Darwin Initiative – Final Report

*(To be completed with reference to the Reporting Guidance Notes for Project Leaders (http://darwin.defra.gov.uk/resources/reporting/) - it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)*

Darwin project information

Project Reference	15/031
Project Title	Novel and practical conservation strategies following mining in Sierra Leone
Host country(ies)	Sierra Leone
UK Contract Holder Institution	Centre for Ecology and Hydrology (CEH)
UK Partner Institution(s)	Mind the Gap Research and Training (MTG)
Host Country Partner Institution(s)	Environmental Foundation Africa (EFA) Fourah Bay College (FBC) Njala University (NU)
Darwin Grant Value	£164,408
Start/End dates of Project	1st Nov 2006 to 31st Oct 2009
Project Leader Name	Jan Dick
Project Website	
Report Author(s) and date	Jan Dick, Tommy Garnett, Scott Jones, A. B. Karim. Abu James Sundufu, Richard Wadsworth & Arnold Okoni-Williams – Febuary 2010

1 Project Background

The aim of this project was to develop practical methods for successful land reclamation and conservation following rutile mining in Sierra Leone.

In addition the concept of 'biodiversity offsets' was explored and discussed with the company, Sierra Rutile Ltd. and with the country CBD focal point.

Following the completion of the project there was (i) 'proof of concept' demonstration plots highly visible to local people and international visitors, (ii) local people trained and enthusiastic to continue the concept and (iii) an understanding by the mining company of the steps necessary to restore the mining spoil to a post-mining agricultural environment.

This report is a brief summary of the project and the reader is recommended to read the individual reports authored by the project partners for the full details.

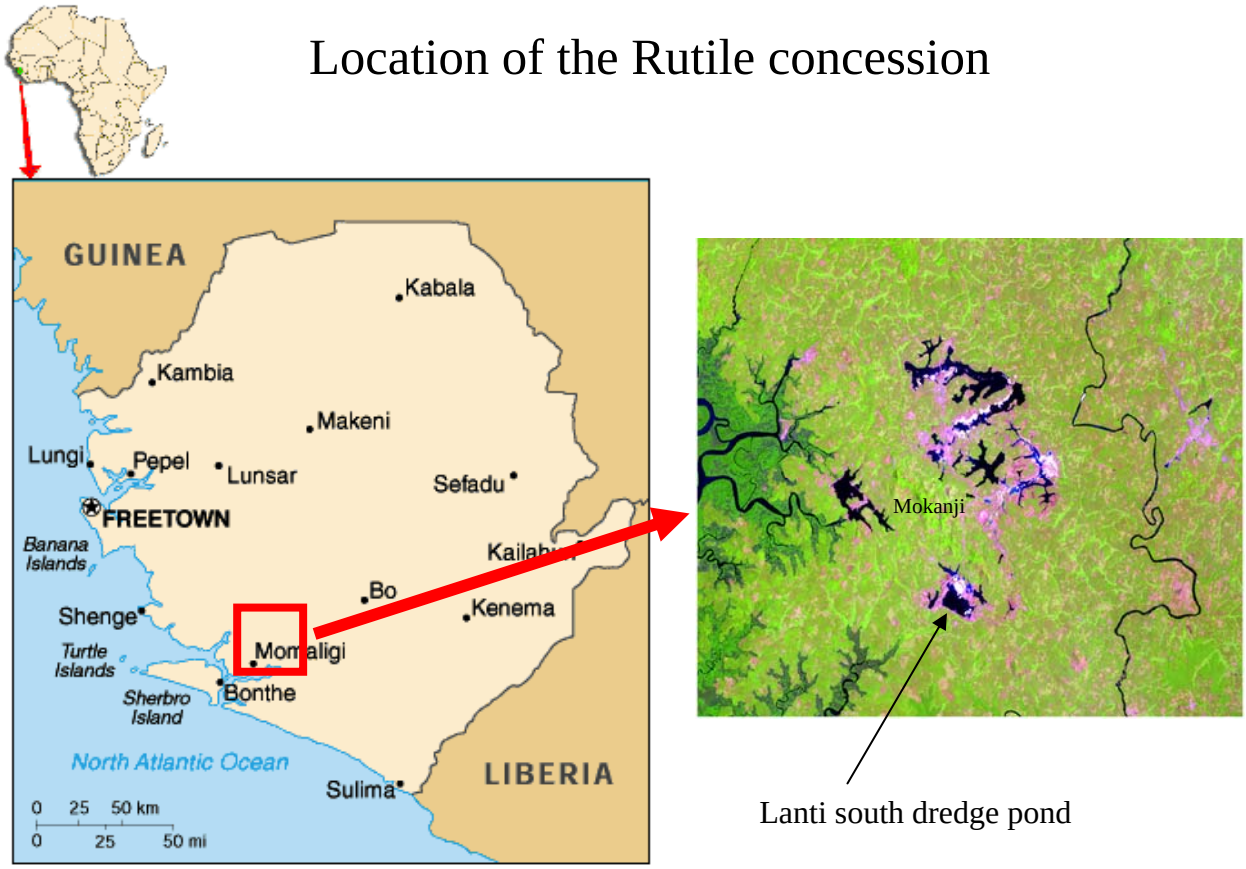

Figure 1. Location of the study site

2 Project support to the Convention on Biological Diversity (CBD)

This project has supported two main themes of the CBD objectives:

10. Sustainable Use of Components of Biological Diversity in particular – 'support local populations to implement remedial actions' and
11. Incentive Measures i.e. assist the host country to establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.

