Darwin Initiative Main Project Annual Report

Important note: *To be completed with reference to the Reporting Guidance Notes for Project Leaders:*

It is expected that this report will be no more than 10 pages in length, excluding annexes

Submission Deadline: 30th April 2017

Darwin Project Information

Project reference	22-006
Project title	Mainstreaming biodiversity conservation and climate resilience at Yayu Biosphere Reserve
Host country/ies	Ethiopia
Contract holder institution	Royal Botanic Gardens, Kew
Partner institution(s)	Environment and Coffee Forest Forum (ECFF); HiU Coffee; Union Hand-roasted Coffee (UHRC)
Darwin grant value	£315,790
Start/end dates of project	1 April 2015 to 31 March 2018
Reporting period (e.g., Apr 2016 – Mar 2017) and number (e.g., Annual Report 1, 2, 3)	1 April 2016 to 31 March 2017. Annual Report Number 2
Project Leader name	Dr Aaron Davis
Project website/blog/Twitter	http://www.kew.org/science/projects/mainstreaming-biodiversity-conservation-and-climate-resilience-yayu-biosphere http://www.kew.org/blogs/kew-science/mainstreaming-biodiversity-conservation-and-climate-resilience-in-ethiopia%E2%80%99s-wild https://www.unionroasted.com/blog/03/18/at-origin-yayu-coffee-forest-in-ethiopia/
Report author(s) and date	Aaron Davis 21 (April 2017)

1. Project rationale

Context. Yayu Reserve (167,000ha) is divided into: (1) core zone, (2) buffer zone, and (3) transition area(s). It is home to around 450 higher plants, 50 mammal, 200 bird, and 20 amphibian species, plus important wild crop genetic resources (including *Coffea arabica*). Coffee cultivation occurs within forests of the buffer zone and transition areas. At Yayu, coffee generates up to 70% of the cash income for over 90% of the population.

The problem. Most farmers in the area are struggling to make sufficient income from coffee. This causes a conversion away from forest-based production (coffee), to non-forest crops such as the narcotic khat and maize, leading to forest loss, biodiversity loss, a reduction in ecosystem services, and a narrowing of income diversity. The most important factor restricting coffee income at Yayu is coffee quality, rather than productivity/quantity. If quality is assured then a market will exist. At Yayu we need to: (1) increase the income from coffee; (2) reduce land-use change/conversion; (3) preserve biodiversity; and (4) minimize farmer's vulnerability to

climate perturbations. These main issue regarding forest conversation was identified by project partners ECFF, after more than a decade of working at Yayu. A Darwin Scoping award in November 2013, undertaken by Aaron Davis (Kew), Tadesse Woldermariam Gole (ECFF) and Jeremy Torz (UHRC), was used to investigate the issues around increasing value (and thus income) from coffee via quality and a strengthened value chain.

The locality. Yayu is located in the province of Illubabor, in SW Ethiopia.

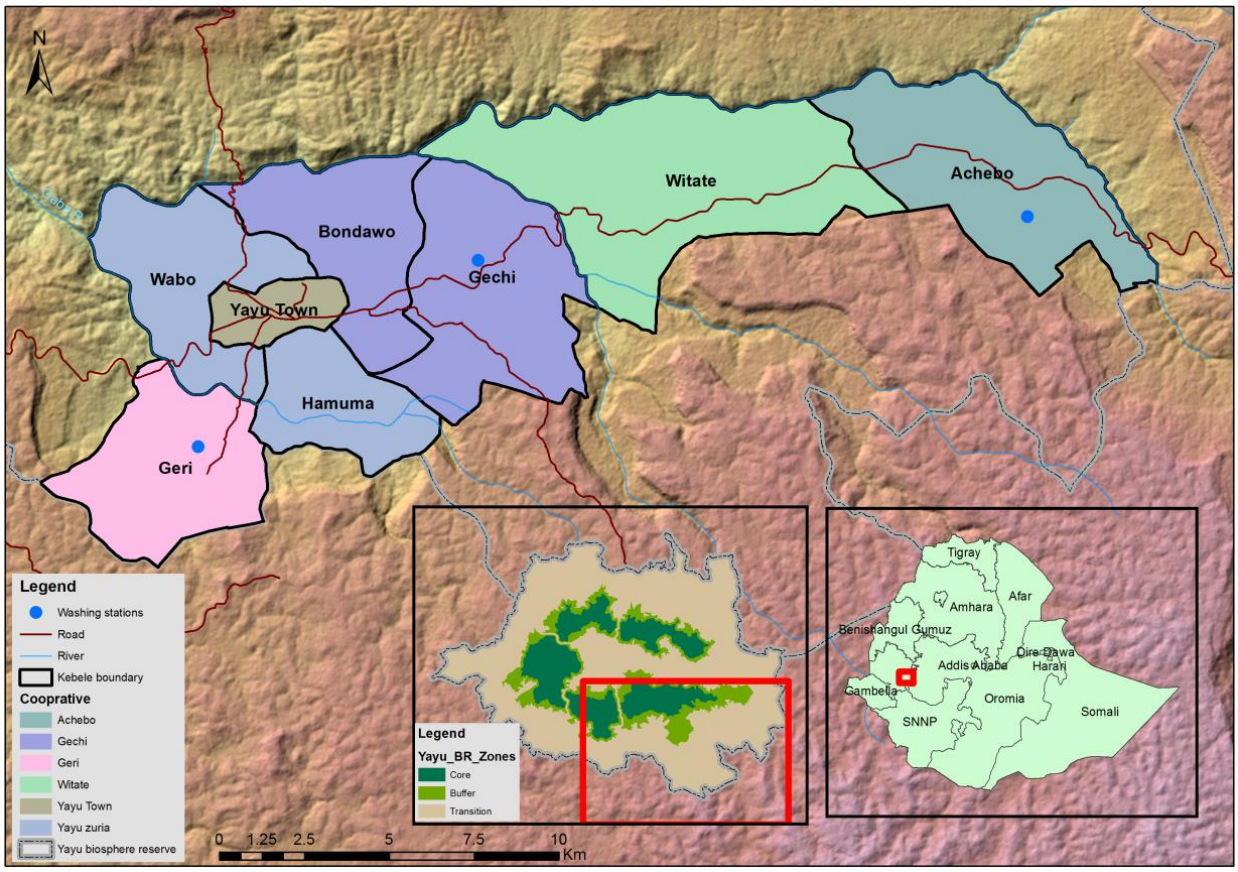

Figure 1. Location of Yayu Reserve, its five coffee cooperatives (Achebo, Gechi, Geri, Yayu (Zuria) and Wutate) and their Kebeles.

