

<p>Institution: Royal Agricultural University</p>
<p>Unit of Assessment: 6 Agriculture Veterinary and Food Science</p>
<p>a. Overview</p> <p>The Royal Agricultural University (RAU) is the oldest agricultural college (1845) in the English-speaking world, but also the newest, gaining university title in 2013; until 2000 it was outside the public sector. The RAU was founded with the express aim of delivering what is now termed translational research in a period of rapid scientific and technological developments. It is one of the smallest universities in the UK but has doubled in size during this REF period from ~600 students in 2007 to over 1100 in 2013. Increased size and natural turnover has enabled growth in academic staff during the latter part of this period, allowing realisation of the strategic plan to recruit research active staff to increase research capacity. Growth and level of research activity needs to be set within this transition. Historically the focus has been on teaching but research is also core to the mission, growth and development of the university. The acquisition of RDAP was set as a medium term objective in the Corporate Plan in 2010-14 and is supported by clear targets in the new 2014-2019 Corporate Strategy.</p> <p>The University is currently organised into three Schools: Agriculture and Food (SoAF); Real Estate and Land Management (RELM); and Business & Entrepreneurship (SoBE). A School of Equine Management and Science is planned for 2014 and a School of International Agri-food Business and Policy is under consideration for 2014/5. However, research activity is managed on a university-wide basis due to the close relationship between all schools. Traditionally it has been focused on near-market and applied research and knowledge exchange both in this country and overseas, playing to its excellent connections with rural and land-based industries. This focus has driven investment decisions and fits with Government policy, exemplified in the anticipated 'UK Strategy for Agricultural Technologies' published in July 2103. Each research group has a designated leader, but staff from across the schools may contribute to any of the groups thus encouraging an interdisciplinary approach.</p> <p>The submitting unit is based in the School of Agriculture and Food and comprises two research groups (i) Sustainable Agriculture, Food and Rural Economy, led by the Vice Principal, Professor Paul Davies, with strong support from the Director of Research, Dr John Conway, and Dr Richard Baines, and (ii) Equine Research Group, led by Drs Hemmings and Moore-Colyer: a new Dean will be appointed to lead the new School of Equine Management and Science planned for 2014. Recent senior appointments and developments in SoBE and RELM will enable submissions from Business and Built Environment Units in future.</p> <p>The RAU is a member of GuildHE and its Hefce-supported research unit, the Consortium for Research Excellence, Support and Training (CREST) is chaired by the RAU Principal, Professor Chris Gaskell. Our research degrees are currently validated by Coventry University (see also 5b).</p>
<p>b. Research strategy</p> <p>The declared strategy at the start of this REF period was to increase research activity by a number of measures including appointing research active staff; pump priming research with small project grants and targeted PhD funding; and to develop the research infrastructure and environment with a clear medium-term objective of Research Degree Awarding Powers (RDAP).</p> <p>Recent increases in staff numbers and turnover have permitted appointment of research active staff, including the appointments of research-active Deans to the Schools of Business & Entrepreneurship (SoBE) and Real Estate & Land Management (RELM) in 2012 and in 2011 to the School of Agriculture and Food (SoAF). A new research professorship in SoAF, the Bomford Chair in Applied Agricultural Mechanisation, was created and filled in 2012 with external sponsorship (below). New, research-active postdoctoral lecturer appointments have been made in all schools SoAF (3 in 2010/11), SoBE (6; 2013) and RELM (2; 2013) to build research capacity for the future.</p> <p>The development of an active research culture is the responsibility of the Director of Research (DoR) and the University Research Committee. The post of DoR was created in 2012 with a key responsibility for the oversight of postgraduate training, seminar series, and the management of the devolved powers from the Coventry University [which validates our research degrees] for the evaluation and progression of PhD students.</p> <p>The strategic aim of achieving RDAP will continue to drive a number of developments, both infrastructure investments and research student recruitment policy. There have been extensive infrastructure investments during this period [detailed in 5d], especially the purchase of Harnhill</p>

