's achievements on its Corporate Plan Key Actions for 2015–16 are listed below. A full commentary with details of our work on each Key Action is available at www.forestry.gov.uk/fr/keyactions

Key Action	Progress
Deliver on Forest Research's Living with Environmental Change (LWEC)-funded tree health research.	Achieved.
Provide expert advice to underpin the UK pest risk register and new shared contingency plans on priority tree pests; contribute in the monitoring and evaluation of pest risk.	Achieved.
Deliver, with partners, the LIFE+ Observatree project to develop a tree health early warning system, including the formal launch of the Observatree project.	Achieved.
Publish a Forestry Commission (FC) Practice Guide on managing forest operations for soil and water protection.	Part-achieved: A full draft of a Practice Guide on management operations has been delivered to the FC's Corporate and Forestry Support (CFS) team and Forest Research (FR) will respond to requests for any editorial changes. Publication has been deferred due to intense knowledge exchange activities – including involvement in site visits, briefings, talks and provision of evidence – that arose as a result of the 2015 floods.
Undertake research into ecosystem services gains/losses from peat land use change.	Achieved.
Publish findings of a study into the incorporation of biodiversity into the modelling of rotation length.	Achieved.
Coordinate and co-author a Guidance Note for the forestry sector on avoiding disturbance to woodland birds.	Achieved.
Disseminate results of collaborative project on the future management of the native pinewood at Black Wood of Rannoch.	Achieved.
Rank the ash seedling populations for Chalara resistance at the ash trials established in East Anglia (carried forward from 2014–15).	Achieved.
Identify seed origins of birch and silver fir that are suitable choices for future climates.	Achieved.
Publication of a Research Note on wood properties and uses of Douglas fir in Great Britain.	Reframed and achieved: The customer revised their priorities and asked instead for FR to prepare a Research Note on Scots pine. This has been done.

Key Action	Progress
Release a new version of the ForestGALES decision support tool to assist managers to minimise wind damage through woodland design and management.	Achieved.
Provide the FC with documentation and a quality assurance system for the forest land component of greenhouse gas inventories.	Achieved.
Publish on the FR website, every six months, information on FR's knowledge exchange activities, and submit information to the FC for the FC's digitised catalogue.	Achieved.
Produce case studies, taken from the range of our seven research programmes, showing the impact that our work has made on forest policy and practice.	Achieved.
Participate in specific targeted events including: International Year of Soils; Institute of Fisheries Management Specialist Conference; Institute of Chartered Foresters' Conference on Tree Health, Resilience and Sustainability; the Annual Conference of the European Forest Institute.	Achieved.
Participate in relevant EU COST Actions in order to develop research approaches, skills and networks.	Achieved.
Secure external (non-CFS) income of £4.6 million.	Exceeded: FR achieved a non-CFS income of £5.0 million.
Expand and strengthen relationships in partnership working across government, devolved administrations, international forestry research organisations, universities and forest sector partners.	Achieved.
Participate in the development of Defra's Network Evidence Action Plans and collaborate with government and others to develop UK LIFE+ bids.	Achieved.
Further develop Forest Research in Wales, working with the Welsh Government, Natural Resources Wales, and new and existing customers and partners.	Achieved.
Quantify and assist training opportunities in forestry research through doctoral training programmes, PhD/ MSc studentships and secondments.	Achieved.

Research highlights from the past year

Over the past year we have continued our work on a wide array of research areas, from tree pests and diseases to urban ecosystem services. Here we summarise a selection of recent projects, but for a fuller account visit our website at www.forestry.gov.uk/forestresearch

Acute oak decline research

As part of a programme funded by Defra, Forest Research has been working with scientists from other organisations to better understand the causes, distribution and scale of acute oak decline (AOD). The disease first appeared in the UK in the early 1980s, and to date many thousands of trees are estimated to be affected or dying. AOD causes decay of the food and water-conducting tissues in oak trees. Working with scientists from Fera and Bangor University, we used a range of conventional and cutting-edge genetic technologies to find out which microbes were involved. The results confirmed that particular bacteria are the most important component in causing decay and that fungi were not consistently present. At the same time, our research is investigating the role of the two-spotted oak borer beetle (*Agrilus biguttatus*), which is regularly associated with AOD trees.

As part of this work, Forest Research reared *A. biguttatus*, bringing it through its entire life cycle in captivity – a world first! We carried out experiments testing the effect of temperature on life cycle development and then used this information to model the beetle's climate preferences and how this might influence its spread. The beetle thrives in the warm but cannot survive low temperatures. With Cambridge University, we have modelled the effect of climate on distribution and used other data to predict current and future risks of AOD in the UK.

As well as studying the influence of climate, we worked with Rothamsted Research to determine why the beetle is attracted to certain oak trees. Chemicals given off by healthy and AOD-affected trees were collected and characterised by gas chromatography. The effects of these chemicals on adult beetles were tested using a method that measures the electrical impulse responses of their antennae, and this work is helping us understand what attracts the beetle to its host tree.

With the spatial epidemiology modellers at Rothamsted Research we also carried out an extensive coordinated survey across England and Wales. We used these results together with 'citizen science' reports to record and map AOD's current presence or absence.

Urban tree canopies and ecosystem services

Urban trees and woodlands provide a range of goods and services that benefit society. These 'ecosystem services' include climate regulation, flood mitigation and socio-economic benefits. Many of these services have been valued in economic terms enabling a cost-benefit approach to be employed in urban forest management strategies. However, a lack of data on the extent and composition of urban trees and woodlands is constraining the use of the ecosystem services approach and preventing monitoring and evaluation of changes in the urban forest.

Forest Research has been working with a range of tools and collaborators to improve our knowledge on the extent and characteristics of urban trees and woodlands. Building on work last year, we have continued to use i-Tree Eco, part of the i-Tree software suite (www.itreetools.org), as a field-survey validated approach that provides a broad picture of the size and qualities of the entire urban forest. With partners, we have now surveyed seven major towns and cities of the UK using i-Tree Eco (www.forestry.gov.uk/fr/itree).

While field-based surveys provide valuable and detailed information, they can be expensive and time-consuming. We have been examining the use of canopy data as a substitute, where practitioners can gain a broad overview of the urban forest and the ecosystem services it provides more quickly and at lower cost. i-Tree Canopy, for example, assesses aerial photography to calculate canopy cover and associated confidence limits. As well as enabling monitoring of canopy change over time, this approach can quantify ecosystem services and provide a market value. We have worked with Treeconomics on the Urban Tree Cover website (www.urbantreecover.org), which shows canopy data for 20 towns and cities of the UK.

In the past year, we have also completed a review of the suitability of remote sensed data for urban canopy cover assessment and the opportunity of verifying the data by comparison to field data. By combining these datasets, we are able to create better quality information on the UK's urban canopy cover and improve our knowledge of the urban forest and the ecosystem services which it provides.