2. Project partnerships

RBG Kew is the Project Leader and is responsible for the organization and overall management of the project, the science activities, budget, and project M&E. ECFF are the in-country Project Leader and negotiating body for government agencies, in-country civil societies, coffee exporting bodies and community governance (including cooperatives and local administration). HiU Coffee (HiU) are responsible for providing the training in coffee harvesting, post-harvesting, cup evaluation and packaging, for the five Yayu cooperatives. They also lead on purchasing and installing coffee processing equipment and overall improvement in coffee quality. Union Hand Roasted Coffee (UHRC) are responsible for providing access to market for Yayu cooperatives, via direct-trade coffee purchasing, and, in conjunction with HiU, play a key role in assessing coffee quality and market value. UHRC also provide funding and resources for socio-economic evaluation, via the employment of a socio-economist Pascale Schuit.

There was a demand from the host partner (ECFF) to develop a more sustainable outcome for Yayu coffee production and farming livelihoods, after more than a decade of dedicated intervention activities at the Yayu Reserve. All of the partners are involved in project planning, development and M&E as they have specific areas of expertise and experience, each necessary to the success of the project. There have been no project partnership changes or challenges during the 2016/17 reporting period; the roles for each partner are clearly delimited. There have been additional activities for RBG Kew in the partnership with UHRC, on the marketing side of the project, especially concerning an outreach project at Kew (the Victoria

Gate cafe display, media work, and especially work leading to Kew branding and the development of a project coffee for Waitrose (see below).

As of the Year 1 the overarching cooperative body, which are responsible for purchasing logistics, transportation (including export) and final processing (milling and sorting), changed from the Oromia Coffee Farmer's Union Cooperative (OCFUC) to the Sor Gaba Union (Sor Gaba). Even though Sor Gaba are not listed as partners, they play a key role in the short (direct-trade) value chain.

3. Project progress

3.1 Progress in carrying out project Activities

Output 1. Five Yayu coffee cooperatives are provided with the equipment, training, supervision, and information resources needed to improve (and sustain) coffee quality.

Activity 1.1. Five Yayu coffee cooperatives provided with the equipment, training, supervision, and information resources, needed to improve (and sustain coffee quality). All (but 250 m^2) of the processing equipment (drying beds) has been purchased and installed for all five Yayu cooperatives. In October 2016, further training (10 days) on drying bed construction was provided for Wutete, Geshi, Achibo and Geri Cooperatives, and children at the Wutete Primary School (see Section 12). The quality evaluation equipment and cupping lab building materials have been purchased and delivered to Yayu, although the Ikawa sample roaster is being kept at UHRC until the cupping lab has been fully secured. Construction of the cupping lab is at least half way to completion; the foundations have been laid and the walls built. The building is substantial (see photographs) with construction in concrete and bricks and a tiled roof. The building will be used as a science lab, when not in use as a cupping lab.

Activities 1.2 and 1.3*. Training of 950 cooperative members (5 cooperatives) in coffee harvest, post-harvest (washing and drying), and evaluation techniques (cupping and grading). Year 2 training of cooperative members in coffee harvest and post-harvest techniques has completed, via training of the 25 trainers by HiU Coffee (HiU) and Union Handroasted Coffee (UHRC) during three dedicated visits in October 2016 (two weeks), December 2016 (one week) and February 2017 (one week). The 25 trainers then went on to continue the training during the entire harvest and post-harvest period (November to March). A total of c. 298 individuals (farmers) were trained by the trainers (with further assistance from the HiU-UHRC tea) in harvest and post harvesting techniques, including the construction of drying beds. Coffee evaluation (i.e. the tasting and scoring/grading of the Yayu coffee, has had to be delayed until the cupping lab is built and equipment installed (anticipated May 2017). However, training in the use of refractometers was given to representatives of the Wutete, Geshi, Achibo and Geri Cooperatives in October 2016

* Note. These two activities have been combined as the work required and metrics used are indistinguishable.

Activity 1.4. Production of draft reference and training manual for harvest and post harvest coffee farming techniques. The four training manuals have been produced, translated into Oromifa and Amharic languages by the project trainers with the help of Sor Gaba. Trial copies have been printed and distributed (October 2016) to the farmers for appraisal (10 copies per cooperative). UHRC and HiU are working on the design and artwork for the final versions of the manual.

Activity 1.5. Each cooperative member (950) in total) in possession of the Coffee Farming and Processing Manual. See Activity 1.5. Final dissemination will be in Year 3.

Activity 1.6. Evaluation of coffee processing and coffee quality improvements. HiU Coffee and UHRC conducted an evaluation of coffee processing during their visits to Ethiopia in December 2016 and February 2017 (2 weeks in total), on site in Yayu at each cooperative and at the Sor Gaba premises in Addis Ababa. They inspected the Sor Gaba milling and storage operations (Addis Ababa), and checked on conditions and equipment for coffee transportation. Several

issues were highlighted and resolved, e.g. the labelling of the Yayu coffee bags, and some final processing steps. Activity 1.6 confirms the success of the farmers training, with an agreed purchase of 37.8 metric tonnes (37,800 kg), which has a FOB value (see Section 6) of $232,848 (£179,820.76) for the 2016/17 season. This was down on the figures/values for Year 1, when 10 metric tonnes of lower quality coffee was purchased in error during the transition to Sor Gaba. In October 2016 a meeting was held with all five Cooperatives (with the Board of Directors), Mr. Mulugeta (Manager of Sor Gaba) and HiU-UHRC Team, concerning the results of the 2015/16 coffee quality, processing, prices, as well as the expectations for the 2016/17 crop. During meetings in October and December, the HiU-UHRC undertook meetings to understand and improve the cooperative (Yayu) to cooperative (Sor Gaba) relationship, and particularly the method of transfer of coffee crop payments and farmer supplements (i.e. the additional payment of 20% to farmers supplying the higher quality coffee).

