

# **Sierra Rutile Expansion Area 1 – Environmental, Social and Health Impact Assessment Social Impact Assessment**

Report Prepared for

**Sierra Rutile Limited**



Sierra Rutile Limited

Report Number 515234/SIA/Final



Report Prepared by

 **srk** consulting

March 2018

# **Sierra Rutile Expansion Area 1 – Environmental, Social and Health Impact Assessment: Social Impact Assessment**

## **Sierra Rutile Limited**

### **SRK Consulting (South Africa) (Pty) Ltd**

265 Oxford Rd  
Illovo 2196  
Johannesburg  
South Africa

e-mail: [johannesburg@srk.co.za](mailto:johannesburg@srk.co.za)

website: [www.srk.co.za](http://www.srk.co.za)

Tel: +27 (0) 11 441 1111

Fax: +27 (0) 11 880 8086

### **SRK Expansion Number 515234**

**March 2018**

#### **Compiled by:**

Victoria Braham  
Environmental & Social Scientist  
Anita Bron  
Social Scientist  
Sue Reuther  
Economist

Email: [vbraham@srk.co.za](mailto:vbraham@srk.co.za)

#### **Authors:**

Victoria Braham, Anita Bron, Innocentia Lediga, Sue Reuther

#### **Reviewed by:**

Tim Hart  
Social and Development Consultant  
  
Vassie Maharaj  
Partner

## Executive Summary

This Social Impact Assessment was prepared for Sierra Rutile Limited (SRL), and forms part of an Environmental, Social and Health Impact Assessment (ESHIA) and an Environmental, Social and Health Management Plan (ESHMP) for the changes in mining that occurred since the allocation of the last Environmental Licence (reference number EPA-SL030). Excluded from the current license is the open cast dry mining that was introduced as an auxiliary method of ore extraction in conjunction with dredge mining in 2013. SRL commissioned a second dry mining operation in 2016 and anticipates that, over time, dredge mining will cease, and dry mining will be the mining method employed. The ESHIA and ESHMP had to be compiled in accordance with Sierra Leone's *Environment Protection Agency (EPA) Act 2008* (Act No. 11 of 2008) as amended, the Environmental Protection (Mines and Minerals) Regulations 2013 (Statutory Instrument No. 10 of 2013), and Good International Industry Practice (GIIP).

The overall purpose of the Social Impact Assessment was to identify and assess the contribution of activities and operational changes and expansions since 2012 to changes in the social baseline context, predict the ways in which the expansion could contribute to future changes, and assess the current and potential impacts of these changes on the social context. Existing management measures were subsequently assessed, and additional measures identified to minimise negative impacts and to optimise positive impacts. Management plans for the implementation of these measures were then developed, based on the management measures, as reflected in the ESHMP.

To identify and assess social changes and impacts, the existing social baseline had to be described and understood as well as SRLs mining activities and related social aspects, such as employment levels, local spend, and community development initiatives. The social baseline compiled for this study included the changes and impacts that were brought about by previous mine owners, inclusive of mined out areas, legacy social and environmental issues, together with mining activities already occurring as part of the environmental license (reference number EPA-SL030). The baseline further took into account changes to SRL's policies, standards and procedures as a result of SRL becoming a wholly owned subsidiary of Iluka Resources Limited (Iluka) in October 2016. The policies, standards and procedures now align with those of Iluka, which are in line with GIIP.

The description of a baseline and the definition of impacts therefore had to address the following challenges:

- Baseline conditions are complex, including the civil war, the Ebola outbreak and a long and varied history of rutile mining in south east Sierra Leone. In this context it was necessary to clearly distinguish long-term legacy impacts from those based on current activities and planned changes; and
- The requirement that the Social Impact Assessment should address both current activities implemented since 2012 and future plans (the expansion) sometimes led to complex impacts, with an associated difficulty of isolating one from the other.

The social baseline report follows the order of the objectives of a Social Impact Assessment as prescribed by the Environmental Protection Agency of Sierra Leone (EPA-SL), and broadly describes the socio-demographic, socio-economic, socio-cultural, land use and institutional situation.

Primary and secondary data sources were consulted for the compilation of the social baseline. This enhanced confidence in the impact assessment, with the associated possibility of sound and informed management measures and focussed monitoring and evaluation. The baseline describes information at national, regional, provincial, District and Chiefdom levels, after which it describes conditions at SR Area 1 (the study area). Primary data collection on study area level included Rural Rapid Appraisal, Household Surveys, Focus Group Discussions, interviews, and on-site observations.

The impacts related to health and safety in the social context were identified as:

- **Impact HS1:** Increased crime as a result of the influx of job seekers, employees and business owners was already occurring prior to the expansion, and not only as a result of SRL. It is unlikely to be significantly changed by recent and planned developments;
- **Impact HS2:** Instances of drowning due to mine ponds results in mental health impacts on next of kin and the broader community. Although drownings seldom occur, management measures must continue to be implemented to reduce the likelihood of drownings occurring. Once the mine ponds have been drained / water levels have been reduced during the rehabilitation phase, the risk of drowning will be significantly reduced, and the impact will be unlikely to occur.
- **Impact HS3:** Noise and dust generated by heavy vehicles on the road cause frustration and is reportedly experienced as a nuisance amongst recipients. The extension of mine operations has resulted in the continuation of SRL heavy vehicle and mine personnel vehicle traffic on roads. However, the roads are not only used by SRL trucks, but also trucks from other companies in the area such as Vimetco. Only SRL trucks have a speed limits imposed, and steps are taken in the event that drivers exceed the limit. The speed limit reduces noise and dust generation; and
- **Impact HS4:** As a result of the mine ponds and other mine related infrastructure, the traditional movement patterns of some local communities have been altered. The impact will be reduced through progressive rehabilitation.

Social impacts associated with population, political structures and organisations are as follows:

- **Impact PP1:** Community disruption due to influx of job seekers, employees and business owners has allegedly led, in some instances, to tension and issues relating to social cohesion. Influx has occurred in the study area prior to this expansion, any additional community disruption as a result of influx specific to this expansion are difficult to isolate from influx that has occurred; and
- **Impact PP2:** Job seekers and their families may move / have moved into the study area, thus competing with local residents for basic services including water supply and energy sources. Influx was already occurring prior to the expansion, and not only as a result of SRL, but the continuation of mining activities will support the situation unless relevant government departments provide the necessary infrastructure and services.

Social impacts associated with the use of land and loss of access to resources are as follows:

- **Impact LR1:** Loss of land, crops and livelihood resources in the expansion footprint areas due to mining activities have occurred. Although SRL's mining activities have resulted in land take and loss of access to land and livelihoods resources, the increase in population in the area has also resulted in an increase in competition for livelihoods resources. Mitigation measures that were implemented by SRL to manage the impacts related to loss of livelihoods resources included cash compensation for crops, payment of surface rent, providing alternative access routes to agricultural fields, stocking mine ponds with fish, and providing boat taxis, alternative roads, and bridges. While these are existing impacts that will remain ongoing for the duration of the operational phase, mitigation measures reduce their significance. During the rehabilitation process, land will gradually be returned to agriculture and other uses;
- **Impact LR2:** The expansion had not and is not likely to impact on any cultural resources, although SRL's activities prior to the expansion has impacted on cultural resources, such as shrines and secret society bush. Proactive measures such as consultation with communities prior to clearing new areas are in place and a procedure will be developed for implementation in the event that cultural resources are found;
- **Impact LR3:** The presence of mine ponds has given rise to additional aquaculture / fishing livelihood options for some of the adjacent mine communities. This is an opportunity that SRL is investigating to enhance the potential positive economic and livelihoods impact;
- **Impact LR4:** Despite perceptions that water in the mine ponds are unsuitable to drink, and pollute groundwater and therefore sources of drinking water, most water sources in the study area are suitable for drinking water. Water quality in the study area may be affected by both natural and anthropogenic factors, and as such, the perceptions that decreased water quality is as a result of mining activities alone, is unfounded; and
- **Impact LR5:** Although prohibited, some community members do make use of mine ponds for domestic purposes because it is accessible and / or there are no immediate sufficient alternatives. Some communities, on the other hand, do not make use of this water, as instructed by SRL, despite the reported need for domestic water. This impact can be enhanced positively.



Social impacts associated with economy, work and livelihoods are as follows:

- **Impact EW1:** Total SRL expenditure on workforce and goods and services was US\$70.2 million in 2016, of which US\$56.5 million were spent on goods and services (US\$19 million of this was spent on goods and services in Sierra Leone). It is therefore assumed that US\$13.7 million was spent on payroll. The 2016 SRL expenditure is equivalent to 1.8% of Sierra Leone Gross Domestic Product (GDP). SRL's total economic contribution in 2016, considering indirect and induced effects, was reported as US\$109.5 million, equivalent to 2.8% of GDP, which is highly significant for a single operation;
- **Impact EW2:** In 2015, SRL contributed significantly to government revenue, e.g. through personal income tax (US\$4.3 million), royalties (US\$4.1 million, equivalent to 20.3% of government income from mining royalties and licenses that year) and corporate (minimum turnover) tax (US\$3.7 million, equivalent to 6.5% of government income from corporate income tax that year);
- **Impact EW3:** The expansion has directly employed 115 workers during construction between 2013 and October 2017. The mine currently employs 2 614 workers. Based on estimated multipliers, direct employment may have generated up to 22 000 indirect and induced jobs during construction and operation combined, most of them in the informal economy;
- **Impact EW4:** SRL spent some US\$20 million in 2016 on local procurement, almost all of which goes to companies outside of the immediate mine region. Procurement of goods and services by SRL therefore provides very few opportunities for local individuals and businesses in the study area but is nevertheless significant for the country as a whole. Over time, it is anticipated that SRL's operations may promote new local producers of goods and services. The intensity of this benefit is limited by the capacity of local industries to supply the development; and
- **Impact EW5:** SRL pays surface rent in line with legislation, which is distributed to various stakeholders as stipulated by legislation. In 2018 SRL paid Le5 168 682 000 in surface rent, a 3% increase on the rent paid in 2017 and equivalent to US\$821 743. The feedback from land owners was that the income was not deemed sufficient and should be increased, especially in light of perceived limitations in other benefits from the mine. SRL provided additional context (2017) noting that the number of people in the land holding families had grown, which meant the same land area had to be divided amongst more people. The same applies to the land for which rent is paid, where the increase in population means more people have to make a living out of the same finite resource. With sufficient financial acumen, the income could have a significant positive impact.

Social impacts associated with the access to infrastructure are as follows:

- **Impact SS1:** Improved infrastructure have been provided by SRL, which has resulted in an improved quality of life for people in the study area. SRL has indicated that while they will continue to maintain the road infrastructure relevant for current and future operations, they will not develop any new infrastructure programmes. Instead, the Community Development Committee established by SRL with the communities will be responsible to identify development projects for implementation. SRL will fulfil a mentoring and supporting role to national, district and local government and non-profit organisations active in the study area, and will help facilitate provision and maintenance of infrastructure.

Social impacts associated with social divisions and vulnerable groups are as follows:

- **Impact SD1:** SRL is the main employer in the area and one of the largest employers in the country. Expansion of SRL operations has created an expectation of further significant employment. Against the background of unemployment, poverty, and the significant dependency on subsistence agriculture (the main economic activity in the country), the finite number of jobs that SRL can provide for the community in the study area has promoted and may continue to promote a level of dissatisfaction. This is particularly true of the youth, many of whom voiced their frustration at an inability to find employment at SRL. Tension between the mine and communities may occur should employment benefits not be evident and / or be deemed inadequate in spite of evidence that the number of jobs are finite and that SRL requires employees to have the West African Senior School Certificate;
- **Impact SD2:** Dissatisfaction related to perceived corrupt or unfair practices by SRL were raised by community members. SRL, under its new management, have developed and are implementing a stringent Anti-bribery and Corruption Policy, and the Company takes bribery and corruption allegations seriously;

- **Impact SD3:** The expansion of SRL operations may create an expectation of further and significant local procurement opportunities. Dissatisfaction is evident in the study area, where opportunities have reportedly proven to be limited and has been allegedly marred by corrupt or unfair practices. While this may only be a perception, it is one which can result in conflict between local service providers and SRL should it not be managed effectively;
- **Impact SD4:** Against the background of on-going operations and expansion, community development activities are likely to continue, but through the Community Development Committee. An on-going challenge for the Community Development Committee is that of spreading community development investment fairly among the settlements and communities impacted by SRL, without assuming the responsibilities of government. If inequities in development investment are perceived, and especially if unfair practices are assumed, dissatisfaction will continue. Community development expenditure amounted to Le1.01 billion (approximately US\$135 000) in the second half of 2016, and Le1.26 billion (approximately US\$202 000) in the second quarter of 2017 (SRL, 2018); and
- **Impact SD5:** Disproportionate impacts on vulnerable groups due to their status in the community (specifically youth, elderly, women, children and disabled), may be due to negative mine expansion impacts, which could potentially reduce access to positive benefits. These disadvantages may be underpinned by social and structural relationships, marginalisation and lack of access to information about mitigation measures and beneficial activities, and therefore not as a result of the conduct of the mine. Because of diverse combinations of vulnerability indicators among households, status has to be assessed on a case by case basis.

Recommended management measures in addition to those already implemented have been developed to avoid and mitigate negative social impacts, and optimise potential positive impacts, from current and future activities. These measures include but are not limited to:

#### **Health and safety**

- Initiate a multi-stakeholder influx management planning process and include crime-related measures in a regional Influx Management Plan;
- Place warning signs in high risk areas, indicating the risk of drowning and incorporating clear imagery and local languages;
- Should a drowning occur at an SRL site, SRL will investigate the incident, giving feedback to the next of kin and broader community timeously and identify preventative measures for implementation; and
- Mine ponds will be drained in accordance with the Mine Closure Plan timeframes and methodology.

#### **Population, political structures and organisations**

- Prepare and implement a code of practice to guide the management and onsite behaviour of construction and operational teams. The code should include terms relating to community relations, culturally appropriate behaviour and conduct towards women specifically;
- Inform local communities about the construction and operation timeframes and the Grievance Management Procedure;
- Opportunities to educate and up-skill local people to an employable level are explored by SRL and will be implemented once a feasible option(s) have been identified; and
- Engage regularly with the Paramount Chiefs and other structures to manage and monitor influx and housing / site allocations.

#### **Use of land and loss of access to resources**

- Consider supporting Non-Government Organisations to facilitate breeding cane rats ("cutting grass") and rabbits (or similar small livestock as may be culturally appropriate) as sources of bush meat, to protect and grow medicinal plants, and to implement improved agricultural practices;
- Where possible, identify culturally significant sites; and where possible, ensure expansion infrastructure does not encroach on these sites;
- Design and implement a Chance Finds Procedure to guide actions where cultural sites are discovered;
- Develop a Cultural Heritage Resources Management and Monitoring Plan; and

- Raise awareness about the quality of the water, the causes of water of unacceptable quality, and the characteristics of unsuitable water (colour, odour).

**Economy, work and livelihoods**

- Procure goods and services from local or national suppliers as far as possible;
- Procure ancillary services for goods purchased overseas, such as installation, customisation and maintenance, from national companies as far as possible;
- Develop a Downscaling and Retrenchment Plan;
- Update the social closure risk and SIA three years prior to closure, inclusive of pre-closure measures to minimise the impact of job losses at mine closure;
- Implement business, life skills and investment training in the context of the in-house training programme; and
- Facilitate appropriate business training and provide assistance where local response to procurement opportunities can be enhanced.

**Uses of and access to infrastructure and services**

- Educate local business and government on the maintenance of roads provided by SRL; and
- Implement regular briefing sessions with relevant Paramount Chiefs and sectoral ministries represented by local government. These meetings will clarify roles and responsibilities and SRLs role and contribution.

**Social divisions and vulnerable groups**

- Develop and maintain regular communication with local communities and other stakeholders to minimise tensions relating to employment and expansion benefits;
- Ensure the Community Affairs Department team is adequate in size, and competent;
- Ensure adequate application and access to the Grievance Management Procedure as well as reasonable response turnaround times;
- Pursue joint social services and infrastructure expansions and programmes with Non-Governmental Organisations (with a focus on education) through the Community Development Committee;
- Identify vulnerable groups and understand the sources of marginalisation and disadvantage; and
- Inclusion of requirements to consider vulnerable groups in all mitigation measures and developmental activities (the latter including recruitment, procurement, training and capacity building and stakeholder engagement).

