

Novel and Practical Conservation Strategies following  
Mining in Sierra Leone

Report on Technical Workshops conducted at  
Sierra Rutile Operational Areas  
13<sup>th</sup> – 17<sup>th</sup> November 2006

Submitted to Darwin Initiative

Dr. A.B.Karim (FBC), Dr. A.J.Sundufu (NU),  
Mr. A. Okoni-Williams (FBC) and Mr. K. Kanu (FBC)

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## Executive Summary

The aim of the visit was to present all the project components to the facilitators and implementing team members as well as develop appropriate facilitation methods to reduce conflict and build relationships among the various stakeholders through out all project activities. After a joint stakeholders [Sierra Rutile Limited (SRL), University Team Coordinators, Local Communities, Community Advocate for Development Movement (CADEM) and United Kingdom Partners] meeting held on the 11<sup>th</sup> of November, 2006, in the South Spur of Mobimbi, SRL, Sierra Leone, the project implementing team, accompanied by the SRL company representatives, visited 4 villages and held technical workshops using participatory methods on

- (1) composting techniques
- (2) candidate plants to be utilized on the mining spoils.
- (3) Trust and consensus building
- (4) ecosystem services payment

In addition, a series of meetings held with members of SRL during which various aspects of the project, especially, ecosystem services payment models were discussed. In general there was considerable cooperation from all stakeholders, especially the communities. Also SRL staff showed a high level of understanding in dealing with the issues that were discussed, especially those relating to the communities.

The Darwin Team also held a technical meeting in Freetown in which arrangements for the experimentation of the restoration programme were concretized.

## **1.0 BACKGROUND**

In May, 2006 a research team comprising staff and students from the Fourah Bay College (FBC) University of Sierra Leone (USL) and Njala University (NU) collected data on soil, water, plants, insects and birds and socioeconomic issues from the Rutile operational area to assess the status of the environment following mining. The project, named SEE 360 with funds from IUCN Small Grants Programme, was aimed at providing a basis for target-oriented action to mitigate the effect of mining on the local communities and their environment. Based on preliminary results, the Centre for Ecology and Hydrology (CEH) and its local partners (FBC and NU) submitted a project proposal to Darwin Initiative to implement a land restoration project. The project is aimed at developing a process based on experimentations of a number of options for land restoration and benefit sharing within affected communities.

The current project funded by Darwin Initiative, started off with consultations and consensus building between Sierra Rutile Limited (SRL) and the local communities in November 2006. The Centre for Ecology and Hydrology (UK) and its external partners, joined forces with local experts from the University of Sierra Leone and Njala University to facilitate the process (Table 1). The consultation process also includes training and experience sharing in the area of compost making and plant identification, which are the most important material requirements for the restoration experimentation programme. The project at this experimental stage will run for three years, after which, the successes and lessons learnt will hopefully be translated into a sustainable mechanism for land restoration and enhancement of local economy. This report details proceeding of the consultative meetings and technical workshops held at SRL offices and at various villages in the SRL operational areas.

### **1.1 Terms of Reference**

1. Conduct meetings with project facilitators and team members to develop appropriate facilitation methods and build relationships through out all project activities.
2. To present all project components to implementing team to ensure that everyone is acquainted with all aspects of the project.
3. Conduct technical workshops using participatory methods on composting techniques, ecosystem payments and monitoring with local communities and relevant mining staff.

### **1.2 Itinerary – Novemeber, 2006**

Thur 9 Travelled to Sierra Rutile Limited and had dinner at the mine site at Mobimbi.

Fri 10 Briefing with Hadji Dabo, Manager, Community Affairs; Clement Adams, Head, Community Health and Safety Department; Aminata Kamara, Development Officer; Abdul R. Hassan-King, Horticulturist and Alie Dausy

Yumkella regarding Darwin project. Visited NC-IUCN (SEE 360 analysis) project sites.

- Sat 11 Held a stakeholders meeting involving SRL representatives, CEH, university team coordinators and local communities. Presented the results of the SEE 360 analysis and an overview and purpose of the Darwin project.
- Sun 12 Day off
- Mon 13 Technical workshop at Lungi. Discussed composting techniques and candidate plants for the experimental plots.
- Tue 14 Technical workshop at Kpetema. Discussed composting techniques and candidate plants for the experimental plots.
- Wed 15 Technical workshop at Yangatoke. Discussed composting techniques and candidate plants for the experimental plots.
- Thur 16 Technical workshop at Bonjema. Discussed composting techniques and candidate plants for the experimental plots.
- Fri 17 Meeting with SRL and held discussions to address issues on demonstration plots (hypothesis, treatments, layout, location, budget) and timeline.
- Sat 18 Traveled back to Freetown

### **1.3 Participants and Facilitators of the village technical workshops**

Participants were drawn from about nine villages adjacent to mined and would-be mined areas within the Rutile Concession areas (Appendix 1). Table 1 shows a list of workshop facilitators, who were mainly drawn from the team from United Kingdom and the Universities of Sierra Leone and Njala:

