

Novel and practical conservation strategies following mining in Sierra Leone

Report of initial project workshops

6-23 November 2006

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Executive Summary

The aim of the visit was to initiate the Darwin Initiative project. A 15 person team was assembled in Sierra Leone during the two week period. The following activities were achieved

- Constructive consultation with communities, mining company and government representatives'
- Participatory initiation workshop at the mining site
- Four technical workshops in four nucleolus villages with representatives from several surrounding villages
- Demonstration plots designed and agreed with SRL management and village communities (16 * 0.25 ha)
- The hypothesis of the first year demonstration plots will be *Addition of organic matter in the form of compost and mulch to the disturbed soils in the SRL concession increase crop productivity*
- Preliminary stakeholder analysis was conducted
- Assessment of environmental service payment options for SRL were formulated
- Assessment of land cover in the mining area was determined

Each partner is reporting on a primary activity they conducted during this period.

The aim of this document is to report the management issues covered during this period and give background to the decisions taken. It was decided in order to minimise misunderstanding that during this project when decisions are made they should be routinely written and circulated.

The first in a series of such statements are attached as appendixes to this report.

- Reporting structure of DARWIN project
- Demonstration plots – November 2006
- Compost price
- Use of video footage shot in connection with the DARWIN project.

Terms of Reference

1. Conduct meetings and workshops as appropriate with relevant stakeholders and formulate detailed project work plan.
2. Discuss specifically the experimental plan for the demonstration plots and the source of the materials needed
3. Meet with relevant government and donor actors in Sierra Leone to introduce the project and learn about related activities in country

Introduction

Between 6 and 23 November 2006 a large team (15 persons) was assembled in Sierra Leone for the initiation of this project. During the two week period the project team consisting of 1-5 representatives of each of the partners (Table 1). The team covered a range of tasks including conducting workshops, stakeholder analysis, consultation with communities, mining company and government representatives', experimental design of demonstration plots etc. Each partner is reporting on a primary activity they conducted during this period. However, the skills and knowledge that each individual brought is much wider and this was evident during the field trip. This report will focus on project management issues and reporting the experimental design agreed with the villagers and SRL senior staff.

Table 1. List of core project staff and their role within the project.

Name	Affiliation	Primary role
Dr Jan Dick	CEH	Project manager
Dr Richard Wadsworth	CEH	Landscape monitoring
Dr Sundufu	Njala University	Reclamation technologies
Pious Abu Bakark Sesay	Njala University	Reclamation technologies
Dr A B Karim	Fourah Bay College	Reclamation technologies
Mr Arnold Okoni Williams	Fourah Bay College	Reclamation technologies
Mr Kabbie Kenu	Fourah Bay College	Reclamation technologies
Mr Leslie Mboka	CADEM	Interactions between stakeholder groups
Ms Jestina Jusu	CADEM	Interactions between stakeholder groups
Dr Scott Jones	Mind the Gap	Interactions between stakeholder groups
Mr Edward Niesten	Conservation International	Ecosystem payments
Mr Tommy Garnett	EFA	In-country manager
Ms Evy Wilkins	EFA	In-country organiser
Mr Eugene Cole	EFA	Reclamation technologies
Mr Kasier	EFA	Project finances
Mr Mohamed Fortune	EFA	Logistics

In addition Mr Harold Williams, Chairman of ENFORAC accompanied the field team to the mining site and shot footage for a video.

The over arching management principle of this project is the participation of all parties. Effective participation encourages ownership of project design and outcomes by the communities and SRL while still satisfying the scientific rigour required by the academic participants. This inevitably resulted in less forward planning than is normal in such projects. Decision were made and acted upon during the project teams stay in Sierra Leone when all parties had been consulted. While this management approach made some members of the team uncomfortable initially it was considered vital by the project manager, Jan Dick, not to push either the communities or the mining company into a position where they suspected that decision had been made before they were fully consulted. In general this approach was welcomed by all parties and as manager Jan Dick is committed to ensuring that full participation by all parties in all major decisions remains the normal management practise.

It was recognised that the project required a snappier title than **Novel and practical conservation strategies following mining in Sierra Leone**. During the two week field trip various suggestions were made but most often the villagers, SRL staff and the project team themselves referred to the project as the DARWIN project. As the donor is keen on visibility within a project it was agreed that the project should be referred to as the DARWIN project.