Environment template (REF5)

farm (2009; £2.4M) as an outdoor laboratory, and the construction on the farm of a Research and Innovation Centre (opened November 2013; £1.2M). Sponsorship from the Douglas Bomford Trust (£175K over 5 years) enabled appointment of a Chair in Applied Agricultural Mechanisation in 2012 which underpins our research initiatives pre-empting the Government's 'UK Strategy for Agricultural Technologies': these are included in the Corporate Plan (2014-19) under the strategic aims of 'Engaging with industry to develop cutting-edge research' and 'Delivering real-world research to enhance global agri-food business policy.'

These investments and strategic aims are catalysing the creation of an Agri-technology Research Centre which will focus on the application of digital and sensor technology to agricultural issues, translation of research and knowledge exchange. New and existing strategic links with other academic and industrial partners are being developed, focusing on improving dairy cow management using novel sensor technology to monitor health and performance and reduce emissions, and biodegradable field sensors for mass environmental monitoring. The institutional strategic plan for 2014-2019 includes significant investment in both campus and farm-based laboratories. Other areas in the UoA which will substantially benefit from the staff and infrastructure investments include research into the development of integrated sustainable farming systems; food security, quality and safety; and the application of social science to rural issues (below).

Recent investment in staff in the SoBE will support research in the development of sustainable and accessible food supplies through global supply chain management as part of agri-food business and policy, with an emphasis on international partnerships. RELM strategy is focused on both the existing remit for land use, and the development of research activity in the built environment working towards a REF submission in this area in 2020. This will also contribute to the maintenance of the Threshold Standards for Research and Innovation currently in place and required by the RICS-HEI Partnership.

The strategic policy of issuing calls for pump priming monies for small projects by competition has stimulated some areas of research, namely Hemmings [equine] and Grange [soil carbon] leading to the development of PhD projects. The policy of issuing calls for PhD funding from internal monies by competition has stimulated ideas for research and increased research student numbers [6 applications, 3 appointed in 2009, and again in 2013, 9 applications, 3 approved: the selection panel was chaired by an external visiting professor to ensure quality and impartiality]. This builds capacity towards development of bids for external support for postgraduate research students with targets to recruit 10 PhD students per year to meet RDAP criteria. The number of PhD students has risen towards the end of the REF period and now stands at 13 currently registered. The importance of publishing such research in high quality peer-reviewed papers and using this as a platform for project grant applications and postdoctoral funding is fully recognised: staff are encouraged and mentored to achieve this aim, and encouraged to collaborate both internally and externally to facilitate this. [In this context see 5d re the increase in research income to date for 2013-14].

The **Sustainable Agriculture, Food and Rural Economy** research group is based mainly in the SoAF but involves staff from all Schools; its rationale is to promote higher yield and quality food within sustainable agricultural production and social systems. Its main achievements include

- Sustainable intensification (i) developing integrated farming systems combining legumes for nitrogen accumulation with reduced cultivation systems to promote soil conservation; (ii) wireless telemetry and biosensors to monitor dairy cattle health and performance; developing novel technology for environmental sensors.
- Food security, quality and safety (i) benchmarking, risk assessment and enhancing quality assurance in national and international food supply chain; (ii) systems [radio frequency, irradiation etc.] to preserve food quality and safety; (iii) developing theoretical frameworks for international food supply chains (iv) developing models for alleviating food poverty in urban areas.
- Application of social science to rural issues – (i) social capital in rural communities and its importance in knowledge exchange, including in relation to farmer attitudes to bovine tuberculosis (bTB) control and policy; and greenhouse gas (GHG) emissions from livestock and implications for policy.
- Environmental Policy - factors influencing biodiversity in both organic and conventional farming systems, evaluating effectiveness of CAP and agri-environment schemes to deliver economic

and environmental objectives.