**Table 1. Workshops Facilitators**

<b>Name</b>	<b>Organisation</b>	<b>Position/Role</b>
Dr. Jan Dick	CEH	Project Leader
Dr. Richard Wadsworth	CEH	Landscape Ecologist
Dr. Scott Jones	Mind the Gap	Social Scientist
Dr. Eddy Niesten	CI	Conservation Economist
Dr. A. B. Karim	FBC, USL	Research Scientist
Dr. R. A. Sundufu	NUC, NU	Research Scientist
Mr. Arnold Okoni-Wiliams	FBC, USL	Research Scientist
Mr. Kabbie Kanu	FBC, USL	Plant taxonomist
Mr. Pious Sesay	NU	Research Assistant
Mr. Leslie Mboka	CADEM	Community Activist
Mr. Harold Williams	SLBS TV	Environmental Journalist
Ms Jestina Jusu	CADEM	Secretary CADEM
Mr Hadji Dabo	SRL	Manager, Community Affairs
Mrs. Aminata Kamara	SRL	Community Affairs
Alhaji Hassan King	SRL	Horticulturist

## **2.0 MEETINGS AND WORKSHOPS CONDUCTED**

The first of a series of meetings was held on the 11<sup>th</sup> November, 2006. This gathering comprised representatives of various stakeholders including mining representatives, university staff, local communities, CADEM (local NGO) and media personnel. This meeting commenced after a brief prayer (Muslim and Christian), followed by self-introduction of members of the various stakeholder groups. However, for detailed introduction of each member of the entire gathering, aiming at establishing good working relationships among members, Dr. Scott Jones, who facilitated the initial workshop, suggested that the entire gathering be divided into 4 groups.

After spending 20 minutes in the groups, Dr. A. B. Karim (Team coordinator, FBC), gave an overview of the origin of the Darwin project, the SEE 360 analysis, and Dr. A. J. Sundufu (Team coordinator, NU) presented the results of the research conducted during the SEE 360 implementation. Unfortunately, the result from the socio-economic study was not presented because the analysis done on it was not site-specific.

Dr. Jan Dick then presented an illustrative overview of all project components to the facilitators and implementing team, ensuring that everyone was fully integrated with all aspects of it. In addition, she clearly stated the purpose of the visit, which was a decentralised sourcing of compost and seedlings from the communities to rehabilitate the mining spoil. Both groups were supportive of the idea and the village representatives requested knowledge on preparing compost. Against this backdrop, the team was invited to provide such education in workshops organized in their villages. In all these activities, Mr. Hadji Dabo (Community Development Affairs Officer, SRL) was very helpful in interpreting the entire presentations in Mende (the language of the local communities), which they appreciated very much.

We held technical workshops in four villages (Table 2.), using participatory methods on composting techniques and ecosystem services payments with local communities and relevant mining staff. A total 324 participants of from 16 villages, attended (Table 2; Appendix 1). Some photos taken during the village workshop have been included in Appendix 4.

The final meeting was held on the 17<sup>th</sup> November, 2006. This gathering comprised representatives of Sierra Rutile Limited (SRL) and the project-implementing group. The minute of this meeting is in Appendix 2a and a list of attendees in Appendix 2b.

**Table 2. Dates, locations and villages involved in the technical workshop**

<b>Date</b>	<b>Workshop Location</b>	<b>Villages involved</b>	<b>No. of participants</b>
13 <sup>th</sup> November	Lungi	<ul style="list-style-type: none"><li>• Lungi</li><li>• Gangama</li><li>• Semabu</li><li>• Junctionla</li></ul>	73
14 <sup>th</sup> November	Kpetema	<ul style="list-style-type: none"><li>• Kpetema</li><li>• Bamba</li><li>• Ndedemoya</li><li>• Mokepe</li></ul>	85
15 <sup>th</sup> November	Yangatoke	<ul style="list-style-type: none"><li>• Yangatoke</li><li>• Foinda</li><li>• Gbangbama</li><li>• Madina</li></ul>	97
16 <sup>th</sup> November	Bonjema	<ul style="list-style-type: none"><li>• Bonjema</li><li>• Varma</li><li>• Bandavulahun</li><li>• Simbeck</li></ul>	69

## **2.1 Village Technical Workshops Proceedings**

The programme for the technical workshops held at village levels followed the general outline shown below:

1. Prayers (Muslim and Christians)
2. Introductions (Facilitators and local community members)
3. Explanation of the background and purpose of the workshop
4. Questions, comments and responses
5. Group work (four groups)
6. Lunch
7. Plenary - Report from each group
8. General discussions, questions and responses
9. Prayers (Muslim and Christian)

Muslim and Christian prayers were said by volunteers from the communities. A member of the Darwin Initiative team introduced team members followed by introduction of community member by a local resident (usually a traditional elder). The Project Leader, Jan Dick then explained the background and purpose of the project and allowed questions relating to its implementation. The whole group of participants was then divided into four subgroups to discuss and exchange ideas on compost making and suitable candidate plant species for the restoration programme.