# Table of Contents

Disclaimer .....	xiv
List of Abbreviations .....	xv
<b>1 Introduction .....</b>	<b>1</b>
1.1 Background .....	1
1.2 Current mining operation.....	3
1.3 Proposed additions to the SRL mining operations .....	5
1.4 Current workforce .....	6
1.5 Mine closure .....	7
1.6 Objectives of the SIA .....	8
1.7 Areas of influence .....	9
1.8 Approach and methodology .....	10
1.8.1 Scoping phase.....	10
1.8.2 Impact assessment phase .....	12
<b>2 Legal framework, standards and SRL policies .....</b>	<b>18</b>
2.1 International regulations and standards .....	18
2.2 National legal framework.....	18
2.2.1 Sierra Rutile Agreement (Ratification) Act, 2002 .....	18
2.2.2 Environmental Protection Agency Act, 2008.....	19
2.2.3 Environmental and Social (Minerals and Mining) Regulations, 2013 .....	19
2.2.4 Mines and Minerals Act, 2009.....	20
2.3 SRL Policies and Procedures.....	22
<b>3 Study context, assumptions and limitations .....</b>	<b>23</b>
3.1 Study context.....	23
3.2 General assumptions and limitations .....	24
<b>4 Social baseline.....</b>	<b>24</b>
4.1 Demographic indicators .....	25
4.1.1 Population number, density and distribution .....	25
4.1.2 Population age profile .....	26
4.1.3 Population growth.....	26
4.1.4 Gender distribution .....	29
4.1.5 Children under eighteen.....	30
4.1.6 Average life expectancy.....	30
4.1.7 Migration .....	31
4.1.8 Fertility rates.....	35
4.2 Community and social organisation.....	37
4.2.1 Role of Chiefdoms, local authority structure, powers and capabilities .....	37
4.2.2 Civil society structures, NGOs and multi-lateral development agencies .....	38

4.2.3	Cultural diversity, ethnic groups and religion .....	40
4.2.4	Gender roles.....	42
4.2.5	The interface between local customs and taboos and mining .....	43
4.2.6	Vulnerable and disadvantaged groups .....	43
4.3	Housing .....	46
4.3.1	Housing stock and household population .....	46
4.3.2	Housing conditions .....	47
4.3.3	Housing demand .....	51
4.4	Education .....	51
4.4.1	Levels and distribution of education and literacy .....	51
4.4.2	School attendance .....	52
4.4.3	Training facilities.....	55
4.5	Public health.....	56
4.5.1	Dust and noise irritation .....	56
4.5.2	Crime and social ills.....	56
4.6	Economy and livelihoods .....	60
4.6.1	Economic structure and trade .....	60
4.6.2	Livelihoods .....	63
4.6.3	Employment, unemployment and key employment sectors .....	71
4.7	Land ownership, land use and ecosystem services .....	75
4.7.1	Land ownership .....	75
4.7.2	Land use .....	77
4.7.3	Ecosystem services .....	78
4.8	Utilities and services .....	83
4.8.1	Electricity.....	83
4.8.2	Roads.....	84
4.8.3	Water supply and access.....	84
4.8.4	Sanitation .....	87
4.8.5	Bridges and boats.....	89
4.9	Intangible assets.....	91
4.10	Quality of life indicators .....	92
4.11	Construction impacts .....	93
<b>5</b>	<b>Social Impact Assessment .....</b>	<b>95</b>
5.1	Introduction.....	95
5.2	Impact assessment methodology .....	95
5.3	Framework for impact assessment.....	99
5.4	Social and economic impacts.....	100
5.4.1	Health and safety.....	100
5.4.2	Population, political structures and organisations .....	105
5.4.3	Use of land and loss of access to resources .....	107
5.4.4	Economy, work and livelihoods .....	113

5.4.5 Uses of and access to infrastructure and services.....	120
5.4.6 Social divisions and vulnerable groups.....	121
5.5 Overview and discussion of impacts.....	126
<b>6 Conclusions.....</b>	<b>128</b>
<b>7 References.....</b>	<b>129</b>
<b>Appendices.....</b>	<b>133</b>
<b>Appendix A: Fieldworkers.....</b>	<b>134</b>
<b>Appendix B: Attendance Registers.....</b>	<b>135</b>

# List of Tables

Table 1-1:	Summary of mining operation and processes .....	4
Table 1-2:	Capital expenditure for construction activities 2013 - November 2017 .....	5
Table 1-3:	Proposed future changes operational processes .....	6
Table 1-4:	Workforce breakdown for the SRL operation (August 2017) .....	7
Table 1-5:	Breakdown of main contractors used by SRL (August 2017) .....	7
Table 1-6:	Data collection methods .....	12
Table 1-7:	RRA ecosystems services topics covered.....	14
Table 1-8:	List of FDGs.....	17
Table 1-9:	List of Interviews .....	17
Table 4-1:	Population information of Chiefdoms in the broader area of direct influence.....	25
Table 4-2:	Population growth statistics .....	27
Table 4-3:	Main reasons for migration cited.....	33
Table 4-4:	Fertility by residence, education and wealth.....	36
Table 4-5:	Teenage pregnancy and motherhood .....	36
Table 4-6:	Chiefdoms relevant to the study .....	38
Table 4-7:	List of CBOs that attended FGDs .....	39
Table 4-8:	Gender roles in the local economy and livelihoods.....	42
Table 4-9:	Previous resettlements at SRL .....	48
Table 4-10:	Educational facilities at District and Chiefdom level.....	52
Table 4-11:	Most common crimes at national level .....	57
Table 4-12:	Most common crimes at provincial level.....	57
Table 4-13:	Economic multipliers for different sectors in Sierra Leone .....	62
Table 4-14:	Main source of water .....	86
Table 4-15:	Recognised quality of life indexes, including Sierra Leone's ranking .....	92
Table 4-16:	High level opinion on quality of life in the study area .....	93
Table 5-1:	Definition of significance.....	95
Table 5-2:	The process of allocating an impact significance rating.....	97
Table 5-3:	Impact HS1: Increased crime as a result of the influx of job seekers, employees and business owners. ....	101
Table 5-4:	Impact HS2: Instances of drowning due to mine ponds, resulting in mental health stress on next of kin and the broader community.....	102
Table 5-5:	Impact HS3: Increased traffic resulting in irritation relating to dust and noise.....	103
Table 5-6:	Impact HS4: Altered movement patterns to access services, fields, natural resources and villages resulting in dissatisfaction and frustration.....	104
Table 5-7:	Impact PP1: Community disruption due to influx of non-local job seekers, employees and business owners. ....	105
Table 5-8:	PP2: Increased pressure on infrastructure and social services due to influx, impacting on quality of life.....	106
Table 5-9:	Impact LR1: Loss of and / or loss of access to land, crops and livelihood resources in expansion footprint areas due to mining activities. ....	108

Table 5-10:	Impact LR2: Loss (or loss of access to) cultural resources and sites due to mining activities restricting / encompassing land. ....	109
Table 5-11:	Impact LR3: Increase in fishing and aquaculture opportunities as a result of mine ponds (existing and non-rehabilitated). ....	110
Table 5-12:	Impact LR4: Perceived decrease quality of drinking water and perceived unsuitability of mine pond water for drinking, resulting in perceived lack of access to drinking water. ....	111
Table 5-13:	Impact LR5: Increased access to domestic water due to existence of mine ponds. ....	112
Table 5-14:	Impact EW1: Contribution to national and regional economic growth due to investment .....	114
Table 5-15:	Impact EW2: Increased government income due to payment of taxes and royalties. ....	115
Table 5-16:	Impact EW3: Continued employment and income opportunities as a result of ongoing and expanded operations at SRL. ....	117
Table 5-17:	Impact EW4: Opportunities for local business due to procurement by SRL.....	118
Table 5-18:	Impact EW5: Lease payment income for land owners as a result of mining activities. ....	119
Table 5-19:	Impact SS1: Improved road infrastructure where provided by SRL, resulting in better quality of life.....	120
Table 5-20:	Impact SD1: Dissatisfaction over limited jobs due to high unemployment and poverty in the study area. ....	121
Table 5-21:	Impact SD2: Distrust in leadership due to corruption (or unfair advantage) or perceptions thereof. 122	
Table 5-22:	Impact SD3: Dissatisfaction over perceived procurement inequities. ....	123
Table 5-23:	Impact SD4: Dissatisfaction over reduced development investment inequalities.....	124
Table 5-24:	Impact SD5: Disproportionate impacts on vulnerable groups. ....	125
Table 5-25:	Overview of impacts .....	126



# List of Figures

Figure 1-1:	Locality map.....	2
Figure 1-2:	Summary depicting areas of influence .....	11
Figure 1-3:	Villages included in the RRA .....	13
Figure 1-4:	Household survey sample size .....	16
Figure 4-1:	Population growth hotspots in the study area.....	28
Figure 4-2:	Gender distribution.....	29
Figure 4-3:	Age distribution of the sample .....	31
Figure 4-4:	Migration patterns .....	34
Figure 4-5:	Fertility rates .....	35
Figure 4-6:	Typical Chiefdom structure.....	38
Figure 4-7:	Distribution of language and ethnic groups .....	40
Figure 4-8:	Other languages spoken .....	41
Figure 4-9:	Main religions.....	42
Figure 4-10:	Housing materials .....	49
Figure 4-11:	Housing types .....	50
Figure 4-12:	School enrolment in the study area.....	53
Figure 4-13:	Reasons given for children not attending school – FGD views and perceptions.....	54
Figure 4-14:	Reported crime hotspots in the study area.....	59
Figure 4-15:	Local procurement in different economic sectors .....	61
Figure 4-16:	Most common crops reportedly owned .....	66
Figure 4-17:	Most common trees reportedly owned .....	67
Figure 4-18:	Most common livestock owned .....	68
Figure 4-19:	Frequency of food shortages .....	68
Figure 4-20:	Reported reasons for food shortages.....	69
Figure 4-21:	Observed and reported livelihoods sources and ecosystems services .....	70
Figure 4-22:	Income sources.....	72
Figure 4-23:	Reasons for occupying specific land.....	75
Figure 4-24:	Reported number of people per building .....	76
Figure 4-25:	Reported mammals (bush meat) as livelihood sources .....	79
Figure 4-26:	Reported birds (bush meat) as livelihood sources.....	79
Figure 4-27:	Reported fish as livelihood sources .....	80
Figure 4-28:	Ecosystem service activities .....	81
Figure 4-29:	Examples of livelihoods sources and strategies .....	81
Figure 4-30:	Examples of ecosystems services activities.....	82
Figure 4-31:	Sources of energy .....	83
Figure 4-32:	Examples of water sources in the study area.....	87
Figure 4-33:	Sanitation types.....	88
Figure 4-34:	Waste pit and latrine observed .....	88
Figure 4-35:	Examples of bridge conditions in the study area .....	90

Figure 4-36: Examples of bridge conditions at Mogbwewa.....90

Figure 4-37: Impacts reportedly experienced as a result of construction activities .....94

Figure 4-38: Most missed about the time before mining operations.....94

## Disclaimer

The opinions expressed in this document have been based on the information supplied to SRK Consulting (South Africa) (Pty) Ltd (SRK) by Sierra Rutile Limited (SRL). The opinions in this document are provided in response to a specific request from SRL to do so. SRK has exercised all due care in reviewing the supplied information. Whilst SRK has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this communication protocol, about which SRK had no prior knowledge nor had the opportunity to evaluate.

## List of Abbreviations

AFDB	African Development Bank Group
Aids	Acquired Immune Deficiency Syndrome
ATS	Allterrain Services Group
CAD	Community Affairs Department
CBO	Community Based Organisations
CIA	Central Intelligence Agency
CSR	SRL's Corporate Social Responsibility
EIA	Environmental Impact Assessment
ESHIA	Environmental, Social, and Health Impact Assessment
ESHMP	Environmental, Social, and Health Management Plan
ESIA	Environmental and Social Impact Assessment
EPA	Environmental Protection Agency
EPA-SL	Environmental Protection Agency of Sierra Leone
EVD	Ebola Viral Disease
FGD	Focus Group Discussion
FGM	Female Genital Mutilation
GDP	Gross Domestic Product
GIIP	Good International Industry Practice
GPS	Global Positioning System
ha	hectare(s)
HSEC	Iluka Health, Safety, Environment and Community
HDI	Human Development Index
HHS	Household survey
HIA	Health Impact Assessment
HIV	Human Immunodeficiency Virus
IDP	Internally Displaced Persons
IFC	International Finance Corporation
ILO	International Labour Organisation
ISS	Integrated Household Survey
Iluka	Iluka Resources Limited
IMF	International Monetary Fund
JADA	Jackson and Devon Anderson Technical and Vocational Institute
km	Kilometre
km <sup>2</sup>	Square kilometres
kt	Kilo tonne
Leones	Le
LOM	Life of Mine
MDC	Moyamba District Census
MSP	Mineral Separation Plant

NGO	Non-Governmental Organisation
NMJD	Network Movement for Justice and Development
PAYE	Pay As You Earn
PHC	Population and Household Census
PPP	Purchasing power parity
PPG	Public and publicly guaranteed
RAP	Resettlement Action Plan
RRA	Rapid Rural Appraisal
SC RHIA	Shape Consulting's Rapid Health Impact Assessment
SESA	Strategic Environmental and Social Assessment
SIA	Social Impact Assessment
SLDHS	Sierra Leone Demographic and Health Survey
SL-EPA	Sierra Leone Environmental Protection Agency
SMP	Social Management Plan
SR Area 1	Sierra Rutile Area 1
SRK	SRK Consulting (South Africa) (Pty) Ltd
SRL	Sierra Rutile Limited
tph	tonnes per hour
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
US\$	US Dollar
WCP	Wet Concentrator Plant
WHO	World Health Organisation

# 1 Introduction

## 1.1 Background

Sierra Rutile Limited (SRL) is a wholly owned subsidiary of Iluka Resources Limited (Iluka). SRL holds mining leases in Sierra Leone covering a land area of 559 square kilometres (km<sup>2</sup>), or 55 900 hectares (ha), which comprises 16 separate rutile deposits. Since 1967, SRL has intermittently undertaken dry and dredge mining activities within some of these leases to extract rutile deposits. SRL's current mining operation is located 30 km inland from the Atlantic Ocean and 135 km south east of Freetown (refer to Figure 1-1).

The current operation activities occur in the Mining Lease Area 1 (SR Area 1 / the study area), which covers an area of approximately 290 km<sup>2</sup>. The footprint of mining activities in SR Area 1, including associated infrastructure, covers approximately 18.6 km<sup>2</sup> (1 860 ha). SR Area 1 straddles the Imperi and Jong Chiefdoms in the Bonthe District, and the Upper Banta and Lower Banta Chiefdoms in the Moyamba District (refer to Figure 1-1). During 2013, SRL commenced an open cast mining operation (referred to as dry mining) as an auxiliary method of ore extraction in conjunction with dredge mining. In 2016 a second dry mining operation was commissioned. It is anticipated that, over time, dredge mining will cease, and dry mining would be the primary mining method employed.

The SRL mining operation has an existing Environmental Licence (reference number EPA-SL030) for SR Area 1. Two Environmental and Social Impact Assessment (ESIA) studies were previously undertaken; one in 2001, followed by an update in 2012. In 2015 the Environmental Protection Agency of Sierra Leone (EPA-SL) issued a notification to SRL (reference number EPA-SUHA.96 / 214 / a / HNRM), instructing them to undertake an Environmental, Social and Health Impact Assessment (ESHIA) and develop an Environmental and Social Management Plan (ESHMP) for their current and proposed dry and wet mining activities, including the proposed expansion areas. This included the Gangama deposit and other deposits within SRL's current operating concession in SR Area 1. The purpose of the ESHIA is to update the previous ESIA and associated management plans to incorporate the dry mining process and associated activities and include social and community health aspects.

In light of these changes since 2012, SRK Consulting (South Africa) (Pty) Ltd (SRK) was appointed by SRL to undertake an ESHIA and develop an ESHMP for SR Area 1 that meets the Sierra Leonean legal requirements, considers Iluka's corporate policies, and is aligned with Good International Industry Practice (GIIP).

As part of the legal process, in accordance with the *Environment Protection Agency (EPA) Act 2008* (Act No. 11 of 2008) as amended and the Environmental Protection (Mines and Minerals) Regulations 2013 (Statutory Instrument No. 10 of 2013), a final scoping report was submitted to the EPA-SL in August 2017. The scoping report formed the first phase of the process to prepare a new ESHIA and an ESHMP for SR Area 1.

This report comprises the Social Impact Assessment (SIA) as part of the second phase of the preparation of the ESHIA and ESHMP, as required by the EPA Act. The remainder of this section of the SIA report focuses on a description of the expansion, the objectives of the SIA, the areas of influence identified, and the approach and methodology applied to meet these objectives. The legal and policy context to the SIA are then discussed (Section 2), followed by an outline of the limitations to the study (Section 3). Section 4 contains the social baseline description, followed by the assessment of social impacts in Section 5. Section 5 contains proposed social management and mitigation measures that inform the ESHMP (SRK, 2018(6)).