However, it was also recognised by all parties that additional funding is necessary to fully deliver all the aspirations of the villagers, SRL and project staff. Indeed the Darwin Initiative Fund openly encourages project participants to use the projects that they fund to leverage additional financial support. Doubt was raised as to whether other donors would be happy to co-fund a project so strongly identified with one donor. It was decided that if the letters of DARWIN could be made to be relevant to the project the objections of other donors would be lessened. It was therefore decided that the initial letters would standing for

D – Darwin
A – And
R – Rutile
W – Working with
I – Indigenous
N - Neighbours

In future DARWIN will be the normal internal and external shortened version of the project title.

Introduction of the project to local actors

The project team introduced the project to government and donor actors in Freetown to raise awareness and foster collaboration. Evy Wilkins EFA had arranged appointments with relevant government officials including Mr Femi Kamara, Assistant Director, Ministry of Mineral Resources who was very supportive of the project. We also met with Mr Cyril Jusu, Director of Ministry of Environment, who is responsible for monitoring mining activities in the country. Mr Jusu was particularly interested in the results of the IUCN-NL funded SEE360 analysis which was conducted in the mining area in May 2006.

We also met with the Principle of Njala University Dr A.M. Alghali and Dr Andrew Bomah, Dean of Environmental Sciences. We explained in greater detail the aim of this Darwin Project and Dr Alghali fully endorsed Dr Sundufu's suggestion of involving students in the monitoring of the reclamation technologies tested in this project.

Dr. Redwood-Sawyer the Deputy Vice Chancellor and Principal of Fourah Bay College was also very supportive of the project and fully endorsed Dr Karim's involvement. Forah Fourah Bay College hosted ??? project lead by Dr Richard Wadsworth and fully understand the benefit of just a project for their University.

We formally presented the project to Mr Sigvard Bjorck, Head of Section – Infrastructure, European Union. Mr Bjorck had only been in post for a few weeks and was keen to see the images of the mining area presented by Richard Wadsworth. Mr Bjorck visited the mining area for one night during our visit and was pleased to hear of the rapid progress we were making.

We met with Tom Walsh, Director British Council Sierra Leone and explained the rationale of the project. We attempted to introduce the project to DFID but Mark White, Deputy Programme Manager was out of the country. We provisionally arranged an appointment with Annette Babita, Assistant Program Manager and Lise Curtis the officer in charge of liaises between government and private industry but unfortunately they were unavailable on the appointed day.

The project team also introduced the project to 'The Environmental Forum for Action' (ENFORAC). Formed in 2004 ENFORAC is a coalition of environmental NGOs, community groups and academic organisations who have come together as a united voice to maximize their impact on policy, management and behavioural change for a healthy environment in Sierra Leone. EFA, CADEM and both university partners are members of ENFORAC. The group welcomed our project and we agreed to circulate our reports to members of the group to inform and foster further collaboration with other ENFORAC members.

Relevance of project to local communities in the concession of Sierra Rutile Limited (SRL)

This project arose from the IUCN-NL funded work to conduct SEE 360 analysis in 5 regions of the SRL concession. Leslie Mboka and SRL staff conducted sensitisation activities in the surrounding villages two weeks prior to our visit. Jan Dick visited these villages again in the company of Leslie Mboka and Scott Jones to invite them to send representatives to the initial project meeting held on Saturday 11 November when the exact work plan for the first year would be decided.

The communities were very much in favour of this project as many remembered Jan Dick from her visit one year earlier when they told her what they wanted in terms of rehabilitation of the mining spoil i.e. more involvement in the species selection and money directly from the company for services they felt they were well able to provide.

The project concept of decentralised sourcing of compost and seedlings from the communities to rehabilitate the mining spoil was presented to the community representatives and new SRL staff at the initial meeting. Both groups were supportive of the idea and the village representatives requested knowledge on preparing compost. The team readily agreed to provide workshops in their villages but as many villages were represented Jan Dick explained that the team would either have to spend a short time in each village or the villages would have to organise themselves into fewer groups. The villagers discussed amongst themselves and decided that they wanted four full day workshops. Workshops were held at Kpetema, Yangatoke, Foinda Gangama which included representatives from neighbouring villages. Over 250 people in the villages attended and actively participated in the discussions. A full report of the village workshops will be given by the project university partners. It is important to note here that in terms of management the work plan for the workshops was not decided before the villages requested them. It is a credit to all the DARWIN field team, particularly the university partners (Table 1) that they fully engaged and actively contributed to the design of the workshops. We were not sure on the Saturday how many people would attend the workshops and therefore had two alternative strategies. The project team had to adapt their facilitation methods in each village depending on the specific questions asked by the villagers. This participatory approach of facilitating knowledge transfer between villagers was not new to the team and all members were excellent in keeping control of their groups while actively encouraging all participants to have a say.