The **Equine Research Group** based in the SoAF (but transferring soon to the new School of Equine Management and Science) works in two main areas; (i) the molecular basis of stereotypical behaviour and brain function and how this relates to health and welfare and optimal competition performance; and (ii) improving health, nutrition and behaviour through studies on digestion and processing of forage, in particular putative links between health of the gastro-intestinal tract and behaviour, and behavioural and physiological consequences of feeding a diet rich in fibre coupled with pro-biotic supplements such as live yeast.

Much of the work of the RAU is applied, near-market or contract research in agriculture and land-based studies; most of it demands an interdisciplinary approach and many projects involve staff across disciplines or Schools. As a relatively small institution, the RAU particularly recognises the value of external multi or interdisciplinary collaborations to augment expertise, facilities and funding opportunities. The RAU has numerous interdisciplinary collaborations with universities (e.g. Aberystwyth, Cambridge, Leeds, and Harvard) and with industry and professional bodies (e.g. Royal Institution of Chartered Surveyors, British Trust for Ornithology, Cotswold Seeds, Pasture Led Farmers Association and other farmer groups) [for details see 5e].

The RAU is a partner with the University of Gloucestershire and Hartpury College in the Countryside and Community Research Institute (CCRI) where RAU natural and physical sciences are complemented and interact with social science (e.g. Fisher, Manley, Gaskell, see 5e); Baines and Conway have also been developing mixed social-physical science studies on how farmers relate to different sources of information. Fisher holds a Defra Fellowship based in Westminster, sharing knowledge and expertise between academia and government.

The RAU has established a Centre for Translational Research to promote effective knowledge exchange and the facilitation of agricultural and food chain innovation, entrepreneurship and human development in order to meet the challenges of supplying food to a growing global population whilst maintaining the opportunities for future generations to meet their food security requirements.

RAU has been at the forefront of knowledge transfer since its inception; most recently through Rural Development Agency and European Development Fund funding to work with farmers, industry and public bodies. For example, training days on climate change, renewable energy, trees on farms, flock science and CAP for farmers, agricultural industries and public bodies including the Environment Agency, Natural England and Defra-funded groups. Also, a three day course for 18 Defra employees entitled 'Insight into Agriculture', including Fisher's research about bovine tuberculosis and the social context of current policy, based on her PhD and subsequent on-going research. The RAU have organised Prince Charles' Farming Summer School.

The RAU publishes a research blog promoting our developments, publications etc. and also commenting on current research issues/initiatives of national/international importance. We also publish a quarterly research newsletter with longer articles. There is a regular programme of research seminars given by staff and PhD students which all researchers and taught postgraduates are expected to attend. RAU staff development days include sessions on research, grant applications and publication skills; inexperienced staff are mentored by more research active members of staff; PhD supervisory teams normally include a junior member of staff being mentored.

Although much research activity is e.g. consultancy reports or policy documents, staff are encouraged to publish their research findings in peer reviewed journals and to present papers at scientific conferences. In this context the Equine Group have organised three major conferences to promote their research: 2010, European Workshop on Equine Nutrition, (200 delegates from over 10 countries) in conjunction with the European Association of Animal Production (EAAP) and the British Society for Animal Science (BSAS); and including keynotes by Moore-Colyer and Hemmings at 2012 (150 delegates from the UK and Ireland) and 2014 'Horses Inside Out' Annual Conference.

c. People, including: (i) Staffing strategy and staff development

The Research Strategy is predicated on two strands, recruiting research active staff whenever the opportunity arises [this year we have had the opportunity to take on eight new lecturers, two new Deans, and through the Douglas Bomford Trust sponsorship, a new research Chair in Applied

Agricultural Mechanisation) and on building capacity in the existing teaching-focussed staff through staff development, mentoring and training sessions. The RAU operates a strict Equal Opportunities Policy in recruitment, employment and progression. The Staff development policy has the following objectives