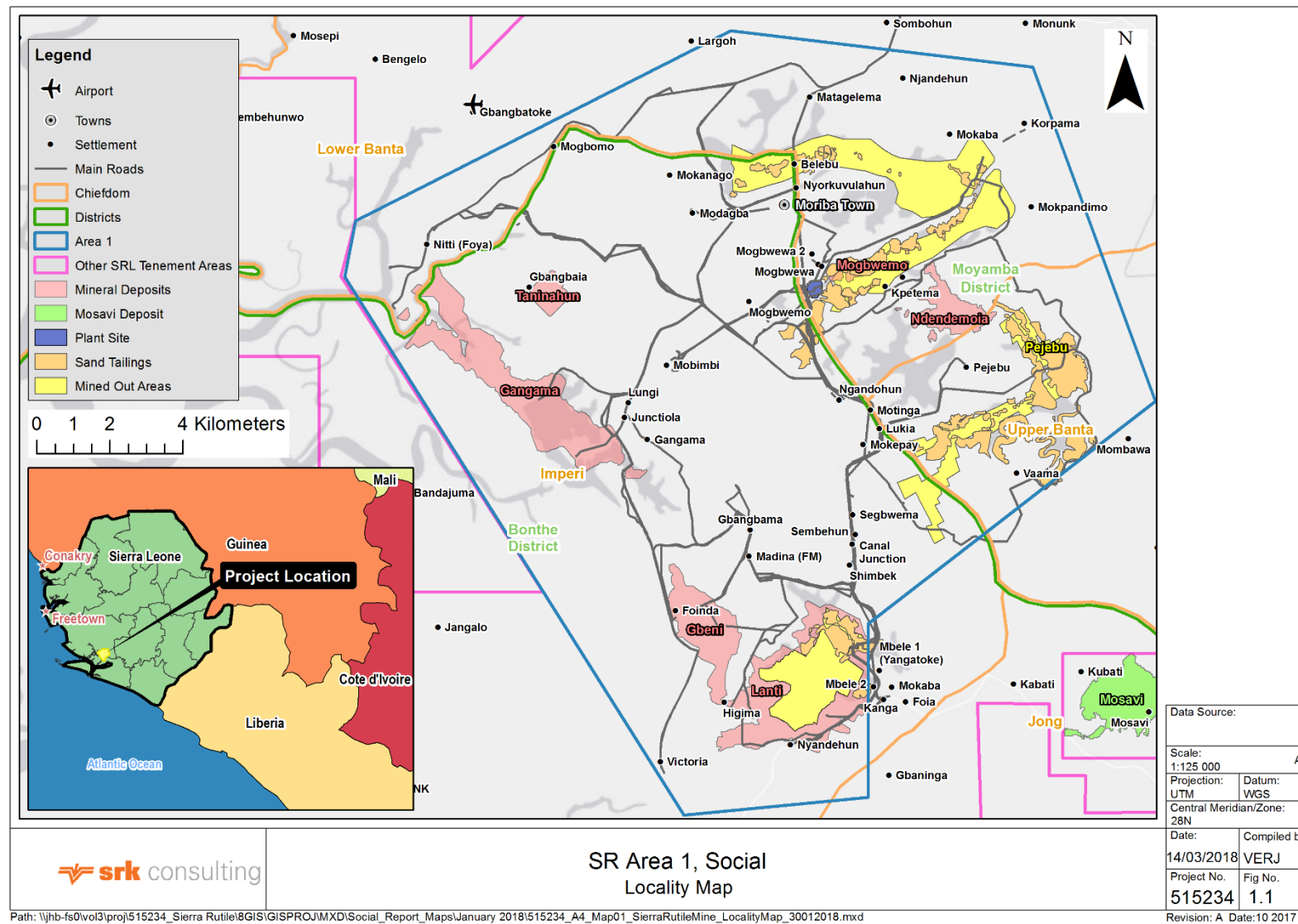


Figure 1-1: Locality map

## 1.2 Current mining operation

SRL currently undertakes both dredge and dry mining in SR Area 1. SRL intends to expand the dry mining operations to include new deposits within their current SR Area 1. The expansion has implications for employment and procurement opportunities and continuation thereof.

Currently, SRL's primary operations consist of: Lanti mining operations (both dredge (wet) and dry mining); processing operations (floating and land-based concentrators); Gangama dry mining operation (dry mining and land-based concentrator); Mineral Separation Plant (MSP); and the transport and export of product through the Nitti Port facilities. In addition, the mine maintains an extensive network of ponds and has power generation facilities, accommodation, offices, a clinic and roads.

Mining, scrubbing and screening is undertaken on-board the Lanti dredge, with mineral concentrate produced on board the floating Wet Concentrator Plant (WCP). The dry mines produce Run of Mine (ROM) ore for their respective concentrators, where de-sliming and primary heavy mineral concentration takes place. The separation of mineral concentrate into the various products takes place at the MSP. Products are then transported from the MSP to Nitti Port where it is barged approximately 37 km to ships awaiting offshore in the Sherbro River estuary. A summary of the current mining operation and processes are provided in Table 1-1. Section 3 of the ESHIA (SRK, 2018) contains a detailed description of the mining operations' processes.



**Table 1-1: Summary of mining operation and processes**

<b>Type of operation</b>	Large scale open cast (dry mining) and dredge mining (wet mining)
<b>Type of orebody</b>	Rutile, ilmenite and zircon
<b>Deposit groups (current and planned)</b>	<ul style="list-style-type: none"> <li>• Lanti Wet;</li> <li>• Lanti Dry (including Gbeni); and</li> <li>• Gangama Dry.</li> </ul>
<b>Current mining operations (LOM)</b>	<ul style="list-style-type: none"> <li>• Lanti Wet (18 months);</li> <li>• Lanti Dry (including Gbeni) (6 years); and</li> <li>• Gangama Dry (4 years).</li> </ul>
<b>Historical dredge areas (ponds)</b>	<ul style="list-style-type: none"> <li>• Bamba/Belebu;</li> <li>• Mogbwemo;</li> <li>• Pejebu;</li> <li>• Motinga 1 and 2; and</li> <li>• Mosama.</li> </ul>
<b>Current operational activities</b>	<ul style="list-style-type: none"> <li>• Site clearing;</li> <li>• Dredging;</li> <li>• Dam construction;</li> <li>• Ore extraction (earth moving);</li> <li>• Primary mineral processing;</li> <li>• Secondary mineral processing;</li> <li>• Tailings management;</li> <li>• Transporting and storage of ore and product;</li> <li>• Port handling and shipping;</li> <li>• Access road building and maintenance;</li> <li>• Waste management;</li> <li>• Power generation facility and transmission of power;</li> <li>• Potable water services;</li> <li>• Mine offices, workshops, storage, accommodation and associated facilities; and</li> <li>• Rehabilitation.</li> </ul>

Source: SRL, 2017

Since undertaking an ESIA in 2012, SRL has constructed and commissioned the Gangama Dry Mine and its associated concentrator plant. Hence the operations at Gangama are not covered under the 2012 ESIA and are included in this update. The construction of Gangama Dry Mine commenced in April 2015 and was commissioned in May 2016. The following infrastructure and facilities were constructed:

- Concentrator plant;
- Offices and workshop;
- Power distribution;
- Water distribution and management;
- Waste disposal facilities; and
- Roads (including ramp).

The capital expenditure for the construction activities undertaken from February 2013 to November 2017 is outlined in Table 1-2, with the total cost for Gangama Dry Mine construction activities close to US\$38 million, and for Gbeni close to US\$10 million.

**Table 1-2: Capital expenditure for construction activities 2013 - November 2017**

Cost as at November 2017	Amount	Percentage of total cost
<b>Gangama Dry Mine</b>		
Total local supplier allocation	US\$13 888 665.88	36.5%
Total foreign suppliers	US\$19 626 573.91	52.0%
Total internal costs	US\$4 425 281.39	11.5%
<b>Capital expenditure</b>	<b>US\$37 940 521.18</b>	<b>100%</b>
<b>Gbeni as part of Lanti Dry Mine</b>		
Owner's team cost	US\$514 229.93	5.0%
Total foreign suppliers	US\$9 503 631.78	92.1%
Insurance	US\$45 299.00	0.4%
Clearing fees / duties	US\$770 464.45	7.5%
<b>Capital expenditure</b>	<b>US\$10 883 625.16</b>	<b>100%</b>

Source: SRL Project Manager, 2017

The construction team consisted of 115 people in total, of which 34 were nationals and 81 were expatriates. Of the 34 local people, eight were from Moriba Town, 22 from Mogbwemo, three from Gbangbatoke and one from Kpetema. The 81 expatriates mostly came from South Africa (22) and Ghana (47).

In addition, a total of 45 temporary workers worked between 60 and 92 days between May to October 2015. The temporary workers included: Labour (nine), electrician (four), carpenter (ten), mason (ten), security guards (four), plumber (four), foreman (three), forewoman (the only female on the team). The temporary workers were recruited as follows:

- Lower Banta Chiefdom:
  - One from Gbangbatok; and
  - One from Largoh.
- Jong Chiefdom:
  - Two from Mogarie.
- Imperi Chiefdom:
  - Nine from Junctiola;
  - Eighteen from Mogbwemo; and
  - Fourteen from Moriba Town.

### 1.3 Proposed additions to the SRL mining operations

The SRL operation intends to further expand their current operations by implementing a more cost-effective mining method as well as by doubling the throughput of Lanti and Gangama dry mining operations from 500 tph (tonnes per hour) to 1 000 tph, and increasing the throughput capacity of the MSP from 175 kilo tonne per annum (ktpa) to up to 300 ktpa of rutile. The latter expansion is driven by capacity constraints as well as environmental, occupational health, and safety related considerations. The primary change in the dry mining process involves the installation of an in-pit Dry Mobile Mining Unit at Lanti Dry Mine. This will replace the existing truck and shovel method and result in efficiency improvements. Ore will then be pumped as slurry via pipeline up to the land based WCP at Gangama and Lanti respectively. This reduces the need for haulage, stockpiling and reclaiming that is currently undertaken at the dry mining areas. All operational expansions will be undertaken within the existing operations footprint in areas that are already impacted from mining operations. Table 1-3 provides an overview of proposed changes to operational processes and methods at the various mining operation sites.

**Table 1-3: Proposed future changes operational processes**

Operational Area	Proposed amendments to operational process
Lanti Wet Mine and floating WCP	No proposed additions or amendments to the current process.
Lanti Dry Mine and land based WCP	<p>It is proposed to modify the current truck and shovel method by constructing an in-pit Dry Mobile Mining Unit, followed by an ex-pit scrubber, before ore is pumped to the current concentrator. Lanti Dry Mine currently has a nameplate capacity of 500 tph, and the intent is to increase throughput to 1 000 tph.</p> <p>This proposal will see the establishment of the following infrastructure within the existing footprint:</p> <ul style="list-style-type: none"> <li>• In-pit Dry Mobile Mining Unit;</li> <li>• Ex-pit scrubber;</li> <li>• Additional tailings containment facilities;</li> <li>• Potential extensions to or new borrow pits; and</li> <li>• Potential extensions to roads.</li> </ul>
Gangama Dry Mine and land based WCP	<p>Similar to Lanti Dry Mine, the intention is to increase the current throughput from 500 tph to 1 000 tph.</p> <p>This proposal will see the establishment of the following infrastructure within the existing footprint:</p> <ul style="list-style-type: none"> <li>• Additional tailings containment facilities;</li> <li>• Potential extensions to or new borrow pits; and</li> <li>• Potential extensions to roads.</li> </ul>
MSP and complex	There is a plan to upgrade the MSP on the existing location to improve the plant's performance and health and safety standards.
Nitti Port	There are no proposed additions or amendments to the current layout and processes at Nitti Port.

Source: SRL, 2017

## 1.4 Current workforce

SRL is the largest formal employer in the study area (or SR Area 1). As of August 2017, SRL employs 1 871 people, of which the 93% are Sierra Leonean nationals. There are 93 Sierra Leoneans in management positions, 156 senior staff members and 1 583 general staff members. The remaining workforce consist of 39 expatriates. Table 1-4 provides a further breakdown of the workforce currently employed by SRL.

Six main contractor companies provide services such as security, fleet maintenance, corporate services, shipping, warehouse and camp management. These contractors employ a combined total of 725 Sierra Leonean nationals, 18 expatriates, and approximately 300 casuals. Table 1-4 provides a breakdown of the employment statistics for SRL's contractors.

**Table 1-4: Workforce breakdown for the SRL operation (August 2017)**

Position	Staff numbers
<b>Number of Expatriates Employed</b>	
Senior Management	11
Middle Management	4
Professionals	24
<b>Total Expatriates</b>	<b>39</b>
<b>Number of Nationals Employed</b>	
<b>Management Staff</b>	
Senior Management	5
Middle management	18
Professionals	70
<b>Total Management Staff</b>	<b>93</b>
Senior Staff	156
General Staff	1 583
<b>Total General and Senior Staff</b>	<b>1 739</b>
<b>Total of Staff Combined</b>	<b>1 871</b>

Source: SRL, 2017

**Table 1-5: Breakdown of main contractors used by SRL (August 2017)**

Item	Quantity
<b>Main Contractors</b>	<b>6</b>
All Terrain Services	1
Beowulf	1
Afrilogue	1
CET	1
AYS / VOLVO	1
Frontier Afrique	1
<b>Total Expatriates</b>	<b>18</b>
<b>Total Nationals</b>	<b>725</b>
<b>Breakdown of Nationals Employed by Main Contractors</b>	
Senior Management	7
Supervisors	35
Below Supervisors	683
<b>Total Nationals</b>	<b>725</b>

Source: SRL, 2017

## 1.5 Mine closure

Refer to the Mine Closure Plan (SRK, 2018(5)) for a description of the way in which closure of the operations will be completed.

## 1.6 Objectives of the SIA

As noted in Section 1.1, the EPA-SL has instructed SRL to undertake an ESHIA and to develop an ESHMP for current and proposed dry and wet mining activities that meets the Sierra Leonean legal requirements. This SIA considers legal requirements, Iluka's corporate policies, and is aligned with GIIP including the standards of the International Finance Corporation (IFC) and the World Bank.

According to the EPA Act, the SIA has to meet a number of objectives. These objectives include the assessment of socio-economic, socio-demographic, and socio-cultural information. In meeting these objectives, the overall purpose of an SIA will be met. SIA is defined as "the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, expansions) and any social change processes invoked by those interventions" (Vanclay, International Principles for Social Impact Assessment, 2003).

The objectives of this SIA are derived from the EPA Act (pages 99-100), and inform the framework of the report:

- Describe the basic social characteristics, i.e. of SR Area 1 (study area) and its surroundings;
- Identify the main economic activities taking place or being promoted in the region;
- In the context of the baseline conditions, describe the potential beneficial and adverse areas of impact from a social perspective;
- Develop a social baseline focusing on:
  - Demographic indicators:
    - Population number, density and distribution;
    - Population age profile;
    - Male / female ratios;
    - Children under 18;
    - Average life expectancy;
    - Population growth;
    - Migration; and
    - Fertility rates.
  - Community and social organisation:
    - Role of Chiefdoms;
    - Local authority structure, powers, capabilities;
    - Informal administration structures;
    - Cultural diversity, ethnic groupings and religion;
    - Local customs and taboos; and
    - Vulnerable and disadvantaged groups.
  - Housing:
    - Housing stock;
    - Housing conditions; and
    - Housing demand.
  - Education:
    - Child education;
    - Youth education and training; and
    - Adult education and training.
  - Economy and livelihoods:
    - Economic structure;
    - Livelihoods;
    - Business enterprises;

- Employment;
- Unemployment;
- Goods and services; and
- Market trading.
- Land ownership and use:
  - Use of natural resources; and
  - Utilities and services.
- Intangible assets:
  - Quality of life indicators;
  - Cultural heritage; and
  - Areas of historical, cultural or scientific interest.
- Identify the social and cultural changes that the expansion may generate;
- Identify and analyse positive, negative, intended and unintended consequences of the expansion;
- Develop a social impact management plan to manage and monitor potential social impacts, ensuring that the role of women, youth, and marginalised segments of society are included bringing about a more equitable distribution of benefits;
- Describe the critical social values and / or sensitive sites that are to be protected during the life, closure and post closure stages of the mining operations, in addition to those social and local economic features that are likely to be directly influenced or affected in the social management plan;
- Develop and implement a stakeholder participation process as part of the social research process to assist with meeting the above objectives;
- Develop a strategy that will enhance community support throughout the life of expansion including closure and post closure, feeding into the Life of Expansion engagement plan;
- Develop maps which indicate the following:
  - Area and area of influence of mine and mining activities; and
  - Populated rural areas and urban areas, agricultural areas, cultivated areas, areas with agricultural potential, ecosystems services.

## 1.7 Areas of influence

To delineate the spatial extent of data collection and analysis for the SIA, the expansion's area of influence from a social perspective was broadly determined. The study area is defined as the "direct area of influence" (refer to Figure 1-1). This area is referred to as the "study area" or SR Area 1 throughout the SIA, and was similarly defined in the 2012 CEMMATS ESIA (2012). The CEMMATS ESIA (2012) is a key point of reference for this SIA. The alignment in study areas between this report and the CEMMATS ESIA of 2012 makes it possible, where relevant, to compare current baseline data against the baseline situation described in the CEMMATS ESIA (2012), and to use the CEMMATS ESIA (2012) data where the current socio-economic data may be limited.

For this SIA, a "broader direct area of influence" includes the Bonthe and Moyamba Districts. The Imperi, Jong, Upper Banta, Lower Banta and Bagruwa Chiefdoms are in these two Districts. Parts of the Imperi, Upper Banta, and Lower Banta Chiefdoms as well as a small part of the Jong Chiefdom are within the study area. A "broader indirect area of influence" is defined as Southern Province, within the national context.

