This is a spreadsheet that tracks progress of English forestry's key research needs in the programmes arising from the Science and Innovation Strategy for Forestry in Great Britain 2014.
The needs have been imported from the document "Critical Research Questions for England"
For each need, the spreadsheet collates the following status information:
RAG: shows how confident the lead person is that the need will be delivered without having to do something more than already agreed.
Risk: is the product of the likelihood and impact of harm to FS if the need is not delivered. Because we know what Government forestry policy is this allows us to test the priority of the project, i.e.: risk = priority.
It also shows key issues to escalate.
Project leads should ensure that the RAG, risk, milestones and issues fields are up to date prior to each quick catch-up NEt meeting (every two months).
The Change Management team (Paul Marshall lead) in Strategic Development Team will own the spreadsheet and facilitate updates
An overall rating will be tracked into the management information that tracks overall RAG and risk status for the business plan and will be included in the management information

Forestry Commission England research portfolio

Ref.	FS Business Plan prog. no.	Research prog. No	Research need	Lead Contact	RAG	Issues Identified / Recommended Actions	Likelihood of harm to Forest Services if the project is not completed	Impact of harm to Forest Services if the project is not completed	Risk score	Risk Category	T:Drive - Hyperlink to supporting documentation, e.g.: Forest Research website
1	3	2	How can the resilience of trees to pest or disease threats be evaluated at a range of scales ?	Isted, Rebecca	Amber/Green		4 - Probable	4 - Major	16	Significant	
2	3	3	What tree species and silvicultural systems should we be encouraging to produce resilient woodlands and what are their requirements?	Weir, John	Amber/Red	In the programme but not with funding allocated.	4 - Probable	4 - Major	16	Significant	
3	3	3	How can breeding and selection for resistance to pests, disease and climate change improve long-term resilience?	Weir, John	Amber/Red	In the programme but not with funding allocated.	4 - Probable	4 - Major	16	Significant	
4	4	1	Do we know enough to prevent further damage and return afforested acid-sensitive catchments to good ecological status without unnecessary impact on the forestry sector ?	Carter, Vince	Amber/Green		3 - Possible	4 - Major	12	Material	
5	1	1	A single simplified question to cover: How are host susceptibility and pest behaviour influenced by changes such as climate change, changing silvicultural practice and changing age structure ?What impact can introduced pests have on native species occupying the same niche ? What interaction is there between the impact of newly established and endemic pests ?	Broadmeadow, Mark	Amber/Green		4 - Probable	4 - Major	16	Significant	
6	1	3	What adaptive strategies and management techniques, including silvicultural systems such as coppicing and pollarding, can be developed to reduce the risk and effects of pests and diseases and what are their impacts ?	Broadmeadow, Mark	Amber/Green		4 - Probable	4 - Major	16	Significant	
7	4	4,7	How can we better instigate behaviour change in owners to enable and encourage a more co-operative approach to the management of forests ?	Townsend, Helen	Amber/Green	Covered in prog 4 and 7, I think. Helen T please check.	4 - Probable	4 - Major	16	Significant	
8	3	3, 4?	How can we better build consensus with the public on controversial methods to manage pests and disease such as wildlife management, biological control, lack of intervention and use of pesticides ?	Townsend, Helen	Amber/Green	Seemed to be covered, Helen please confirm. This is still a critical question for England, even more so in the light of deer and squirrel reviews.	4 - Probable	4 - Major	16	Significant	
9	1	2	A simplied question to cover: How can the rapid detection of pests be improved? How can we better understand and respond to pest introduction pathways? What can we do to achieve a better understanding of how the outputs of modelling can be interpreted to inform pest response strategy? How do we improve our ability to respond appropriately to the priorities identified through the risk register and contingency planning processes (to include short-term work to prepare PRAs)? How can we improve our use of diagnostic techniques?	Weir, John	Amber/Green		4 - Probable	4 - Major	16	Significant	
10	4	2	What appropriate success criteria and indicators might be used to select biosecurity response options and to monitor their effectiveness and how would these be chosen, used and evaluated ?	Isted, Rebecca	Amber/Green		4 - Probable	4 - Major	16	Significant	
11	4	7. External	How can the effectiveness of citizen science projects be evaluated and improved ?	Townsend, Helen	Amber/Red	Seemed to be covered in Rgoers external research programme, Helen plese could you follow up.	3 - Possible	4 - Major	12	Material	
12	X-cutting	4?	What are the most effective methods to inform, enable, engage and deliver useful results from the public on issues such as biosecurity, increasing woodland resilience and climate change (for example through citizen science programmes, community ownership and management)?	Townsend, Helen	Amber/Red	Covered in part in programme 4 regarding effective methods of engagement.	3 - Possible	4 - Major	12	Material	
13	X-cutting	4,7	What are the barriers to behaviour change which will ensure that the results of the research are adopted and become part of mainstream activity ?	Townsend, Helen	Amber/Green	Seems to be covered, Helen T please confirm.	4 - Probable	4 - Major	16	Significant	
14	X-cutting	4,7	How effective is traditional knowledge transfer and is moving away from this approach towards “knowledge exchange” and “knowledge Integration” achievable and effective ?	Townsend, Helen	Amber/Green	Seems to be covered, Helen T please confirm.	4 - Probable	4 - Major	16	Significant	