- To provide a research ethos and culture which develops a balanced research and consultancy capacity at strategic, applied and translational levels for the benefit of businesses and organisations nationally and internationally, and which supports the educational activities and applied mission of the institution.
- To attract, develop and retain top quality academic staff who can command respect in their field of expertise; to treat them justly and equally, support and encourage them to achieve their maximum capabilities, and reward them fairly for their work. The research capability will be enhanced through appointment of staff who are research-active.
- To encourage and enable staff to develop their research and consultancy abilities through staff development and mentoring activities
- To increase research to a quality that is recognised both nationally and internationally and builds on our knowledge of the needs for research in our sectors.
- To provide outstanding facilities to support and enhance the academic research efforts of the RAU, and to manage the resources efficiently and effectively.
- To provide a supportive forum for currently research active staff as well as staff who are keen to become involved in research.
- To promote research opportunities and sources of funding, and encourage both internal and external collaboration.
- To organise research dissemination exercises such as seminars or conferences both internally and externally.
- To establish a 'Papers in Progress' (PIP) forum for staff to circulate papers to others for comment before submission.
- To establish a bid writing forum whereby staff work together to write bids and peer review bids before submission.
- Encouragement is also provided by offering pump priming and PhD funding by competitive tender to build staff capability to bid for grants to acquire more funded PhDs and postdoctoral scientists.

(ii) Research students

Doctoral research training is provided to all research students, MSc and PhD alike. During this REF period, our relationship with Coventry University changed from one of associated institution status, whereby our research students attended training modules at Coventry, to validated degree programme status, whereby we take ownership, control and development of the management of the research degree programmes. Two research training modules have been developed and are taken by all research degree students; Research Induction (induction to research, facilities, supervision etc.) and Research Skills (a comprehensive methodology, skills and stats training programme) from which students are directed to take relevant sections depending on the nature of their research. Specific training is provided as required for individual students in statistics (e.g. by software providers) and modelling.

The RAU overcomes dis-economies of scale by being a member of GuildHE's research unit, the Consortium for Research Excellence, Support and Training (CREST), chaired by the RAU Principal, Professor Chris Gaskell, which enables small, specialist institutions to build on existing research strengths and enhance their collective and individual research cultures by pooling resources and offering a range of services to support research management, including staff and PGR training and development. The RAU is developing its Open Access Repository using the CREST Collections shared facility.

A dedicated postgraduate research centre has been established adjoining the PostGrad Centre such that PGR and PGT students can interact. All research students are based here creating a research community and culture. Research students are required to give internal seminars each year and to contribute to both the CREST Symposia (<http://crest.ac.uk/crest-symposia/>) and to external subject conferences whenever possible; they are also expected to take the lead in writing papers with their supervisors. Training and mentoring are given in presentation and writing skills. Training courses are provided in Genstat and other statistics software as

required.

To increase PhD recruitment, the RAU has a policy of issuing calls for competitive bids for PhD funding from internal monies (see 5b for details). We have also initiated an MSc by Research programme as an alternative for self-funded applicants. We encourage our PGT students to consider research as the next step, in particular we have recruited researchers from our highly competitive and prestigious African Land and Food Fellowship (ALFF) programme (200 have applied annually for ALFF for last 6 years, we award about 10 PGT fellowships annually and on average one goes forward to PhD; we have two here currently and are about to take on a third). We encourage successful PhDs to undertake post-doctoral research and are currently funding one post-doc to further develop student writing skills; she is developing our own peer-reviewed journal to engage PGTs in publishing work of sufficient quality. We have developed a strategy to increase research output by providing low cost opportunities for self-financing post-docs (4 this year) to work with our staff.

d. Income, infrastructure and facilities

Academic research income has averaged ~ £68K pa over the REF period but RAU has also delivered nearly £1M of applied research for commercial companies including work in RAU core themes of ~ £170,000 in the rural and land based sectors; £260,000 in agriculture; £90,000 on international rural development; £150,000 in conducting agricultural trials and £220,000 in projects focusing on the food chain. This includes some subcontracted work which is funded from government research projects (for example, the Food Standards Agency). During this financial year (2013-14) projects already confirmed are valued at £87,159 for consultancy and £237,325 for contract research, marking a substantial rise from previous years.