These workshop sessions were facilitated by one or two members of the Darwin team and sometimes assisted by a member of staff of SRL. Facilitators led the discussions by posing questions and stimulating discussions that were dominated by local participants. Sample questions included:

**For compost**

- Do you know how to make compost manure?
- How do you do it and what materials do you put into the compost heap?
- What materials should not be included in the compost heap and why?
- What do you do with the compost ?
- How long does it take to make compost and what time of the year it is best to make it?
- How much would you charge for a bucket or rice bag full of compost?

**For plants**

- What plants have you observed growing in the sand tailings?
- What experience do you have with plants grown on the sand tailings?
- Why do you think the plants that were planted did well or do not do well in the sand tailings?
- What plants do you think can grow well in the sand tailings if treated with compost?

After lunch, the groups together reconvened for a plenary where a local participant reported to the entire audience what was discussed at the group levels. A question, comments and response session then followed, which included responses by staff of SRL and a member of the Darwin team as and when necessary. The workshop proceedings were always concluded by prayers from both a Muslim and a Christian participant.

## 3.0 OUTCOMES OF MEETINGS AND WORKSHOPS CONDUCTED

### 3.1 Composting

Procedures for compost making agreed and experience shared among participants and facilitators of the workshop (Box 1). The agreed procedure was based primarily on local knowledge with complementary ideas provided by facilitators.

#### **Box 1. Procedure for Compost making**

The following is an outline of the general steps that were discussed and agreed for compost making

1. Excavate a hole in the ground (of reasonable dimension, preferably three feet deep) or construct a heap bound by thatch above the ground.
2. Collect and deposit degradable materials into the hole/heap, including the following among other things:
  - Peels of potato, cassava, yam and banana etc.
  - Groundnut hawks, rice hawks and palm kernel hawks
  - Fish skins, cattle, goat and sheep excreta, chicken wastes
  - Leaves, and grasses that are easily degradable (e.g. *Eupatorium africanum* and California Plant (local name))
  - Ash from the kitchen or burnt grasses or vegetation.
  - Carbon from used batteries
  - Layers of earth can be used in between layers of degradable materials

Materials that should not be added into the compost heap include:

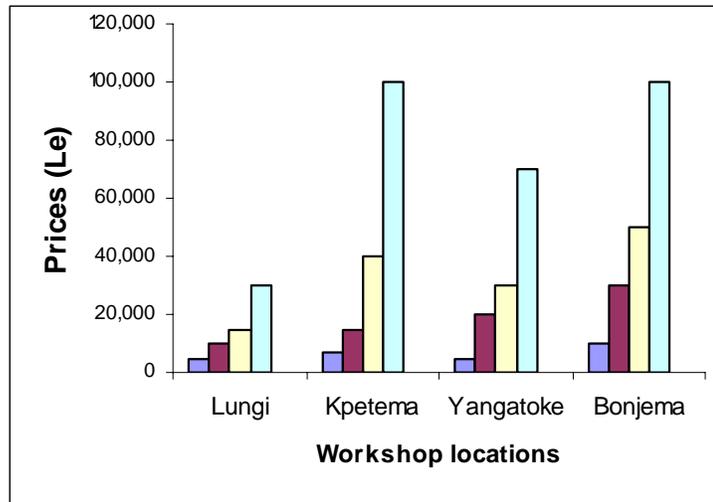
- Plastics and rubber materials
  - Clothing-like materials
  - Tins and metals
  - Slowly degrading plants/leaves (for e.g. Acacia)
  - Any non-degradable material
3. Sprinkle water over the compost regularly and allow the decay process to proceed.
  4. After a period of one to two weeks use a stick to deep through the compost. If heat is generating from the heap, that is an indication that the decaying process is ongoing.
  5. Turn compost upside down by mixing the layers. Sprinkle water and leave for another week
  6. Carry out a regular check on the decaying process, sprinkle water at regular intervals and mix layers to facilitate the decaying process.
  7. Insert stick through compost to monitor progress. Reduced heat emission from the compost heap is an indication of the maturity.
  8. At the completion of the decaying process no heat is generated from the heap, meaning that the compost is ready for use. Young seedlings could be seen popping up from the compost at this stage.

#### **Things to note**

- Compost heap or hole should be located away from houses, away from latrines and wells and closer to a backyard garden or rubbish dump. This is to avoid contamination and invasion by insect into homes.
- Compost can take between two months to one year to make depending on the type of materials used and the processing.
- A mature compost is normally dark in colour and compact.
- The rainy season is the best time to make compost, when water is abundant. Otherwise compost can be made anytime of the year.

### 3.1.1 Prices for compost

A range of prices charged for the compost by the participating communities to be purchased by SRL (Fig 1). These figures would served as a guide to the negotiation process with SRL for the price of compost to be used for the experimental plots.



**Figure 1..Range of prices for compost per 50kg rice bag (Note that the prices have been converted to cost per bag assuming that 2.5 x 34cm bucket = 1 rice bag). The four bars for each location show the common prices suggested in the four groups**

There was a wide range of prices suggested by the local participants for one 34cm bucket or a 50 kg rice bag full of compost. Participants were asking for as low as Le 3000 (US\$ 1) a bucket to as high as Le 100,000 (US\$ 33) per rice bag depending on the community.