This project has demonstrated the possibility, from an environmental perspective, of sustainably mining rutile in a moist tropical climate by restoring vegetation to the mining spoil following liberal application of organic matter (compost) produced by local people. In order for the experimental plots to be economically sustainable for widespread adoption, considerable "economies of scale" must be developed for the production and spread of the compost. Both mining representatives and local villagers were supportive of the approach if it could be implemented in an economically sustainable basis. It is unclear at this time due to the hidden financial position of the company what costs would be considered economically sustainable by both the communities and the mining company.

Representatives of the project met with the CBD focal point Dr Lebbie before the project commenced and have continued to interact with his replacement Mr Mansaray, Ministry of Agriculture, Forestry and Food Security. Mr Mansaray is personally concerned about the state of the mangroves and was consequently very interested in the biodiversity offset aspect of the project (Dick et al 2008).

3 Project Partnerships

The core of the consortium for this project was formed following previous projects particularly an earlier Darwin Initiative project and a project funded by the IUCN. This allowed identification of weaknesses and strengths of the various partners. Initially it was agreed that EFA the local in-country coordinator would be responsible for in-country finance and management; the university partners FBC and NU would be responsible for scientific monitoring of the demonstration plots; CADEM would facilitate project activities at a local level; CEH would coordinate the project and facilitate the knowledge exchange i.e. learning by action. Changes in the institutional aims, resources and staff at the various organisations mean that the relationships between individuals evolved over time, but discussions are underway to form new groupings to study new problems. Local communities were integral to the success of the project. The villagers were consulted prior to the start of the project and were keen to participate; in the first year they produced far more material (compost and seedlings) than we thought was physically possible. Three villages were in the initial proposal but due to village pressure and company acceptance 12 villages participated. While this level of involvement proved that the project concept was of interest to the villagers it significantly increased the logistics of the project (see Hardcastle 2008 Mid-term review). Despite frequent changes of management at SRL they unfailingly supplied logistical support to the project (accommodation and at times transport) but following the problems which beset the collection and payment of compost in the first year the company felt unable to fully engage directly with villagers in the second and third years. There is good evidence to suggest that they may in future years (i.e. acceptance of villagers at final project workshops and representatives of the agricultural ministry). The UK lead institution, CEH, underwent major restructuring announced on the same day as the project commenced. This had significant implications for the project as Dr Rehema White, our key social scientist left CEH but she recommended Dr Scott Jones, Mind the Gap Research and Training, who fitted well into the project team and delivered excellent work (see previous year reports).

Not surprisingly with such a diverse team, personal and cultural differences both between Sierra Leone partners and between Sierra Leone and UK partners surfaced several times during the course of the project. However, these were dealt with each time and management structures were altered to improve the situation. The post-war social and economic climate of the country influenced both internal and external project relations.

One member of the original consortium, CADEM, resigned from the project (see Dick et al 2007 annual report) the position was filled by an ex-member of CADEM Jestina Jesu, in the role of Community Liaison Officer. A service level agreement with EFA (in-country co-ordinator) was implemented in 2008 as a mechanism of formalising the working relationship.

This ambitious project suffered from a lack of additional funding after the first year as the mining company withdrew leverage funding (they paid £8,000 for additional activities in the first years, See Scott Jones May 2007 Report). This and the increased costs due to currency fluctuations left project staff with less money than anticipated to complete the project. Additional project funding was obtained from CEH (as a transfer from a previous EU project); this helped cover the increased costs and ensured a balanced budget, but came too late to influence the experimental plantings. An initial decision to pay on receipt of written reports was successful in ensuring the project delivered quality output.

No formal MoU were developed between EFA and the other in-country partners and it is not clear if this would have influenced any of the project outcomes.

4 Project Achievements

4.1 Impact: achievement of positive impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

This project had a very clear 'impact' in the mining area. We have demonstrated (as far as possible in a 3 year project) that restoration of the sand tailings is **not** a technical problem (figure 3). The addition of village produced compost resulted in obvious regrowth on mining spoil (see previous reports). The plots spread with 3-5 cm of village produced compost were estimated to have over 90% vegetation cover after two and half years while the plots with no surface spread had less than 10%. In addition one Gmelina tree on the compost treated plots managed to grow over 4 meters tall. Villagers were very impressed and the mining officials also conceded that the project had delivered its intended goal of demonstrating that the mining spoil could be rehabilitated. However they claimed the financial cost was too high but they could not supply a value per hectare which they would consider to be reasonable. While the attitude of SRL remains hesitant it was clear that villagers now feel more empowered to negotiate with mining officials and take the work forward (see Jones 2009).

The concept of biodiversity offsets was explored with mining officials and while interested in the theory they were always wary of the costs. Following the economic crunch of 2008-09 (figure 2) it is clear they do not intend to take the concept further at this time.