15	X-cutting	4	How can the value of woodlands and their associated services be captured and articulated so interactions between services (such as biodiversity, sustainable management, tourism, landscape, heritage and access) are maximised? Furthermore how can these benefits be achieved at both landscape and local level ?	Driver, Dominic	Amber/Green		3 - Possible	4 - Major	12	Material	
16	X-cutting	4	What payment methods for ecosystem services are most likely to result in beneficial impacts in the real-world (such as increased woodland creation and sustainable management) and how do we identify the provider of the money/service ?	Tubby, Ian	Amber/Green	We want FR to be innovative on this and push ahead with commercial applications, don't wait for policy to catch up.	3 - Possible	4 - Major	12	Material	
17	3	4	How can assessment and valuation tools such as iTree be adapted to UK conditions and developed to value benefits over time in a manner that allows users to easily undertake valuation exercises at a range of geographic scales ?	Smith, jim	Amber/Green	But note we think there is duplication with external research funding on urban forest valuation.	3 - Possible	4 - Major	12	Material	
18	3	3?	How can the particular challenges facing the urban forest (e.g. ensuring species chosen are resilient to climate change, spread of pest and diseases, and impact of liability concerns) be better understood to ensure the full benefits, of the urban forest are realised ?	Smith, jim	Amber/Red	Programme 3 covered in part in terms of suitable trees species and their impacts. Wider issue of full benefits of urban forest may not be covered	3 - Possible	4 - Major	12	Material	
19	4	4?	How can the longer term impacts of social interventions within woodlands and forests be evaluated* at both individual and community level ?	Townsend, Helen	Amber/red	Possibly in scope of programme 4. Helen T to advice Ian how much this should be pushed relative to other asks of social research in the programme.	3 - Possible	3 - Moderate	9	Material	
20	4	2. External	What are the relationships between undisturbed forest soils and above-ground biodiversity value ?	Isted, Rebecca	Amber/Green	Was listed by Roger in his presentation.	3 - Possible	3 - Moderate	9	Material	
21	4	1 External	What are the sensitivities of undisturbed forest soils to the impacts of climate change and how can the impacts best be mitigated ?	Broadmeadow, Mark	Amber/Green		3 - Possible	3 - Moderate	9	Material	
22	5	4	How can forestry be incorporated into domestic and international carbon markets and agreements ?	Broadmeadow, Mark	Amber/Green		3 - Possible	4 - Major	12	Material	
23	4	n/a	Through collaboration with the Biomass Energy Centre or any successor body, how can the knowledge supply chain promoting the use of timber for bioenergy be further improved and thus how can greater uptake/implementation of this knowledge be encouraged and monitored?	Tubby, Ian	Red	No longer a priority research question with FR [and us? - I'm assuming us at the moment, please could Ian advise]	2 - Unlikely	3 - Moderate	6	Manageable	
24	4	n/a	What is the potential for growth in the number of direct and downstream jobs in the forestry workforce represented by increased area of woodland in management in a range of locations and silvicultural systems/management scenarios?	Fowkes, Steve	Red	No longer a priority research question with FR. The information is important but we have other ways to answer the question – Steve F to take forward	2 - Unlikely	3 - Moderate	6	Manageable	
25	5	6?	How do management interventions affect future growth and yields in light of projected climate change ?	Broadmeadow, Mark	Amber/Red	Possibly in programme 6, still a critical research question – check with Mark B. Data already available through ESC	3 - Possible	4 - Major	12	Material	
26	4	5	How do the properties of UK timber currently reaching market compare to the properties needed for modern timber products and timber use ?	Tubby, Ian	Amber/Green		3 - Possible	3 - Moderate	9	Material	
27	4	5	What species and silvicultural systems will provide fibre with the properties needed to meet future market demands (for example timber properties for joinery, construction and biochemical purposes)? Collaborative work with timber engineers, architects and retailers may be needed in the future .	Tubby, Ian	Amber/Green		3 - Possible	3 - Moderate	9	Material	
28	4	5	What is the effect of continuous cover forestry and other establishment and management systems on timber quality ?	Weir, John	Amber/Green		3 - Possible	3 - Moderate	9	Material	
29	4	5	What silvicultural systems best reflect the various needs of hardwood timber markets (such as construction, joinery and biomass)?	Tubby, Ian	Amber/Green		3 - Possible	3 - Moderate	9	Material	
30	4	n/a	What cost effective, certified, stress grading equipment and simple methodologies could be developed for use by smaller wood processing businesses, in particular those using hardwood species?	Tubby, Ian	Red	Not a critical research question, for business to take forward	2 - Unlikely	3 - Moderate	6	Manageable	