All infrastructure and facilities are available for researchers across the HEI; the Schools are mainly for the coordination and management of teaching. Research projects often involve staff from other Schools [e.g. SoAF with SoBE or RELM are typical] as our ethos is within the rural economy. Our farms are used by all three Schools; our labs provide analytical facilities for many cross-HEI projects.

During this REF period the University has made major investment in infrastructure and facilities which help underpin research. Farms are a valuable facility and outdoor laboratory for research teams, and farm staff are familiar with the requirements of field-based research. £2.4M was invested in purchasing Harnhill Farm (235ha) in 2009 primarily for research, specifically translational research, and teaching; it is the locus of three PhD field projects measuring nitrogen dynamics in farm soils and carbon sequestration in hedgerows; and of the interdisciplinary DART project (Detection of Archaeological Residues using Remote Sensing Techniques; 2010-13, led by University of Leeds; £815K, AHRC and EPSRC funded). A further £1.2M has been invested on the farm in a Research and Innovation Centre (opened November 2013). A collaborative arrangement in 2009 with Kemble Farms Ltd has provided access to a 900 cow dairy unit and anaerobic digestion facility for teaching and research.

Equine research facilities including an outdoor all weather riding surface for gait analysis and behavioural research (maze tests etc) have been installed at Fosse Hill Farm (£102K in 2013). A major campus redevelopment provided the Emrys Jones centre for postgraduate study (£1.2M in 2010) and a dedicated Research Centre was added (£80K in 2010) providing research students with IT facilities, offices and shared social space to encourage a research community ethos and academic interaction. Taught MSc students (Equine Science and Sustainable Agriculture) are encouraged to interact with the research students, especially to discuss their dissertations. Further renovations in the laboratory building included a refurbished Microbiology lab (£45K in 2011) and Chemistry Lab (£35K in 2012).

The Food Centre which was developed originally for training and consultancy has been taken into academic control following the appointment of a research active food technologist in 2010 and is supporting three PhD projects examining food safety and security.

There have been significant investments in new laboratory equipment including Elemental carbon / nitrogen analyser (2008: £25K) and a replacement flow injection analyser (2009: £18K), both used extensively by our PhD students measuring nitrogen dynamics in farm soils and carbon sequestration in hedgerows; an Elisa plate reader (2011: £2.5K) used for equine research, and a food contamination detector (2011: £12K) installed in the Food Centre.

The Library is well resourced [including eight staff] and plays a critical role in supporting staff and students involved in research. It has invested heavily in technological developments,

especially in the greatly increased availability of online resources including both eBooks and eJournals (e.g. JSTOR, Science Direct, Emerald eJournals, Dawsonera and Ebrary eBooks). It is a member of the Sconul Access scheme that allows researchers to access other university libraries, and thereby expand the range of material available. It also provides an efficient inter-library loans service via secure electronic delivery of materials direct to researchers' desktops.

The University has continued to invest in the provision of IT infrastructure across the campus with a new head of IT Services appointed, and a clear IT Strategy and on-going Action Plan. Recent developments include the installation of a campus wide Wi-Fi network supporting students own laptops, Smart Phones and tablets (BYOD) and a dedicated facility for postgraduate students. Research students have their own facilities. Genstat, NVivo and SPSS are networked across all computers on campus.