Using long-term experiments to guide future forestry

Forest Research has a long history of field research, having conducted thousands of experiments throughout Britain over the past few decades. The potential of this unique and valuable resource is now being unlocked to provide answers to the enduring and emerging challenges of 21st century forest management – such as the suitability of various tree species given our changing climate and how forest management practices affect the amount of carbon stored in our forests.

In 2015–16 we completed a review of our long-term experiments, to share the information about them and to consider the best ways to maintain them for the benefit of future generations. Almost 400 experiments have been retained for potential future use. They have been selected to provide a wide geographical coverage of species. New experiments are also being incorporated where it is anticipated that they could be of future value.

The investment of resources to maintain the long-term experiments is particularly important as some are significant globally as well as at European and British scales. They include probably the best-known forest mixtures experiment in the world at Gisburn Forest, Lancashire. Analysis of trees at this site has found that mixed stands of certain species can have higher productivity than pure plots of the same species. This is the longest second rotation experiment exploring this topic in Europe. The long-term experiments are also being used to explore the effects of different tree harvesting methods on the amount of carbon and nutrients stored in forest soil. For British forestry, long-term trials of European silver fir (*Abies alba*) have proved especially valuable by demonstrating that this previously dismissed species grows well across a range of British sites.

Evaluating the impact of Grow Wild

Grow Wild is a programme funded by the UK National Lottery that is encouraging individual and community based wildflower growing projects to provide health and well-being benefits to people and communities. It is particularly trying to engage young people aged between 12 and 25 years and those not involved in environmental and community based activity. The work, led by the Royal Botanic Garden Kew, and running from 2014 to 2017, involves providing funding and support to transform communal spaces, distributing wild seed kits to youth and community groups, and making seed packets available to the general public.

Forest Research is evaluating the impact of the programme on the people and communities taking part. This involves assessing the kind of activities the programme has enabled, the type of people who took part and what, if any, benefits it has had for peoples' well-being (e.g. by helping them to connect with people, be active or try something new). We are also assessing whether the programme has led to any longer term behaviour changes that are benefiting individuals or communities. The evaluation will help us to understand what increases community involvement in the care and management of our environment, and the potential for urban green spaces to provide benefits that support community and individual well-being.

During 2015 Forest Research carried out online surveys, interviews and focus groups to collect data that will be used to evaluate the programme's impact. This has involved undertaking 14 case studies of the community wildflower projects funded by the work and of the programme's national flagship projects in Scotland and England; further case studies will include Wales and Northern Ireland. The online surveys have been sent out to over 250,000 recipients of the seed packets and seed kits. An initial analysis suggests that 85% of community project participants went on to be more active in their community and 65% continued to do more for nature, such as tree planting. Further analysis of impacts is underway and the full evaluation is due to be produced by spring 2017.

Ash trees resistant to Chalara

In 2013, in an attempt to identify ash trees (*Fraxinus excelsior*) with a resistance to Chalara ash dieback (*Hymenoscyphus fraxineus*), Forest Research planted out 155,000 ash seedlings on 14 sites in areas known to be infected with Chalara. We are now at the end of the project's third year and, although later than initially predicted, all sites now show clear evidence of Chalara infection.

We noticed a rapid development of the disease over the 2015 growing season and levels of infection on the 155,000 trees were determined using a simple scoring system. Nearly 50% of the trees are still alive with no signs of infection. There are big variations in the amount of infestation from site to site and also in the survival of trees from different source areas (provenances) at each site. Across all sites the most resistant provenances at the moment seem to be from seed zones in Scotland – but it is too early to form firm conclusions. We expect the number of trees that become infected or die to increase over the remaining two years of the research contract.

This is the first time we have assessed each tree in this manner. We plan to repeat the whole assessment process after both the 2016 and 2017 growing seasons and will then identify trees that are showing clear tolerance to Chalara. In collaboration with partners, we will look for common genetic markers in these apparently tolerant trees that can be used in future screening of other ash trees, and grafted copies of selected trees will be used in future breeding work to produce Chalara-resistant ash seed.

Eradication of the Asian longhorn beetle

Asian longhorn beetle (*Anoplophora glabripennis*) is a major international quarantine pest native to China and Korea that can kill a wide range of broadleaved trees. In 2012, a small population was found established at a site just north of Paddock Wood in Kent. This first confirmed outbreak of the pest in the UK prompted a rapid eradication programme and research to determine which tree species were most at risk and how fast the beetle was spreading.

Forest Research scientists have now completed these studies and they show that the outbreak did not increase and spread as rapidly as was at first feared. A detailed tree ring analysis of the sample material brought back from the outbreak site shows that the beetle had been present for about 10 years before it was discovered, but had spread no further than 234 metres from the original point of introduction.

The relatively slow rate of increase and spread of the outbreak probably reflects the fact that the beetle is near the edge of its climatic range in southern England. Our analysis suggests that several factors combined to allow the beetle to become established, in particular the presence of a highly favourable host species (sycamore, *Acer pseudoplatanus*) close to the industrial unit where the beetles were introduced, multiple introductions of adult beetles over several years, and a run of particularly warm and dry years while the infestation was becoming established.

Since 2012, the Animal and Plant Health Agency has carried out annual surveys at Paddock Wood, but no further signs of the beetle have been detected. Regrowth from the stumps of the trees that were cut down and burnt during the original eradication programme was cleared and inspected by Forest Research staff and contractors in September 2015, but again there was no sign of any residual infestation. Consequently, even though surveys and monitoring will continue at Paddock Wood until 2018, it seems that we can be increasingly optimistic that this particular infestation has been successfully eradicated.

Release of improved wind risk management tool

Major storms have damaged over a million cubic metres of timber in Britain at least five times in the past 50 years, causing major economic losses, and every year wind causes damage to forests in exposed locations.

During 2015 Forest Research released a new version (2.5) of ForestGALES, its computer-based tool to help foresters improve the resilience of their forests to potentially damaging wind. ForestGALES does this by calculating how the risk of damage changes with species, trees size, soil conditions and silviculture. Forest managers can use this information to adjust their forest management to maintain tree stability and reduce storm damage across the forest.

The original ForestGALES was based on over 30 years of research exploring tree stability and the effects of wind across forests. Since its last upgrade in 2006, our ongoing research, in collaboration with colleagues at INRA in Bordeaux, France, has led to advances in the underpinning science.

ForestGALES 2.5 incorporates the results of field measurements of how trees respond to strong winds, and improved understanding of root anchorage based on a new analysis of almost 2,000 trees across Britain. It predicts that most stands of trees are more stable than indicated by previous versions of the tool, and we verified the improved accuracy of its estimates by comparing them with damage observed in Forestry Commission forests in Cowal and Trossachs following a major storm that crossed central Scotland in 2012.

ForestGALES 2.5 is the recommended wind risk decision support tool for forest management in Britain. In addition, the latest version of ForestGALES incorporates a research mode that will allow researchers to examine the effects of changing the many physical characteristics of trees and forests on the likelihood of wind damage. This will help improve guidance on forest wind risk management. For further information see www.forestry.gov.uk/fr/forestgales

Sustainability Report

This Report is not subject to audit

Forest Research continues its support of business sustainability and holds ISO 14001 status.