31	4	5	What are the timber properties of UK grown hardwoods (durability, strength, stiffness, kWh per m3 etc.) in relation to a variety of woodland types and silvicultural regimes especially small diameter material, diseased timber and unmanaged woodland?	Tubby, Ian	Amber/Green		3 - Possible	3 - Moderate	9	Material	
32	3	3	How do practical measures & management interventions affect priority species in light of projected climate change?	Broadmeadow, Mark	Amber/Green		3 - Possible	4 - Major	12	Material	
33	4	n/a	What is the current and projected size, nature and distribution of the forestry workforce, in particular the workforce age profile and skill level/training need?	Fowkes, Steve	Red	Not a critical research question, information is still needed but can be accessed through NEt and CONFOR	2 - Unlikely	3 - Moderate	6	Manageable	
34	4	n/a	Can increasing the number of integrated forestry qualifications, before and at degree level and within a strategic professional framework, best assist the development of a skilled forestry workforce and if so, how would this be achieved?	Fowkes, Steve	Red	Not a critical research question, information is still needed but can be accessed through NEt and ICF	2 - Unlikely	3 - Moderate	6	Manageable	
35	5	1	What is the optimum location to plant new woodlands ?	Broadmeadow, Mark	Amber/Green	Covered by publication of existing work (carbon calculator, wood and water etc. Remaining work covered by Programme 1	3 - Possible	4 - Major	12	Material	
36	3	1	What is the role of landscape scale (i.e. more widely focussed than individual sites) adaptation in forestry? What evidence is there that landscape-scale approaches to climate change adaptation are effective ?	Broadmeadow, Mark	Amber/Green	Covered by existing publication and remaining work in Programme 1	3 - Possible	4 - Major	12	Material	
37	5	1 and 4	What are the benefits of different types of woodland creation and management for a range of ecosystem services, particularly water quality/availability, flood risk ecosystem service objectives and public health benefits ?	Broadmeadow, Mark	Amber/Green		3 - Possible	4 - Major	12	Material	
38	5	1, 4, and 5	How can forestry's role in climate change mitigation be optimised ?	Broadmeadow, Mark	Amber/Green		3 - Possible	4 - Major	12	Material	
39	4,5	4	How can changes in landowner behaviour be enabled to encourage woodland creation and sustainable management ?	Townsend, Helen	Amber/Green	Covered by segmentation study / URS report and for PES in programme 4. Also the mechanisms work in 4. We want FR to include radical changes in the role of the state in the scope of their research.	4 - Probable	4 - Major	16	Significant	
40	4,5	6. External	What is the applicability of international woodland investment/delivery models to advise and promote woodland creation and management in England ?	Broadmeadow, Mark	Amber/Green	I think this was covered in Rogers list.	4 - Probable	4 - Major	16	Significant	
41	4,5	n/a	How have historic and existing grant/incentive systems, in this and other countries, affected woodland creation and management and what lessons can be learned to improve the situation in Britain.	Driver, Dominic	Red	No longer a critical research question	2 - Unlikely	4 - Major	8	Manageable	
42	X-cutting	2, 3, 6	The development (or at least maintenance) of the series of permanent sample plots managed by Forest Research was highlighted as an irreplaceable data resource that could be called upon by the Sustainable Forest Management; Monitoring and Biosecurity and Forests and Climate Change research programmes, amongst others.	Broadmeadow, Mark	Red	FR programme managers predicts this will not be sustained in year 1. General problems in prog.6 navigating between IFOS and FR and budgetting. £200k a year needed.	4 - Probable	4 - Major	16	Significant	
43	X-cutting	4, 5, 6	What is the size and condition of the English woodland resource and how will it change in response to different management decisions, climate change and natural disturbance events ?	Broadmeadow, Mark	Amber/Red	Problem in programme 6 navigating between IFOS and FR and budgetting. I think we'd want remote sensing development in here as well.	4 - Probable	4 - Major	16	Significant	
44	3	2,3?	How to enable landowners to collaborate to get grey squirrel populations into a better balance with forestry?	Isted, Rebecca	Amber/Green	Not in the previous England's critical research needs document but has becoome higher profile in recent years.	3 - Possible	4 - Major	12	Material	
45	X-cutting	n/a	High quality, flexible science function	Driver, Dominic	Amber/Green	We need to keep this flexibility in here somewhere.	4 - Possible	4 - Major	16	Significant	