The level of detail required for each of these areas of influence, to meet the objectives of the SIA, was determined as follows:

- The broader area of indirect influence: A national and provincial macro-economic and social overview of relevant information for Sierra Leone and the Southern Province;
- The broader area of direct influence: A socio-economic characterisation of the Bonthe and Moyamba Districts, as well as the Imperi, Jong, Upper Banta, Lower Banta and Bagruwa Chiefdoms; and

- Study area assessment: An assessment of the socio-economic, resource use, and livelihoods of communities in the study area.

## **1.8 Approach and methodology**

SRK planned the scoping and impact assessment phases of the SIA report development with consideration of the objectives outlined in Section 1.6, the in-country legal requirements, applicable Iluka policies, standards and procedures and GIIP discussed in Section 2. Primary and secondary data sources were consulted to address these objectives and requirements. Secondary data sources included socio-economic information that the mine had collected over the years, as well as general public information such as the country's census data of 2004 and 2015. The secondary sources that were consulted for the SIA are listed in Section 7.

Additional information was collected from primary data sources by way of Household Surveys (HHS), Focus Group Discussions (FGDs), interviews and a Rapid Rural Appraisal (RRA). In addition, information from the ESHIA Issues and Responses Report was analysed. Specialist studies conducted as part of this ESHIA were also consulted. Sections 1.8.1 and 1.8.2 contain a detailed account of the approach and methodology that were applied during the scoping phase and the impact assessment phase respectively.

### **1.8.1 Scoping phase**

The SIA study commenced with an ESHIA initiation meeting, whereafter a kick-off meeting and workshop specific to the SIA study was held. The workshop commenced on 17 June 2017, and continued on 20 June and 21 June 2017 with most of SRL's Community Affairs Department (CAD) team in attendance. A site orientation visit was conducted on 18 June 2017 with members of SRL's CAD team guiding members of SRK's SIA team. A fieldwork preparation site visit was conducted on 21 June 2017 by members of SRK's social team.

A public consultation meeting was attended by members of the SIA team to gain a better understanding of the social context. The public consultation process was executed by SRK's specialist public consultation team. The public consultation team and the SIA team together mapped stakeholders prior to engaging with the public.

A desktop study commenced after the expansion initiation meeting. Apart from populating the social baseline, the desktop study and workshop results guided the development of data collection tools, the sampling frame, and confirmation of the areas of influence identified from a social perspective. The data collection tools, sampling methodology, and areas of influence were finalised after the SRK team had completed a site orientation visit and a pilot test of the tools.





## 1.8.2 Impact assessment phase

To meet the objectives of the SIA, primary and secondary data sources were used. Both qualitative and quantitative tools were used to collect primary social baseline information, as outlined in Table 1-6.

**Table 1-6: Data collection methods**

Activities	Reference in the SIA	Method	Timeframes	Number of respondents / groups
RRA	SRK, 2017b	Qualitative	13-17 August 2017	92 respondents
HHS	SRK, 2017a	Quantitative	8-25 August 2017	562 respondents
FGDs	SRK, 2017d	Qualitative	22-23 August 2017	Eight focus groups
Interviews	SRK, 2017c	Qualitative	September 2017	Six interviews

Source: SRK, 2017a-d

It is important to understand the role of qualitative and quantitative primary research in the SIA:

- Qualitative research was used to explore the current circumstances of study area residents from their perspective, and to gain an understanding of on-the-ground views of these circumstances, including causes and consequences. This method was used to give insight into people's thoughts, feelings, and the interpretation of situations. The information may not be complete or factually accurate in all cases, but it reflects the different subjective realities of people in the study area. Participants played an active role in the information gathering process, as opposed to responding to a set of prescribed questions as is the case with quantitative research. Many participants expressed their appreciation for the opportunity to share their situation in this way; and
- Quantitative research was used to gain structured information mainly about the biophysical environment in the study area (mostly from specialist studies that formed part of this ESHIA), and to determine household characteristics and socio-economic and socio-demographic trends. Whilst qualitative research is exploratory in nature and process orientated, quantitative research aims to be conclusive and results orientated.

The baseline description in Section 4 is based both on secondary data sources mostly reporting on quantitative information, and on qualitative and quantitative information that was collected from primary data sources. Qualitative information was collected through RRA, FGDs and interviews, and discussions of these results should be read with the understanding that opinions and perspectives of participants of the study are reflected. Where appropriate and possible, this qualitative information is put side by side with quantitative information gathered through the HHS, by other specialists, and from secondary data sources, to provide a more complete picture of a situation.

For the collection of qualitative and quantitative primary information from people in the study area for the SIA, a team of six local fieldworkers (Appendix A) were trained to conduct the RRA and the HHS. The training took place on 9 and 15 August 2017. Four men and two women were recruited and trained. Training was conducted in a manner that ensured skills transfer, and continued during the data collection process where required. Two senior SRK team members, one in-country specialist and one South African, were in field to supervise and manage the process, and to execute quality control.

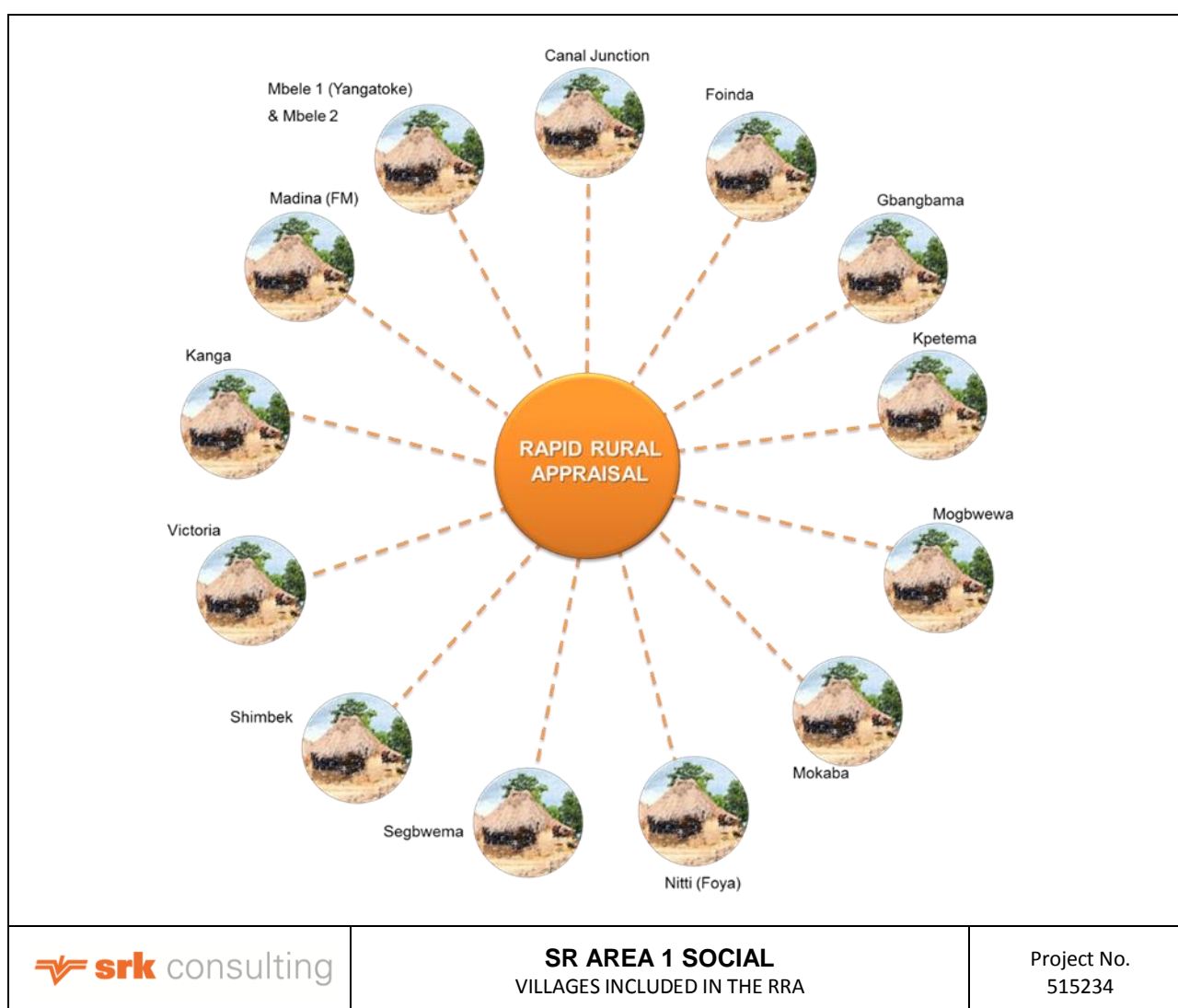
Interviewers engaged with people of the same and of the opposite sex. Where it became evident that gender sensitivities could be present when the interviewer was of the opposite sex, same gender interviewers were used. An effort was made to ensure that age appropriate interviewers interviewed older women and men.

All the fieldwork activities were preceded by a discussion with the relevant Paramount Chiefs, various Town or Village Chiefs, their support teams, and villagers of the relevant village. These discussions were informal, and confidentiality was assured. This allowed for participants to freely voice their opinions, fears and wishes. SRK representatives stressed that they were independent from SRL, and

therefore could not ensure that wish lists, fears, etc. would be addressed by SRL. It should be noted that SRL can also not necessarily fulfil people's wish list requests. SRL will give due consideration to suggestions made where such suggestions are congruent with SRL's Corporate Social Responsibility (CSR) guidelines, and where these can positively contribute to the long-term sustainability of SRL's CSR initiatives. SRL will also bring the wish list to the Community Development Committee's attention to ensure that they consider this in their deliberations.

### Rapid Rural Appraisal

The RRA was conducted in a sample of areas where the use of ecosystem services was evident. Hence the focus was largely on community use of natural resources. The villages that were covered are listed in Figure 1-3. Recording sheets were used to collect information from residents of these villages. The methods used to collect information included observation, discussions with stakeholders and group meetings with Village Chiefs and villagers. Discussions with participants (stakeholders) were focused, and specific information was recorded about ecosystems services and farming activities as outlined in Table 1-7. Male-female responsibilities were discussed.



**Figure 1-3: Villages included in the RRA**

**Table 1-7: RRA ecosystems services topics covered**

Questions asked by the fieldworker:
What animals / birds / fish do you hunt? How scarce is it? When is it present?
How many do you catch at a time? Where and how do you catch it? How often do you catch it? How often would you like to catch it?
I don't know the animal / bird / fish please describe it to me?
What livestock do you have? How many do you have? What are they fed on? How much food do they get per feeding?
What plants / plant material including trees, grass, bark, nuts, fruits, bulbs and leaves do you gather?
If the animal / bird / fish / livestock / plant / plant material is not available, what do you use instead?
What parts of the animal / bird / fish / livestock / plant / plant material do you use? What do you use it for?
How do you manage fields for grazing?
How many crop plots do you have and how large are they? What type of crops do you grow? Number of crop plots and size? How much food do you obtain per harvest and how often do you harvest? What time of the year is the crop available to harvest and eat? What parts of the crop do you use? What do you make from it? If not available, what do you use instead?
Monetary value of animal / bird / fish / livestock / plant / plant material / crops?
How important is animal / bird / fish / livestock / plant / plant material / crops to your household to keep you well and healthy?
Where do you collect water? How often do you collect water? How much do you collect at a time? how often would you like to collect this amount? If there was no water available here, where would you go instead? How scarce is fresh water? How important is fresh water to your household?
Where are these places of spiritual significance? Where do you go to relax? How often do you go there and how do you get there? How long do you stay there? If not available, where would you go instead? How important is it?

Source: SRK, 2017b

## Household surveys

The HHS comprised a formal, structured questionnaire. It contained mainly closed-ended questions, and some open-ended questions, which were coded for quantification after the fieldwork had been completed. The survey was pilot tested in the week of 17 July 2017 in the Jong Chieftdom, and adaptations were made where necessary. The sections covered in the HHS included:

- Basic information about the participant;
- Land and building ownership;
- Views on resettlement;
- Profiles of household members;
- Migration patterns;
- Livelihoods sources;
- Access to infrastructure;
- Attitudes towards SRL; and
- Access to health services, practices and knowledge related to health.

Heads of households were interviewed, and if they were not available, representatives were interviewed (primary interviewees). A mobile application was used to collect information. Each HHS took 20 minutes to an hour to complete, depending on the size of the household, the skill of the interviewer, the distractions during the interview, the talkativeness of the participant, and the length of the survey.

The infrastructure and health sections of the survey were addressed with a smaller sub-sample. As a guidance to the fieldworkers, every tenth household they interviewed was to be asked the infrastructure and health questions. Sample coverage for these two sections was deliberately limited because infrastructure services were assumed to be similar for households in the same village, and health survey results served to support health information on a study area level, not focusing on specific villages / areas within the study area. Sample size was thus reduced to around 50+ households.

Fieldworkers had to be flexible in the application of this sub-sample method, considering unique conditions. For example, when heavy rain prevented fieldworkers from moving on to the next household, they filled the time by completing the health and infrastructure sections with the household being interviewed. When a household showed communication / interview fatigue, the next household had to be considered for inclusion of the health and services questions instead.

A total of 562 household interviews was recorded digitally. Opportunity sampling was applied, where the households that were willing and available to participate were interviewed. An attempt was made to interview a spread of households in the different villages, by applying the approach used for representative sampling: depending on the estimated size of the village, a specified number of households was skipped before approaching the next household for participation.

The sample breakdown is illustrated in Figure 1-4 (tall buildings as icons represent built-up areas). There was an even spread of participants by gender: 51% were male and 49% were female. A total of 200 interviews were conducted with a representative of the household because the head of the household was not available at the time of the visit. Heads of households were identified by asking who the main decision maker in the household was. A household was defined as the group of people who “ate from the same pot”. Only those who spent at least four nights at the house in the week prior to the interview, and generally spend four nights a week in the household, were considered to be household members.

A total of 36 villages and towns was included in the survey. Due to challenges fieldworkers experienced with the mobile application, the interviews held with households at Higima were not recorded, and not all the interviews at Mokpandimo, Mokaba, Korpama and Modagba were recorded. Moganago village was not visited, due to problems with transportation. Since the intention was to obtain an indication of broad socio-economic circumstances and trends within the study area, the omission of these interviews should not significantly affect the survey results. The relevant Paramount and Village Chiefs were consulted in preparation for the HHS, and their issues and concerns raised at these meetings were recorded and considered in the analysis (See Appendix A for a list of Chiefs).

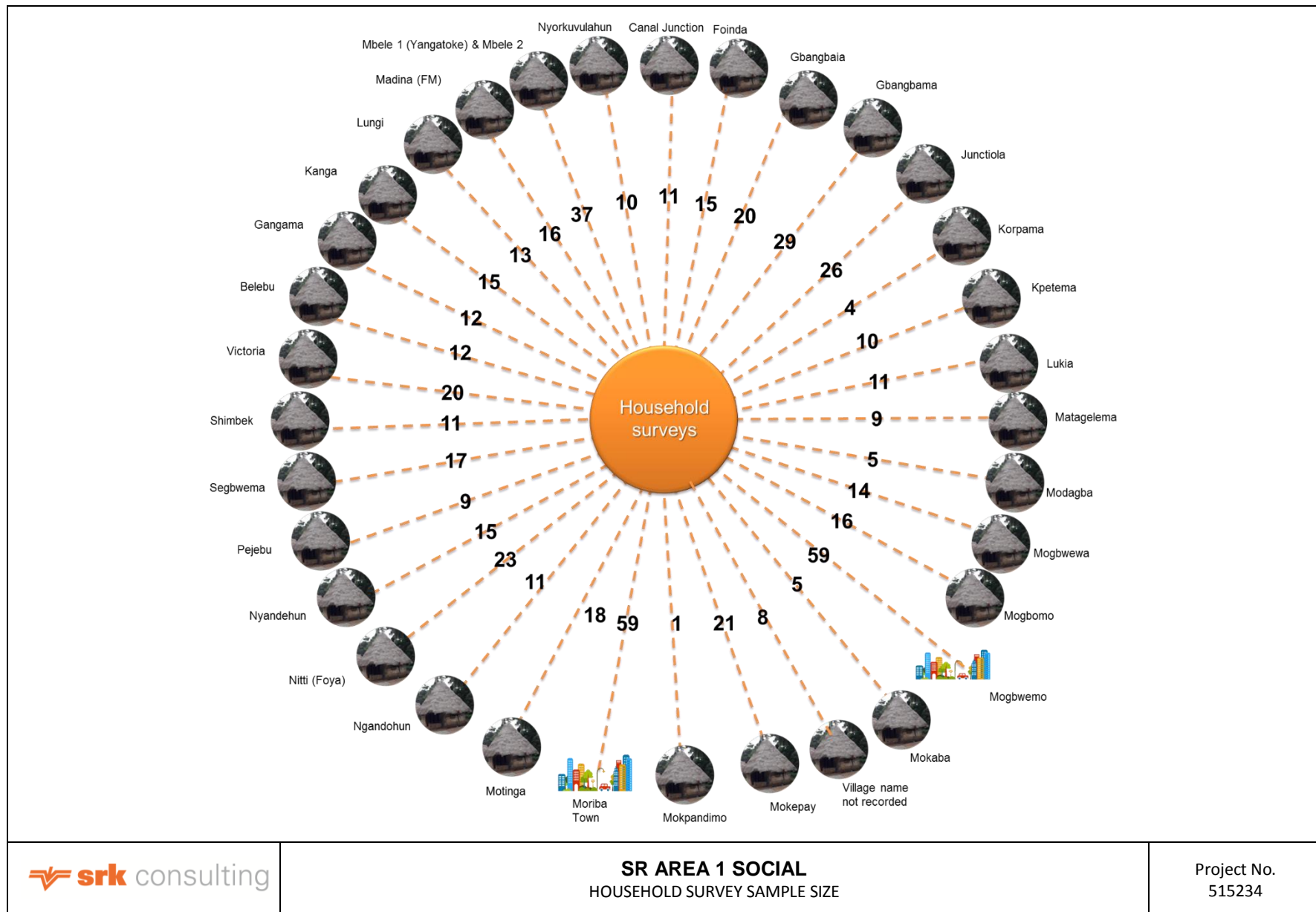


Figure 1-4: Household survey sample size

## Focus group discussions

A total of eight FGDs was held, as reflected in Table 1-8 (attendance registers are attached as Appendix B). The discussions were recorded and transcribed. Once the inputs had been transcribed, the recordings were deleted to ensure confidentiality was maintained.