On a day-to-day basis, we continue to reduce our environmental impact wherever possible. This includes reducing business travel, for which our target is a 10% reduction, and using alternative mechanisms such as Skype, video conferencing and teleconferencing. However, the nature of our work does require travel to domestic and international meetings and conferences, and this requirement fluctuates yearly. There has been a change to the conversion factors used in the calculation of tonnes CO₂ equivalent; previous years' figures have been recalculated accordingly.

We seek to reduce our environmental impact wherever possible. During 2015–16 we installed a replacement energy efficient boiler and installed new (more energy- and water-efficient) sewerage facilities at Alice Holt. To install the new sewerage facilities we were required to have increased collections of waste by tanker and this increased our waste figures. We have a target to reduce our estate and office water consumption by 8%, but our consumption this year has increased due to the level of work undertaken in growth rooms and greenhouses.

Business sustainability remains a standing item on the regular meetings of the Site Management Committees, at which representatives from all teams are present. It is also discussed by the Forest Research Executive Board. We have been successful in securing funding from Defra for capital investment during 2016–2021 and this includes works such as replacement windows and roofs. These works will help improve our business sustainability through reduced electricity consumption, as well as keeping the buildings safe and fit for purpose.

We do not have biodiversity action plans. However, we do undertake, contribute to, and publish expert research and evidence on aspects of biodiversity that form a significant part of the policies, practices and biodiversity action plans across Great Britain, Europe and, occasionally, internationally.

We follow the procurement terms and procedures of the Forestry Commission as detailed in the respective Forestry Commission Operational Guidance Booklets.

The following table gives information on travel, energy usage, waste and water. Figures for 2015–16 are compared with previous financial years.

Performance measurement		2015-16		2014-15	2013-14	2012-13
Area		Actual (cost/qty)	Comment			
Greenhouse gas emissions (Scopes 1, 2 and 3 business travel including national and international air/rail travel)		£441,245 459	Target: 10% reduction on baseline	£486,927 518	£451,644 447	£402,992 505
Electricity, gas and other heating fuels (estate)	Consumption (kWh)	2,676,905	Target: 12% reduction on baseline;	2,429,460	2,659,800	2,798,171
	Expenditure and tonnes CO ₂ e	£187,953 904	FR generated 25,548 kWh from the photovoltaic panels at Alice Holt	£178,078 820	£188,830 898	£155,191 945
Total energy*	Expenditure	£629,198		£664,624	£640,474	£558,183
Estate and office waste ~	Amount (tonnes)	1,345	Target: <20% landfill (actual <1%) Target: ≥80% recycling (actual: 99.9%)	200	204	626
	Expenditure	£35,052		£21,140	£15,646	£110,612
Estate and office water	Quantity used (m ³)	14,137	Target: 8% reduction on baseline (2010/11)	12,763	9,681	8,414
	Expenditure	£18,180		£17,739	£11,475	£8,682
* Total energy is the fossil fuel consumption of the built estate (heating and lighting, etc.) and the CO ₂ from travel.						
~ Waste includes sewage (1,302 tonnes equivalent) and other waste (43 tonnes equivalent) and costs of £15,249 and £19,803, respectively.						



Accountability Report

Corporate Governance

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:

Elizabeth Truss MP	<i>Secretary of State</i>
George Eustice MP	<i>Minister of State from 11 May 2015</i>
Rory Stewart MP	<i>Parliamentary Under-Secretary of State from 10 May 2015</i>

Composition of the Management Board

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

James Pendlebury *	<i>Chief Executive</i>
Peter Freer-Smith *	<i>Chief Scientist</i>
Mike Cowan	<i>Human Resources Business Partner</i>
Helen McKay	<i>Head of Centre for Sustainable Forestry and Climate Change</i>
Chris Quine	<i>Head of Centre for Ecosystems, Society and Biosecurity</i>
Sandra Smith	<i>Head of Finance</i>
Hugh Williams	<i>Head of Centre for Research Services</i>
Shireen Chambers	<i>Non-Executive Director</i>

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.

* These Board Members have related party interests which are disclosed in Note 16.

Register of interests

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

Personal-data-related incidents

There were no protected personal-data-related incidents reported for Forest Research in 2015–16.

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

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 which 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 2015–16 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, normally through Director Central Services, 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 Minister, and a right to meet them at least once a year.

Forest Research Executive Board (FREB)

The FREB was established to manage the day-to-day operations and performance of the Agency, within the policy framework set by Ministers and the Forestry Commissioners. The Board meets regularly and met 12 times during 2015–16. The Board discussed a wide range of forest research and related issues, including:

- future science;
- Research Strategy Management Board;
- communications;
- Forestry Governance Project;
- Corporate Plan Key Actions;
- health and safety;
- staff survey;
- business development, including external income;
- Forestry Governance Project;
- implementation plan for transfer of Inventory, Forecasting and Operational Support (IFOS) and other staff from FC GB;
- risk management.

At each of the meetings during 2015–16 the Board also discussed the Finance and Human Resources reports and received verbal updates on Forestry Commission-wide Governance meetings. They also periodically reviewed Centre reports on Sustainable Forestry and Climate Change, Ecosystems, Society and Biosecurity and Research Services.

Further information about FREB, including membership and attendance, is available on our website, www.forestry.gov.uk/forestresearch

Audit and Risk Assurance Committee

FREB established an Audit and Risk Assurance Committee (ARAC) to support it in its responsibilities for the effective management of risk, control and governance. Forest Research has a risk register which is overseen by the ARAC. Through its work, the ARAC provides independent assurance to the FREB on those key activities which support the achievement of country objectives. Assurance is also provided through the findings from work carried out by Internal and External Audit. 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:

- risk management;
- Annual Report and Accounts 2014–15;
- Internal and External Audit strategies and reports;

- information security;
- Forestry Governance Project;
- Governance Statement.

There were three ARAC meetings during 2015–16 and attendance was as follows:

Name	No. of meetings
Shireen Chambers	3
Victoria M. Edwards (Chair) *	1
David A. Evans ~	1
Judith Webb #	3

* Victoria Edwards' appointment ceased February 2016.

~ David Evans' appointment ceased May 2015.

Judith Webb was appointed Chair from March 2016.

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.

I receive an Annual Assurance Statement from the Director of Central Services on behalf of the Heads of Shared Services for the Forestry Commission, providing me with assurance on the standard of governance and control within their areas of responsibility.

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 ARAC reviews its effectiveness in line with best practice as set out in HM Treasury's *Audit and Risk Assurance Committee Handbook*.

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 Executive Board 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 Executive 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.

Forest Research has an Audit and Risk Assurance Committee (ARAC) to support the Accounting Officer and the Agency Executive Board 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. This is achieved through encouraging a culture of openness, where employees feel confident to raise concerns about potential wrongdoing. This positive approach to whistleblowing is aligned to our organisation's values; for example, in our communications we are open, honest and objective with each other and our stakeholders.