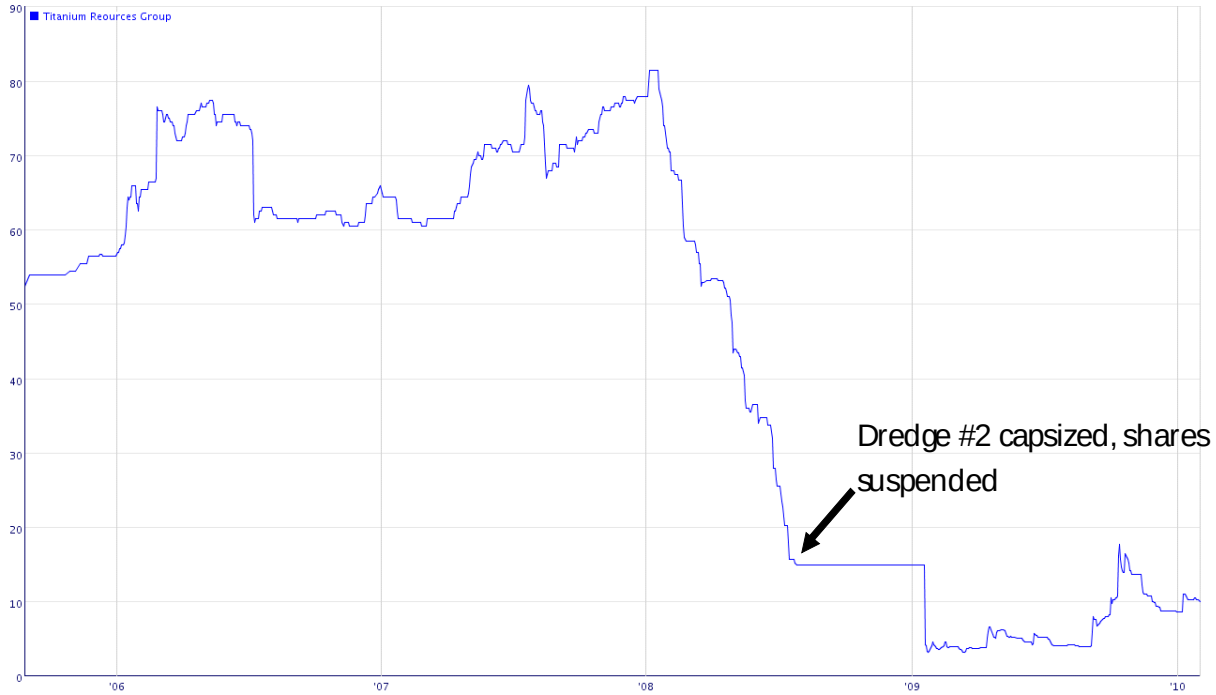

Figure 2. Effect of the "credit crunch" on the share price of Titanium Resource Group (who own SRL)

The project has fed the data on biodiversity offsets directly to Mr Mansaray, the local CBD focal point at the Ministry of Agriculture, Forestry and Food Security. He is personally concerned about the state of the mangroves and involved in the on-going development of a national policy on mangrove forests and is consequently very interested in the biodiversity offset aspect of the project (Wadsworth 2008).

The in-country host organisation EFA is now contemplating partnering with a coalition of the "willing and able", to build a program for the local schools system, around the theme of peace, education and sustainable natural resource management, including land rehabilitation. The work of the DARWIN project would feature as part of that program. A proposal has been submitted (January 2010) to DfID by some of the partners of this project under DfID's "Research in Use" program with the intention of using the scientific knowledge gained under the Darwin project. Other proposals to exploit the knowledge gained by this project are under discussion.

4.2 Outcomes: achievement of the project purpose and outcomes

The demonstration plots established by the company in 2007 as part of this project are a very clear, physical, achievement of the project. The plots demonstrate unambiguously that restoration of the sand tailings is possible (figure 3). The project also proved that the local communities are willing and able to produce all the materials needed to perform the restoration. Over 30 community representatives visited the demonstration plots at the final workshop and witnessed the difference between the project directed rehabilitation efforts and those of the mining horticulturalist which were located at the same sites. The graphic demonstration of spreading compost which resulted in the growth of herbs which "locked" the nutrients into the system, stopped erosion and supported significant tree growth was obvious and while the differences in the treatments were statistically analysed by the University partners the effect was so obvious statistical analysis was not necessary. The undeniable demonstration of rehabilitation was graphically demonstrated to the mining officials during the final workshop (Dick 2009) and accepted by mining officials. The "mass production" of compost has also had an effect on the production of vegetables in the area with many farmers making much more use of compost than before.

Plot 3 – June 2007

Plot 3 – November 2009

Figure 3. Outcome of planting experiments

The potential for improved partnership working and the empowerment of key members of local communities were also significant project achievements. After the local elections of early 2009 a number of new relationships became available to the project. In particular, we worked more closely with the two new councillors, with Ministry officers (e.g. the Block Agricultural Extension Officer for Imperi and two other Chiefdoms; the District Forest Officer and the District Crops Officer). Together with emerging relations with the Messima Women's Group, these new relationships enhanced what was already a positive working relationship with the community representatives from the 12 villages.