A discussion guide was followed for each of these groups. Not all the discussion points in the discussion guide could be addressed, due to time constraints. Participants spoke about their own organisations or groups and the relationship with SRL. Details of stakeholder relations were not explored. The groups were led by the male in-country social specialist. The FGD with representatives of women's groups was led by an in-country female facilitator. The transcriber attended the FGDs to familiarise himself with the information.

**Table 1-8: List of FGDs**

Organisation / group	Date	Time	Number of people
Organised business	23 Aug 2017	13:00-15:00pm	10
Youth groups	22 Aug 2017	08:00-10:00am	9
Women's groups	23 Aug 2017	15:00-17:00pm	8
Non-governmental organisations (NGOs)	22 Aug 2017	13:00-15:00pm	9
Land owners	22 Aug 2017	10:00am-12 noon	8
Family Support Unit and Criminal Investigation Department	23 Aug 2017	10:00am-12 noon	5
Education Department	23 Aug 2017	08:00-10:00am	10
Ward councillors	22 Aug 2017	15:00-17:00pm	2

Source: SRK, 2017d

## Interviews

Interviews were held with key local stakeholders. These included people employed in oil palm and pineapple plantations, and in stone mining activities occurring in the study area (refer to Table 1-9). Interviews with business representatives focused on the socio-economic aspects of the business, such as numbers, incomes, origins and skill levels of workers. Interviews with other institutions focused on the activities of the institution.

**Table 1-9: List of Interviews**

Organisation / Activity	Person interviewed	Date
African Lion Agriculture (Oil palm farm)	General Manager	6 September 2017
Sierra Tropical Limited (Pineapple farm)	Foreman	6 September 2017
Community stone mining small business	Stone Miner	5 September 2017
Beowulf	Guard Force Commander	19 September 2017
Ruby Rose Educational Resource Centre	Chief Librarian	18 September 2017
Allterrain Services Group (ATS)	Expansion Manager	21 September 2017

Source: SRK, 2017c

## 2 Legal framework, standards and SRL policies

As a management tool for ensuring proper social economic conduct, the SIA is informed by numerous pieces of international and national legislative requirements, as well as internal company policies, standards and procedures.

### 2.1 International regulations and standards

Sierra Leone is a signatory to certain international conventions that may be applicable to the Expansion and these may be seen to provide additional direction in the absence or limitation of local legislation or policy. Those relevant to this study include the following (not exhaustive):

- The IFC Performance Standards;
- World Bank Environmental, Health and Safety (EHS) Guidelines;
- The International Labour Organization Conventions;
- The United Nations declarations and agencies including:
  - Declaration on Rights of the Indigenous Peoples;
  - International Health Regulations as promulgated by the World Health Organisation (WHO). Updated regulations for 2005;
  - International Covenant on Economic, Social and Cultural Rights; and
  - Partner programmes such as the Sustainable Development Goals.

### 2.2 National legal framework

#### 2.2.1 Sierra Rutile Agreement (Ratification) Act, 2002

SRL is governed by *The Sierra Rutile Agreement (Ratification) Act, 2002*. This Act refers to the *Mines and Minerals Act 1994* (amended by The Mines and Minerals Amendment Act, 1999) as applicable but is superseded by the Agreement Act where there are conflicts between them. The Sierra Rutile Act addresses policies, development, operations, and financial matters related to mining within the study area including environmental matters such as surface land usage and rent, community relocation, hydrology, hydrogeology, and water quality matters. The Act sets out a number of statutory obligations for SRL in relation to the occupation of surface land and compensation of land owners or occupiers, as follows:

- *Clause 6 (a)(1)*  
The Company shall pay to the Government annually in advance mining rent under each mining lease and additional mining lease for each square mile or part thereof embraced within the mining lease area commencing with the financial year ending December 31, 1989 and for each subsequent financial year end at the rate of US dollars (US\$) 400 for the first year increasing annually thereafter at a cumulative rate of 5% per annum.
- *Clause 6 (a)(2)*  
The Company shall pay to the Government annually in advance a Surface Rent under the Mining Lease for all land occupied or used there under, for the purposes enumerated in Section 35 (1) of the Minerals Act at the rate of US\$ 4 per acre per annum. Beginning January 1, 2003 the rate shall increase to US\$ 10 (ten) per acre per annum, such rate increasing in respect of each subsequent year at the rate of 3% per annum.
- *Clause 10 (b) (1)*  
The company shall endeavour to make satisfactory arrangements for payment of a fair and reasonable compensation for any prospective damage to any crops, buildings, trees or works therein. The Government shall negotiate on behalf of the land owners or occupiers with the Company to assess the compensation to be paid. The land owners or occupiers shall have the right to participate in the negotiations.



- *Clause 10 (b) 2 (iii-v)*

iii. The compensation payable by the company pursuant to this clause shall be based on the estimated monetary amount (or fair market value) of the damage to be done to the crops, buildings, trees or works on the land. Any compensation with reference to the fact that the owner will be deprived of the use and occupancy of the land is included in and covered by the surface rent payable pursuant to clause 6 (a) (2) hereof.

iv. The company shall not unduly disturb and interfere with the living conditions of the local population settled within the mining lease area.

v. If at any point the resettlement of the local population appears to be absolutely essential, the company shall move with utmost caution, with the consent of the government and in consultation with local authorities in persuading the local population to resettle and provide a fully adequate resettlement programme in accordance of the directions of the responsible minister.

## 2.2.2 Environmental Protection Agency Act, 2008

The Sierra Leone Environmental Protection Agency (SL-EPA) is responsible for reviewing and approving environmental impact assessments for expansions that might lead to environmental disturbances, and also for providing licences in respect of such expansions. The EPA Act (2008) stipulates some of the factors for which expansions require an environmental impact assessment as follows:

- The environmental impact on the community;
- The location of the expansion;
- Whether the expansion transforms the locality;
- Whether the expansion has or is likely to have substantial impact on the ecosystem of the locality;
- Whether the expansion results in the diminution of the aesthetic, recreational, scientific, historical, cultural or other environmental quality of the locality;
- Whether the expansion will endanger any species of flora or fauna or the habitat of the flora or fauna;
- Whether the expansion will result in an increase in demand for natural resources in the locality; and
- The cumulative impact of the expansion together with other activities or expansions on the environment.

## 2.2.3 Environmental and Social (Minerals and Mining) Regulations, 2013

Specific standards relating to the undertaking of an SIA require that:

- *Clause 8*

The process of undertaking the Social Impact Assessment shall include:

- Identifying, managing, and monitoring the negative and positive, intended and unintended consequences of reconnaissance, exploration, small-scale, and large-scale mining operations, and any kind of social and cultural change that these interventions may generate;
- A public consultation process through which to identify, analyse, manage, and monitor potential social impacts;
- A participatory process with the aim of strengthening the role of women, youth, and marginalized segments of society in development planning, bringing about higher levels of social inclusion and a more equitable distribution of benefits; and
- A strategy identifying how the applicant plans to obtain the community's support for the expansion and strengthen ties with it throughout the entire life of the expansion, including preparing the community for closure and post-closure phases.

It states the following regarding SIA stakeholder participation during the ESHIA process [sixth schedule – SIA Standards (Regulation 15(1) (b) paragraph 7]: “when undertaking the analysis of social and local economic issues the applicant shall actively engage stakeholders including village communities, individuals and local enterprises such as agricultural cooperatives, education, gender and youth empowerment groups, market traders and educational, health and social workers.



## 2.2.4 Mines and Minerals Act, 2009

The main purpose of this Act is to:

- Consolidate and amend the law on mines and minerals;
- Promote local and foreign investment in the mining sector by introducing new and improved provisions for exploration, mine development and marketing of minerals and mineral secondary processing for the benefit of the people of Sierra Leone;
- Ensure that management of the mineral sector is transparent and accountable in accordance with international best practice;
- Promote improved employment practices in the mining sector;
- Improve the welfare of communities adversely affected by mining; and

Introduce measures to reduce the harmful effects of mining activities on the environment and to provide for other related matters.

In terms of land, the Act clearly stipulates the following:

- *Clause 32 (1) b i-iv* The holder of a mineral right shall not exercise any of his rights, under the mineral right, except with the written consent of the owner, or lawful occupier or his duly authorised agent, in respect of-
  - i. any land dedicated as a place of burial or which is a place of religious or other cultural significance;
  - ii. any land which is the site of, or which is within two hundred metres or such greater distance as may be prescribed, of any inhabited, occupied or temporarily unoccupied house or building;
  - iii. any land which is within fifty metres or such greater distance as may be prescribed, of land which has been cleared or ploughed or otherwise *bona fide* prepared for the growing of, or upon which there are agricultural crops; or
  - iv. any land which is the site of, or within one hundred metres or such greater distance as may be prescribed, any cattle dip, tank, dam, or other body of water.
- *Clause 33(1)*  
The owner or lawful occupier of any land which is within an area that is the subject of a mineral right shall retain the right to graze stock upon or to cultivate the surface of such land in so far as such grazing or cultivation does not interfere with the proper use of such area for reconnaissance, exploration, or mining operations.
- *Clause 34*  
Subject to the provisions of any law relating to the acquisition of land titles and Section 38, the holder of a large-scale mining licence shall obtain a land lease or other rights to use the land upon such terms as to the rents to be paid for the licence, the duration or the extent or area of the land to which such licence shall relate, as may be agreed between such holder and such owner or lawful occupier of the land or failing that, such agreement as may be determined by the Minister on the advice of the Minerals Advisory Board.
- *Clause 34 A*  
A land lease or other rights to use land obtained by the holder of a large-scale mining licence, shall be subject to surface rent which shall be distributed as follows:
  - i. Land owners 50%;
  - ii. District Council 15%;
  - iii. Paramount Chiefs 15%;
  - iv. Chiefdom Administration 10%, and
  - v. Constituency Development Fund 10%.
- *Clause 35. (1-7)*
  - 1) The holder of a mineral right shall on demand being made by the owner or lawful occupier of any land subject to such rights pay such owner or lawful occupier fair and reasonable compensation for any disturbance of the rights of such owner or occupier and for any damage done to the surface of the land by his operations and shall on demand being made by the owner of any crops, trees, buildings or works damaged during the course of such operations

pay compensation for such damage subject to Section 34 and Section 38 shall be deemed to be adequate compensation for deprivation of the use of land to which such rent relates;

- 2) In assessing compensation payable under this section, account shall be taken of any improvement affected by the holder of the mineral right or by his predecessor in title the benefit of which has or will inure to the owner or lawful occupier;
  - 3) The basis upon which compensation shall be payable for damage to the surface of any land shall be the extent to which the market value of the land (for which purpose it shall be deemed saleable) upon which the damage has occurred has been reduced by reason of such damage, but without taking into account any enhanced value due to the presence of minerals;
  - 4) No compensation shall be payable to the occupier of a state grant of land in respect of any operations under a mineral right existing at the date of such grant;
  - 5) No demand made in terms of this subsection shall entitle the owner or lawful occupier to prevent or hinder the exercise by the holder of a mineral right of his rights there under pending the determination of compensation to be paid;
  - 6) If the holder of a mineral right fails to pay compensation when so demanded under this section, or if the owner or lawful occupier of any land is dissatisfied with any compensation offered, such compensation may be determined by the Minister on the advice of the Minerals Advisory Board; and
  - 7) A claim for compensation under the provisions of subsection (1) shall be made within a period of two years from the date when the compensation became due failing which, notwithstanding the provisions of any other enactment, such claim shall not be enforceable.
- *Clause 37 (1)*  
Subject to Section 38, when land is acquired compulsorily under Section 36, those persons having an interest in or rights over the land concerned shall be paid adequate compensation by the holder of the mineral right determined on the same basis as compensation for disturbance of rights under Section 35.
  - *Section 37 (2)*  
The holder of a large-scale mining licence shall, before entering into possession for enjoyment of any land or before exercising any right over the land, make payment of compensation as determined in accordance with subsection (1) to the person or persons concerned or if the whereabouts of the person or persons concerned or any of them are unknown, give such undertakings concerning the payment of compensation as the Minister may require.
  - *Clause 38 (1-3)*
    - 1) The Minister shall ensure that all owners or lawful occupiers of land who prefer to be compensated by way of resettlement as a result of being displaced by a proposed mining operation are resettled on suitable alternate land, with due regard to their economic well-being and social and cultural value so that their circumstances are similar to or improved when compared to their circumstances before resettlement, and the resettlement is carried out in accordance with the relevant planning laws;
    - 2) The cost of resettlement shall be borne by the holder of the mineral right:
      - a) As agreed by the holder and the owner or lawful occupier of land or by separate agreement with the Minister, or
      - b) In accordance with a determination by the Minister, except that where the holder elects to delay or abandon the proposed mining operation which will necessitate resettlement, the obligation to bear the cost of resettlement shall only arise upon the holder actually proceeding with the mining operation; and
    - 3) Subject to this section, the Minister may take the necessary action to give effect to a resettlement agreement or determination.

## 2.3 SRL Policies and Procedures

SRL has a number of policies, standards and procedures. These include:

- Iluka Health, Safety, Environment and Community (HSEC) Policy (2017) – commits the company to operate in a sustainable manner by targeting high levels of performance and pursuing leading practice in the areas of health, safety, environment and community reflecting the company's values of Commitment, Integrity and Responsibility; and
- Iluka Group Standard – Social Performance (2017) and Group Procedure – part of the Iluka HSEC Management system and set out the minimum performance requirements for all Iluka sites and expansions pertaining to social performance.

Iluka has 14 separate standards on HSEC, including a dedicated Social Performance Standard.

The Iluka Social Performance Standard includes the following key elements:

- Stakeholders and their interests shall be identified, analysed and mapped to inform impact and risk assessments and social management plans (SMPs);
- Identify, assess and control social risks to the business;
- Undertake human rights risk and impact assessments;
- Identify, record and maintain social obligations and commitments in a register and develop and implement action plans to address these;
- Establish and implement a local-level mechanism to manage grievances from stakeholders in a timely and respectful manner;
- Collect relevant social baseline data;
- Develop, communicate and implement SMPs proportionate to the scale and social risk profile. These will include stakeholder engagement, social impact and risk management, social investment, and social monitoring. These are unpacked in the Social Performance Procedure – Social Performance;
- Specifically, regarding social impact and risk management, all formal SIA processes shall, at a minimum, comply with regulatory requirements and:
  - Give special attention to identifying and mitigating impacts on vulnerable and / or marginalised community members who may be disproportionately affected by Iluka activities;
  - Include consultation with stakeholders, inclusive of potentially affected communities, in the identification of impacts and development of mitigation options;
  - Provide stakeholders with opportunities to express their views on potential impacts and mitigation measures;
  - Prepare and communicate a culturally appropriate and independently verified interpretation of the SIA to affected stakeholders; and
  - Where community health is identified as a potential risk, a Health Impact Assessment conducted.
- Involuntary resettlement must be undertaken in accordance with the IFC's Performance Standard 5;
- Influx management strategies shall be developed in collaboration with external stakeholders;
- Management and conduct of security personnel should be aligned with the Voluntary Principles of Security and Human Rights; and
- A process shall be established to monitor and evaluate relevant socio-economic indicators and impact management controls.

### 3 Study context, assumptions and limitations

#### 3.1 Study context

The current study comprises a socio-economic baseline description and an associated SIA. The study is informed by the EPA-SL requirement for an ESHIA and associated ESHMP covering SRL's *current* and *proposed* dry and wet mining activities, including the proposed expansion areas. The objectives listed in Section 1.6 have guided the implementation of the study and the required reporting.

In the context of GIIP, SIA and linked socio-economic baseline studies are a key component of an ESHIA. Baseline studies report national, regional and local economic and social circumstances, and in most cases the impact assessment is focussed on *proposed* activities in either green or brownfields contexts (e.g. establishment of a new mine, expansion of a mine, or material changes in operational practices) and the baseline changes the activities are expected to generate.