Activity 1.7. Socio-economic and livelihood monitoring and evaluation. The socio-economist Pascale Schuit followed up on her workshops of October 2015, with a review of the base-line farmer surveys. Cooperative surveys were undertaken in October, and December, with surveys completed for two of the Yayu cooperatives. These surveys will allow us to more accurately assess the impact of the project in terms of the increase in household income. GPS mapping of two cooperatives (locations of farms) was undertaken during the same time periods, which will feed into the mapping activities of the project.

Output 2. Yayu household members (particularly women) are provided with access to training, and then employment within the local coffee sector.

Activity 2.1. Training for 250 seasonal workers in coffee processing (90% female; 10% male). A further 5,000 m^2 of drying beds were installed by cooperative members and seasonal labourers.

Activity 2.2. Re-fresher training for 250 seasonal workers in coffee processing (90% female; 10% male). Household training in coffee processing continued in 2016/17 with 298 recipients receiving training from the 25 trainers from November to January, with assistance the HiU-UHRC team in October and December 2016 and in February 2017.

Activity 2.3. 250 (extra) household members seasonally employed within the Yayu coffee sector, by Year 2. The recipients of the training (2.2) were employed during and after the harvest at Yayu, from November 2016 to January 2017. The precise number of seasonal labourers was very difficult to measure.

Output 3. Area (land-use) analysis of forest and forest-based household income areas for the Yayu Reserve.

Activity 3.1. Construction of land-use vegetation map for the Yayu area using RapidEye data (5 m resolution). The land-use vegetation map (with a focus on humid forest cover) for the Yayu area, based on RapidEye data (5 m resolution) was completed in Year 1. The user-version is currently (March 2017 onwards) being prepared for comparison with the other activities in this Output.

Activity 3.2. Construction of land-use vegetation map for the Yayu area using Landsat and Modis data (30 m resolution). The basic land-use change map, based on Landsat and Modis data (30 m resolution has been produced (2016), and is currently (March 2017 onwards) being prepared for integration and comparison with the RapidEye data. Mapping layers (roads, town, elevation, biosphere reserve boundaries) and farm location data are currently being integrated into a geographical information system (GIS).

Activity 3.2. Construction of narrative report to accompany map, and production of final report disseminated to stakeholders. A Year 3 activity.

Output 4. Yayu coffee cooperative members are provided with the training and information resources required for on-farm climatic resilience.

Activity 4.1. Set-up of (climate resilience) study plots on 3 Yayu farms. Two trial plots have now been running since Year 1, with farmers undertaking the interventions (mulching, micro-terracing; pruning), and gathering productivity and cost data. Plot 1 (1400m) is dedicated to mulching and micro-terracing, and Plot 2 is a tree-stumping/pruning trial. Plot 3 (1700 m) was set up in November 2016 (with the help of additional funding) to provide an altitude and soil replicate of Plot 1. These plots have been established to better understand the value of interventions for climate resilience, and the cost-benefit of these interventions (in terms of measurable increases in coffee productivity and quality, and climatic resilience improvement metrics (e.g. increase in soil moisture; improved water-use efficiency)). We have installed three simple climate data-loggers for air-temperature and humidity, recording every hour throughout the year, for the three plots (Plot 1; 2013; Plot 2 2015; and Plot 3 2016). The data-loggers provide useful climate data, which we use to assess the weather for each year's growing and harvest cycle.

Activity 4.2. Evaluation of study plot data. The first rounds of plot data evaluation was undertaken in November 2016 and March 2017. There were some methodological issues concerning the farmer's exact roles and activities, which were resolved (further time was spent providing further instruction and training for farmers) during the visits in October/November 2016 and March 2017. The scientific equipment for measuring soil moisture and soil water potential was deemed as not fit for purpose, mainly because it was too visible and likely to be either stolen or damaged (e.g. during weeding and harvesting. With additional funding we are developing new equipment (buried probes and data loggers), which will be installed at the end of the wet-season (October/November 2017). It is clear from the work we have done so far that both mulching and pruning are likely to require at least two years before their actions are measurable. We should, however, have some useful data by the end of the project. Fortunately, we already have good data from the shading research that was undertaken as a result of the projects scoping award.

Activity 1.3. Demonstration workshops to each of the 5 Yayu cooperatives on on-farm adaptation methodologies. This is a Year 3 activity, although in-depth discussions have already been held with Yayu farmers.

3.2 Progress towards project Outputs

Output 1. Five Yayu coffee cooperatives provided with the equipment, training, supervision, and information resources, needed to improve (and sustain) coffee quality, as represented by the following three Indicators.

Indicator 1.1. Five Yayu co-operatives are provided with the equipment required to correctly process and evaluate their coffee, in order to attain (and sustain) high quality (by Year 1). Baseline: no drying beds or cup evaluation equipment. Change recorded by 2017: almost all of the processing equipment (drying beds, etc.) has now been provided for the five Yayu cooperatives, with only one cooperative not receiving the full amount of equipment. C. 60% was provided in Year 1 (2015/16). The quality evaluation equipment and cupping lab building materials has been paid for, but will not be put into service until the cupping lab has been completed. Evidence: payment receipts/invoices, records of receipt, and photographs.

Indicator 1.2. 950 cooperative members (for the 5 cooperatives) provided with the training, supervision, and information resources (including coffee processing handbook), needed to improve (and sustain) coffee quality (by Year 2 and 3). Baseline: no or minimal training in harvest and post-harvest processing. Change recorded by 2017: 25 trainers received further training and went to train an additional 298 farmers/coffee workers trained in coffee processing and construction of drying beds; the same trainers also received training in 2016 (as well as 63 farmers/coffee workers. The coffee processing manuals have been written and translated into Oromifa and Amharic languages; 10 draft copies have been sent across the five cooperatives for testing and evaluation. The design team at UHRC is currently working on the design and artwork. Evidence: payment receipts for trainers and their documentation; electronic versions of manuals.

Indicator 1.3. 950 cooperative members (households) with an annual increase in income of 30% (by Year 3). Baseline: pre-project price of less than $0.50 to $1.30, or farmers not selling their coffee. Change recorded by 2017: an elevated price of $2.60 per lb for processed green coffee, plus a $0.20 per lb quality premium paid to cooperatives producing export-quality coffee (FOB value* of $2.80). This represents a 115% increase in the unit price paid for quality coffee ($2.80), compared to commodity coffee ($1.30), although those converting from cherry only sales ($0.30) to high quality coffee would see a 560% increase in the value of their coffee. Evidence: bills of sale for exported/imported coffee. See Section 6 for further details.