There had been some pretty straight talking among some village representatives, the company and the Darwin team after the 2008 compost purchase was somewhat spoiled by poor implementation. Villagers and village chiefs acknowledged that some among their number had added topsoil and fresh leaves to the compost and put pressure on negotiators to accept this as "compost." Mining company representatives acknowledged that there had been miscommunications from their side, and the Darwin team acknowledged that they had not been fully present in the communities at the time of compost sale. After this moment of difficulty in the project, we worked closely with Chiefs, company representatives and others to develop a focus on the future and on the positive. This approach paid dividends as we moved toward the final workshops and a three-stage process of project closure, evaluation and dissemination in Sierra Leone.

In this process, local people, SRL representatives and the Darwin team all were present in a community site visit (two representatives from each village plus the Paramount Chief), a workshop at SRL where managers, the General Manager and Chief Operating Officer were present (three villagers came to this meeting), and a Freetown seminar. In Freetown community members gave a presentation that they themselves had developed – this was their first PowerPoint presentation and for two villagers, their first use of a computer. They then fielded questions from an international and national audience and contributed actively to wider discussions. In these discussions it became clear to the audience that many villagers had demonstrated strong composting skills and knowledge, with several villagers producing very high quality compost and seedlings. One of the villagers at the Freetown seminar said openly that the learning she and others had achieved was so powerful for them, that they now apply those skills in their own fields, using compost that they now make themselves. The Ministry of Agriculture Block Extension Officer supported this statement.

A more equal and respectful relationship emerged among the different stakeholder groups than had existed at times during the project and potential now exists for closer cooperation between identified, serious community members and the mining company, should they wish (see Jones, 2009)

4.3 Outputs (and activities)

The initial outputs were met i.e. demonstration plots established by the mining company in June 2007. However, only limited plots were established in future years because the company would not purchase compost from the villagers and although indicating they had sufficient compost did not follow agreed planting plans. The project was designed on the understanding that the company would plant the demonstration plots, but when this did not occur there was little that project staff could do to insist. As noted above however, it is clear that villagers have been empowered by the project and now have both the knowledge and the skills to rehabilitate the mining spoil.

The project team have also transferred knowledge to mining officials on the concepts of biodiversity offsets and carbon trading. It appears unlikely that they will adopt either of these concepts further at this time but if the economic fortunes of the company should change they now have both the knowledge and the skills to fulfil their social and corporate responsibility if they want to.

4.4 Project standard measures and publications

See Annexes.

4.5 Technical and Scientific achievements and co-operation

This project encouraged the development of methods and techniques for the restoration of biodiversity on land degraded through mining in accordance with Article 18 of the CBD. This was achieved by cooperation and knowledge exchange between all project partners including mining officials, villager, academic and NGO partners. The methodologies tested were conducted on 0.25 ha plots and were so dramatically different there was little need for statistical analysis to understand the methods. This was an important objective of the project as these legacy plots will be an important reminder for both the local people and the mining officials that the mining spoil can be revegetated. In addition the University partners in Sierra Leone are keen to publish the results of the experiment in a peer reviewed journal. They have a wealth of data (see University reports throughout life time of project) and have assured the project leader that they will submit a paper shortly. In addition the details of the plot will be submitted as a data paper to Ecological Society of America's data archives (currently in draft format see Dick et al 2010). A draft socio-ecological paper is current in draft form and circulating around partners (see Dick et al. 2010).

4.6 Capacity building

In addition to the points made above, some significant additions to local capacity have been achieved through this project. Specific training in natural resources conflict management was successfully undertaken in 2008 (Jones, 2008). Notably, local people have reported feeling able to negotiate on their own behalf in ways that are more acceptable to their peer and to company officials. Indeed, by the end of the project, company managers and key local people were engaging in serious and collegial discussions. For the time being, community representatives wish to continue working with SRL through a neutral third party but over time, they said, they would like to take over and hold face-to-face discussions themselves. Indeed, one can't help feeling that things would have advanced much more quickly on all sides had the top management in the company not seen such a high turnover during the project.

Of particular relevance is that biodiversity conservation and agriculture, far from being seen as in conflict with each other, are regarded by many local people as complementary. Several senior villagers noted at the end of the project that natural land and bush were important elements of any restoration of mined-out lands. Indeed the villagers' presentation recorded "return to nature" as an important goal and end point in their desire to rehabilitate their lands.

4.7 Sustainability and Legacy

A three year project is relatively short time to be absolutely certain that a tree is properly established. However, examination of the soil nutrient profile, ground flora and tree height suggest that the "best" plots are capturing and cycling nutrients and will thrive until (or unless) someone deliberately cuts them down or sets fire to them. The most likely enduring legacy of the project is, however, likely to be in the knowledge and beliefs that have been fostered in the host communities. They can see how the materials that they produced can be used to restore the land and they can see that the relationship between themselves and the company could be different.

All data collected by the project is currently securely housed in a project "wiki" hosted by CEH. Data will be migrated for long-term storage in the NERC designated CEH data archive. It is also intended to submit the data to the Ecological Society of America's ecological archive to allow the widest possible use of the data in the future (see Dick et al 2010b).