This study is situated in a particularly complex context:

- Sierra Leone has navigated a difficult socio-economic and developmental path, even by the standards of developing countries around the world. A civil war erupted in 1991, and ended in 1995, leaving a seriously damaged economy and a disrupted (and in some cases traumatised) population. The outbreak of the Ebola Viral Disease (EVD) in 2014 brought a new cycle of economic and social shocks;
- The country has a long and variable history of mining, interwoven with the above events, and with other external and internal drivers of investment and activity (including market conditions and management shortcomings); and
- Rutile mining potential was identified in south eastern Sierra Leone in the 1920s, and mining activities started in earnest in 1967. The civil war stopped all rutile mining activity for its duration, and the re-establishment of mining infrastructure and activity took many years following the war. Around these events rutile mining has proceeded and stalled in several cycles, under multiple ownership and management arrangements.

This context, and especially the extended history and legacy of mining presents the following challenges to the current study:

- Local stakeholders attribute many felt impacts of historic mining to mining in general, and sometimes to the current SRL operation in particular. The challenge in this context is to clearly isolate study impacts from those of historical mining;
- Resettlement is an important example of the challenge outlined above. Mine-driven displacement and related relocation have taken place, but decades ago under different mine ownership and management arrangements. The lived experience of resettlement is an important element of the baseline, but it is not an impact of current mining or planned expansion;
- Similarly, input from stakeholders sometimes referred to perceived corruption, in many forms and involving a variety of transacting bodies. In the context of the study it has proved difficult to verify reported instances of corruption. It is important to note the awareness of corruption, however, and the importance of measures to combat it; and
- In these and related examples, the study has to remain honest to its participants, whilst drawing a responsibility boundary where necessary. Again, with reference to resettlement, the study has noted the commitment of Iluka and SRL to international resettlement good practice going forward.

The requirement by the regulator that identified impacts relate both to current and proposed activities introduces a further set of considerations, especially in seeking to separate current activity impacts and management measures from those linked to new activities. Key implications are the following:

- The new activities proposed by SRL are spatially confined and are likely to have relatively limited impact. Current activities are shown to be significantly impactful in some areas, for example in terms of employment and associated multipliers and the link between mine ponds and community access to facilities and resources; and

- The impacts of existing activities are already in place, often with accompanying management measures. Where new measures might be required for new activities, existing management often requires continuation or in some cases elaboration.

### 3.2 General assumptions and limitations

The following assumptions and limitations have informed the SIA:

- The national census was undertaken after the outbreak of the EVD in 2014. It is assumed that some of the impacts are reflected in population and demographic figures. This study does not seek to define or interpret these impacts;
- Demographic desktop information was, wherever possible, derived from the 2015 Population and Household Census (PHC). Where applicable, corrected population figures were used as per the Ministry of Education Science and Technology's assessment. Where the PHC did not have the necessary data available, it was sourced from other reliable secondary sources, including ReliefWeb, the United Nations Children's Fund (UNICEF), the WHO, the United Nations Development Programme (UNDP) and the Central Intelligence Agency (CIA) World Factbook;
- A lack of socio-economic information at District level was identified during the desktop analysis from the publicly available Sierra Leone PHC. Data provided by Humanitarian Response was utilised where appropriate. It is assumed that Humanitarian Response acquired this data directly from the Sierra Leonean government's census, as much of the data is in keeping with trends observed in PHC at national and Chiefdom level;
- Information derived from CEMMATS' SIA of 2001 and 2012, whilst outdated in some cases, still provides insight into the key socio-economic characteristics of the study area;
- The HHS sample is relevant to requirements for this baseline study, providing useful primary information on household characteristics and trends. The sample reflects but is not fully statistically representative of all households in the study area; and
- In light of the fact that SRL has been active in the area since 1967, it was not possible to isolate, quantify and describe with accuracy the social changes and impacts generated by historic mining. Socio-economic changes and impacts have accumulated over the years and contribute to the baseline reported here.

## 4 Social baseline

The social baseline presents socio-demographic, socio-economic, socio-cultural, land use and institutional information to develop an understanding of the existing social and economic context within which the project operates. This information enables the SIA practitioner to identify and assess the contribution of the expansion to changes in the social context, to predict the ways in which the expansion could contribute to future changes, and to assess the current and potential impacts of these changes.

A baseline that is informed by a combination of primary and secondary data enhances confidence in the impact assessment and is more likely to result in the development of appropriate and relevant management measures, which enhances positive impacts and avoids or minimises negative impacts. A broad-based and solid social baseline also contributes to more accurate and applicable monitoring and evaluation processes. The social baseline follows the themes listed in Section 1.6, as prescribed by the SL-EPA.

The baseline first seeks to describe information derived at desktop level for the broader area of indirect influence (national, regional, and provincial levels), the broader area of direct influence (District and Chiefdom levels), after which it describes conditions at study area level, through primary data collection findings from the RRA, HHS, FGDs, and other ESHIA specialist studies. This is in line with the areas of influence as identified (Section 1.71.7).

## 4.1 Demographic indicators

### 4.1.1 Population number, density and distribution

The PHC (2015) reported that the total population of Sierra Leone was close to 7 million in 2015, with more females than males (3 601 135 females and 3 490 978 males). Of this population, 20% (1 439 308) were based in the Southern Province, 35% (2 508 201) in the Northern Province, 23% (1 642 370) in the Eastern Province, and 21% (1 500 234) in the Western Area<sup>1</sup>. The Southern Province, where SRL is active, has the smallest population.

By type of residence nationally, 59% of people in Sierra Leone lived in rural areas (4 187 016), and 41% (2 905 097) lived in the urban areas. The national population density in 2015 was 79 persons per km<sup>2</sup>, and 73 persons per km<sup>2</sup> in the Southern Province. The Northern Province had 70 persons per km<sup>2</sup> and the Eastern Province 110 persons per km<sup>2</sup>. Population density in the Western Area was high, with 2,693.4 people per km<sup>2</sup> (PHC, 2015).

SRL's mining activities fall within the boundaries of the Bonthe and Moyamba Districts. The Bonthe District was home to a population of 200 781 people in 2015, distributed across 11 Chiefdoms, with a population density of 58 persons per km<sup>2</sup>. An estimated 81% of the population lived in rural areas, with only 19% living in urban areas (PHC, 2015). Of the Bonthe population, 17% lived in the Imperi Chiefdom and 17% in the Jong Chiefdom (see details in Table 4-1).

The population of the Moyamba District was larger, with 318 588 people, and a lower population density of 46 persons per km<sup>2</sup>. An estimated 93% of the population were living in rural areas in 2015. The population is distributed across fourteen Chiefdoms. Of the population in the Moyamba District, 12%, 3%, and 9% were located in Lower Banta, Upper Banta, and Bagruwa Chiefdoms respectively (PHC, 2015).

Of the Chiefdoms that the study area straddles, Imperi has the lowest population density. Considering the mining activities taking place in the Imperi, Lower Banta and Upper Banta Chiefdoms, it is possible that population densities have increased since the 2015 census (SRK, 2017).

Chiefdom population numbers, density and distribution relevant to this study are highlighted in Table 4-1. Bagruwa Chiefdom is included in the table, and subsequent sections, in light of its association with SRL and therefore forms part of the broader area of direct influence (Section 1.7). A comparison and discussion of differences in population trends in the study area is presented in Section 4.1.3.

**Table 4-1: Population information of Chiefdoms in the broader area of direct influence**

District	Chiefdom	Population size	km <sup>2</sup> covered	Population density
Bonthe	Imperi	33 394	622.2 km <sup>2</sup>	54 persons per km <sup>2</sup>
Bonthe	Jong	33 816	384.2 km <sup>2</sup>	88.0 persons per km <sup>2</sup>
Moyamba	Lower Banta	10 513	497.6 km <sup>2</sup>	75.0 persons per km <sup>2</sup>
Moyamba	Upper Banta	37 317	194.0 km <sup>2</sup>	54.2 persons per km <sup>2</sup>
Moyamba	Bagruwa	27 623	827.8 km <sup>2</sup>	33.4 persons per km <sup>2</sup>

Source: Statistics Sierra Leone, 2015

The PHC (2015) does not indicate population density variations within each Chiefdom. Field observations of the study area indicate that significant proportions of the Imperi and Lower Banta Chiefdoms' populations are concentrated in settlements close to the mine, specifically Moriba Town

<sup>1</sup> The Western part of Sierra Leone unlike the other provinces is referred to as an "area" not a province

and Mogbwemo. Moriba Town. Mogbwemo, Njorkuvulahun, Belebu, and Matagelema are built up and are developing into one integrated settlement.

### **Study area assessment**

Using Google satellite imagery of 2017 and consulting Village Chiefs about the number of households in their villages, SRK (2017) estimated a total of 4 000 households resided within the study area. The household survey recorded 2 960 household members in 560 households in total, resulting in an average household size of 5.2 persons per household. This figure aligns with the PHC (2015), which showed average household sizes in Moyamba and Bonthe Districts as 5.1 and 6.2 respectively.

Assuming an average household size of 5.2 persons per household, the indicative population estimate for the study area is 20 800. This suggests a population density to 71 people per km<sup>2</sup> in the study area, including the areas taken up by mining related activities (20,800 persons / 291 km<sup>2</sup>). Assuming approximately 21 km<sup>2</sup> is taken up by mining activities, this suggests a population density of around 77 people per km<sup>2</sup> (20 800 persons / 270 km<sup>2</sup>). This is in line with the densities reflected in Table 4-1.

## **4.1.2 Population age profile**

Age profile information was not readily available at provincial or Chiefdom levels. According to the PHC (2015), 41% of the national population comprised of children younger than 15, while people aged between 15-64 accounted for 56%, and 4% were aged 65 and older. It is therefore reasonable to conclude that around half of the national population (50%) comprised of people aged 20 or younger. The majority of the population in both Bonthe and Moyamba Districts were between the ages of 15 and 64 (PHC, 2015).

### **Study area assessment**

In the HHS (SRK, 2017a) people 20 and younger comprised 47% of the household members captured in the sample of households. To some extent this can be extrapolated to the study area, and the proportion correlates with the estimated national distribution. Children younger than 15 comprised 30% of the sample of household members, people aged between 15-64 accounted for 66%, and 4% were those aged 65 and older. Two thirds of the sample (66%) were 30 years and younger. The mean age of the sample was 27, and the median<sup>2</sup> 23. The median for females was 22, and for males 23.

## **4.1.3 Population growth**

The first population census was released in 1963. Since the first census, Sierra Leone's population has increased significantly. Table 4-2 shows population size and population growth between 1974 and 2015. Between 2004 and 2015, the growth rate was 43% compared to 29% from 1985-2004 (PHC, 2015). The same accelerated upward trend is visible at provincial, District and Chiefdom levels. A full breakdown for each Chiefdom is presented in Table 4-1. Notable increases are in the Imperi Chiefdom (17 576 in 2004 to 33 394 in 2015), in the Lower Banta Chiefdom (25 954 to 37 317), and Bagruwa Chiefdom (18 989 to 27 623).

The Imperi Chiefdom's population has shown a greater increase between 2004 and 2015 than the other Chiefdoms in the area of influence. Migration is likely to be a significant driver, as SRL and Vimetco had significantly expanded operations in the Chiefdom. According to Lam and Leibbrandt (2013), the growth of the working age population in low income African countries is likely to be 2% annually for several decades to come. In this context a growth rate of around 2% is likely to be maintained in Sierra Leone.

<sup>2</sup> Median age is the age that divides a population into two numerically equal groups - that is, half the people are younger than this age and half are older.

### Study area assessment

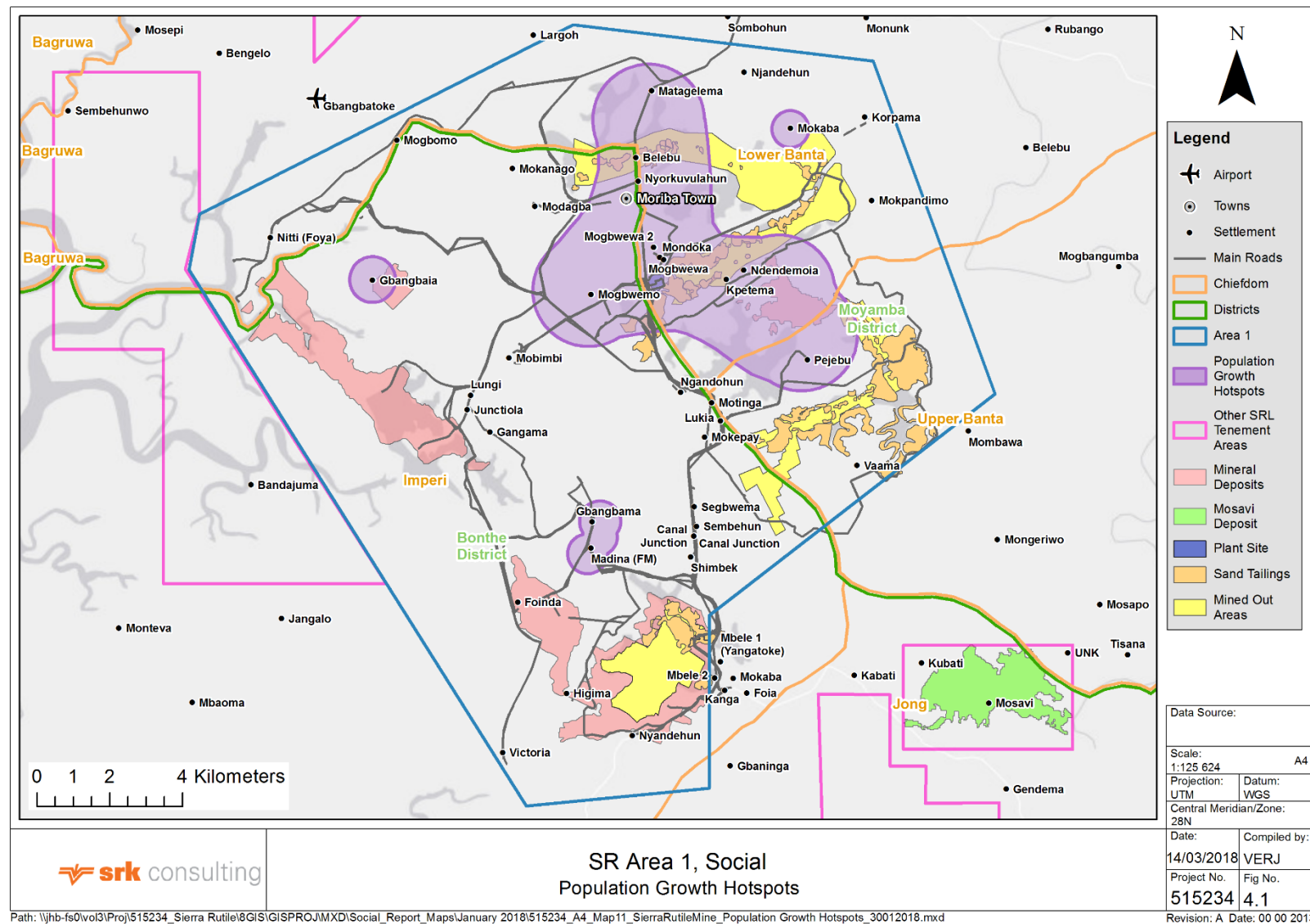
SRK's information (2017a, 2017b, 2017c, 2017d, refer to Figure 4-1) suggests that the study area has become a favoured destination for many migrants (Imperi Chiefdom was already indicated as a favoured destination by the National Advocacy Coalition on Extractives, 2009).