Sponsorship has been received from various feed companies (Animal Life, Vetrocalm, Haygain & Waltham Centre for Pet Nutrition) together with the donation of equipment (Haygain) to underpin much of the horse nutrition research. Martin Collins partially sponsored the Equine facilities at Fosse Hill Farm. The Parkinson Trust provided £60K [matched by £60K from HEFCE] towards the Innovation Centre at Harnhill.

Douglas Bomford Trust provided sponsorship (£175K) of a research Chair in Applied Agricultural Mechanisation in 2012 for five years. The Oppenheimer Memorial Trust match-funded the RAU sponsorship of a PhD project, whilst The Oldacre Trust has provided sponsorship for PhD students throughout the REF period (a total of four studentships). Cotswold Seeds Ltd has supported three of those studentships with trial sites and field research facilities.

The development of an active research culture is the responsibility of the Director of Research and the University Research Committee. The post of Director of Research was created in 2012 to take responsibility for the oversight of postgraduate training, seminar series, and the management of the devolved powers from the Coventry University [which validates our research degrees] for the evaluation and progression of PhD students. Research degrees are governed by our own regulations which were formally approved by our validating body, Coventry University. These ensure compliance with QAA Code of Practice. The RAU's Business Development Centre provides administrative support and quality control (with ISO 9001 accreditation) for all research project funding and consultancy. Academic quality control is provided by a system of peer review of research reports. The RAU Ethics Committee [a subcommittee of the Governing Council] provides oversight of all ethical issues regarding the conduct of research; ethical issues with PhD projects are controlled by Coventry University processes administered by the RAU's Director of Research. We administer the HEA's postgraduate research experience survey (PRES) in house to enable our researchers to provide feedback.

e. Collaboration and contribution to the discipline or research base

Editorial boards: *Davies*: International Food and Agribusiness Management Board Review (International Food and Agribusiness Management Association); Agribusiness, Landscape and Environment Management Journal (University of Udine, Italy); World Review of Science, Technology and Sustainable Development'. (Inderscience); International Journal of Innovation and Knowledge Management in Middle East and North Africa. *Conway*: CREST Journal & Journal of Inclusive Practice in Further and Higher Education. *Manning*: British Food Journal.

Peer-review: *Mottram*: ~ 30 international project proposals for the Joint Programming Initiative on Agriculture, Food Security and Climate Change (FACCE-JPI) <http://www.faccejpi.com/>
Grange: proposals for FACCE-JPI as above; NERC on biodiversity change and ecosystems; RELU (part of the multiagency Living with Environmental Change Programme (LWEC) Boundary Organisational Theory and Collaborative Conservation.

Davies: Visiting Professor at University Malaysia Sabah, Borneo and a Fellow of Harvard University's 'Private and Public, Scientific, Academic Consumer Food Policy Group' (PAPSAC); *Parsa*: Visiting Professor at University Tun Hussain Malaysia (UTHM), and external assessor for professorial promotion in a number of universities in Malaysia; *Cannon* (2009) awarded a Nuffield Scholarship; *Fisher*: Defra Fellowship (2013) based at Westminster in the Animal and Plant Health Evidence and Analysis team undertaking policy-relevant research, and facilitating the sharing of knowledge and expertise between academia and government, specifically exploring various approaches to cost-sharing in relation to bTB control; *Mottram*'s eCow farm Bolus: Special Award for the Innovation Most Likely to Improve Agriculture in Wales 2013 at the Royal Welsh Show. It

also won a placing in the Top Ten Innovations at the World Dairy Expo in Madison Wisconsin. *Hemmings* iPhone app won British Equine Trade Association Award for Innovation award in 2013.