Parts of the consortium are forming new consortia to investigate other environmental issues, but now with the knowledge that inter-disciplinary research can achieve far more than single discipline research can hope to do. A proposal has been submitted in response to DfID's "Research in Use" call by some of the project partners; it is expected that other proposals will follow.

5 Lessons learned, dissemination and communication

There are several lessons learnt from this project. They can be summarised as technological and social. The technical lesson is that application of compost is necessary to restore land to a post-mining agricultural use within a 10 year time span – this was demonstrated to representatives all local partners at the final workshop and via videos distributed in country by ENFOAC. The social lessons are more complex and panarchy theory was adopted as a tool to explore the relations within the project (Dick et al 2010c).

5.1 Darwin identity

The project was known in-country as the DARWIN project standing for **D**arwin **a**nd **R**utile **W**orking with **I**ndigenous **N**eighbours

The plots are marked by metal signage but some of these have been "recycled" during the life time of the project.

The Darwin logo appears on the videos about the project and on all handouts and papers

6 Monitoring and evaluation

The project was formally monitored each year when all consortium partners, villagers and mining officials were specifically asked their opinions on the projects progress (see Dick et al. 2007, 2008, 2009). In addition the project was formally reviewed at the mid-point by Pat Hardcastle. This was very opportune as he made several helpful suggestions and amended the log-frame (see Hardcastle report).

6.1 Actions taken in response to annual report reviews

All reviews were circulated to project partners and the points answered where necessary. Essentially this involved better communication and the project bought two additional computers to enable communication. This helped the situation.

7 Finance and administration

7.1 Project expenditure

The original budget was used as initially agreed (except for staff changes resulted in different people receiving the funding). It was possible to use the budget exactly as agreed because changes were incorporated in the additional CEH contribution. Staff changes as noted above are incorporated in the tables below.

Table A: Staff time. List each member of the team, their role in the project and the percentage of time each would spend on the project each year.

	2006/2007 %	2007/2008 %	2008/2009 %	2009/2010 %
UK project team member and role				
J. Dick -project leader and restoration ecologist R. Wadsworth – GIS / mapping R. White – replaced by Scott Jones, Mind the Gap Research and Training – as R. White left CEH participatory workshops and research				
Host country/ies project team members and role				
T. Garnnet –in country leader (EFA) K. Koker – administered support Dr Blyden, -replaced by Dr Sundufu as Dr Blyden left the country prior to the start of the project - Tech. Coordinator - NU Dr Karim, Tech. Coordinator - FBC L. Mboka – activist CADEM Resigned from project – position filled by Jestina Justu				

	2006/2007 %	2007/2008 %	2008/2009 %	2009/2010 %
Tech support – CADEM – replaced on a casual labour basis as required Admin support CADEM - replaced on a casual labour basis as required E. Niesten Economist-CI J. Donovan W.Africa Manager - CI As a result of frequent staff changes within SRL all except A. H. King changed several times through the lifetime of the project F. Smith EHS Manager – SRL Ecologist - SRL J. Magbity Comm. Develop. Facilitator - SRL A. Kamara Comm. Develop officer LAIR - SRL A. H. King – Consultant Horticulturist				

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Table B: Salary costs. List the project team members and show their salary costs for the project, separating those costs to be funded by the Darwin Initiative from those to be funded from other sources.

See notes on staff changes in Table A

Project team member	2006/2007		2007/2008		2008/2009		2009/2010	
	Darwin	Other	Darwin	Other	Darwin	Other	Darwin	Other
J. Dick -project leader and restoration ecologist R. Wadsworth – GIS / mapping R. White - sociologist T. Garnnet –in country leader (EFA) K. Koker – administered support Dr Sundufu, Tech. Coordinator - NU Dr Karim, Tech. Coordinator - FBC Jestina Jesu – Darwin liaison Office (DLO) Tech support – DLO Admin support DLO E. Niesten Economist-CI J. Donovan W.Africa Manager - CI Environment Manager-SRL Ecologist - SRL – Comm. Liaison SRL livelihood officer – SRL A. H. King - Horticulturist								
TOTAL COST OF SALARIES								

Table C. Total costs. Please separate Darwin funding from other funding sources for every budget line.

	2006/2007	2007/2008	2008/2009	2009/2010	TOTAL
Rents, rates, heating , cleaning, overheads					
• Darwin funding					
• Other funding					
Office costs eg postage, telephone, stationary					
• Darwin funding					
• Other funding					
Travel and subsistence					
• Darwin funding					
• Other					
Printing					
• Darwin funding					
• Other					
Conferences, seminars etc.					
• Darwin funding					
• Other funding					
Capital items/equipment (please break down)					
• Darwin funding					
• Other funding					
Other costs (including Audit costs to a maximum of £500) (Please specify and break down)					
• Darwin funding					
• Other funding					
Salaries (from previous table)					
• Darwin funding					
• Other funding					
TOTAL PROJECT COSTS					
TOTAL COSTS FUNDED FROM OTHER SOURCES					
TOTAL DARWIN COSTS					

In addition to contribution from CEH and other sources agreed in the initial proposal CEH also gifted £xxxx which was used to provide additional input from UK partners and pay for the final workshops and part fund the videos.