**Table 4-2: Population growth statistics**

Sierra Leone	1974	1985	Growth 1974 to 1985	2004	2015	Growth 2004 to 2015
National	2 735 159	3 515 812	28%	4 976 871	7 092 113	42%
Southern Province	596 758	741 377	24%	1 092 657	1 441 308	32%
Bonthe District	87 761	105 007	20%	139 687	200 781	44%
Imperi	-	-	-	17 576	33 394	90%
Jong	-	-	-	28 495	33 816	19%
Moyamba District	188 745	250 514	33%	260 910	318 588	22%
Upper Banta	-	-	-	8 219	10 513	28%
Lower Banta	-	-	-	25 954	37 317	44%
Bagruwa	-	-	-	18 989	27 623	45%

Source: Statistics Sierra Leone, 2015





Source: SRK, 2017a and b

**Figure 4-1: Population growth hotspots in the study area**

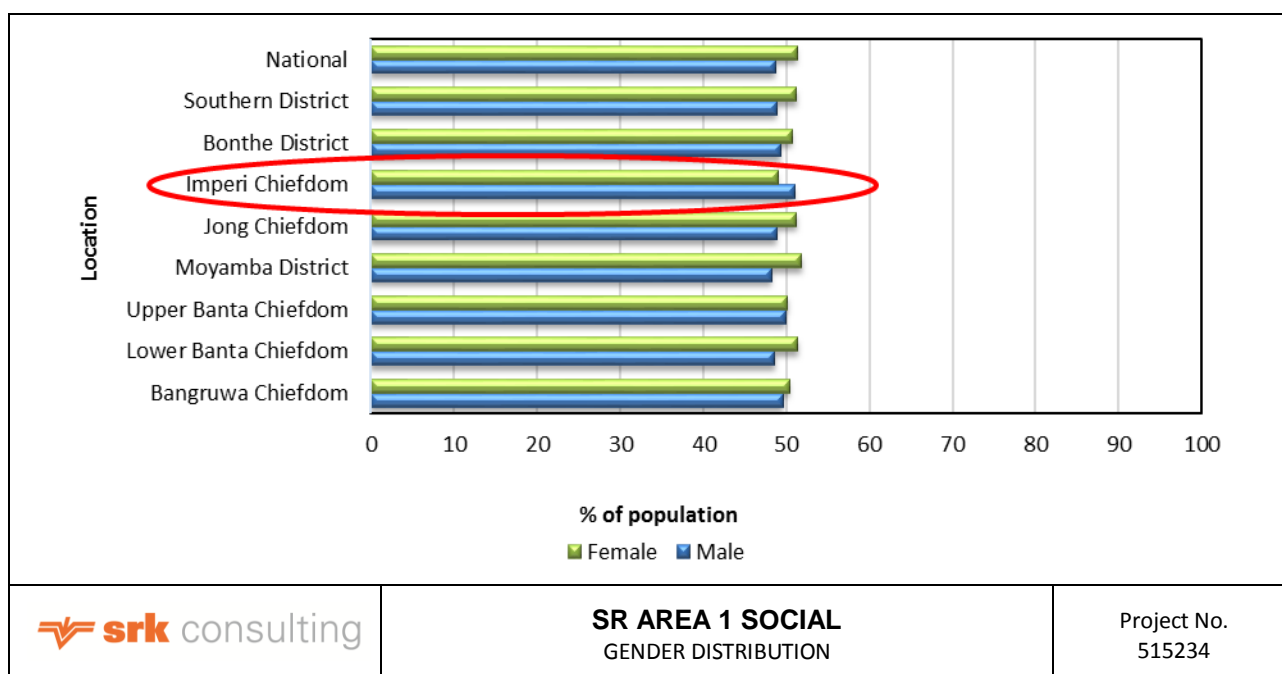
#### 4.1.4 Gender distribution

Figure 4-2 shows the gender distribution of the total population at national, District and Chiefdom level as at 2015 (PHC). At national level, 51% were women and 49% men. This was reported for the Southern Province as well. Moyamba District and Bonthe District were similar with 52% and 51% females respectively. The male-female representation correlates with the findings of the population census that was conducted in 2004 (Statistics Sierra Leone).

Chiefdoms typically echo the national and provincial gender distributions. Imperi Chiefdom is an exception, with a higher male population (51%). This may reflect accelerated male migration to areas of economic and employment opportunity as reflected in Figure 4-1. Mining is possibly the major attraction, but other attracting economic activities may include agriculture and fishing.

##### Study area assessment

Of the households surveyed by SRK (2017a), 1 407 males and 1 527 (52%) females were recorded. The distribution matches male-female distribution ratios recorded in 2015 (PHC): 52% and 51% females in 2015 in the Moyamba District and Bonthe District respectively.



Source: Statistics Sierra Leone, 2015

#### Figure 4-2: Gender distribution

In general, the indication is that males are predominantly the decision makers in the households in the study area. The HHS (SRK, 2017a) showed that the majority of the household heads were reported to be male: 380 males (77% of the 495 households that answered the question) and 115 females (23% of the 495 households that answered the question). If the head of household was not present, the spouse was most likely to stand in on his / her behalf. Reportedly, 43 males were the “spouse of the head of household” (SRK, 2017a).

More female parents and parents-in-law of heads of households were recorded as household members (3.0% females and 0.6% males for parents; 0.7% females and 0.2% males for parents-in-law). Of the sample of household members, 116 females were widowed and 13 men were widowers. The median age of this group was 62 years (SRK, 2017a).

The indication is that women live longer than men, and that younger widowed people marry again. A possible interpretation is that women are more vulnerable, and their sons or daughters may take them in when they are old. Males are likely to get married again and tend to continue to run their own homes (SRK, 2017a).

Single and divorced women recorded in the sample were 22 and men two. The median age of the divorced group was 39 years. The implication is that younger people who divorce marry again and that women tend to remain single after divorce (SRK, 2017a).

Monogamy was in the majority (34% of the sample versus polygamy at 9% of the sample). The single, never married group comprised 20% of the sample. The median age of those single and never married was 20, and the median age of those engaged was 25 (SRK, 2017a).

#### **4.1.5 Children under eighteen**

Children younger than 15 years constituted 41% of the total population of Sierra Leone (PHC, 2015). PHC (2015) does not report on the children under 18. UNICEF (2015) estimated the national population under 18 to number 2 886 000, which was 45% of the total population. Information relating to children under 18 is not available at Chiefdom or provincial level.

##### **Study area assessment**

The HHS total household members (SRK, 2017a) constituted 36% under 18-year olds, and 30% under 15-year olds. These figures are lower than the national and UNICEF figures. Feedback from FDGs indicated that in-migration of single men over 18 is on the increased in the study area, which could explain the difference between national and study area figures (SRK, 2017d).

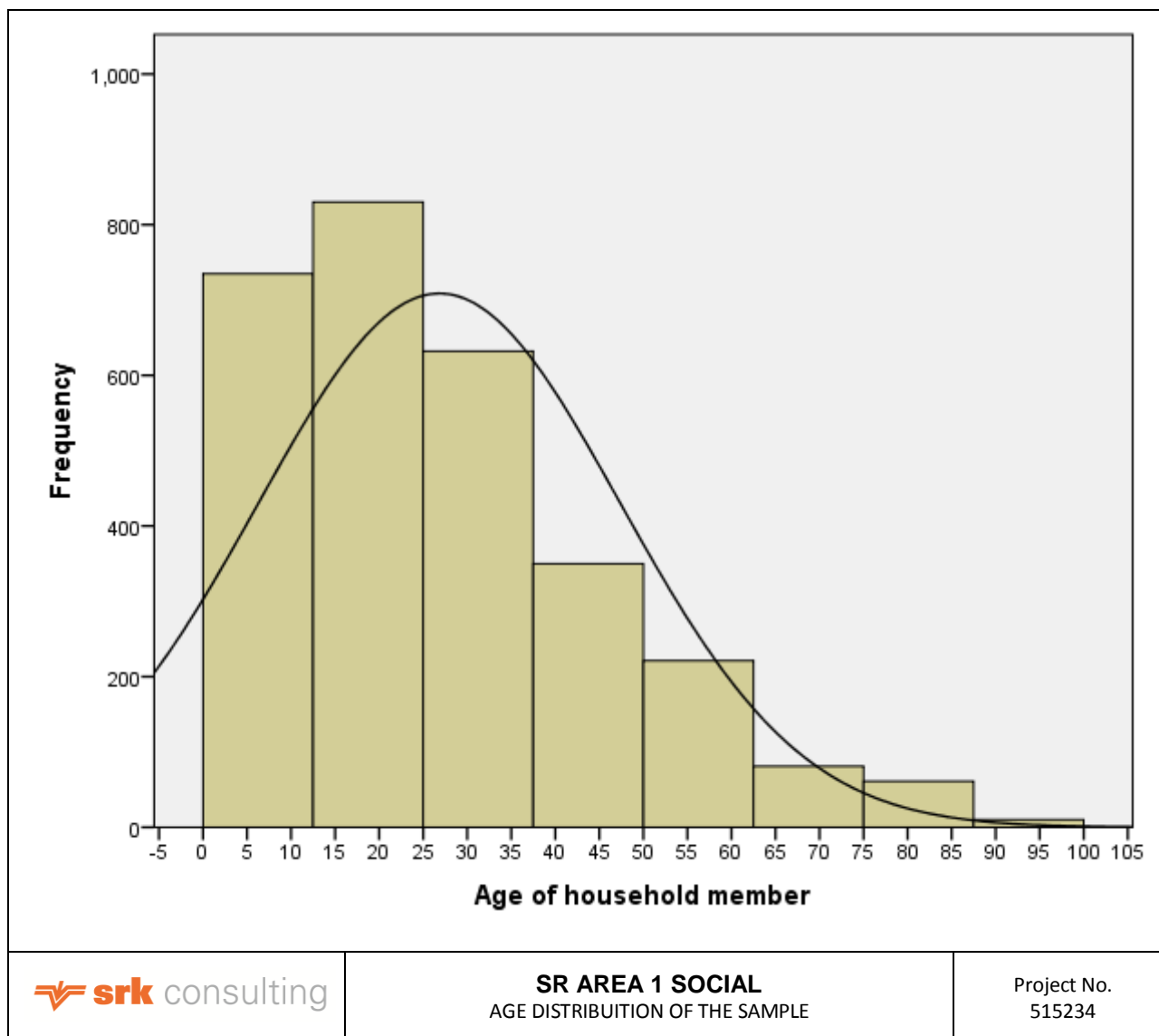
#### **4.1.6 Average life expectancy**

According to the CIA (2016), Sierra Leone is ranked 204<sup>th</sup> in terms of life expectancy compared to 224 countries ranked. The average life expectancy for women in Sierra Leone was 60.9 years for women; 55.6 years for men, with an average life expectancy of 58.2 years inclusive of males and females (CIA, 2016).

Average life expectancy in Moyamba District was below the national average at 45 years for both males and females, while Bonthe District demonstrates a slightly higher life expectancy level of 49 years (ReliefWeb, 2015).

##### **Study area assessment**

Figure 4-3 shows the age distribution of the household sample (SRK, 2017a), with the majority falling in the 15-25 years age group. A notable drop in representatives in the 60+ years age group is indicated.



Source: SRK, 2017a

**Figure 4-3: Age distribution of the sample**

#### 4.1.7 Migration

The civil war in Sierra Leone resulted in millions of Internally Displaced Persons (IDPs)<sup>3</sup> as they fled war-affected areas in search of safety. An estimated 2.6 million people were displaced by the civil war. Both the Eastern and Southern Provinces suffered significant displacements during the war. Many people moved into the Western Area for better opportunities (ReliefWeb, 2015).

Today, Sierra Leone receives migrants mainly from other West African countries, many of which, like Sierra Leone, have experienced violent civil wars. At the time of the Integrated Household Survey (ISS, 2014), Guineans accounted for an estimated 37% of all known foreign nationals. Most of them settled in the Western Area and in the Eastern Province of the country (17% and 16% respectively).

<sup>3</sup> An internally displaced person (IDP) is someone who is forced to flee his or her home but who remains within his or her country's borders. They are often referred to as refugees, although they do not fall within the legal definitions of a refugee (Deng F., 1998)

Access to economic opportunities in Freetown and surrounds, food security, better education facilities, and health services probably attract people to settle in the Western Area. Other immigrants include Gambians, Ivorians and Liberians (ISS, 2014).

Following the civil war, many people have chosen to migrate to urban areas such as Freetown, Bo and Kenema, where an urban lifestyle and perceived employment opportunities, better service delivery and social infrastructure are likely drivers (ISS, 2014).

### Study area assessment

In the case of SRL, mining infrastructure was attacked and damaged during the war and in 1995 forced SRL to terminate its operations. As a result, local economies in the study area and others dependent on the mine collapsed. Many of the villagers around the SRL expansion fled during the war and abandoned villages fell into disrepair due to raids, vandalism and the stripping of infrastructure and other materials.

Following the war, populations in the study area showed a drift to urban areas, likely driven by returning residents and former mine workers, job-seekers, and people seeking to make a non-mine living in growing local economies (CEMMATS, 2012).

CEMMATS (2012) reported a growth in population numbers in the larger villages closest to the mine site and operational areas, including Mogbwemo, Matagelema and Moriba Town. Other villages experiencing influx were Kpetema, Mokaba, Ndendemoia, Gbangbama and Gbangbaia. The presence of Vimetco, a bauxite mining operation located in the Upper Banta Chiefdom contributed to influx according to CEMMATS (2012), with SRL and Vimetco probably having a cumulative effect in this context. This collective influx and increased economic activity, such as commercial fishing, has supported the growth of business centres, the establishment of new villages, and the growth of existing towns.

The population growth has continued, with Mogbwemo, Mogbwewa, Njorkuvulahun, Pejebu, Matagelema and Moriba Town merging. The growth experienced is attributed by local stakeholders to an influx of mine workers, job seekers and business people, as well as those seeking better living conditions (SRK, 2017a and 2017b).

Migration out of the villages was reported in interviews during the RRA. Families were reportedly moving out of rural villages to bigger urban nodes in search of perceived better opportunities relating to education, employment, and services. A general observation was that this outmigration was most pronounced in smaller villages, with Moriba Town appearing to be a popular receiving area. However, the occupants of Moriba Town were described by many participants in village meetings as mostly outsiders and “imported labour” from other parts of Sierra Leone (SRK, 2017b).

Those employed by SRL (with an improved income) were reportedly moving out of smaller villages to towns with better access to infrastructure. Additionally, youth and adults (not necessarily employed) were seen by some to be moving out of the resettled villages into bigger urban nodes, including Moriba Town, in the hope of better opportunities (SRK, 2017b). SRK (2017a and 2017b) observed empty buildings in these areas, confirming that out-migration was occurring. This trend is expected to continue, irrespective of SRL’s mining activities.

Approximately two thirds (60%) of participants in the HHS (SRK, 2017a) reported that they had experienced an influx of people **into the area**. Of those reporting influx, more than 10% were located in Moriba Town / Mogbwemo. Fewer participants who lived in villages closer to mined areas within the study area reported an influx of people into the area (Belebu, Gangama, Kanga, Lungi, Madina (FM), Mbelleh 1 (Yangatoke), Njorkuvulahun and Pejebu) than stakeholders from the other villages (excluding Mogbwemo and Moriba Town). An influx occurred in Nyandehun due to the presence of the pineapple farm.

Overall, 41% of participants reported that they had experienced people moving **into the household** between August 2016 and August 2017 (216 of the 517 households who did respond). Half of the participants from villages away from the mining activities reported that they experienced an influx into their own households (including Moriba Town and Mogbwemo) since August 2016. Only a third of those villages close to the mined areas reported an influx into their households since August 2016.

Regarding movement **out of the household** experienced since August 2016, 35% reported that they had experienced people moving out of the household (176 of the 506 households who did respond). In Moriba Town and Mogbwemo, 43% of participants reported that people moved out of their households. Among participants from villages close to mining activities, 24% said they had experienced people moving out; among participants from villages not close to the mining activities, 36% said they had experienced people moving out.

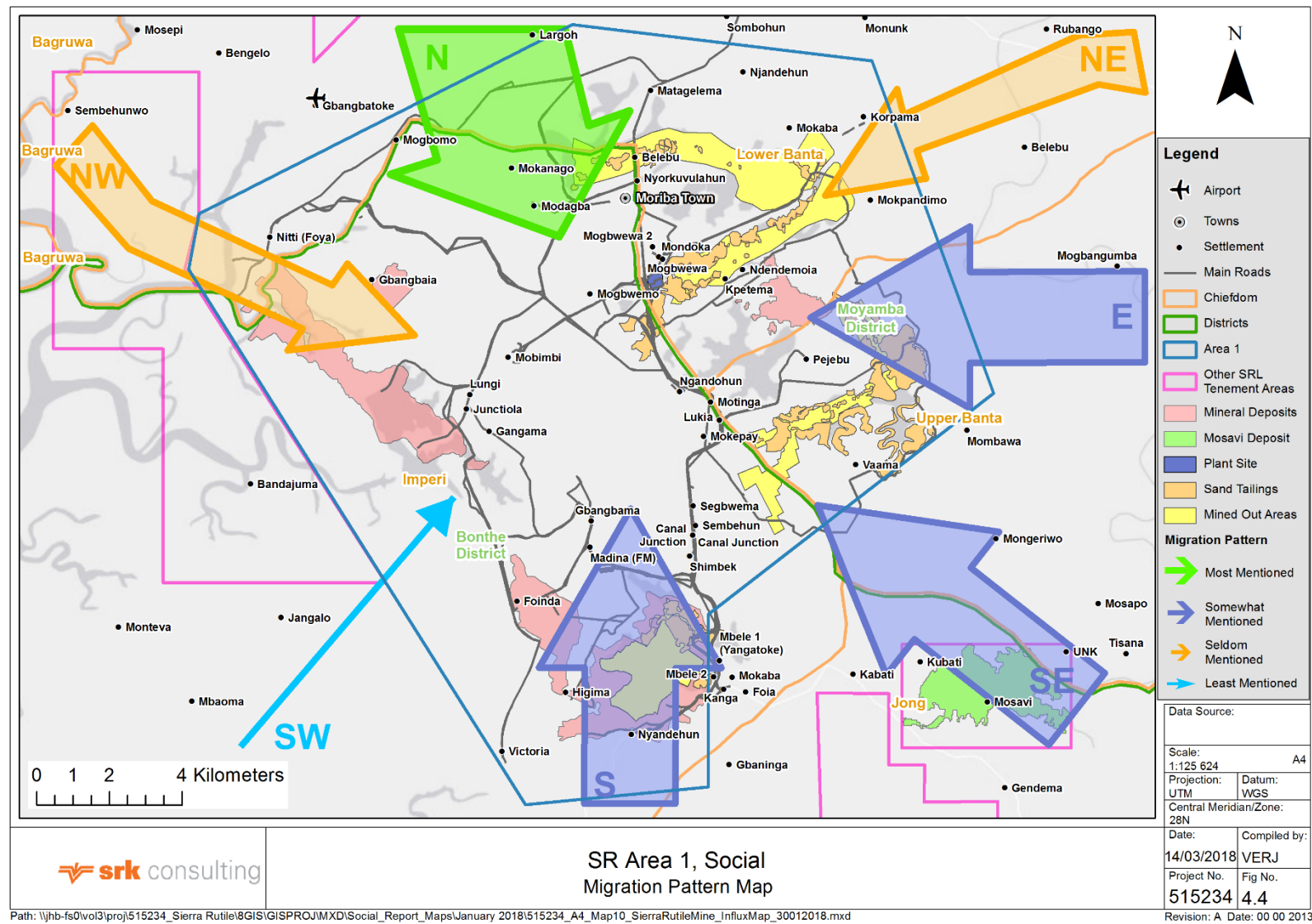
In summary, villages away from mining activities (excluding the plant area) seem to attract more people, whilst the turnover of people in Moriba Town seems to be higher.