*Note. FOB means that the seller pays for transportation of the goods to the port of shipment, plus loading costs. The buyer pays cost of marine freight transport, insurance, unloading, and transportation from the arrival port to the final destination.

Output 2. Yayu household members (particularly women) provided with access to training, and then employment, within the local coffee sector.

Indicator 2.1. 12,000 square meters of drying bed equipment (Africans Beds) installed for five cooperatives (by Year 1). Training is required for the initial and installation, and then because the equipment is placed into storage for most of the year seasonal labour is required for re-installation. Baseline: no materials for drying beds (little or no training, and no or minimal seasonal labour. Change recorded by 2017: a total of c. 5,000 m^2 of drying bed materials purchased installed, with training provided and seasonal labour. A total of 11,850 m^2 is now in place across the five cooperatives. Evidence: invoices for purchase of materials and construction (labour hours) of drying beds. We have found that the labour hours (and payments) are very difficult to monitor, due to the nature of this activity and casual methods of payment.

Indicator 2.2. 250 (extra) household members (50 per cooperative) trained in coffee harvesting and processing techniques (by Year 1). Baseline: little or no seasonal labour (due to lack of training). Change recorded by 2017: at least 50 extra household members per cooperative provide with training (compared to pre-project). Thus is required due to increase in labour requirement for the production of high quality coffee and increased volumes; this labour comes from within the household and is mainly done by women and girls. Evidence: see below.

Indicator 2.3 250 (extra) household members seasonally employed within the Yayu coffee sector (by Year 2). Baseline: little or no seasonal labour. Change recorded by 2017: as for 2016, we estimate a 40% increase in seasonal labour. Evidence: this metric has been found very difficult to assess and therefore is estimated on the basis that the increase in coffee export/import volume and quality requires additional seasonal labour.

Output 3. Area (land-use) analysis of forest and forest-based household income areas for the Yayu Reserve.

Indicator 3.1. Ethiopian GIS technician trained and supported in advanced land-use change technology and methodology (by Year 1). Baseline: an Ethiopian GIS technician with good GIS skills. Change recorded by 2017: training and support continued (from 2016) throughout 2017, including support on the collation on mapping outputs. Evidence: mapping outputs Indicators 3.2 and 3.3).

Indicator 3.2. Three land-use change maps produced for Yayu Reserve (by Year 2). Baseline: nothing available. Progress by 2017: land-use change maps produced, and being reviewed by RBG Kew GIS Team (March 2017 onwards). Evidence: RapidEye (5m resolution), Modis and Landsat 8 (30m resolution) maps available (at least within GIS programmes).

Indicator 3.3. One new forest-cover survey map produced for Yayu Reserve (by Year 3). Baseline: nothing available. Progress by 2017: compilation of mapping outputs started in March 2017 and ongoing. Evidence: GIS files for mapping outputs.

Output 4. Yayu coffee cooperative members are provided with the training and information resources required for on-farm climatic resilience.

Indicator 4.1 3 Yayu farm plots (1 ha) provided with, and participating in, on-farm climate adaptation trials (by Year 1). Baseline: no farm plots/resilience trials. Progress by 2017: three plots set up in Year 1 (2015/16) and then revisited in Year 2 (October/November 2016), with an additional plot added during this period (by ECFF staff). Evidence: plot payments (Darwin Project and additional funding finance information), data sheets and photographs.

Indicator 4.2. On-farm adaptation evaluation provided for 3 Yayu farm plots, and this broadened to provide an overview of climate resilience, etc. (by Year 3). Baseline: no farm plots/resilience trials in operation. Change by 2017: first evaluations in March 2017, with preliminary data recorded. Evidence: data sheets.

Indicator 4.3. Five Yayu cooperatives provided with training in, and information resources for, on-farm adaptation (by Year 3). Baseline: no adaptation training or experience. Change by 2017: discussions with Yayu and other local stakeholder concerning climate resilience. Evidence: notes made from discussions held.

3.3 Progress towards the project Outcome

Project outcome. Five coffee cooperatives in the UNESCO registered Yayu Coffee Forest Biosphere Reserve, move to sustainable and resilient livelihoods, whilst conserving local biodiversity

Measurable Indicator 1. A 30% increase in cash income [per year] for the 950 Yayu coffee cooperative members, across the 5 cooperatives (by Year 3). Baseline: farmers either not selling their coffee; selling only fresh cherry ($0.50 per lb, or less); or selling processed cherry at New York (NY) commodity price (c. $1.30 per lb, or less). Change by 2017: a 19% increase in household income across all 950 households (see Calculations 2017.xls), although this figure is considered conservative. See notes in Section 6.

Measurable Indicator 2. A 25% increase in seasonal employment for household members of the Yayu cooperatives (by Year 2). Baseline: little or no seasonal employment. Change by. 2017: an estimated 40% increase in seasonal labour, compared to pre-project baseline.

Measurable Indicator 3. A useful and usable forest-cover/land use survey for Yayu Reserve (by Year 3). Baseline: no forest-cover/land-use surveys. Change by 2017: all basic mapping completed and available within a GIS.

Measurable Indicator 4. 20% of the 950 Yayu coffee cooperative members provided with a clear understanding of climate resilience/adaptation methodologies (by Year 3). Baseline: little or no adaptation training or experience. Change by 2017: 3 plots implemented (i.e. one new plot); climate data-logging equipment in place; preliminary data collected for 2 plots, and discussions held with several farmers/households.

Overview. The project is already achieving substantial poverty alleviation. The biodiversity and climate resilience metrics will be unknown until Year 3.

3.4 Monitoring of assumptions

Assumption 1: That an improvement in coffee quality will lead to a significant increase in market value, and that there is a strong, growing and sustainable market for improved (high quality/speciality coffee). In order to achieve this, essential equipment, training and information resources (e.g. handbooks and posters) are required.

Comments: The increase in the coffee purchased and increase in price (paid by UHRC), substantiates this assumption. See notes in Section 6. The training and other interventions have produced a large amount of high quality coffee (from four of the five cooperatives) from low grades (Grade 4 to 9; cupping score below 70), to high grade (Grade 2, cupping score 85+). See notes in Section 6 and accompanying documentation. It is clear that the link to market is robust, which in the case of UHRC is part of their purchasing model (Union Direct Trade). The speciality coffee trade is growing but it is also very competitive. Marketing for the

Yayu coffee has been stepped up in 2016/17 in order to drive customer demand. There was been substantial progress in this area in 2016/2017. It also clear that maintaining quality requires commitment from the farmer and also the buyer and to this end HiU and UHRC have been very stringent with quality standards. The farmers need to be made aware that quality cannot be compromised, otherwise income will suffer.