The villagers participated fully in the project workshops and contributed significantly to the knowledge sharing and design of the first year experimental rehabilitation plots. There is still a legacy of suspicion between the villagers and the mining company but many people we met in communities and at SRL see this project as a positive attempt to move forward with constructive actions for land rehabilitation.

The provision of lunch at the workshops was symbolic of the good will created in this project. On the Saturday the villagers asked if it was necessary for them to provide lunch for the participants. Following discussion it was agreed that SRL would provide the ingredients and the women of the village would provide the culinary skills to prepare and served the food. This practical partnership worked well and is hopefully a model for the future.

Relevance of project to Sierra Rutile Limited (SRL)

SRL were fully engaged in the activities reported here and in the technical reports. This project clearly assists SRL to fulfil its obligations under its Environmental Social Health and Safety Policy (appendix 1). Specifically, we addressed the following items

- Educate and train employees through programs on health, safety, and environmental issues;
- Progressively rehabilitate areas no longer required to support our operations using sound practical methods; and
- Liaise openly with the community throughout the life of the project [SRL mining concession] with the aim of continuing to operate and develop activities to the benefit of all.

This project with its academic research focus is well aligned with SRL's commitments as stated in Smith (2005).

SRL proposes to report on its performance annually and in an appropriate way to all stakeholders. In addition, as required by its environmental and social covenants with OPIC/ EU-GOSL, SRL proposes to prepare a Biodiversity Conservation and Development Plan to protect and manage areas of ecological significance (such as remnant patches of primary forest and mangrove swamps) within its exploration and mining lease.

SRL will align with government agencies and appropriate non-government organisations (NGOs) to participate in the planning, design, implementation and long term management and monitoring of conservation areas.

SRL will promote a participatory approach with the surrounding villages, government representatives and NGOs to assure that stakeholder interests and livelihoods are factored into the planning and development process (Knight Piésold, 2001).

Transferring these plans and programmes from paper into practice by establishing and maintaining an integrated and transparent EMS as a means of ensuring continual improvement in SRL's environmental and social performance as envisaged in the best practice model; and maintaining a proactive posture will

present a considerable challenge. It however presents an opportunity for SRL to demonstrate its corporate social responsibility and environmental stewardship.

The original proposal for this project was agreed by members of SRL staff that are no longer in post (Max McGravie and Frank Smith). The new senior management team in SRL (Table 2) were supportive of the project concept but wary of the cost.

Table 2. SRL staff consulted during the field visit to the mining concession

Name	Position
Len Cumerford	Chief Executive Officer
Alex McDonald	Chief Operating Officer
Sahr Wonday	Duputy Chief Operating Officer
John Sisay	Corporate Affairs Officer
Stuart Brown	Marketing Director
Mahen Sookun	Chief Finance Officer
Hadji Dabo	Community Affairs
Clement Adams	Health and Environment
Abdul Hassan King	Horticultural consultant to SRL
Aminata A. Kamara	Community Affairs
Alie Dausy Yumkella	Health and Environment
Henry Kangbai	Community Affairs
Ezekiel Kposowa	Mine planning

Demonstration plots

A major element of this project is the planting of demonstration plots testing new concepts of land reclamation following mining in the SRL concession. The senior management team in SRL while supportive of the project concept clearly require a rehabilitation methodology which is cost effective. As a consequent the whole DARWIN field team worked hard to develop an experimental plan which reflected the aspirations of the community while genuinely testing a system which the company could commercially roll out over the whole mining concession.