Forestry Commission's Director Central Services has overall responsibility for whistleblowing policy and practice and works with the Chief Executive to ensure its effectiveness. Mechanisms have been established through our policy whereby all cases are managed centrally by the Head of Internal Audit. All cases are investigated thoroughly, ensuring that any lessons learnt and recommendations are embedded into how we operate as an organisation. The policy is reviewed regularly and was last updated in May 2015 to take account of the changes made by Civil Service Employee Policy (CSEP) to reflect the Public Accounts Committee (PAC) recommendations.

Ministerial direction

No ministerial directions were given during the year.

Significant governance and risk issues

Key governance and risk issues are:

Forestry Governance Project

The future of Forest Research has previously been under consideration by the Forestry Commission as a component of the Woodland Policy Enabling Programme. However, the UK Government and Scottish Ministers have agreed that officials will work jointly to consider options for the transfer of Forestry Commissioners' powers and duties as they relate to Scotland and to Scottish Ministers. This work will be undertaken by a group comprising senior Defra, Scottish, Welsh and Forestry Commission officials called the Forestry Governance Project Board. As part of its work the Board will consider the future organisational options (given their role as both funders and customers of the Agency) for Forest Research. Forest Research is actively involved in this work. The purpose is to produce a strategic outline business case, focusing on the strategic and economic cases, for a future operating model for Forest Research in order to enable recommendations to be made to responsible Ministers on the future delivery of forestry research functions.

Information communication technology (ICT) infrastructure

The ICT infrastructure modernisation programme continues with further migration of key business applications to the new platform. The programme continues to make positive inroads into the business risk posed by ICT infrastructure failure. The disaster recovery facility at the Northern Research Station is operational and, subject to testing, has the capacity to restore major corporate systems within five working days.

Forest Research is dependent on the Forestry Commission's ICT infrastructure and, while some risk to the business operations of the Agency still remains as work continues, the overall risk position has substantially improved.

Business continuity management

Forest Research has business continuity plans to ensure that there are procedures in place to facilitate the recovery of business activities, although it is recognised that these still focus more on disaster recovery than on business continuity. We will review the plans again during 2016–17 to bring them more up to date.

Forest Research is reliant on Shared Services, based in Silvan House in Edinburgh, for many of its Human Resources, Information Services and Finance requirements, and the uncertainty generated by the expectation that these services will be devolved to countries and Forest Research has led to an increase in the loss of key

staff which, together with difficulties encountered in recruiting talent, has increased the risk of disruption to business continuity. The Forestry Commission has introduced additional controls and actions, including a review of recruitment and retention policy, to mitigate the risk.

Information risk management

Forest Research shares a common approach to information risk management with the Forestry Commission. The Forestry Commission continues to take a proportionate approach to information risk. Forest Research does not have as much sensitive information as most other departments and our information holdings are relatively small. We therefore manage risk as appropriate for the business.

Within that context, Forest Research fully considers, manages and cares for its information. Forest Research's Head of Centre for Research Services is the Senior Information Risk Owner (SIRO) for Forest Research and participates in the meetings of the Forestry Commission's Information Security Management Forum (ISMF).

The ISMF has agreed that Privacy Impact Assessments will be required for all projects that involve the handling of personal information. Three levels of 'Responsible for Information' training are now online and have been undertaken by all staff where required at the appropriate level for their role.

Significant progress has been made in the designation of local Information Asset Owners, identifying and recording local information assets, including personal information, and improving the procedures for reporting losses. This work is not yet complete but the ongoing work is helping develop a better understanding of the value of the information we hold and an improved information security culture across the organisation.

There were no lapses of data security reported during 2015–16 (2014–15: one).

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.

Wider circumstances and future challenges

The main challenges for Forest Research during 2016–17 and beyond are:

- integrating and managing changes following staff transfers from the Forestry Commission with effect from 1 April 2016;
- responding to new and unforeseen tree health disease outbreaks or other issues;
- delivering the new interdisciplinary science programmes for 2015–19;
- maintaining and increasing the Agency's non-core income;
- managing the likelihood of organisational change to the Agency while maintaining business continuity;
- maintaining Agency relevance to an increasingly devolved governmental client base and changing evidence commissioning arrangements;
- enhancing our scientific capability and research offer through effective and strategic partnerships;
- growing our international profile, activities and business.

In 2016–17 Forest Research will remain focused on managing these challenges either directly, or in partnership with other bodies across the Defra network and wider government, while continuing to maintain business continuity across the broad range of its operations and meeting stakeholder expectations in line with the Corporate Plan.



Professor James Pendlebury
Chief Executive and Accounting Officer

29 June 2016

Remuneration and Staff Reports

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 which are open-ended until they decide to retire or leave. Professor James Pendlebury and Professor Peter Freer-Smith'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:
<http://civilservicecommission.independent.gov.uk>

Remuneration policy

Remuneration of Forest Research Executive 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 Great Britain/England. 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 members of the Forest Research Executive Board.

Name	2015-16				2014-15			
	Salary £000	Benefits in kind (to the nearest £100)	Pension benefits £000	Total £000	Salary £000	Benefits in kind (to the nearest £100)	Pension benefits £000	Total £000
James Pendlebury	70-75	4,100	18	95-100	70-75	3,300	16	90-95
Peter Freer-Smith	70-75	3,100	24	100-105	70-75	8,100	12	90-95
Mike Cowan *	25-30	-	21	45-50	25-30	-	21	45-50
Helen McKay	65-70	-	15	80-85	65-70	-	8	70-75
Chris Quine	65-70	-	15	80-85	65-70	-	9	75-80
Sandra Smith	50-55	-	21	75-80	50-55	-	20	70-75
Hugh Williams	55-60	-	29	85-90	55-60	-	17	75-80

* Mike Cowan works 60% for Forest Research and 40% for Forestry Commission. The table shows the whole of his pension benefits but only the FR share of his salary.

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 2015–16 or 2014–15.

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 and house purchase loans.

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 2015–16 was £75,000 – £80,000 (2014–15: £80,000 – £85,000). This was 2.93 times (2014–15: 2.89) the median remuneration of the workforce, which was £26,482 (2014–15: £28,569). In 2015–16 no employees (2014–15: nil) received remuneration in excess of the highest-paid director.