Assumption 2: That there will be a requirement for extra coffee workers as the price and demand for Yayu coffee grows, especially due to the conversion of unprocessed coffee fruits (transported out of the reserve area) to coffee processed at Yayu.

Comments: This has been calculated based on an increase in coffee production by 41%. We have asked trainers to record number and gender in Years 2 & 3, but so far this has not been forthcoming, due mainly to the fact that this metric is very difficult to record with precision.

Assumption 3: That by making forest-based coffee production systems more financially successful, there will be a strong incentive to maintain these forest-based cultivation systems, reducing conversion to non-forested systems. Preserving semi-wild and forested agricultural systems will retain forest cover and preserve valuable biodiversity and ecosystem services, and that this can be measured by a detailed GIS land-use survey and on-the-ground survey.

Comment: This assumption cannot be tested until Year 3, although it is clear from our workshops that project partners ECFF have been very effective in messaging the value of the forest and income security from agroforestry. The farmers want to keep the forest but require and income from it (i.e. mainly from coffee).

Assumption 4: Yayu is within a climate vulnerable coffee growing area: interventions will be required now and over the coming century. Ethiopian coffee farmers are ill-equipped to deal with climate resilience. Increases in income will incentivize farmers, and provide the financial resources, to adapt their farms for improved climatic resilience. Development of land within and/or adjacent to the Yayu reserve (for mining), could be an issue within the next few years and in decades to come, however, the land identified for development is not within the coffee farm or processing areas.

Comments: Yes. El Nino conditions (2015/16) resulted in a lost harvest for farmers at lower elevations (outside the area of most Yayu cooperative households), and those not adopting best-practice agriculture. Plot experiments have been redesigned to include real-life cost-benefit analyses to test this assumption more fully. Land-use change study has been adapted to include urbanization. It was clear from discussions in 2016/17 that farmers are aware of climate resilience measures (specifically proper shading, mulching and micro-terracing). They know what to do but either: (1) cannot afford these interventions; or (2) do not anticipate a worthwhile return on the extra investment in time and money. This was not what we expected, and goes against the current assumption that interventions will repay investment, in the short- or long-term. This is a fundamental question, which we hope that the Darwin study will start to address, particularly as we have a situation where farmers will have the flexibility (extra funds) to invest in resilience. This is key issue for the coffee sector generally, and especially in the commodity sector, where prices paid to farmers are often not sustainable (e.g. when famers diversify away from coffee when there is no profit). Assumption 4 cannot be tested until Year 3.

3.5 Impact: achievement of positive impact on biodiversity and poverty alleviation

See Point 6 for poverty alleviation. Indicators on biodiversity conservation will not be available until Year 3.

4. Contribution to the Global Goals for Sustainable Development (SDGs)

Our project covers numerous sustainable development goals (SDGs), especially 1, 2, 5, 8, 13, 15 and 17. Although this is only Year 1 of the project we already feel that we are directly addressing these goals. The coffee farmers at Yayu now have a sustainable access to market, and a belief that their incomes will grow (SDGs 1, 2 and 8). It is clear from discussions, meetings and workshops that the Yayu farmers are very aware of the importance and benefit of

natural terrestrial ecosystems (SDG 15); they just need to see the financial return (via coffee purchasing) that the end parts of the value chain also recognize this and are willing to pay for it. Our training programme has been re-designed to fully engage women and girls (SDG 5), by empowering the local female school teachers as the trainers in Years 1 and 2. UHRC Direct Trade model of purchasing sets a high standard within the coffee sector, and pushes an agenda for developing partnerships and mechanisms for trading relationships that benefit farmers (SDG 17). Our work on understanding and implementing climate resilience at the farm-level is breaking new ground. In Year 1 and Year 2 we have been able to advise other projects on implementing climate smart agricultural practices and climate resilient/vale chain evaluation systems. In 2017 we held meetings in Ethiopia and the USA with DFiD Ethiopia, Partnerships for Forests (World Bank funded) and The Climate Innovation Network (Ethiopia).

5. Project support to the Conventions, Treaties or Agreements

In Ethiopia c. 15 million people depend on coffee farming for their livelihoods. Ethiopia's 5th CBD Progress Report (2014; https://www.cbd.int/reports/search), states that there is a specific objective to half habitat conversion. Ethiopia's *Poverty Reduction Strategy Paper* and *Growth and Transformation Plan* (2010/11–2014/15) highlights that increasing coffee productivity, while conserving biodiversity [CBD goals] and genetic resources, will play an important role in Ethiopia reaching Millennium Development Goal (MDG) 1.

We will not be able to measure this aspect of the projects until Year 3.

6. Project support to poverty alleviation

Project documents and other evidence shows that the project is having a substantial influence on farmer/co-operative income (and thus poverty alleviation).

1. In Year 2 (2016/17) $232,848 (**£179,848**) of Darwin project coffee was purchased from the five Yayu cooperatives via the Sor Gaba Union (who take 10% costs). The volume is 37,800 kg (3.8 metric tonnes), in 630 x 60kg sacks. In total, the project (including the Darwin scoping award of 2013/14) has been placed and additional **£580,000** into the Yayu economy, although we are unable to estimate the value of additional coffee (via quality improvements) sold into the commodity system as a result of the project.

2. There has been a substantial increase in the price paid to farmers for processed coffee, from a base-price of **$1.00 per lb to $2.60 per lb**. The base-price is based on 50% of the coffee being sold as unprocessed/wet cherry (at $0.50 per lb) [see Prices to farmers_P_Schuit_notes.doc] and a 2016/17 New York commodity price of ($1.50 per lb). UHRC are also paying a direct quality premium of $0.20 per lb to those farmers delivering high quality coffee (Grade 2 and above), which increases the FOB price to **$2.80 per lb**). This translates into to a **180% increase** in the price per unit/weight for the farmer best coffee.

3. **An estimate increase in household income of at least 19%.** This is based on the assumption that the farmers are still producing the same amount of coffee, but instead of this being either sold as a mixture of wet cherry and NY commodity price coffee (which we average at $0.50 per lb), the coffee is sold at $2.80 per lb. At Yayu, the minimum payment for wet/fresh cherry is $0.13 per lb and the maximum $0.21 per lb.