The experimental design reported here was very much a team decision following wide spread consultation in the village workshops, detailed discussions with project staff and a targeted workshop involving SRL staff and the Darwin field team. The decision process was participatory starting with recognition that there were three types of land which required rehabilitation

- White sand tailings –nutrient poor sand with minimal organic matter and even after 20 years of abandonment was seldom colonised by vegetation
- Brown sand tailing – which contains slime and was frequently colonised by pioneer annual grasses and perennial shrubs

- Lateritic soils which have resulted from burrow pits and other forms of land disturbance e.g. road and canal building

SRL staff and villagers all agreed that the three soil types needed rehabilitation and that the severity of degradation followed the order stated above. There was no real consensus on a priority soil type to test in the first years experiment. We therefore designed an experiment which involved all three soils types. In addition it was clear that all the villages represented in the project wanted to host the experimental demonstration plots close to their village. This understandably was challenging for the project team to accommodate. However Len Cumerford, Chief Executive Officer, SRL supported the distribution of the demonstration plots around the concession while recognising that this decision would increase the costs of the plots he felt that this was cost effective in terms of the additional benefits in community participation. As both SRL staff and the village communities insisted on a dispersed array of experimental plots, such that each of the four village communities had plots close to them, it was agreed that we must have sixteen 0.25 ha plots rather than 15 as originally agreed with the company. The agreement by the company for this alteration to the original plan is another sign that a true partnership is developing between the company and the villagers.

The cost involved in rehabilitation is not trivial and all technologies tested in this project must be fully grounded commercially. The villagers were asked during the consultation how much they would be willing to accept for a bucket or bag of compost. As would be expected the price varied considerably but it became clear to the DARWIN team that the lesser price necessary for commercial rehabilitation may not be sufficient to encourage the villagers to experiment with compost production. It was agreed therefore that in this first year there may need to be an added incentive element paid for compost. It is important however that the villagers realise that in this first year there are two components in the price paid for compost and that the incentive payment element will stop in future years. While it was recognised that it would be desirable to spread compost over the whole surface area of the demonstration plots this is impractical commercially. It was therefore decided to experiment with incorporating mulch across the whole surface area of the plots and use compost in tree planting holes. Both SRL staff and villagers agreed that the land should be contoured prior to planting.

Given the priorities and constraints mentioned above it was agreed that in the first year we should test the hypothesis that the

- Addition of organic matter in the form of compost and mulch to the disturbed soils in the SRL concession increased crop productivity.

Consequently an experimental plan was formulated at a specific meeting involving the full DARWIN field team and SRL staff of the Community Affairs and the Health

and Environment departments (Clement Adams, Hadji Dabo, Abdul Hassan King, Aminata A. Kamara, Henry Kangbai and Alie Dausy Yumkella).

The exact experimental protocol was discussed and the practical implications considered in terms of quantity of mulch and compost requested etc (see accompanying spreadsheet).

The agreed experimental plan and associated costs were presented to Len Cumerford at a meeting on Friday 17 November 2006

Jan Dick presented

- The experimental unit as one 0.25 ha plot comprising of 4 treatments; \pm mulch spread over the surface and \pm compost in planting holes of 18 inches by 18 inches
- The plots would be spread over the three soil types identified – white sand, brown sand and lateritic soil
- The four regions within the concession which had hosted the village workshops each have two plots on sand tailing and/or lateritic soil depending on what was close to their village (see Table 1).
- The communities would choose themselves what plants were sown - both the trees in the compost enriched planting holes (100 per treatment per plot) and between the rows of trees. The only stipulation would be that a crop or tree must be equally represented in all four soil treatments in every 0.25 ha plot (it is recognised that crop productivity will not be analysable in this experimental design)
- The plots identified at Lanti North which would be used to more rigorously test rehabilitation techniques on the sand tailing would be planted in two halves – one half would be planted with ground nut and the other would be planted with the colonising plants identified by the university partners and SRL staff.
- The 0.25 ha plots would cost between \$1,200 and \$3,500 to establish depending on the price of compost, mulch and seedlings agreed between the company and the village communities (excluding transport costs and ground contouring).
- The cost of the 16 plots therefore would range between \$19,000 and \$55,000.
- SRL would be responsible for planting the experimental plots according the plan agreed at the joint meeting.

Mr Cumerford was very supportive of our approach but from his experience of rehabilitation questioned the team closely about various aspects of the experimental design including

- Quality of compost and mulch – Jan Dick explained that this had been discussed with the villagers and initially a sieve would be used to ensure that compost did not contain large elements of un-composted organic matter or non-organic matter.