From Figure 1 one can deduce that Kpetema, Yangatoke, and Bonjema workshops participant suggested that widest and highest range of prices, whereas, participants at the Lungi workshop suggested the lowest range of prices. The varying prices between communities are thought to have been determined by level of discontent people from these community have with regard to the environmental problems they have faced as a result of the mining activities of SRL. Kpetema, Yangatoke and Bonjema participants come from areas where considerable mining has been done, whereas, Lungi workshop participants come from areas where little or no mining had occurred.

### 3.2 Plants for restoration of sand tailings

A list of plants, considered as candidate species for restoration of sand tailings, compiled (Box 2 and Appendix 3.). This list was purely based on local knowledge and on a consensus between members of the affected communities on desired species that should be planted on the sand tailing. The choice of species from the communities' point of view was mainly considered on the basis of economic benefit to the people. With the exception of *Anisophyllea laurina* no overlap exist between species suggested by the communities and those found growing on or near the sand tailings that are considered suitable for restoration.

**Box 2. A. List of plant species suggested by the local participants, that are thought to do well in the sand tailings during the community workshops**

Species list	Plant use	Community workshop locations				Frequencies
		Lungi	Kpetema	Yangatoke	Bonjema	
<i>Ananas comosus</i>		1	1	0	1	3
<i>Anacardium occidentale</i>	Food (C)	1	1	1	1	4
<i>Arachis hypogaea</i>	Food	1	1	1	1	4
<i>Allium cepa</i>		1	1	1	1	4
<i>Anisophyllea laurina</i>	Timber (B)	0	1	0	0	1
<i>Cocos nucifera</i>	Food (C)	1	1	1	1	4
<i>Capsicum frutescens</i>		1	1	1	1	4
<i>Citrus sinensis</i>	Food	0	1	0	1	2
<i>Cumunis sativus</i>		1	1	1	1	4
<i>Colocynthis citrullus</i>	Food	0	0	1	1	2
<i>Dioscorea sp</i>	Food	0	1	0	1	2
<i>Elaeis guineensis</i>	Food (C)	1	1	1	1	4
<i>Gmelina arborea</i>	Timber (C)	1	1	1	1	4
<i>Hevea brasiliensis</i>		1	1	1	1	4
<i>Hibiscus esculentus</i>		1	1	1	1	4
<i>Ipomoea batatas</i>	Food	1	1	0	0	2
<i>Manikot esculenta</i>		1	0	0	1	2
<i>Oryza sativa</i>	Food (S)	1	1	0	1	3
<i>Solanum melongena</i>		1	1	1	1	4
<i>Saccharum officinarum</i>		0	0	1	0	1
<i>Vigna sinensis</i>	Food (C)	1	1	1	1	4
<i>Vigna unguiculata</i>	Food (C)	1	1	1	0	3
<i>Zea mais</i>	Food	1	1	1	1	4
<b>Total no. of plants</b>		<b>18</b>	<b>20</b>	<b>16</b>	<b>19</b>	

B – mainly for building poles; C – mainly for commercial purposes; S – mainly subsistence use

**B. Plants found growing on or close to the sand tailings that are thought to be suitable for restoration by the Darwin Team**

1. *Anadelphia leptocoma*
2. *Anisophyllea laurina*
3. *Borreria verticilata*
4. *Centosema probuscens*
5. *Croton hirtus*
6. *Eupatorium africanum*
7. *Eragrostis grangatica*
8. *Imperata cylindrical*
9. *Pennisetum parvifolium*
10. *Pennisitum subagastrum*
11. *Pueraria phaseoloides*
12. *Ricinus cunminis*

### **3.3 Seedlings production and sale**

The communities agreed to produce the seedlings for the experimental plots at a price of Le 1000 for three seedlings. SRL agreed in principle to support the communities in the production of the seedlings and to pay the suggested price.

### **3.4 Gathering, sale and supply of mulch**

Agreement was reached with communities on the gathering and sale of mulch as it was considered as one of the treatment for the experimental plots. A purchasing price of Le 5000 a bunch of mulching material was accepted in principle by the communities. A bunch of mulch in this case would be about half the volume of the bunch of thatch materials used for roofing. The following were the proposed materials to be collected for mulching:

- Lalang grass (*Imperata cylindrica*)
- *Centrosema pubescens*
- *Acacia* leaves
- Aerial portion of *Eupatorium africanum*
- Dried palm fronds
- Leaves of *Anadelphia sp.*

### **3.5 Trust and concensus built between stakeholders**

Trust and consensus built between SRL, the communities and Darwin Project team, particularly with regards to cooperation and collaboration in the implementation of the project. This was particularly addressed during the plenary sessions where the communities asked very pertinent questions relating to the project and SRL past and future plans for rehabilitation and ecosystem payment for the environmental destruction they have caused. As part of the consensus building the communities requested that the following be done by SRL, which was agreed in principle, but on the feasibility and availability of funds:

1. the supply of topsoil (a depth of 1 m) for planting for spread on sand tailing
2. leveling of the sand mounds
3. provision of irrigation facilities
4. prefinancing the cost of nursing/composting materials – purchase of polythene bags, wheelbarrows, pick axes, shovels etc

## APPENDICES

### Appendix 1 – Names of Participants of the technical workshops

#### 1a – 13<sup>th</sup> November - Lungi

<b>Group A – Facilitators – Pious Sesay &amp; Jan Dick</b>			
	Participant	Town/Village	Position/Occupation
1	Kemoh T. Sannoh	Gangama	Tribal authority
2	Amidu Ansumana	Lungi	Chief Imam
3	Sorba Bonah	“	Town Speaker
4	Bockarie Makawray	“	Elder
5	Mary Sam	Junctionla	“
6	Thomas Munda	Lungi	Youth
7	Luseni Kaiboi	“	“
8	Moi-Konneh Kallon	“	Elder
9	Sulaiman Kenneh	“	Youth
10	Sallieu Kanneh	“	“
11	Tejan Sany	“	“
12	Fatmata Lupan	“	“
13	Mammie Bockarie	Junctionla	“
14	Mammie Kemoh	“	“
15	Baindu Sam	“	“
16	Lansanah Nuni	Gangama	“
<b>Group B. Facilitators – A. Okoni-Williams, Richard Wadsworth &amp; Aminata Kamara</b>			
1	Joe Karjui	Junctionla	Section Chief
2	Samuel B. Songu	Lungi	
3	Albert Williams	Junctionla	
4	Osman Kabba	Lungi	
5	Lansana Musa	“	
6	James Lebbie	“	
7	Amara Sheriff	Junctionla	
8	Aruna Nabbie Selorne	Lungi	
9	Idrissa Sama	“	
10	Mariama Gasiima	Junctionla	
11	Lamin Bockarie	Lungi	
12	Aminata Kabba	“	
13	Aminata Humpa	“	
14	Kardie Moriba	Junctionla	
15	Theresa Koroma	“	
16	Muiatu Kemoh	“	
17	Hannah Vincent	“	
18	Maira Koroma	“	
<b>Group C. Facilitators –Kabbie Kanu, Abdul Hassan King &amp; Scott Jones</b>			
1	Tommy Gassumu	Junctionla	Chiefdom T.A.

2	Francis Songu	“	Pastor
3	Kemoh Mansaray	“	Elder
4	Momoh Tibbo	“	Chiefdom T.A.
5	James Junisa	“	Pastor
6	James Moseray	Lungi	Elder
7	Tommy Karjui	Junctionla	General Secretary
8	Momoh Humpa	“	Youth
9	Solomon Tucker	“	“
10	Umaru Swarray	Lungi	“
11	Momoh Sannoh	Gangama	“
12	Sallay Jabaty	Junctionla	Women’s Leader
13	Mamie Sam King	“	Treasurer Women’s
14	Fatmata Sindeh	“	Housewife
15	Iye Doddie	“	“
16	Mamadi Karjui	“	“
17	Umu Ansumana	“	“
18	Betty Ansumana	“	Business Women
<b>Group D. Facilitator – Abu J. Sundufu</b>			
1	Adama Moseray	Lungi	Nurse (TBA)
2	Hawa Dawah	“	Farmer
3	Anthony Juana	“	“
4	Musa Kabba	“	“ & Decision maker
5	Yeama Sonny	“	Farmer
6	Tajoe Kallon	“	“
7	Tommy Gbondo	“	“
8	Mohamed Conteh	“	“
9	Sorbah Kallon	“	“
10	Tommy Kpanah	“	“ & Decision maker
11	Thomas Fatoma	Gangama	Farmer
12	Patrick Kallon	Lungi	“
13	Adama Conteh	“	“
14	Mariama Kabba	“	“
15	Joe Ndapy	“	Decision maker
16	Jeneba Ndapy	“	Farmer
17	Henry Kpana	“	“
18	Kadie Kaniwai	“	“
19	Maddy Wudu	“	“
20	Isha Humpa	“	“
21	Morie Conteh	“	“

**1b – 14<sup>th</sup> November 2006 – Kpetema**

<b>Group A. Facilitator – A. Okoni-Williams &amp; Jan Dick</b>			
	Participant	Town/Village	Position/Occupation
1	Franklyn Dakowa	Kpetema	Leader
2	Alpha Shaw	“	Secretary
3	Talibie Allie	“	Town Chief