7.2 Additional funds or in-kind contributions secured

Additional funding of ~£xxxx was obtained towards the end of the second year of the project from CEH sources. These funds compensated for cost overruns due to fluctuating exchange rates and extra inputs being required.

7.3 Value of DI funding

The problem of what to do with mine spoil has been recognised as an issue more or less since the mine opened. Unfortunately, resources for environmental NGO's in Sierra Leone are very limited. The Sierra Leone Government has often appeared to be reluctant to enforce agreements with the company perhaps in recognition that the company has, at times, provided 70% of the foreign exchange earnings of the country. It seems unlikely that any one other than the Darwin Initiative would have funded a project like this one with the blend of both biodiversity and increased livelihood objectives. In addition to the actual financial resource made available there is also the "cachet" of being funded by the Darwin Initiative that helped us negotiate with the mining company. The mining company could be (and was) reassured that the project would be conducted in a dispassionate way to the proper international standards.

Annex 1 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements April 2009 - Nov 2009	Actions required/planned for next period
Goal: *To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve* *The conservation of biological diversity,* *The sustainable use of its components, and* *The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources*		Restoration demonstration plots established and monitored Communities actively engaged in restoration efforts Biodiversity offset options identified	*(do not fill not applicable)*
Purpose Develop practicable methods for reclamation of surface mined land that engage communities and Support biodiversity conservation	Develop practicable methods for reclamation of surface mined land that engage communities and support biodiversity conservation	Communities engaged and demonstration plots established in 2007. Reduce planting in 2008 while new business model developed Communities keen to continue reclamation activities when mining company able.	
Output 1. Livelihood and restoration relevant business models developed and piloted in mining adjacent communities	Model adopted by local people and mining company following this project	Business model piloted in the first year. Implementation problems identified and strategies developed to overcome the problems (written agreements). Funding crisis within mining company resulted in no testing of written agreements.	
1.1 Develop business strategies with stakeholders to support interventions		Initial business model was not sufficiently structured all agree that new agreements necessary.	

1.2 Undertake Training Needs Assessment and deliver appropriate training opportunities		In addition to informal 'on the job' training courses ran on Genstat and GIS. Local villagers coached in public speaking and travelled to Freetown to present 'villagers' perspective at final workshop with Ministry and MPs in the audience.
1.3 Monitor livelihood impacts, adapt and revise strategies as appropriate		Limited activity on this activity due to the nature of the relationship between the communities and SRL
Output 2. Range of appropriate interventions tested and evaluated in demonstration plots	Plots established –minimum 15 plots 0.25 ha each in each of three years	16 plots planted June 2007 and limited planting in 2008 planting; plots not established in 2009 (note funding for this element is from SRL and due to economic crisis (figure 2) they refused to participate).
2.1 Undertake GIS survey of mine spoil areas and forward estimate of areas of different types		Initial estimate quantified discrepancies discussed with company representatives. Unfortunately no new satellite images available.
2.2 Develop interventions in consultation with stakeholders and establish demonstration plots		Negotiations in progress with company
2.3 Develop data gathering methodology for demonstrations, collect and analyse technical and economic data		16 plots monitored January 2009
2.4 Discuss results with stakeholders and revise interventions as appropriate		Limited village level communication this year due large final workshop planned
Output 3. Community / company relationships improved and consolidated	Initial and final stakeholder analyses	Continued dialogue and empowerment of community liaison officer. Empowerment of local people attending Freetown seminar
3.1 Run workshops and similar events to provide forum for discussion 3.2 Undertake regular monitoring through field visits and discussion with key individuals 3.3 Maintain close linkages with company and confirm agreement and support for interventions in advance		Three workshops held Nov 2009. Community development officer visits villages and plots regularly and site visits from Sierra Leone and UK partners Regular telephone conversations between project manager and focal point in mining company.
Output 4. Alternative forms of biodiversity offset payment schemes identified and evaluated	Survey mining company and local community. Consolidate data and compare to similar initiatives.	Survey reported in year 1 additional survey of favoured option in 2009. Plan discussed with mining representatives but due to funding crisis no specific action taken.
4.1 Prepare analytical discussion paper on options and potential 4.2 Conduct SWOT analysis and consensus building to identify preferred options 4.3 Make recommendations for selected options including cost effectiveness and contribution to biodiversity conservation		Completed – see previous reports Company currently concentrating on production aware but non-committal about off set payments.

Annex 2 Project's final logframe, including criteria and indicators – same as above