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

Pension benefits 2015–16 – subject to audit

Name	Accrued pension at age 60 at 31/3/16 and related lump sum (LS)	Real increase (decrease) in pension and related lump sum (LS)	CETV at 31 March 2016	CETV at 31 March 2015*	Real increase (decrease) in CETV
	£000	£000	£000	£000	£000
James Pendlebury	10–15 plus 40–45 LS	0–2.5 plus 2.5–5.0 LS	294	253	16
Peter Freer-Smith	30–35 plus 90–95 LS	0–2.5 plus 2.5–5.0 LS	707	666	24
Mike Cowan	5–10 plus nil LS	0–2.5 plus nil LS	81	64	5
Helen McKay	30–35 plus 90–95 LS	0–2.5 plus 2.5–5.0 LS	696	695	16
Chris Quine	25–30 plus 85–90 LS	0–2.5 plus 2.5–5.0 LS	610	553	14
Sandra Smith	10–15 plus nil LS	0–2.5 plus nil LS	162	132	11
Hugh Williams	15–20 plus 10–15 LS	0–2.5 plus 0–2.5 LS	310	264	13

*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 that provide benefits on a final salary basis (**classic**, **premium** or **classic plus**) with a normal pension age of 60; and one that provides 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 will switch into **alpha** sometime between 1 June 2015 and 1 February 2022. 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 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 'money purchase' stakeholder pension with an employer contribution (**partnership** pension account).

Employee contributions are salary-related and range between 3% and 8.05% of pensionable earnings for members of **classic** (and members of **alpha** who were members of **classic** immediately before joining **alpha**) and between 4.6% and 8.05% for members of **premium**, **classic plus**, **nuvos** and all other members of **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 the 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 is 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 a stakeholder pension arrangement. The employer makes a basic contribution of between 3% and 12.5% up to 30 September 2015 and 8% and 14.75% from 1 October 2015 (depending on the age of the member) into a stakeholder pension product chosen by the employee from a panel of providers. 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 0.8% of pensionable salary up to 30 September 2015 and 0.5% of pensionable salary from 1 October 2015 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** or **classic plus**, 65 for members of **nuvos**, and 65 or State Pension Age (whichever is higher) for members of **alpha**. (The pension figures quoted for Board Members 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 www.civilservice.gov.uk/pensions

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 (decrease) in CETV

This reflects the increase (decrease) in CETV effectively funded by the employer. It does not include the increase (decrease) 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 Audit and Risk Assurance Committee received the following remuneration for their services:

Name	2015-16 £000	2014-15 £000
Shireen Chambers *	5	2
Victoria M. Edwards ~	0	1
David A. Evans #	0	1
Judith Webb	1	1

* Shireen Chambers joined both the Audit and Risk Assurance Committee and the Forest Research Executive Board in November 2014.

~ Victoria Edwards' appointment ceased February 2016.

David Evans' appointment ceased May 2015.

Staff Report

Number of senior civil servants by band

Band	Number of senior civil servants
1A	1
1	1

Average number of persons employed (full-time equivalents)

	2015-16	2014-15
Permanent staff – male (5 Executive Board Members)	98	102
Permanent staff – female (2 Executive Board Members)	56	55
Total permanent	154	157
Others – male	10	13
Others – female	14	15
Total others	24	28
Total staff	178	185

Staff costs – subject to audit

	2015-16		2014-15
	Permanent staff	Other staff	Total
	£000	£000	£000
Wages and salaries	5,436	590	6,026
Social security costs	441	39	480
Employer's superannuation costs	1,118	110	1,228
	6,995	739	7,734
			£000
			6,131
			485
			1,131
			7,747

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 2015-16, employers' contributions of £1,216,945 were payable to the PCSPS (2014-15: £1,129,823) at one of four rates in the range 20.0% to 24.5% (2014-15: 16.7% to 24.3%) 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 2015-16 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. Employers' contributions of £8,892 (2014-15: £9,055) were paid to one or more of a panel of three appointed stakeholder pension providers. Employer contributions are age-related and range from 3% to 12.5% of pensionable earnings to 30 September 2015 and from 8% to 14.75% from 1 October 2015 (2014-15: 3% to 12.5%). Employers also match employee contributions up to 3% of pensionable pay. In addition, employer contributions of £399, 0.8% of pensionable pay up to 30 September 2015 and 0.5% of pensionable pay from 1 October 2015 (2014-15: £929, 0.8%) 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. Contributions prepaid at that date were £nil.

Sickness absence

The Forestry Commission has one common sick absence management policy which 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 which is available 24 hours a day. The average number of working days lost to sickness absence in Forest Research in 2015–16 was 7.9 per employee (2014–15: 7.5), compared with the average of 10.5 (2014–15: 6.9) for the Forestry Commission.

Early departure costs

During 2015–16 and 2014–15, no staff members left under Compulsory or Voluntary Redundancy terms.

People

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

- **teamwork:** we work collaboratively with each other and our stakeholders, ensuring trees, woods and forests meet the needs of society;
- **professionalism:** we enjoy and take pride in our work, acting with integrity and political impartiality to achieve high standards of health and safety, quality, efficiency and sustainability;
- **respect:** we value each other and our stakeholders, recognising diverse perspectives and treating everyone with consideration;
- **communication:** we are open, honest and objective with each other and our stakeholders. We are prepared to challenge and be challenged;
- **learning:** we are always learning, developing the skills, knowledge and behaviours to support organisational success;
- **creativity:** we seek new ways of doing things, sharing ideas and embracing change.

The Forestry Commission's People Strategy sets out the strategic direction in relation to our people. We continue to be an organisation that is committed to high levels of employee engagement, motivation and achievement, that openly encourages participation and personal development and that values its staff.

Equality and diversity is valued highly within our organisation and we are committed to providing equality of opportunity for our staff. Selection for employment or promotion is on merit on the basis of fair and open competition.

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

Much of FR's work is funded by the FC with Corporate and Forestry Support acting as purchaser of research and other services in support of the ministerially endorsed Science and Innovation Strategy for Forestry in Great Britain and forestry policies of the UK, Scottish, Welsh and Northern Irish governments. The funding from Corporate and Forestry Support was decided as part of SR10. In addition, FC England, FC Scotland and Natural Resources Wales purchase research, development and surveys specifically related to their respective forest estates. FR 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.

Losses and special payments

There were no losses or special payments during 2015–16. In 2014–15 there were two amounting to £51,000.

Fees and charges

FR's primary financial objective is to recover full economic costs of its operations from the sale of services to customers and it has complied with the principles of cost allocation and charging requirements set out 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, FR 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

	2015–16 £000	2014–15 £000	2013–14 £000	2012–13 £000	2011–12 £000
Staff costs	7,734	7,747	7,684	7,677	8,730
Other management costs	2,527	2,389	2,963	2,631	3,957
Materials and services	2,418	2,707	2,605	2,390	2,548
Total expenditure	12,679	12,843	13,252	12,698	15,235

Certificate and Report of the Comptroller and Auditor General to the House of Commons

I certify that I have audited the financial statements of Forest Research for the year ended 31 March 2016 under the Government Resources and Accounts Act 2000. The financial statements comprise: the Statements of Comprehensive Income, Financial Position, Cash Flows, Changes in Taxpayers' Equity; and the related notes. These financial statements have been prepared under the accounting policies set out within them. I have also audited the information in the Remuneration and Staff Reports and Parliamentary Accountability Disclosures that are described in that report and disclosures as having been audited.