There are many difficulties with calculating this increase, as: (1) not all farmers are producing high quality coffee; (2) we are unable to estimate the value of additional coffee (via our quality improvements) sold into the commodity system as a result of the project; and (3) the amount of coffee produced per household varies considerably.

4. An increase in seasonal labour. Based on the increase in productivity (see Note 1) and extra input required for better harvesting and higher quality processing, we estimate that there has been a **40% increase is seasonal labour** (especially at the washing station and at the drying beds). We are looking at ways to more closely measure where this labour is coming from (i.e. within or outside the cooperatives), and the gender disaggregation and how the value/income is distributed. However, gathering these metric is extremely difficult.

5. More income for famers via a better relationship with their Ethiopian trading partners. In 2015, during the middle of the project's first year, the Yayu cooperatives made a new contract with the Sor Gaba Union, for hulling/milling and exporting their coffee. Sor Gaba have a shorter payment time to farmers, and return 90% of the coffee price value to the farmers (with OCFCU it was 70%). The 10% covers hulling/milling, sorting and export activities. In 2017 Project partners HiU Coffee, UHRC and ECFF have continued to help with the migration to the new union, including site visits to the processing and storage warehouses in Addis Ababa.

6. UNRC and HiU Coffee have pledged a long-term commitment to the Yayu cooperatives post project, as part of a sustainable direct trade model that benefits both producer and purchaser. See Section 11.

7. Project support to gender equality issues

HiU Coffee has made best use of an opportunity that was not apparent at the beginning of the project. At the main school (at Wutate, which is in a central (physical) position within the Yayu coffee cooperative landscape) most of the teachers are members of Yayu Coffee Farmer's Cooperative. The teachers speak English, Oromifa and Amharic, and thus can work easily with us and the community; their pupils are the sons and daughters of coffee farmers, and many also undertake seasonal work in family coffee farms. Thus, Wutate School's teachers have been employed as the coffee trainers. Of the 23 trainers 13 are male and 12 are female.

8. Monitoring and evaluation

The project is monitored and evaluated using the log-frame, outcomes, activities, indicators, assumptions and outputs, as stated in the project proposal. The Project Leader (A. Davis) is responsible for managing and reporting the M&E, in collaboration with all project partner leads. This works well, especially as the Project Leader plays an active role in the project, and works alongside the other project partners at Yayu during project activities (for selected periods). We have a good (and longstanding) relationship with our in-country partners (ECFF) and have established a working relationship based on achieving outputs. HiU and UHRC are from the private sector and constantly monitor and evaluate their performance internally; sourcing high quality coffee is their livelihood. During Year 2 we have had four meetings (in London and in Ethiopia) for M&E purposes. Preparation for the Annual Report, and the annual report itself, constitutes an effective M&E tool.

9. Lessons learnt

Our Darwin Scoping Award (2013) and following pre-project trial (UHRC/HiU Coffee) was vital for establishing the project and validating proof of concept. Likewise, Kew/ECFFs DFID funded (SCIP Project) Building a Climate Resilient Coffee Economy for Ethiopia gave us a head-start in terms of understanding the resilience landscape and key issues for coffee farmers in Illubabor. As identified in the SCIP project, it is critically important to listen carefully and spend time with the stakeholders (i.e. farmers), and to ask their opinions on advice on key aspects of the project. Following on from this, a certain amount of flexibility is essential, so that learning and discovery can be incorporated to best achieve project outcomes. For example, putting the cupping lab and having the school teachers as the coffee trainers was not in the detail of our plan for 2015/16, but the decision to use this opportunity has had greater impact than originally envisaged.

After reviewing other 'Climate Smart' projects, and after talking to farmers, we learnt that it is essential take into account the actual cost ($) of adaption and its benefit (income and resilience) to farmers. On the basis of this learning, our climate resilient plot studies now include and a cost-benefit analysis component.

The workshops clearly identified that the coffee farmers of Yayu needed no further persuasion that the Yayu Reserve was an important and valuable resource. This is mainly due to previous

work of ECFF, but also because of fundamental understanding of the benefits of the forest environment. The community must, however, also see tangible income benefits from preserving forest-based production systems.

Working out the economics of a cooperative trading systems is extremely difficult, as many activities are ad hoc and baseline figures for household productivity and earnings are difficult to collect.

We are not making any significant changes to next year's activities.

10. Actions taken in response to previous reviews (if applicable)

One issue was raised from the last Darwin report, concerning project identify and outreach. Please see Section 13.

11. Other comments on progress not covered elsewhere

Please see Section 12 and 13 for additional progress. In particular we have been working very hard to promote sales of the coffee, so that we can step-up the export volumes for Year 3 and beyond. There is also evidence that producers adjacent to the project area are improving quality and we hope to see additional high volumes of high quality coffee coming from these forest areas in the future, for the non UK market.

12. Sustainability and legacy

The project is already serving as a model for similar coffee projects within Ethiopia and beyond. Please see Section 13, In-country presence.

Please see Section 13 for details on promoting to the project within the UK and abroad.

The exit strategy is still valid, UNRC and HiU will continue their direct trade relationship with the Yayu cooperatives.

UHRC have agreed to donate 25p of each Yayu Forest Coffee packet to running the project, once the Darwin project has completed. This money will go directly to the Yayu project, either for the upkeep of equipment (e.g. expensive cupping lab equipment) or ongoing scientific research by Kew and ECFF. No administration fees will be charged. We estimate a £5000 to £7000 per year income. Please see Packet designs.doc.

HiU coffee have helped the school children at Wutate to plant 1ha of coffee at their school. This will be used as a training plot, and to raise additional revenue for the school.