Annex 3 Project contribution to Articles under the CBD

Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use		Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring		Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
8. In-situ Conservation		Establish systems of protected areas with guidelines for selection and management; regulate biological resources, promote protection of habitats; manage areas adjacent to protected areas; restore degraded ecosystems and recovery of threatened species; control risks associated with organisms modified by biotechnology; control spread of alien species; ensure compatibility between sustainable use of resources and their conservation; protect traditional lifestyles and knowledge on biological resources.
9. Ex-situ Conservation		Adopt ex-situ measures to conserve and research components of biological diversity, preferably in country of origin; facilitate recovery of threatened species; regulate and manage collection of biological resources.
10. Sustainable Use of Components of Biological Diversity	30	Integrate conservation and sustainable use in national decisions; protect sustainable customary uses; support local populations to implement remedial actions; encourage co-operation between governments and the private sector.
11. Incentive Measures	30	Establish economically and socially sound incentives to conserve and promote sustainable use of biological diversity.
12. Research and Training	10	Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
13. Public Education and Awareness	10	Promote understanding of the importance of measures to conserve biological diversity and propagate these measures through the media; cooperate with other states and organisations in developing awareness programmes.
14. Impact Assessment and Minimizing Adverse Impacts	5	Introduce EIAs of appropriate projects and allow public participation; take into account environmental consequences of policies; exchange information on impacts beyond State boundaries and work to reduce hazards; promote emergency responses to hazards; examine mechanisms for re-dress of international damage.
15. Access to Genetic Resources		Whilst governments control access to their genetic resources they should also facilitate access of environmentally sound uses on mutually agreed terms; scientific research based on a country's genetic resources should ensure sharing in a fair

Article No./Title	Project %	Article Description
		and equitable way of results and benefits.
16. Access to and Transfer of Technology		Countries shall ensure access to technologies relevant to conservation and sustainable use of biodiversity under fair and most favourable terms to the source countries (subject to patents and intellectual property rights) and ensure the private sector facilitates such assess and joint development of technologies.
17. Exchange of Information		Countries shall facilitate information exchange and repatriation including technical scientific and socio-economic research, information on training and surveying programmes and local knowledge
19. Bio-safety Protocol		Countries shall take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities and to ensure all practicable measures to promote and advance priority access on a fair and equitable basis, especially where they provide the genetic resources for such research.
Other Contribution	15	Smaller contributions (eg of 5%) or less should be summed and included here.
Total %	100%	Check % = total 100

Annex 4 Standard Measures

Code	Description	Totals (plus additional detail as required)
Training Measures		
1a	Number of people to submit PhD thesis	
1b	Number of PhD qualifications obtained	
2	Number of Masters qualifications obtained	
3	Number of other qualifications obtained	
4a	Number of undergraduate students receiving training	23 (2 in Sierra Leone, 1 in Lancaster, 20 Edinburgh University Natural Resource Mangament)
4b	Number of training weeks provided to undergraduate students	6
4c	Number of postgraduate students receiving training (not 1-3 above)	4
4d	Number of training weeks for postgraduate students	1
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification(ie not categories 1-4 above)	
6a	Number of people receiving other forms of short-term education/training (ie not categories 1-5 above)	1 one the job training JJ
6b	Number of training weeks not leading to formal qualification	
7	Number of types of training materials produced for use by host country(s)	3 (Teaching manuals on using ArcMap and Genstat and a guide to land cover classes)
Research Measures		
8	Number of weeks spent by UK project staff on project work in host country(s)	JD = 10 weeks, Nov 2006, May 2007, Nov 2007,2008, 2009 RAW = 10 weeks (November 2006, June & November 2007, November 2008 & November 2009)
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (s)	
10	Number of formal documents produced to assist work related to species identification, classification and recording.	
11a	Number of papers published or accepted for publication in peer reviewed journals	1 Panarachy paper in prep
11b	Number of papers published or accepted for	1 (Voyage of the Ocean of Bliss,

Code	Description	Totals (plus additional detail as required)
	publication elsewhere	Planet Earth)
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country	
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country	
13a	Number of species reference collections established and handed over to host country(s)	
13b	Number of species reference collections enhanced and handed over to host country(s)	
Dissemination Measures		
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	2 (Communities workshop at SRL; national stakeholder workshop in Freetown)
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	4 (Royal Geographic Society/ Kew; workshop Lancaster Environment Centre; Shore Section, CEH; CEH Conference)
15a	Number of national press releases or publicity articles in host country(s)	
15b	Number of local press releases or publicity articles in host country(s)	1 Tommy can you be sure to total this correctly please There were several through the lifetime of the project
15c	Number of national press releases or publicity articles in UK	
15d	Number of local press releases or publicity articles in UK	
16a	Number of issues of newsletters produced in the host country(s)	
16b	Estimated circulation of each newsletter in the host country(s)	
16c	Estimated circulation of each newsletter in the UK	
17a	Number of dissemination networks established	
17b	Number of dissemination networks enhanced or extended	
18a	Number of national TV programmes/features in host country(s)	
18b	Number of national TV programme/features in the UK	
18c	Number of local TV programme/features in host country	
18d	Number of local TV programme features in the	

Code	Description	Totals (plus additional detail as required)
	UK	
19a	Number of national radio interviews/features in host country(s)	
19b	Number of national radio interviews/features in the UK	
19c	Number of local radio interviews/features in host country (s)	1 (from the final workshop) +
19d	Number of local radio interviews/features in the UK	0
Physical Measures		
20	Estimated value (£s) of physical assets handed over to host country(s)	2 Computers? £xx (Mobile phone).
21	Number of permanent educational/training/research facilities or organisation established	0
22	Number of permanent field plots established	16 plots of 0.25 ha each (total 4 ha)
23	Value of additional resources raised for project	£xxxx
Other Measures used by the project and not currently including in DI standard measures		
24	Training in use of technology	4 people trained to use tablet computer and GPS for land cover mapping