Respective responsibilities of the Accounting Officer and auditor

As explained more fully in the Statement of Accounting Officer's Responsibilities, the Accounting Officer is responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view. My responsibility is to audit, certify and report on the financial statements in accordance with the Government Resources and Accounts Act 2000. I conducted my audit in accordance with International Standards on Auditing (UK and Ireland). Those standards require me and my staff to comply with the Auditing Practices Board's Ethical Standards for Auditors.

Scope of the audit of the financial statements

An audit involves obtaining evidence about the amounts and disclosures in the financial statements sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of: whether the accounting policies are appropriate to Forest Research's circumstances and have been consistently applied and adequately disclosed; the reasonableness of significant accounting estimates made by Forest Research; and the overall presentation of the financial statements. In addition, I read all the financial and non-financial information in the Annual Report to identify material inconsistencies with the audited financial statements and to identify any information that is apparently materially incorrect based on, or materially inconsistent with, the knowledge acquired by me in the course of performing the audit. If I become aware of any apparent material misstatements or inconsistencies I consider the implications for my certificate.

I am required to obtain evidence sufficient to give reasonable assurance that the expenditure and income 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.

Opinion on regularity

In my opinion, in all material respects the expenditure and income 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.

Opinion on financial statements

In my opinion:

- the financial statements give a true and fair view of the state of Forest Research's affairs as at 31 March 2016 and of the net operating income for the year then ended; and
- the financial statements have been properly prepared in accordance with the Government Resources and Accounts Act 2000 and HM Treasury directions issued thereunder.

Opinion on other matters

In my opinion:

- the part of the Remuneration and Staff Reports and Parliamentary Accountability Disclosures to be audited has 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 Report and Accountability Report for the financial year for which the financial statements are prepared is consistent with the financial statements.

Matters on which I report by exception

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 part of the Remuneration and Staff Reports and Parliamentary Accountability Disclosures to be audited are not in agreement with the accounting records and returns; 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.

Report

I have no observations to make on these financial statements.

Sir Amyas C.E. Morse
Comptroller and Auditor General

National Audit Office

157-197 Buckingham Palace Road, Victoria, London SW1W 9SP

5 July 2016



Financial Statements

Statement of Comprehensive Income for the year ended 31 March 2016

	Notes	2015-16 £000	2014-15 £000
Income			
Forestry Commission customers	6.1	(9,590)	(9,836)
Non-Forestry Commission customers			
European Union		(413)	(783)
Other	6.2	(2,594)	(2,417)
Total income		<u>(12,597)</u>	<u>(13,036)</u>
Expenditure			
Staff costs	3	7,734	7,747
Other management costs	4	2,527	2,389
Materials and services	5	2,418	2,707
Total expenditure		<u>12,679</u>	<u>12,843</u>
Net operating expenditure/(income)		82	(193)
Other comprehensive net (income)/expenditure			
Net (gain) on revaluation of property, plant and equipment	7	(247)	(500)
		<u>(247)</u>	<u>(500)</u>
Total comprehensive net income for the year		<u>(165)</u>	<u>(693)</u>

All income and expenditure are derived from continuing operations.

The notes on pages 40 to 54 form part of these accounts.

Statement of Financial Position as at 31 March 2016

	Notes	31 March 2016 £000	31 March 2015 £000
Non-current assets			
Property, plant and equipment	7	10,450	10,622
Intangible assets		34	42
Financial assets		25	25
		<u>10,509</u>	<u>10,689</u>
Current assets			
Inventories		-	2
Trade and other receivables	9	1,700	1,568
Cash and cash equivalents	10	268	136
		<u>1,968</u>	<u>1,706</u>
Total assets		<u>12,477</u>	<u>12,395</u>
Current liabilities			
Provisions	12	(83)	(188)
Trade and other payables	11	(1,276)	(1,267)
		<u>(1,359)</u>	<u>(1,455)</u>
Non-current assets plus net current assets		<u>11,118</u>	<u>10,940</u>
Non-current liabilities			
Provisions	12	(53)	(77)
Assets less liabilities		<u>11,065</u>	<u>10,863</u>
Taxpayers' equity			
General Fund		3,660	3,701
Revaluation Reserve		7,405	7,162
		<u>11,065</u>	<u>10,863</u>



Professor James Pendlebury
Chief Executive and Accounting Officer
 29 June 2016

The notes on pages 40 to 54 form part of these accounts.

Statement of Cash Flows for the year ended 31 March 2016

	Notes	2015-16 £000	2014-15 £000
Net cash inflow from operating activities			
Net operating income		(82)	193
Adjustments for non-cash transactions			
Depreciation	4	684	683
Amortisation	4	9	9
Non-cash inter-country transfers		-	2
Loss on disposal of property, plant and equipment	4	19	4
Notional audit fee		35	35
Movements in provisions	12	333	(18)
Decrease in inventories		2	-
Decrease/(increase) in trade and other receivables	9	(131)	35
(Decrease)/increase in trade and other payables	11	8	(898)
Movements in payables relating to investing activities		(25)	-
Use of provisions	12	(462)	(165)
Net cash (outflow)/inflow from operating activities		390	(120)
Cash flows from investing activities			
Purchase of property, plant and equipment	7	(258)	(211)
Purchase of intangible assets		-	(7)
Net cash (outflow) from investing activities		(258)	(218)
Cash flows from financing activities			
Net cash transfer from/(to) the Forestry Commission		-	219
Net financing		-	219
Net increase/(decrease) in cash and cash equivalents in the period		132	(119)
Cash and cash equivalents at the beginning of the period		136	255
Cash and cash equivalents at the end of the period		268	136

The notes on pages 40 to 54 form part of these accounts.

Statement of Changes in Taxpayers' Equity for the year ended 31 March 2016

	General Fund £000	Revaluation Reserve £000	Total Reserves £000
Balance at 1 April 2015	3,701	7,162	10,863
Changes in taxpayers' equity for 2015-16			
Net gain on revaluation of property, plant and equipment	-	247	247
Net gain on revaluation of intangible assets	-	1	1
Realised element of the Revaluation Reserve	6	(5)	1
Notional audit fee	35	-	35
Net operating expenditure	(82)	-	(82)
Cash surplus transferred to the Forestry Commission	-	-	-
Balance at 31 March 2016	3,660	7,405	11,065
Balance at 1 April 2014	3,234	6,680	9,914
Changes in taxpayers' equity for 2014-15			
Net gain on revaluation of property, plant and equipment	-	500	500
Non-cash charges: inter-country transfers	2	-	2
Realised element of the Revaluation Reserve	18	(18)	-
Notional audit fee	35	-	35
Net operating income	193	-	193
Cash surplus transferred to the Forestry Commission	219	-	219
Balance at 31 March 2015	3,701	7,162	10,863

The notes on pages 40 to 54 form part of these accounts.

Notes to the Accounts

Note 1. Statement of accounting policies

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 2015–16 *Government Financial Reporting Manual* (FRoM) issued by HM Treasury. Where the FRoM 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.