4	Andrew Williams	“	Deputy Town Chief
5	Madieu Mammy	“	Elder
6	Saidu Sesay	“	Imam
7	Faduru Koroma	“	Deputy Imam
8	Aruna Humpa	Bamba	Elder
9	Tommy Moseray	Kpetema	Elder
10	Gbanya Ngimor	Bamba	Town Chief
11	Abu Joe	“	Dpty Section Chief
12	Mammy Abu	“	
13	Haja Abu	“	
14	Yeima Williams	Kpetema	
15	Jeneba Madieu	“	
16	Hawa James	“	
17	Sembu Mansaray	“	
18	Nancy Moinu	“	
19	Teneh Abu	“	
20	Hamidu Lamin	Bamba	Elder
21	Abu Dauda	“	Youth Leader
22	Musa Ahmed	“	
23	Abdulai Bassie	Kpetema	
<b>Group B. Facilitators – Kabbie Kanu &amp; Aminata Kamara</b>			
1	Lansana Kongo	Kpetema	
2	Joseph Brima	“	
3	Michael Rogers	“	
4	Joseph Anthony	“	
5	Musa Koroma	“	
6	Alpha Mansaray	“	
7	Ansumana Kpaka	“	
8	Festus Simbo	“	
9	Francis Tucker	“	
10	Allieu Mansaray	Mokepe	
11	Amara Fillie	“	
12	Betty Jusu	“	
13	Davoy Yumkella	“	
14	Moriba Johnson	“	
15	Morie Kamara	“	
16	Juana Mattia	“	
17	Joe Lebbie	“	
18	Musa Khadara	“	
19	Morie Charles	“	
20	Emmanuel Moseray	“	
<b>Group C. Facilitators – Pious Sesay &amp; Scott Jones</b>			
1	Gbanja Ngimoh	Bamba	
2	Abu Dauda	“	
3	Musa J. Brima	“	
4	Dauda Humpa	“	

5	Idrissa Moiwo	“	
6	Amidu Mohammed	“	
7	Abdul Ngimoh	“	
8	Minkailu Ngimoh	“	
9	Musa Ahmad	“	
10	Fatima Jusu	“	
1	Mamie Abu	“	
12	Haja Conteh	“	
13	Fatimata Amidu	“	
<b>Group D. Facilitators – Abu J. Sundufu (Dr.)</b>			
1	Foday Dumbuya	Kpetema	Section Chief
2	Alpha B. Turay	“	Chair, MuslimJamat
3	Jeneba Allie	“	
4	Moseray Keifala	“	
5	Pastor Julius W. Jusu	“	Pastor
6	Solomon Tucker	“	
7	Sandy Margao	“	
8	Laurence Ensah	“	
9	Ibrahim Mansaray	“	Youth/masoner
10	Arnold Ensar	“	Carpenter
11	Munda Samu	“	Motor mechanic
12	Idrissa Jusu	“	
13	Gibrilla Kpaka	“	
14	Augustine Kawa	Ndedemoya	
15	Jusufu Issa	“	
16	Fadilu Musa	“	Town Speaker
17	Daramy Ansumana	Kpetema	Imam
18	Sandy Margao	“	Youth Leader
19	Abu Conteh	“	
20	Musa Kpaka	“	
21	Kinnie Kpaka	“	
22	Fatu Gibrilla	“	
23	Morie Abdulai	“	
24	Mary Allieu	Ndedemoya	Women’s Leader
25	Ibrahim Conteh	Kpetema	
26	Jetta Corey	“	
27	Rev John J. Yambasu	“	Christian Minister
28	Nancy A.Sesay	“	Taecher
29	Solomon B. Fornie Jr.S	“	“

### 1c. 15<sup>th</sup> November 2006. Yangatoke

<b>Group A – Facilitators - Abu J. Sundufu</b>			
	Name	Community	Occupation/position
1	Peter O. Massaquoi	Foinda	Teacher
2	James Baintoma	“	Town Chief
3	Solomon Gbouma	“	Elder

4	Maseray Gbouma	“	Elder
5	Joseph Ansumana	“	Elder
6	Milicent Kpanagbom	Yangatoke	Teacher
7	Isata Gatewah	Madina	Teacher
8	Boi Kandoh	“	Community member
9	Alfred A Pat-Squire	Yangatoke	“
10.	Moses M. Koroma	Foinda	“
11	James Baidoma	“	Town Chief
12	Joseph Ansumana	“	Asst. Chief
13	Solomon Gbouma	“	Advicer
14	Hawa Mbayoh	“	Community member
15	Yusufu Manna	“	“
16	Josephine Koroma	“	“
17	Boi Lamin	“	“
18	Kadie Mohamed	“	“
<b>Group B. Facilitators – Kabbie Kanu &amp; Jan Dick</b>			
1	Alycious Kpanabum	Yangatoke	Security
2	A. P. Squire	“	Teacher
3	Abdulai Gbondo	“	Student
4	Pa Lagaio	“	Farmer
5	Abudu Kabba	“	“
6	Joe Koroma	“	“
7	Amara Kabba	“	“
8	Steven Lavai	“	
9	Katumu Baum	Foinda	
10	Neneh Koroma	“	
11	Alice John	Madina	
12	Lamie Pujeh	Yangatoke	
13	Adama Dukulay	Yangatoke	
14	Joseph Abu	Gbangbama	
15	Adama Sei	Yangatoke	
16	Sheku Koroma	“	
17	Maseray Lamie	Foinda	
18	Durumane Kaiyenga	Yangatoke	
19	Mamie Kanneh	“	
20	Alhadi Kabba	“	
<b>Group C. Facilitators – Pious Sesay &amp; Aminata A. Kamara</b>			
1	Mohamed S. A. Sheriff	Gbangbama	
2	James Beahnoloma	Foinda	
3	Brima Sei	“	
4	Gassima Jebboh	Gbangbama	
5	Sulaiiman Fatorma	“	
6	Ansumana Baum	Yangatoke	
7	Kadiatu Gbondo		
8	Martha Jumbla		
9	Safiatsu Amara		