Hemmings: >12 years collaboration with IBERS, Aberystwyth and more recently with the Department of Physiology, Development and Neuroscience, Cambridge University including joint supervision of a PhD project: Countryside and Community Research Institute (CCRI) partnership with the University of Gloucestershire and Hartpury College; *Gaskell* Board Member; RAU staff collaborators include *Fisher, Manley, Parsa, Minaei and Jones*; *Baines*: University of Stellenbosch (SA) on climate smart farming research [PhD project]; *Martin*: University of Exeter on GWR funded PhD project: *Conway, Grange and Overbury*; interdisciplinary DART project (Detection of Archaeological Residues using Remote Sensing Techniques; 2010-13, led by University of Leeds; (£815K, AHRC and EPSRC funded):

Manley; Universities of Bangor, Reading, Lancaster, Nottingham, Kent, Open University, Oxford, CCRI, Rothamsted and British Trust for Ornithology, Centre for Ecology and Hydrology, Organic Farm Research Centre, Food and Environment Research Agency on various projects funded by Defra and Natural England: *Davies*; University of Reading, wheat studies and new book. The RAU is a partner in the Centre for Agroecology and Food Security of Coventry University.

Mottram; coordinator of the Defra Green House Gas Research Platform 2010-2013: *Baines and Farag*; collaborators with Bristol City Council and Bristol Food Partnership, including PhD project: *Baines*; collaboration with ACCRA [Italian NGO] in Tanzania: *Farag*; collaboration with Synergy Health for access to Gamma and Electron Beam irradiation equipment: *Davies, Cannon and Conway*; Cotswold Seeds and Soya UK collaboration with Oldacre Trust-funded PhD projects: *Kemble Dairy* (900 cow dairy unit and bio-digester); formal partner providing data and facilities for staff student projects: *Manley*; DEFRA Secretary of State Appointee on the Cotswold Conservation Board (CCB), and the CCB and RAU representative on the Gloucestershire Local Nature Partnership & Cotswold Ecological Network partnership: *Parsa*; in partnership with Gloucestershire and Herefordshire County Councils to evaluate the impact of “fastershire” (broadband) on rural areas in the two counties: *Walsh & Charles*; long running association with States of Guernsey dairy industry research: *Nixon & Martin*; continue their >12 years association with RICS on land price research: *Gaskell*; Chair Defra Science Advisory Council (until 2011); Member Welsh Chief Scientists’ (CS) Science Advisory Council (from 2010); Chair Welsh CS Group advising Minister on evidence base for bTB eradication policy (2011); Chair BBSRC Sustainable Agriculture Strategy Group (until 2011); Animal Health Trust Board (until 2013); BBC Rural Affairs Advisory Council (until 2013); Member Government Chief Scientific Advisor’s Food Research Partnership, Chair Translation Sub Group (from 2009).

The RAU is committed to providing innovation and advice for the industries we serve. Individual staff and our BDC scan for national and international priorities and initiatives that we might respond to. Examples are (i) *Manning* work funded by FSA (3 projects totalling c.£70K) responding to food safety issues e.g. the 2013 horsemeat crisis, looking at the development of a risk based sampling model for food and feed non-statutory surveillance sampling in the UK involving desk top review, interviews and the development of a model to be tested through a pilot study; and (ii) *Gaskell, Manley and Fisher* on bTB policy, funded research (~£80K over 4 projects) for Defra on farmer attitudes to bTB vaccination.

Partner in the BBSRC Advanced training Partnership (ATP) – Food Quality and Health Reading/Rothamsted/Birmingham. The RAU is a member of the Countryside and Community Research Institute (CCRI) (a partnership between RAU and the University of Gloucestershire with Hartpury College) providing us with a wider range of research capability, especially in social science.

The RAU is currently part of a national consortium bid for Defra’s Sustainable Intensification Research Platform. This is formed of three separate tenders. We are involved with Project 1: Integrated farm management for improved economic, environmental and social performance. Professor Mottram and Dr Manning will provide expertise on cattle management/sensory technologies and knowledge exchange/food chain/poultry industry respectively. The whole project is £1.5-£2m over 3 years. We are partners in this bid, along with the University of Warwick, Cranfield University, SRUC, CCRI and a host of other industry partners, such as LEAF, the National Trust, the NFU and the AIC.