Forest Research recognises revenue when the amount of revenue can be reliably measured with reference to the terms and conditions of each contract and it is probable that future economic benefits will flow to it.

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 presentational 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 occupation 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 2013 and Smiths Gore (now trading under Savills), Chartered Surveyors, reviewed this.

Property is revalued annually as at 31 March using indices provided by Savills.

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: at fair value through profit or loss, loans and receivables, and available-for-sale financial assets. The classification depends on the purpose 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 at fair value through profit or loss

Financial assets carried at fair value through profit or loss are 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.

(b) Loans and receivables

Loans and receivables are recognised initially at fair value and subsequently measured at amortised cost using the effective interest method, less provision for impairment. A provision for impairment of loans and receivables is established when there is objective evidence that Forest Research will not be able to collect all amounts due. Any impairment is recognised in the Statement of Comprehensive Income.

(c) Available-for-sale financial assets

Available-for-sale financial assets are initially recognised and subsequently carried at fair value.

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 2016 have been adopted in these statements, taking account of the specific interpretations and adaptations included within the FReM.

1.16 Effective for future financial years

At the date of authorisation of these financial statements, the following standards relevant to Forest Research were issued but not yet effective:

IAS 1 Presentation of Financial Statements (Other Comprehensive Income);

IAS 19 Post-Employment Benefits (Pensions);

IAS 27 Separate Financial Statements;

IFRS 9 Financial Instruments, Classification and Measurement;

IFRS 11 Joint Arrangements;

IFRS 12 Disclosure of Interests in Other Entities; and

IFRS 16 Leases.

These standards have not been adopted by Forest Research ahead of their implementation date. The future impact of IAS 1 and 19 is not considered to be significant. IFRS 9, 11, 12, 16 and IAS 27 are still subject to consultation by HM Treasury. Forest Research will review and assess the impact following the outcome of these consultations.

Forest Research has also reviewed the changes in the FReM and determined that there will be no significant impact on the accounts from 2015–16.

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

	2015-16	2014-15
	£000	£000
Wages and salaries	6,026	6,131
Social security costs	480	485
Employer's superannuation costs	1,228	1,131
	7,734	7,747

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

Note 4. Other management costs

		2015-16	2014-15
	Notes	£000	£000
Travel and subsistence		514	539
Building maintenance		655	629
Utilities*		246	227
Training		83	94
Other expenditure		197	(42)
Computer supplies		40	63
Staff transfer expenses		28	8
Non-cash costs:			
Provisions – early departure costs:			
Provided in year	12	20	52
Unwinding of discount	12	-	4
Provisions – HMRC and other	12	(3)	84
Depreciation of property, plant and equipment	7	684	683
Amortisation of intangible assets		9	9
Loss on disposal of property, plant and equipment	7	19	4
Auditors' remuneration – notional cost		35	35
Total		2,527	2,389

* The photovoltaic panels at Alice Holt generated 25,548 kWh (2014-15: 25,062 kWh) of electricity.

Included within other management costs are charges from the Forestry Commission amounting in total to £64,000 (2014-15: £72,000).

Note 5. Materials and services

	2015-16	2014-15
	£000	£000
Materials and supplies	698	764
Central services provided by the Forestry Commission*	716	720
Vehicle lease charges from the Forestry Commission*	290	284
Contractors ~	447	621
Commissioned research	106	72
Protective clothing	11	14
Miscellaneous expenditure	150	232
Total	2,418	2,707

* Charges are made to Forest Research from the Forestry Commission, as appropriate, for assistance with field experiments, hire of vehicles, machinery and equipment and for personnel, business management, financial and other support services. The total charge from the Forestry Commission was £1,007,000 (2014-15: £1,004,000).

~ The level of spend on contractors is partially determined by the nature of the research work that Forest Research undertakes.

Note 6. Income

6.1 Income from the Forestry Commission

Forest Research undertakes the major proportion of the Forestry Commission's overall annual research programme in the form of specifically commissioned projects to deliver agreed outputs. A separate annual charge is agreed for each project based on full cost recovery. The 2015-16 charges amounted to £7,556,000, including £370,000 previously received from Inventory, Forecasting and Operational Support. In addition to the annual research programme, Forest Research provides other research and survey services for the Forestry Commission, the majority of which is on a full cost-recovery basis.

Income from Forestry Commission customers consisted of:

	2015-16	2014-15
	£000	£000
Research, development and other services to:		
Corporate and Forestry Support	7,556	7,350
Inventory, Forecasting and Operational Support	142	490
England	765	768
Scotland	1,127	1,228
Total	9,590	9,836

6.2 Other income

Other income generated during the year is broadly consistent with 2014–15 where Forest Research was successful in winning more external contracts, one of the aims to compensate for reduced income from the Forestry Commission. Other income consisted of:

	2015-16	2014-15
	£000	£000
Contracts for research and services	2,366	2,206
Consultancy	5	25
Ad hoc – sample analysis, supply of seeds, conferences, advisory, reimbursement of expenses	223	186
	<hr/> 2,594	<hr/> 2,417

Note 7. Tangible non-current assets

	Freehold land	Buildings	Scientific equipment	IT equipment	Other machinery and equipment	Assets under construction	Total
	£000	£000	£000	£000	£000	£000	£000
Valuation:							
At 1 April 2015	1,934	13,910	2,202	-	1,130	-	19,176
Additions	-	-	49	-	5	229	283
Transfers	-	224	-	-	-	(224)	-
Disposals	-	(17)	(22)	-	(39)	-	(78)
Revaluation to current prices	26	336	112	-	8	-	482
At 31 March 2016	1,960	14,453	2,341	-	1,104	5	19,863
Depreciation:							
At 1 April 2015	-	6,824	1,168	-	562	-	8,554
Provided in year	-	395	208	-	81	-	684
Disposals	-	(15)	(13)	-	(32)	-	(60)
Revaluation to current prices	-	174	57	-	4	-	235
At 31 March 2016	-	7,378	1,420	-	615	-	9,413
Net book value:							
At 31 March 2016	1,960	7,075	921	-	489	5	10,450
At 31 March 2015	1,934	7,086	1,034	-	568	-	10,622
Valuation:							
At 1 April 2014	1,913	12,918	2,170	24	958	103	18,086
Additions	-	21	40	-	-	150	211
Transfers	-	105	(6)	-	154	(253)	-
Disposals	-	(31)	(41)	(24)	(12)	-	(108)
Revaluation to current prices	21	897	39	-	30	-	987
At 31 March 2015	1,934	13,910	2,202	-	1,130	-	19,176
Depreciation:							
At 1 April 2014	-	6,008	980	20	480	-	7,488
Provided in year	-	386	213	3	81	-	683
Disposals	-	(27)	(41)	(24)	(12)	-	(104)
Revaluation to current prices	-	457	16	1	13	-	487
At 31 March 2015	-	6,824	1,168	-	562	-	8,554
Net book value:							
At 31 March 2015	1,934	7,086	1,034	-	568	-	10,622
At 31 March 2014	1,913	6,910	1,190	4	478	103	10,598

Fixed assets were revalued as at 31 March 2016 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 £4.4 million and £2.4 million, respectively, at 31 March 2016.