13. Darwin identity

In Year 2 we made a huge effort on publicising the Darwin project, marketing and selling the project, and improving Darwin identity for the project. Please see below:

On-line presence

The Kew Science page for the project went live (http://www.kew.org/science/projects/mainstreaming-biodiversity-conservation-and-climate-resilience-yayu-biosphere). A Kew Science blog was written in 2016 (http://www.kew.org/blogs/kew-science /mainstreaming-biodiversity-conservation-and-climate-resilience-in-ethiopia%E2%80%99s-wild); part 2 of the blog will follow in 2017. Union Hand Roasted Coffee updated their webpages (https://www.unionroasted.com/blog/03/18/at-origin-yayu-coffee-forest-in-ethiopia/). There were also two media articles, one in the Financial Times (https://www.ft.com/content

/ffb446d6-1ac6-11e7-a266-12672483791a), and another in the Independent http://www.independent.co.uk/ news/business/comment/fairtrade-movement-ethics-chocolate-coffee-a7623046.html. The coffee is also for sale on-line from UHRC and Kew retail. The packs prominently display the Darwin logo (see supporting documents).

Project coffee at major outlets

The Victoria Gate coffee display was finished in June 2016, which included details of the Darwin project and a display of the project coffee. The project coffee is on sale in the Kew retails outlets. Warwick University sell the Darwin project coffee throughout their campus catering outlets as a best practice sustainable coffee

We are also in negotiations with Ampersand for selling the Yayu Wild Forest Coffee at the Victoria Gate café and other catering outlets, as a customer coffee (i.e. in the cup).

After much work, Waitrose will be stocking the Yayu Wild Forest Coffee at 200 of the stores across the UK. This is a major outcome, as it will boost sales of the coffee (and thus income for Yayu householders) and provide a public platform for project messaging and Darwin identity. Please see appended document XXX, and Section 11 for more details.

In-country presence

The Yayu Darwin project has been the subject of considerable interest by in-country organizations and projects, including DFiD (Ethiopia), The Climate Innovations Trust, and the World Bank Project (McKinsey Consulting) Partners for Forest. The project is seen as a model for how coffee income can provide income for forested coffee production areas, within Ethiopia and east Africa. Meetings with the above organizations have been held in the UK (via Skype) Ethiopia, and the USA.

14. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2016 – 31 March 2017)

Current Year's Costs	2016/17 Grant (£)	2016/17 Total actual Darwin Costs (£)	Variance %	Comments (please explain any variance)
Staff costs (from Section 5)			0.1	Negligible variance
Consultancy Costs				
Overhead Costs				
Travel and subsistence			-2.6	Minimal variance
Operating Costs			11.4	Minimal variance
Capital items (from Section 7)				
Others (from Section 8)			-13.2	Cost slightly underestimated.

			Claimed So Far	Claim for this period	Surrender Amount
TOTAL	**A**	**B**	**C.**	**D.**	**E.**

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2016-2017

	Project Summary	Measurable Indicators/verifications	Progress and Achievements April 2016 - March 2017	Actions required/planned for next period
Impact	Reduce poverty and provide short- to long-term resilience for coffee farming communities and their environment at the UNESCO registered Coffee Forest Biosphere Reserve, through self-sustaining financial mechanisms.			
Outcome	Five coffee cooperatives in the UNESCO registered Yayu Coffee Forest Biosphere Reserve, move to sustainable and resilient livelihoods, whilst conserving local biodiversity.	1. A 30% increase in cash income for the 950 Yayu coffee cooperative members (5 cooperatives), by Year 3. [Invoices and accounts detailing the volume and value of exported coffee for each of the 950 cooperative members]	A c. 19 % increase across all 950 households. See Point 6 of main report for more details.	Increase purchase of high quality coffee, to reach 30% target Find further mechanisms to better understand and measure increases in value/income for Yayu farmers
		2. A 25% increase in seasonal employment for household members of the Yayu cooperatives, by Year 2. [Accounts showing the number of extra coffee sector workers]	An estimated 40% increase in seasonal labour for 2016/17.	Sustain and increase this figure in Year 3.
		3. A 100% increase in the number of forest-cover surveys for Yayu Reserve, by Year 3. **[Land-use change maps. A land-use change survey]**	Basic and advanced forest cover surveys completed.	Produce final outputs for Year 3.
		4. 20% of the 950 Yayu coffee cooperative members provided with a clear understanding of climate resilience/adaptation methodologies, by Year 3. [A mutually constructed climate resilience report for Yayu]	Three resilience plots now operational.	Complete data gathering and finalize resilience booklet text.
Output 1	Five Yayu coffee cooperatives provided with the equipment, training, supervision, and information resources, needed to improve (and			

	sustain) coffee quality.			
1.1	Installation of coffee processing and evaluation (tasting and grading) equipment, for 5 cooperatives.	Five Yayu cooperatives are provided with the equipment required to correctly process and evaluate their coffee, in order to attain (and sustain) high quality, by Year 1. A signed receipt from each cooperative showing that they have received the coffee processing and evaluation equipment.	Coffee processing materials purchased and installed. Evaluation equipment purchased, awaiting the completion of the cupping lab	Coffee quality laboratory (Cupping Lab) completed and equipped in May 2017.
1.2	Training of 950 cooperative members (5 cooperatives) in coffee harvest, post-harvest, and evaluation techniques.	950 cooperative members (for the 5 cooperatives) provided with the training, supervision, and information resources (including coffee processing handbook), needed to improve (and sustain) coffee quality. Training by project consultant, in the following modules: (1) Harvesting Techniques, (2) Processing Techniques, (3) Honey Coffee, (4) Processing Techniques, (5) Natural Coffee, (6) Drying Beds Management and Quality Control, (7) Storage and Packaging Techniques, (8) Drying, (9) Mill Selection and Grading Standards, (10) Quality Control, (11) Laboratory Management, (12) Coffee Cupping Training. By Year 2 and 3. A signed list of the producers/cooperative members that have received the benefits of training. Evaluation of coffee quality by UHRC at Yayu and in UK; quality report produced.	Twenty-five trainers employed and trained. A total of 289 cooperative members trained in harvesting and processing techniques for natural and sun-dried coffees, drying bed construction, management quality control, and storage/packaging.	Complete final training in Year 3.
1.3	Training of 950 cooperative members (5 cooperatives) in post harvesting techniques (washing and drying) and its evaluation.	950 cooperative members (households), c. 5220 individuals, with an annual increase in income of 30% (collectively £700,000; each household with an average increase of c. £735 p.a.), by Year 3. Invoices detailing the volume, type (processed vs. unprocessed; type of processing)	A 19 % increase in income across all; 950 households. Around £580,000 pounds has been transferred to the Yayu community via project and pre-project. For further information see notes in Section 6.	A 30% increase in household income by the end of Year 3, from the 2014/15 baseline.