- Ownership of the plots– Leslie Mboka and Hadji Dabo explained that they would work together with the village chiefs to identify areas suitable for the plots and the owners of that land - SRL had clear records of who owned the land as they currently pay surface rent.
- Ownership of the products from the plots – it was readily agreed that the product of the plots would belong to the land owner (or village community if that was agreed within the village). Neither SRL nor the DARWIN team would own the crops. It was noted however that the DARWIN team would like access to monitor the crops.
- Transport of topsoil, mulch and compost were a major element of the costs in this small pilot scale project. Mr Cumerford suggested that the sister company may provide trucks at competitive rates.

Following our presentation Mr Cumerford agreed that Clement Adams should write up the requirements in standard SRL format and that he would present it to the board at the next available opportunity.

Future work

During the two weeks reported here a number of decision were taken by project participants either individually between project members or collectively at groups meetings. It was decided in order to minimise misunderstanding that during this project when decisions are made they should be routinely written and circulated. The first in a series of such statements are attached as appendixes to this report.

Acknowledgements

The DARWIN team are grateful to all the villagers and staff at SRL for their whole hearted support for this project. In addition to all the people named above the team would like to thank Mr. Ezakid Kposowa, Mine planning department, SRL who kindly invited us to visit his farm on the edge of the rutile pond at Kpetema and assisted Richard Wadsworth and Eddy Niesten with their field work. It was not possible to find accommodation for all the DARWIN field team in one place. We would like to especially thank CADEM members for organising the accommodation for some of the DARWIN team in the local village and SRL management for providing accommodation free of charge for four members of the team.

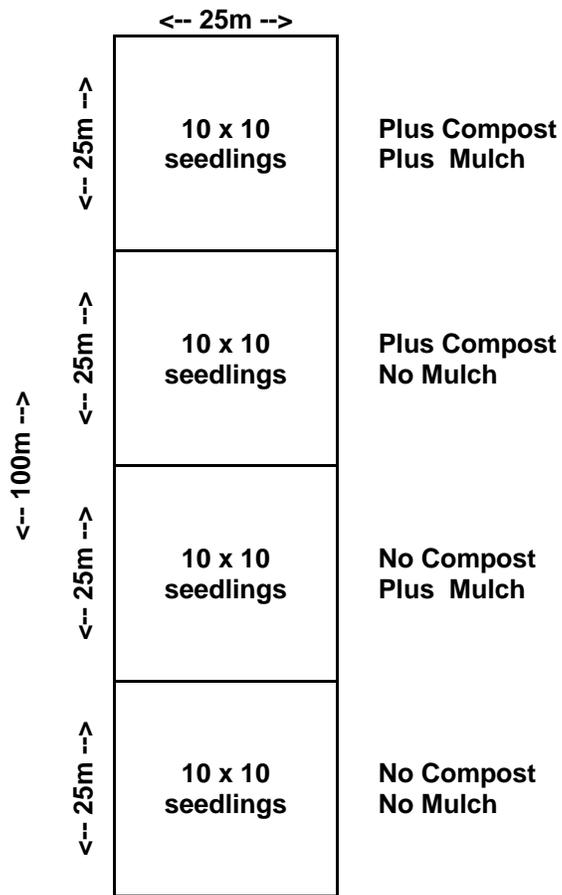


Figure 1 Diagrammatic representation of the experimental rehabilitation plots

	Red L	Sand
Lanti North		4
Bamba/Kpetema	2	2
Lungi	2	
Yangatoke	2	2
Banjema	2	

Table 1 Location of the 16 experimental rehabilitation plots in the SRL concession area. The four plots at Lanti North will be divided equally between the white and brown sand (2 each) and the plots at Yangatoke and Bamba/Kpetema will be located in consultation with villagers.

Appendix 1

Sierra Rutile Limited

Environmental, Social, Health and Safety Policy

Corporate Commitment

Sierra Rutile Limited (SRL) is committed to long-term protection of environmental quality and human health and safety at our operations. We will provide sufficient financial support to our environmental and social programs and will continually aim to improve environmental, safety, and health performance in the workplace, maintain multi-directional communication with the surrounding communities and other interested stakeholders, and limit local community dependence on the mining project.

Policy Statement

Our fundamental policy is to conduct our business in a responsible manner designed to protect and develop our employees, the environment, and the surrounding communities.