10	Martha Syvalie		
11	Joseph Moriba		
12	Tenneh Beahndoma		
13	Umaru Foday		
14	Malikie Bangalie		
15	Mahamed Sandy		
16	Brima Kungubeh		
17	Francis Bumpay		
18	Thomas Foday	Yangatoke	
19	Jeneba Foday	“	
20	Mamie Sesay	“	
21	Kadie Malikie	“	
22	Samuel farmer	Yangatoke	Pastor
23	Bockarie Kanneh	“	
24	Munda Gbondo	“	
25	Masidu Koroma	“	
26	Isata Gatewa	Madina	
27	Bobor Lamboi	Yangatoke	
28	David Tommy	Gbangbama	
29	Peter Massaquoi	Foinda	
30	Joe Sawyerr	Yangatoke	
31	Jeneba Charlie	“	
32	Lansana Kanneh	“	
33	Lappia Bangura	“	
34	Siaka Kpukumu	“	
35	Joseph Ansumana	Foinda	Town Speaker
36	Kadiatu Massaquoi	“	
37	Amara Ansumana	Moyere	
<b>Group D. – Facilitators – A. Okoni-Williams &amp; Jestina Jusus</b>			
1	Francis B. Dauda	Yangatoke 1	
2	Josephine Koroma	Foinda	
3	Jusufu Minah	“	
4	Hawa Turay	“	
5	Jilloh Domawe	“	
6	Jaiah Gbondo	Yangatoke 1	
7	Mohamed Foday	Gbangbama	
8	Essa Rogers	Yangatoke 1	
9	Moses H. Koroma	Foinda	
10	Alex Kpukumu	Yangatoke 1	
11	Tommy Murana	Gbangbama	
12	Amara Lamina	Yangatoke	
13	Ernest Vamboi	Madina	
14	Mamie Rogers	Yangatoke	
15	Millicent Kanagbou	“	
16	Mariama Kombo	“	
17	Gibrilla Keifala	“	

18	Luseni Gbondo	“	
19	Abdul B. Braima	“	
20	Solomon Gbouma	Foinda	
21	Murray Aruna	Yangatoke 1	
22	Tommy Sharka	“	

### 1d. 16<sup>th</sup> November 2006 – Bonjema

<b>Group A. Facilitators – Kabbie Kanu</b>			
1	Musa Kabba		
2	Anthony Juanah		
3	Joe Ndapy		
4	Tommy Kpanah		
5	Sorba Kallon		
6	Mohamed Conteh		
7	Hawa Ndawa		
8	Adama Moseray		
9	Yeama Sonny		
10	Tajoo Kallon		
11	Thomas Fartoma		
12	Sheiku Bellay		
13	Patrick Kallon		
14	Tommy Gbondo		
15	Isha Humpa		
16	Maddy Wudu		
17	Adama Conteh		
18	Henry Kpana		
19	Jeneba Ndapy		
20	Kadie Kaniwai		
21	Morie Conteh		
<b>Group B. Facilitators – Pious Sesay</b>			
1	Edmond Kpanabom		
2	Isata Foday		
3	Jeneba Sesay		
4	Jebbeh Baum		
5	Mohamed Koroma		
6	Maseray Wudu		
7	Betty Sesay		
8	Aminata Foday		
9	Fatmata Jimmy		
10	Theresa Kayenge		
11	Mohamed Gbangba		
12	Mohamed Sulaiman		
13	Marie Fonny		
<b>Group C. Facilitators – Abu J. Sundufu, Jan Dick, Aminata A. Kamara</b>			
1	Hamza Jalloh	Bonjema	
2	Agnes Pujeh	Varma	

3	Musa Samuels	Bandavulahun	
4	Jannies Kayegeh	“	
5	Moyega Swarray	Varma	
6	Amara Sylvali	“	
7	Lucy Kainesie	Bonjema	
8	Musa Gbangba	“	
9	Mammie Masalie	Simbeck	
10	Memuna Swaray	Varma	
11	Allieu Mansaray	Gawama	
12	Alpha Jabatie	Bonjema	
13	Lamin Bawah	“	
14	Musa Jenkins	Varma	
15	Tommy Kpana	Bonjema	
16	Abu Jabatie	Bandavulahun	
17	Adama Jabatie	“	
18	Nancy Jenkins	Varma	
19	Mohamed Fambulleh	“	
20	Hassan Sheka	“	
<b>Group D. Facilitators – Jestina Jusu, Arnold Okoni-Williams</b>			
1	Alusia Foday	Gangama	
2	Christiana Swarray	Varma	
3	Abu Koroma	“	
4	Tenneh Kaindia	Gangama	
5	Tommy Jemmy	“	
6	Ibrahim Kamara	Mokepe	
7	Syvallie Vongo	Gangama	
8	Hawa Jemmy	“	
9	Mammie Shaka	“	
10	Nawyo Abu	“	
11	Nancy Bier	“	
12	Mammie Lamin	Varma	
13	Koneh Ngegba	Gangama	
14	Alpha Sesay	Simbeck	
15	Hassan Shaka	Varma	

## **Appendix 2a**

### **Minute of the meeting held at the SRL Training Centre, South Spur, Mobimbi - 17 November, 2006.**

#### **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.

#### **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 should visit the villages again during the week of 17<sup>th</sup> Dec and is authorised by the project manager to agree on a fixed price.