Note 8. Financial instruments

8.1 Financial instruments by category

All financial assets on the Statement of Financial Position are loans and receivables, except for £25,000 (31 March 2015: £25,000) which is classified as 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.

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.

EU contract income denominated in Euros and New Zealand Dollars forms only 3% 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

	2015-16	2014-15
	£000	£000
Current		
EU trade receivables	215	126
Other trade receivables	666	591
Total trade receivables	881	717
VAT	-	3
Other receivables	13	2
House purchase loans to employees	17	19
Prepayments and accrued income	789	827
Total other receivables	819	851
Total current receivables	1,700	1,568

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

As of 31 March 2016, £563,000 (2014-15: £431,000) were fully performing and not overdue or impaired and provided for.

As of 31 March 2016, trade receivables of £318,000 (2014-15: £286,000) were overdue but not impaired. These relate to a number of customers for whom there is no recent history of default. The age analysis of these trade receivables is as follows:

	2015-16	2014-15
	£000	£000
Months overdue		
Less than one month	35	52
One to two months	1	15
Two to three months	139	125
More than three months	143	94
	318	286

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:

	2015-16	2014-15
	£000	£000
Current		
Pounds sterling	1,072	900
Euros	627	656
Norwegian Krone	-	12
New Zealand Dollars	1	-
Total	1,700	1,568

9.2 Intra-government balances

	2015-16	2014-15
	£000	£000
Current		
Balances with other central government bodies	410	249
Balances with bodies external to government	1,290	1,319
	1,700	1,568

Note 10. Cash and cash equivalents

The following balances at 31 March are held at commercial banks (£5,000; 31 March 2015: £136,000) and the government banking service (£263,000; 31 March 2015: nil) and as cash in hand:

	2015-16	2014-15
	£000	£000
Opening balance at 1 April	136	255
Net change in balances	132	(119)
Balance at 31 March	268	136

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

As part of its normal activities Forest Research maintains sterling and Euro bank accounts primarily used for the receipt of income from non-Forestry-Commission customers. These accounts are cleared to the Forestry Commission's main account on a regular basis. Sums held in these accounts on behalf of partners in European Commission projects are treated as third-party assets and not included in the balances shown.

Note 11. Trade and other payables

	2015-16	2014-15
	£000	£000
Current		
Payments received on account	410	573
Trade payables	167	206
Taxation and social security costs	151	71
Other payables	15	-
Accrued expenses and deferred income	533	417
Total	1,276	1,267

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 2016 and 31 March 2015, with the exception of taxation and social security costs and £121,000 due to central government bodies as at 31 March 2015. Funds held on behalf of partners in European Commission projects are treated as third-party assets (see Note 17). At 31 March 2016 the amount held in Forest Research bank accounts on behalf of partners was £182,000 (31 March 2015: £258,000).

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

	2015-16	2014-15
	£000	£000
Current		
Pounds sterling	966	1,032
Euros	310	235
	1,276	1,267

Note 12. Provisions for liabilities and charges

	2015-16		2014-15	
	Other	Early departure costs	Other	Early departure costs
	£000	£000	£000	£000
Balance brought forward at 1 April	77	188	67	381
Provided in year	316	2	84	52
Provision not required written back	(3)	-	-	(158)
Utilised in year	(345)	(117)	(74)	(91)
Unwinding of discount*	-	18	-	4
Balance carried forward at 31 March	45	91	77	188

* The discount rate used to calculate unwinding and future costs is 1.3%.

Analysis of expected timing of discounted cash flows:

	Other	Early departure costs
	£000	£000
Less than one year	45	38
Later than one year but not later than five years	-	53
Balance at 31 March 2016	45	91

Forest Research meets the additional costs of benefits beyond the normal PCSPS benefits in respect of employees who retire by paying the required amounts annually to the PCSPS over the period between early departure and normal retirement date. Forest Research provides for this in full when the early retirement programme becomes binding on Forest Research by establishing a provision for the estimated payments.

An HMRC audit of Forest Research's treatment of VAT and Income Tax is underway. Provisions for HMRC liabilities have been raised during the year to address areas of non-compliance. All liabilities identified by HMRC were subsequently settled by 31 March 2016. The values are included within Other Provisions and amounted to £316,000 for 2015-16 (2014-15: £74,000).

Note 13. Capital commitments

There were £4,000 contracted capital commitments as at 31 March 2016 (2014-15: £nil).

Note 14. 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. There are no lease payments due in more than five years.

Obligations under operating leases comprise:

	2015-16	2014-15
	£000	£000
Land and buildings:		
Not later than one year	7	9
Later than one year and not later than five years	21	29
<hr/> Total	<hr/> 28	<hr/> 38

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

	2015-16	2014-15
	£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	83	88
<hr/> Total	<hr/> 110	<hr/> 113

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 15. Other financial commitments

There were no other financial commitments at 31 March 2016 (31 March 2015: £nil).

Note 16. Related party transactions

During the year, Forest Research has had a significant number of material transactions with the Forestry Commission, Forest Enterprise country agencies 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.

16.1 Transactions with the University of Southampton

	2015-16	2014-15
	£000	£000
The University of Southampton	8	2

The above transactions, for course fees, student stipends, samples and a collaboration agreement, occurred on an arm's-length basis. These transactions are disclosed as Peter Freer-Smith holds a visiting professorship at the University of Southampton. There was an outstanding balance of £4,749 at 31 March 2016 (31 March 2015: £nil).

16.2 Transactions with C-Cure Solutions Ltd

	2015-16	2014-15
	£000	£000
C-Cure Solutions Ltd	13	20

The above relates to charges to C-Cure in respect of accommodation used at Alice Holt and water sample analysis undertaken in the Forest Research laboratories. There was an outstanding balance of £3,473 at 31 March 2016 (31 March 2015: £58). This is disclosed as, under the Agreement to form the company, James Pendlebury was appointed as the Forest Research Director of the company.

Note 17. 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.

	2014-15	Gross inflows	Gross outflows	2015-16
	£000	£000	£000	£000
Monetary third-party assets – Government Banking Service balances	183	-	(1)	182
Monetary third-party assets – Commercial bank balances	75	389	(464)	-

Note 18. Events after the reporting date

In accordance with the requirements of IAS 10, events after 31 March 2016 are considered up to the date on which the accounts are authorised for issue. The authorised for issue date is the date of the Comptroller & Auditor General's audit certificate.

On 23 June the UK voted to leave the European Union (EU). FR participates in a number of EU-funded projects each year and benefits from such collaboration. The Government has two years under the Article 50 process to seek to negotiate the terms of the UK's exit, with the possibility of extending this time frame with the agreement of the other 27 Member States.

The decision to leave the EU has no impact on the figures disclosed in these accounts, and the long-term implications for FR are not yet known.



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ISBN 978-1-4741-2873-5



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