Specific Goals

In order to demonstrate our corporate commitment and compliance with our fundamental policy, we will:

- Adhere to the best industry practices and principles of sustainable development in all exploration and mining activities;
- Adhere to all applicable safety, health, and environmental laws, regulations and guidelines;
- Respect diversity and cultural differences with mining employees as well as surrounding communities;
- Educate and train employees through programs on health, safety, and environmental issues;
- Establish accountability of employees, and especially managers, for their health, safety, and environmental and social program performance;
- Protect the environment by limiting impacts from mining operations; providing efficient use of energy, water, and other resources; limiting waste generation and disposal; and disposing of wastes responsibly;
- Progressively rehabilitate areas no longer required to support our operations using sound practical methods; and
- Liaise openly with the community throughout the life of the project with the aim of continuing to operate and develop activities to the benefit of all.

Sierra Rutile Limited - Working for a Better Sierra

Leone

Francis J. Waldron, Chairman and CEO
October, 2001

Agreed decisions of DARWIN team

Reporting structure of DARWIN project

It was agreed that with such a diverse team written reports are the only practical way to communicate all the activities between partners. In addition written reports are the means of project review favoured by the donor. The following rules were therefore agreed by the authorised representatives.

- All members of the DARWIN team must submit a report following each activity they undertake for the project
- these activity or interim reports would commonly be only a few pages and would be addressed to the DARWIN project manager or authorised representative
- Activity report e.g. back to office after a field trip, data analysis report, status report etc must be submitted within 4 weeks of the project activity
- Failure to submit reports within the 4 week deadline would result in all financial support for the all aspects of that organisations work being suspended
- The DARWIN project manager or authorised representative would use these activity/interim reports to collate the 6 monthly and annual report required by the donor
- The DARWIN project manager must submit 6 monthly and annual reports to all participants for formal approval one week prior to the submission to the Darwin Secretariat - failure of project participants to return comments to the project manager will be viewed as acceptance of the report such that the report will be submitted (failure to submit reports to the donor on time will impact adversely on the finances of the project)

Demonstration plots – November 2006

The experimental plan was agreed with the DARWIN team and SRL staff as follows:

- The experimental unit is one 0.25 ha plot comprising of 4 treatments; \pm mulch spread over the surface and \pm compost in planting holes of 45 cm (18 inches) by 45 cm (see diagram below)
- The plots would be spread over the three soil types identified – white sand, brown sand and lateritic soil

- The four regions within the concession which had hosted the village workshops each have two plots on sand tailing and/or lateritic soil depending on what was close to their village (see table below).
- The exact location of the plots will be agreed by the villagers and SRL representatives
- The communities would choose themselves what plants were sown - both the trees in the compost enriched planting holes (100 per treatment per plot) and between the rows of trees. The only stipulation would be that a crop and tree must be equally represented in all four soil treatments in every 0.25 ha plot (it is recognised that crop productivity will not be analysable in this experimental design)
- The plots identified at Lanti North which would be used to more rigorously test rehabilitation techniques on the sand tailing would be planted in two halves – one half would be planted with ground nut and the other would be planted with the colonising plants identified by the university partners and SRL staff.
- SRL would be responsible for planting the experimental plots according the plan agreed at the joint meeting.
- Ownership of the products from the plots – it was agreed that the product of the plots would belong to the land owner (or village community if that was agreed within the village). Neither SRL nor the DARWIN team would own the crops. It was noted however that the DARWIN team would like access to monitor the crops.

Compost price

The price of compost must be agreed as soon as possible preferably before villagers start to manufacture compost. It was agreed that the price should have two elements this first year

- Commercial price of compost (possibly \$1)
- Incentive/learning payment (possibly \$2-\$9)

Richard Wadsworth will visit the villages again during the week of 17th Dec and is authorised by the project manager to agree a fixed price.

Use of video footage shot in connection with the DARWIN project.

In respect of video services provided by Harold Williams (Union of Environmental Journalists), the manager of the DARWIN project authorises post production work to continue to the point of generating draft products.

These products must be reviewed, revised and agreed by the DARWIN project manager or authorised representative prior to any dissemination or media use of any part of the video media shot whilst working with the DARWIN team. The cost of production is broken down as follows:

Hire of filing equipment supplied by EFA

Use of editing facilities supplied by EFA

Expenses for Harold Williams in the field (\$100) paid by DARWIN project.