		and price of exported coffee for each cooperative, showing the cash value increase against commodity prices and pre-project prices. Audit report/evaluation by socio-economist (Pascale Schuit), Part 1.		
1.4	Production of draft reference and training manual for harvest and post harvest coffee farming techniques.	As output.	Production of draft reference and training manuals for harvesting, post-harvest processing and farming techniques, translated to Oromifa & Amharic.	Completed in Year 2.
1.5	Each cooperative member (950 in total) in possession of the Coffee Farming and Processing Manual.	As output.	Not a Year 2 output.	Printing and distribution to farmers and coffee workers of final version. A total 950 copies to be distributed.
1.6	Evaluation of coffee processing and coffee quality improvements.	As output.	Completed in Year 2.	Ongoing for Year 3, with additional evaluation in Yayu cupping lab.
1.7	Socio-economic and livelihood monitoring and evaluation.	As output. Audit report/evaluation by Socio-Economist (Pascale Schuit), Part 2.	Farmer surveys undertaken in Year 2.	Farmer surveys completed and evaluation report finalized.
Output 2	Yayu household members (particularly women) are provided with access to training, and then employment within the local coffee sector.			
2.1	Training for 250 seasonal workers in coffee processing (90% female; 10% male).	12,000 square meters of drying bed equipment (Africans Beds) installed for five cooperatives, by Year 1. Invoices for purchase of materials and construction (labour hours) of drying beds.	5,000 square meters of drying bed materials (African Beds) installed for three cooperatives. A small amount (250 m^2) is awaiting delivery, due to stock shortages).	Final and small amount of drying bed materials to be delivered.
2.2	Re-fresher training for 250 seasonal workers in coffee processing (90% female; 10% male).	250 (extra) household members trained in coffee harvesting and processing techniques, by Year 2.Signed receipts for wages received by seasonal workers. Report and account for householders (disaggregated by gender) seasonally employed within the five Yayu cooperatives, during the course of the project (2015–2018) compared	An additional 40% seasonal workers were provided with the training required to meet the demands of an increase in output of high quality coffee.	A follow-up on training.

		to pre-project (2010–2014).		
2.3	250 (extra) household members seasonally employed within the Yayu coffee sector, by Year 2.	250 (extra) household members seasonally employed within the Yayu coffee sector, by Year 2.As above.	See directly above.	Employment of an extra 250 householders (mostly female) for working in coffee harvesting and processing.
Output 3	An area (land-use) analysis of forest and forest-based household income areas for the Yayu UNESCO MAB Reserve.			
3.1	Construction of land-use vegetation map for the Yayu area using RapidEye data (5 m resolution).	One Ethiopian GIS technician trained/supported in advanced land-use change technology and methodologies, by Year 1. Maps showing forest change over a six year period (2012–2018) at 5m resolution, and 18 year period (2000–2018) at 30 m resolution.	Completed in Year 1.	
3.2	Construction of land-use vegetation map for the Yayu area using Landsat and Modis data (30 m resolution).	Three Land-use change maps produced for Yayu Reserve, by Year 2.As above.	Completed in Year 1.	.
3.3	Construction of narrative report to accompany map, and production of final report disseminated to stakeholders.	One New forest-cover survey produced for Yayu UNESCO MAB Reserve, for bench-marking and assessing forest-cover (vegetation) change, by Year 3. Accompanying land-use change survey.	Not a Year 2 output.	Complete this output by the end of Year 3.
Output 4	Yayu coffee cooperative members are provided with the training and information resources required for on-farm climatic resilience**.**			
4.1	Set-up of study plots on 3 Yayu farms to measure the influence of different shade and mulching regimes, and other feasible on-farm adaptation methods, using environmental monitoring equipment.	Three Yayu farm plots (1 ha) provided with, and participating in, on-farm climate adaptation trials, by Year 1. A signed list of the producers/cooperative members that have received the benefits of resilience training and field trials.	Three plots managed, in order to assess the influence of: (1) mulching, (2) mulching and (3) stumping and pruning.	Collect data for the three plots.

4.2	Evaluation of study plot data using statistical and other analytical methods, to assess the precise outcomes for individual and combined adaptation methods.	On-farm adaptation evaluation provided for three Yayu farm plots, and this broadened to provide an overview of climate resilience at Yayu. Results incorporated into a peer-reviewed publication, by Year 3.As above.	Data collected for Plots 1 and 3. Further apparatus added.	Evaluate data from the three study plots.
4.3	Demonstration workshops to each of the 5 Yayu cooperatives on on-farm adaptation methodologies.	5 Yayu cooperatives provided with training in, and information resources for, on-farm adaptation, by Year 3.On-farm, climate adaptation report/survey for Yayu, plus one open access, peer-reviewed scientific paper in draft.	Not a Year 2 output, although some discussions were held in 2016 and 2017.	Undertake workshop(s).
4.4	Construction of first draft (laser-printed) of on-farm climate adaptation chapter.	As output.	Not a Year 2 output.	Complete on-farm climate adaptation chapter.
4.5	Construction of first draft of scientific paper, concerning on-farm adaptation.	As output.	Not a Year 2 output.	Construct draft of scientific paper.

Annex 2: Project's full current log frame as presented in the application form (unless changes have been agreed)

Projects full and current log-frame incorporated into Annex 1, in order to avoid repetition. Projects assumptions stated and supported in Section 3.4.

Annex 3: Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
5	Three years training and support for GIS support person	Male	Ethiopian	1	1	1	1	
6A	Coffee trainers, each receiving five days training	56 % male; 54 % female	Ethiopian	23	25		25	25
6A	Farmers/coffee workers each receiving one day's training	60 % female; 40 male [estimated]	Ethiopian	270	289		559	600
14A	Ad hoc short workshops/discussions with four cooperatives.	80% male, 20% female	Ethiopian	20	14		34	50
20	Coffee processing and evaluation equipment, and scientific apparatus							
21	Cupping Lab				1		2/3	1
23	Non salary input from UHRC		English Dutch Panamanian					
23	Salary input from UHRC (as per budget)							

Table 2. Publications

To come in Years 2 & 3.

Annex 4 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Please see attached files:

Yayu contract 2017 UHR ETH-S17-001.pdf

Report for October 2016.doc

Calculations2017.doc

Packet designs.doc

[The training manuals can be provided but are large, multi-document files; we are awaiting the scans as per the October 2016 report].

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	Yes
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	No
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	