Low	Medium	High	
1 - Low	2 - Minor	3 - Moderate	5 - Extreme
			5 - Highly
1 - Remote	2 - Unlikely	3 - Possible	Probable

Manageable
Material
Significant

Green
Amber/Green
Amber/Red
Red

Completed
Failed
To be confirmed

Abandoned

FS/1 - Failure to control pests and diseases
FS/2 - Forest Services lacks the resources needed to meet delivery expectations.
FS/4 - Failure of the FC in its fundamental protection role (excluding Pests & Diseases)
FS/5 - Failure in systems (e.g. GLOS) and compliance (failure to comply with Rural Development Regulations & adherence in audit compliance for co-financing).
FS/7 - Failure to provide an adequate policy framework to support the change of emphasis by government/European Union.
FS/11 - Pace of change and uncertainty around future of FS distracts from successful delivery
FS/12 - Inadequate forestry budget, incentives and delivery mechanisms in next Rural Development programme 2014-20
FS/13 - Inadequate financial support to sustain the management and delivery of the Big Tree Plant
FS/14 - FC England's plans to reform Regional Advisory Committees and refresh their membership by December 2013 fail to complete successfully with result that FS cannot access required advice on disputed cases or gain wider stakeholder advice and chal
FS/15 - The Forestry Sector, and our own staff lack capacity (money, people and skills) to respond to FC withdrawal/reduction in resource allocation.
FS/16 - Brockholes Financial Viability Failure

Likelihood / Impact	Remote (1)	Unlikely (2)	possible (3)	Probable (4)	Highly Probable (5)
Extreme (5)	5	10	15	20	25
Major (4)	4	8	12	16	20
Moderate (3)	3	6	9	12	15
Minor (2)	2	4	6	8	10
Low (1)	1	2	3	4	5

1-7	**Manageable Risks** Overall rating is 7 or less. Content to carry these risks.
8-14	**Material Risks** Overall rating is 8 – 14. Concerned about these risks.
15-25	**Significant Risks**: Overall rating is 15 or above. Most concerned about these risks.

lenge on policy delivery.