Annex 5 Publications

Publications

Type * (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
Report	Report of initial project workshops Dick et al December 2006 18 pp		Darwin website	0
Report	Report on conflict mediation. Jones S. December 2006. 16 pp		Project wiki	0
Report	Report on technical workshops conducted at Sierra Rutile operation areas 13th-17th Karim et al. November 2006. 29 pp		Project wiki	0
Report	Working together capacity building workshop for effective partnership and collaboration in post-mining land restoration. Jones S. January 2007. 4 pp		Project wiki	0
report	Six-month Project review Dick et al 2007 13 pp		Project Wiki	0
Report	First Annual Project review Dick et al 2007 9 pp +appendices		Darwin website	
Report	Report of practical workshops conducted at Sierra Rutile operational areas 17th - 22nd December 2006. Wadsworth R.A. & Kanu K. January 2007 19pp		Project Wiki	0
Report	A biodiversity offset proposal for Sierra Rutile Ltd. Niesten E. & Wadsworth R.A. February 2007 16pp		Project Wiki	0
Report	Report on base-line data collection and observations on planting. 16th - 23rd June 2007. Wadsworth R.A. August 2007 20pp		Project Wiki	0
Report	Workshop preparation and field work update report.		Project wiki	0

Type * (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
	Jones. S. March 2007. pp 7			
Report	Report from communities on compost making. Jesu J. May 2007. 1 pp		Project Wiki	0
Report	Report on compost collection and transport Jesu J. August 2007. 3 pp		Project Wiki	0
report	Workshop report "skills training and conflict transformation and partnership building". Jones S. August 2007. 15 pp		Project wiki	0
Report	Baseline report on soil macrofauna. Sundufu A. June 2007. 17 pp		Project wiki	0
Report	Development report. Jesu J. December 2007. 4pp		Project Wiki	0
Report	Proposed experimental design for the 2008 planting season. Dick et al December 2007. 3 pp		Project wiki	0
Report	Second Annual Project Review Dick et al 2008		Darwin website	0
Report	Report on inspection of mangrove forest adjacent to Sierra Rutile Operational areas 5th-6th December 2007. Wadsworth R.A. (revised) October 2008. 19pp		Project Wiki	0
Report	Report on an attempt to find and assess fuel wood lots in Magbosi IADP area 24th-26th Wadsworth R.A. October 2008. 3pp		Project Wiki	0
Report	Monthly report Jesu J. January 2008. 4pp		Project Wiki	0
Report	Report on the experiments. Jesu J & Simi. March 2008. 6pp		Project Wiki	0
Report	Report on project. Sundufu A. March 2008. 22 pp		Project wiki	0
Report	Draft report on the post-planting monitoring of		Project wiki	0

Type * (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
	experimental plots on the Sierra Rutile Mines April 2008. Karim A,B., & Okoni-Williams A. June 2008. 50 pp			
Report	Report of July 2008 planting. Sundufu A. August 2008. 9 pp		Project wiki	0
Report	Second Annual Project Review Dick et al 2009		Darwin website	0
Report	Report on project monitoring January 2009. Sundufu A. March 2009 16 pp		Project wiki	0
Article	*Voyage of the Ocean of Bliss, Wadsworth R.A. 2009. 2pp	Planet Earth	NERC website	0
Report	*The Mangrove Expedition.* Wadsworth R.A., Sundufu A.J. & Jalloh A. March 2009. 10 pp		Darwin Website	0
Report	Agenda and Notes of Meeting Held at Njala on 17th February 2009 Wadsworth R.A. March 2009. 5 pp		Darwin website	0
Report	Diary of Events 25th January to 18th February 2009 Wadsworth R.A. March 2009. 8 pp.		Darwin website	0
Report	Analysis of Tree Growth Data to February 2009, Wadsworth R.A. April 2009. 14pp		Darwin website	0
Report	Project Monitoring Report. Sundufu A. J. 2009.		Darwin website	0
Report	*Darwin Initiative report on a visit to Sierra Leone, may 2009. Jones S. May 2009. 17 pp		Project wiki	0
Report	*Draft report on the post-planting monitoring of experimental plots on the Sierra Rutile Mines. Karim et al . July 2009. 16 pp		Project wiki	0
Manual	*A “teach-yourself” manual on the use of ArcGIS for the environmental sciences. Wadsworth		Project wiki	0

Type * (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
	R.A. January 2009 (revised). 114pp			
Manual	*A "teach-yourself" manual on the use of Genstat for the environmental sciences. Wadsworth R.A. January 2009 (revised). 12pp plus 3 example data sets		Project wiki	0
Manual	*Land cover classes used in mapping in Sierra Leone. Wadsworth R.A. 2010 (revised). 5pp		Project wiki	0
Report	*Possible Application of Carbon Credits to Land Restoration Projects Project report for Novel and practical conservation strategies following mining in Sierra Leone Wadsworth R.A. & Dick J. October 2009. 21pp		Project wiki	0
Report	*Draft report field work and community workshops conducted at SRL and Freetown. Project report for Novel and practical conservation strategies following mining in Sierra Leone Wadsworth R.A. November 2009. 7pp		Project wiki	0
Report	In-country report 18 Nov to 2 Dec 2009 Dick J December 2009 26pp.		Project wiki	0

Annex 6 Darwin Contacts

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