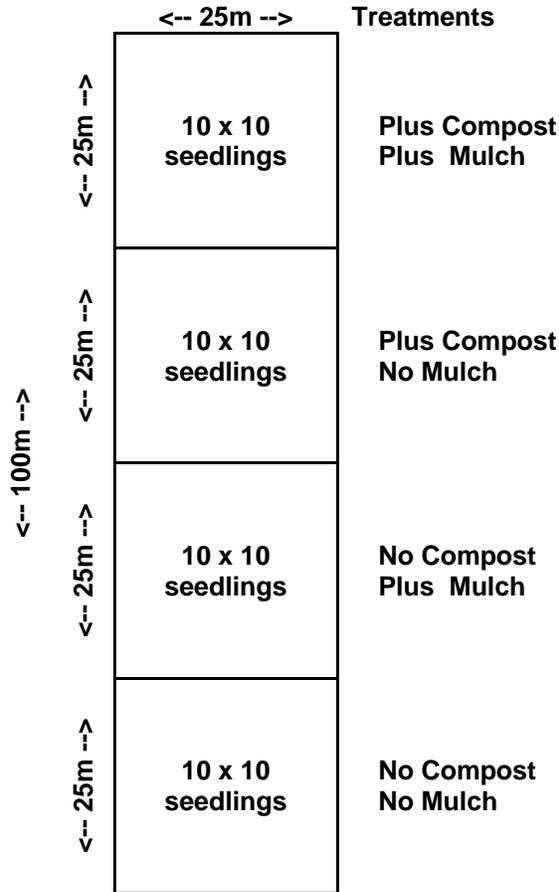
#### **Demonstration plots**

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 for themselves what plants were to be 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 groundnut (*Arachys hypogaea*) 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.

It was agreed that Lesile Mboka, DARWIN team is authorised to work with Hadji Dabo, SRL to identify and agree on village plots suitable to host experimental demonstration plots by 17<sup>th</sup> Dec 2006.

Richard Wadsworth and Leslie Mboka are authorised to mark the plots in a manner acceptable to the local communities. They should also record the plots in such a manner that other project staff will be able to find them easily in order to take base line measurements. In addition, Leslie Mboka should obtain a binding agreement that the land owner and villagers will plant which ever crops they wish in the demonstration plots but all crops must be planted identically in all soil treatments.



Diagrammatic representation of the experimental rehabilitation plots

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

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 2b

### Attendees of the meeting held at the Training Centre, SRL Primary School, South Spur, Mobimbi, 17<sup>th</sup> November, 2006

Name/Designation	Organisation/Department	Telephone/e-mail
Aminata Kamara Development Officer	Community Affairs, SRL	+232-76-770-866
Abdul R. Hassan-King Horticulturist	SRL	+232-76-629-854
Arnold Okoni-Williams Lecturer	Fourah Bay College, University of Sierra Leone	+232-33-372-612
Abu James Sundufu Lecturer	Njala University	+232-33-443-877
Clement Adams Head	Community Health and Safety, Sierra Rutile Limited (SRL)	+232-76-801-419
Harold Williams Mass Media Consultant	Union of Environmental Journalist	+232-76-637-533
Henry Kangbai Supervisor	Community Affairs, SRL	+232-76-648-500
Hadji Dabo Manager	Community Affairs, SRL	+232-76-651-903
Jan Dick Project leader	Centre for Ecology and Hydrology	
Jestina Jusu Secretary	CADEM	+232-76-952-691
Kabbie M. T. Kanu Senior Technician	Fourah Bay College, University of Sierra Leone	+232-76-683-641/+232- 77-425-265

Leslie Mboka Executive Director	CADEM	+232-76-714-561
Mohamed Gbator Member	CADEM	
Pious A.B.Sesay Research Assistant	Njala University	+232-33-412-541/+232-77-833-922
Richard Wadsworth Senior Scientific Officer	Centre for Ecology and Hydrology	+232-76-863-487
Scott Jones Director	Mind the Gap Research and Training	+44 (0)1543-419-777
Sheiku Imam Rogers Director	Beautification Rehabilitation and Conservation Organisation (BRACO)	+232-33-537-541/+232-76-532-527

## **Appendix 3**

### **Photographs of candidate plants identified for restoration of sand tailings**

**Appendix 4**  
**Photographs of Meetings and Technical Workshops sessions**