Risk Status

Rag /Risk	Manageable	% Manageble	Material	% Material	Significant	% Significant	Notes
Completed	0	0%	0	0%	0	0%	
Green	0	0%	0	0%	0	0%	
Amber / Green	0	0%	18	46%	12	31%	
Amber / Red	0	0%	5	13%	3	8%	
Red	6	15%	0	0%	1	3%	
Abandoned	0	0%	0	0%	0	0%	

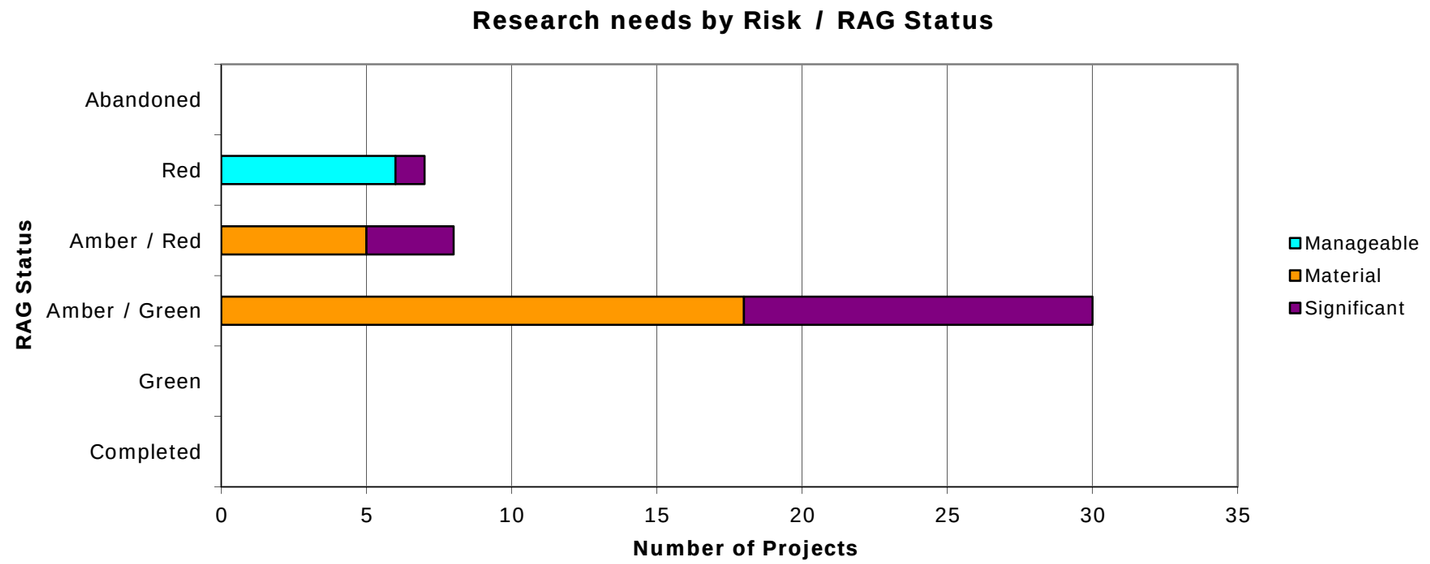

Table to show research needs we most need to work on to further improve our delivery confidence.

		Risk rating			
		Manageable	Material	Significant	Notable projects
DELIVERY CONFIDENCE	Completed	0	0	0	
	Green	0	0	0	
	Amber - green	0	18	12	
	Amber - red	0	5	3	What tree species and silvicultural systems should we be encouraging to produce resilient woodlands and what are their requirements? How can breeding and selection for resistance to pests, disease and climate change improve long-term resilience? What is the size and condition of the English woodland resource and how will it change in response to different management decisions, climate change and natural disturbance events?
	Red	6	0	1	The development (or at least maintenance) of the series of permanent sample plots managed by Forest Research was highlighted as an irreplaceable data resource that could be called upon by the Sustainable Forest Management; Monitoring and Biosecurity and Forests and Climate Change research programmes, amongst others.
	Abandoned	0	0	0	

Delivery index **40**