A summary of participants' reasons for and effects of migration is provided in Table 4-3. Main reasons cited for movement into and out of a household were related to seeking jobs and family matters. The effects of people moving in and out were mainly related to the negative or positive impact on access to food. Figure 4-4 indicates SRK's assessment of the direction of movement patterns as reported by participants and shows that the majority of people reportedly moved in from the north (SRK a, 2017).

**Table 4-3: Main reasons for migration cited**

Question	Responses	% of total who responded
<b>Influx reasons</b>		
Job opportunities	177	35%
Family matters	141	28%
Education opportunities	129	25%
<b>Effects of Influx</b>		
Not enough food available	183	44%
Less space	155	37%
Increase in happiness / social support	33	11%
<b>Outflux reasons</b>		
Job opportunities	93	45%
Family matters	91	44%
<b>Effects of outflux</b>		
More food available	143	40%
More space	139	39%
Not enough food available	20	6%

Source: SRK , 2017a



Source: SRK, 2017a

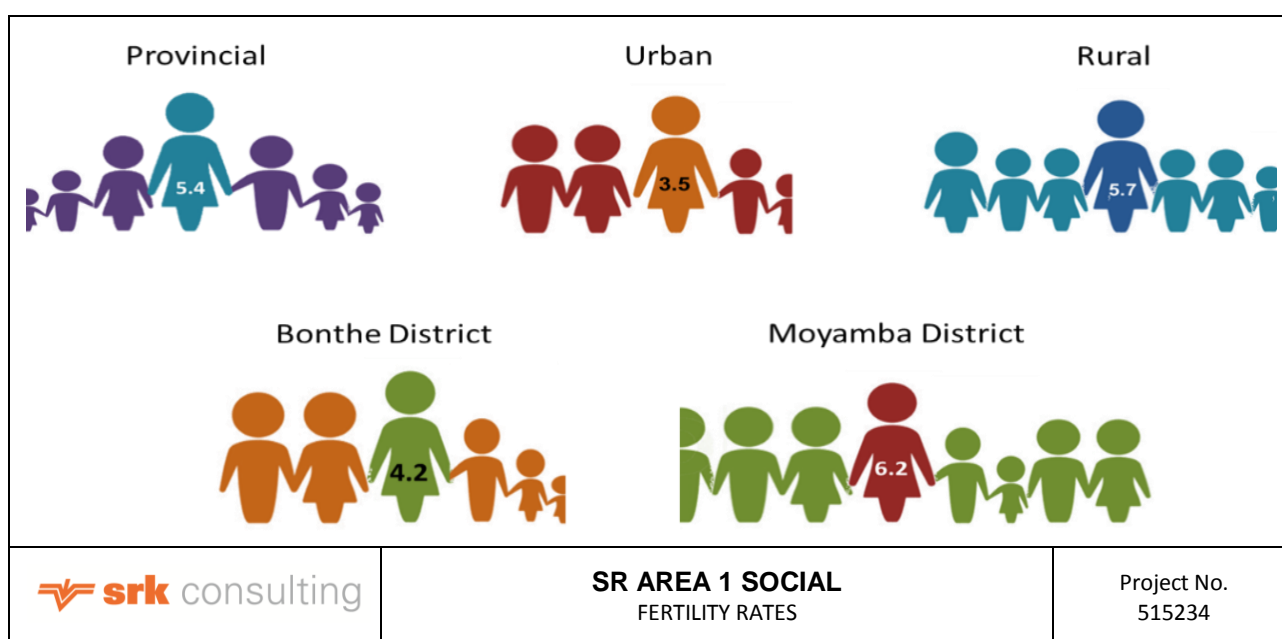
**Figure 4-4: Migration patterns**



### 4.1.8 Fertility rates

According to the Sierra Leone Demographic and Health Survey (SLDHS, 2013) (see Figure 4-5 and Table 4-4), the overall fertility rate was lower in urban areas than rural areas (3.5 and 5.7 children per woman, respectively). At provincial level (Southern Province), the Total Fertility Rate<sup>4</sup> was estimated at 5.4 children per woman.

The SLDHS (2013) does not report on Total Fertility Rate at District level, but figures are available from Humanitarian Response (2015). At this level the Total Fertility Rate stood at 4.2 in Bonthe and 6.2 in Moyamba District respectively. The Total Fertility Rate reported by these two sources should not be compared in absolute terms, but should be seen as indicative since the baseline data sources from which these figures were derived, might be different.



Source: SLDHS, 2013 and Humanitarian Response, 2015

**Figure 4-5: Fertility rates**

Education level and wealth have been shown to have a link to fertility (see Table 4-4). The causal links are complex, but access to contraception and family planning information have probably played a role. The high Total Fertility Rate in rural areas may point to a relative lack of access to family planning, but cultural factors are likely to be important – for example, patriarchal systems where the prevention of pregnancy is discouraged (SLDHS, 2013).

<sup>4</sup> The number of children who would be born per woman (or per 1,000 women) if she / they were to pass through their childbearing years bearing children according to their age-specific fertility rates



**Table 4-4: Fertility by residence, education and wealth**

Category	Total fertility rate	Percentage of women age 15-49 <sup>5</sup> currently pregnant	Average number of children born to every woman age 40-49
Sierra Leone	4.9	8.6	5.9
Urban	3.5	5.8	5.1
Rural	5.7	10.1	6.3
Southern Province	5.4	9.4	6.0
Bonthe District	4.2	7.3	4.3
Moyamba District	6.2	9.4	6.0
No education	5.6	9.8	6.2
Primary school education	5.3	9.2	6.1
Secondary school or higher education	3.0	6.1	4.3
Lowest income group	6.1	10.9	6.4
Middle income group	5.5	9.3	6.3
Highest income group	3.0	5.1	4.5

Source: SLDHS, 2013

Teenage pregnancy is a national and community-wide problem (see Table 4-5). A teenager in Sierra Leone is any individual between 15-19 years of age (Farzaneh, 2013). High rates of teenage pregnancy were evident in the rural areas, the Southern Province and in Moyamba District. As with general fertility, pregnancy and child bearing amongst teenage girls varied markedly according to educational status (SLDHS, 2013).

### Study area assessment

SRK (2017d) was informed that teenage pregnancies a reason for female children dropping out of school in the study area. The issue was also noted in Shape Consulting's Rapid Health Impact Assessment (Shape, 2018). The HHS (SRK, 2017a) asked 75 women what their ages were when they first fell pregnant. Those who reported their first pregnancy to have occurred from the ages of 15 to 19 were 65% (49 women), with 8% (6) stating they fell pregnant at the age of 13.

**Table 4-5: Teenage pregnancy and motherhood**

Category	Have had a live birth (%)	Are pregnant with first child (%)	Have begun childbearing (%)
Urban	15.7	3.2	18.9
Rural	27.0	7.2	34.2
Southern Province	26.2	7.1	33.2
Bonthe District	24.1	8.5	32.7
Moyamba District	32.2	4.6	36.8
No education	37.4	8.8	46.2
Primary school education	22.9	5.8	28.7
Secondary school or higher education	17.2	4.4	21.7

Source: SLDHS, 2013

<sup>5</sup> The age 15-49 is considered childbearing age in Sierra Leone

## 4.2 Community and social organisation

### 4.2.1 Role of Chiefdoms, local authority structure, powers and capabilities

The responsibility for provincial administration matters is within the purview of the Ministry of Local Government and Rural Development, which is responsible for Provincial Administration. The Minister is assisted in his duty by a Resident Minister in each of the three provinces whose offices are in the respective provincial headquarter towns. The Resident Ministers are assisted by Provincial Secretaries and District Officers at provincial level (CEMMATS, 2012).

District level government is responsible for district resource allocation, including the provision of services. A policy of government decentralisation helps to promote the development of Districts and Chiefdoms in Sierra Leone. The Districts are supervised and receive their mandate from the Ministry of Local Government and Rural Development (Sierra Leone Government, 2017).

District administration is headed by the District Council Chairman and there are Local Chief Administrators appointed by the Central Government to assist Local Councils. The administration is responsible for the overall management of the Districts including provision of critical social services to the population. The Ministry of Local Government and Rural Development coordinates the administration and oversees decentralization of local government reform. The system is however in transition (CEMMATS, 2012).

The Districts of Sierra Leone are divided into 149 Chiefdoms (52 of which are in the Southern Province). Paramount Chiefs, who are elected by Chiefdom Councillors, govern Chiefdoms. Paramount Chiefs are in place for the remainder of their lives unless disputed. Those living in the Chiefdoms elect Chiefdom Councillors. General administration, law enforcement and local economic development are the responsibility of the Paramount Chief and their council, as are land rights and land custodianship. Chiefdoms are broken down into sections and then villages, which are governed by Section Chiefs and Village Chiefs respectively (CEMMATS, 2012).

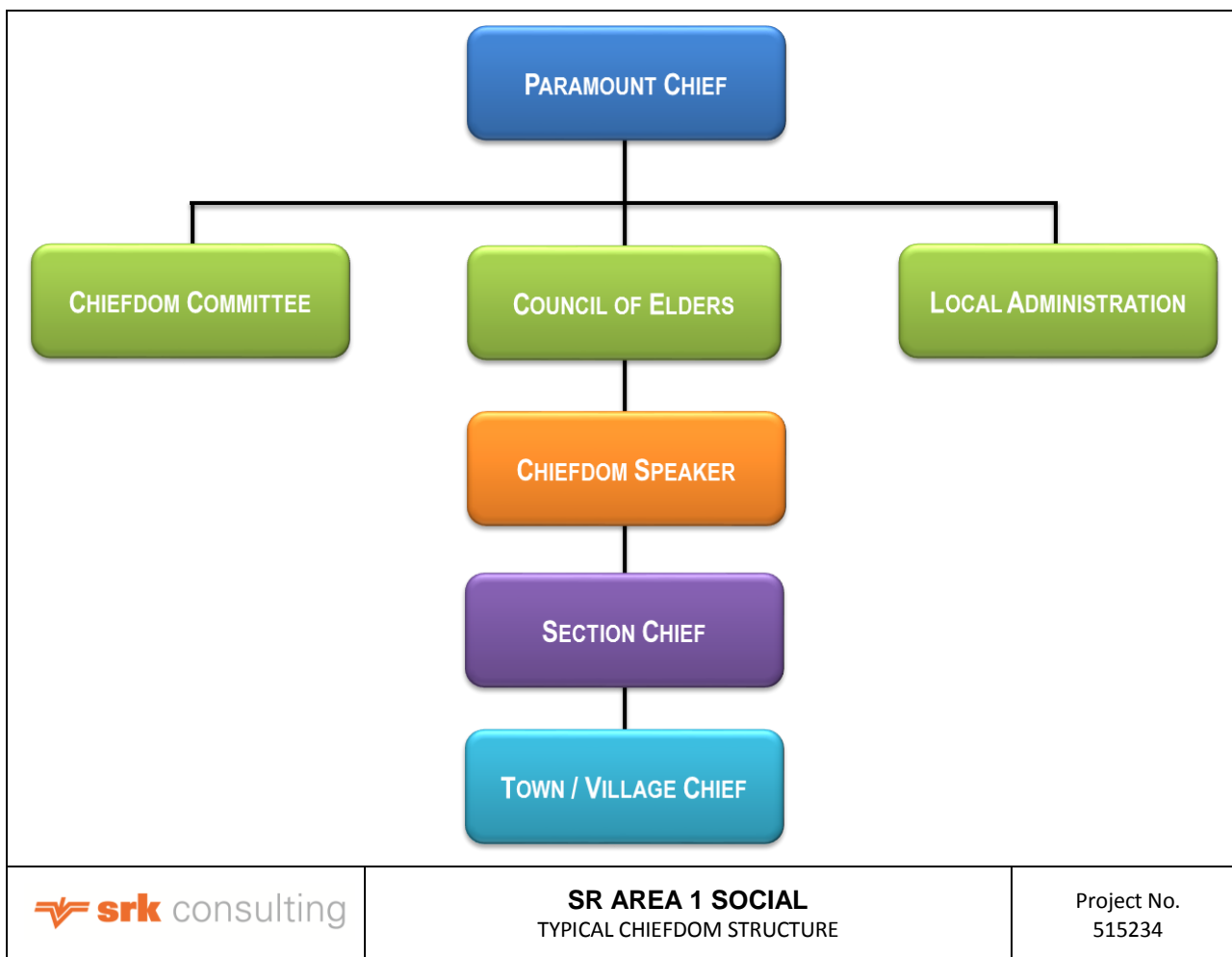
The Paramount Chiefs and the Ministry of Local Government and Rural Development select local Court Chairmen. The traditional courts in Sierra Leone are called Native Administration Courts, and town halls are referred to as Court Barris. Native Administration Courts meet in Court Barris. Chiefdom police are responsible for monitoring and preventing crime and are responsible for the prisons in each Chiefdom. The Village or Town Council has executive and legislative powers and is responsible for overseeing development and development planning, welfare, Chiefdom Councils, local tax rates, basic infrastructure, public works and services (CEMMATS, 2012).

Chiefdoms are a critical component of local governance in Sierra Leone. It is the responsibility of the Paramount Chief to ensure that this third level of administration and organisation is maintained and managed. Among several responsibilities, Chiefdoms play an important role as mediators between land owners and government (Local Economic Development, 2012).

#### Study area assessment

A typical Chiefdom structure is shown in Figure 4-6. The Chiefdoms and associated headquarters relevant to the SIA study are shown in Table 4-6.

Feedback from the participants of the baseline study (SRK 2017) indicated that the authorities responsible for providing services were not seen to be fulfilling their mandate to a satisfactory level.



Source: CEMMATS, 2012

**Figure 4-6: Typical Chiefdom structure****Table 4-6: Chiefdoms relevant to the study**

District	Chiefdom	Headquarters
Bonthe District	Imperi	Gbangbama
	Jong	Mattru-Jong
Moyamba District	Lower Banta	Gbangbatoke
	Upper Banta	Mokelle
	Bagruwa	Sembehun

Source: SRK, 2017c

#### 4.2.2 Civil society structures, NGOs and multi-lateral development agencies

##### Study area assessment

NGOs, Community Based Organisations (CBOs) and Poro and Sande secret societies are active in the study area and play a variety of formal and informal service and developmental roles. The following NGOs, civil society structures and multi-lateral development agencies were found to be present and active in the area by CEMMATS in 2012:

- World Vision Sierra Leone;
- GOBiFO;
- Global Outreach Mission;
- Methodist Church Sierra Leone (MCSL);
- Sierra Leone Red Cross Society (SLRCS);
- United Nations Programme on HIV / AIDS (UNAIDS);
- UNICEF;
- Action Contra Firm (ACF);
- Plan International;
- Street Child Sierra Leone; and
- Help Sierra Leone.

Currently, the Network Movement for Justice and Development (NMJD) is probably the most important NGO in the region. This organisation was not listed by CEMMATS in 2012. Two CBOs reported by CEMMATS in 2012 are still active:

- Initiative for Community Development is based in Moriba Town and is the implementing partner to Sierra Rutile for water well rehabilitation in the receiving communities as well as actively promoting community awareness; and
- The Land Owners Association was formed before the civil war and lobbied for fair compensation and rent over Chiefdom surface lands in exchange for mining land use and operations, including land in the study area. At present, there is a Land Owners Association representative in all Chiefdoms within the study area.

A number of CBOs active in the study area attended the FGDs (SRK, 2017d). These groups included:

**Table 4-7: List of CBOs that attended FGDs**

CBO	Function	Beneficiaries
The Local Police Partnership	Help law enforcement to reduce and prevent crime in the community.	Community.
Ruby Rose Educational Resource Centre	Provides teaching and learning materials to schools and learners, as well as adult education material for illiterate adults.	Learners and adults in adult education.
Community Empowerment Movement (CEM)	Not specified.	Not specified.
NMJD	Educate community on issues such as environment protection and tree planting. Additionally, help the government to explain and interpret policies and legislation of the mine to the community.	SRL workers, the community and government.
Community Advocacy and Development Movement (CADM)	Assist the community with the crop compensation processes and surface rent issues.	SRL, community and government.
UNICEF	Help the community's children with access to education and healthcare.	Community.

Source: SRK, 2017d

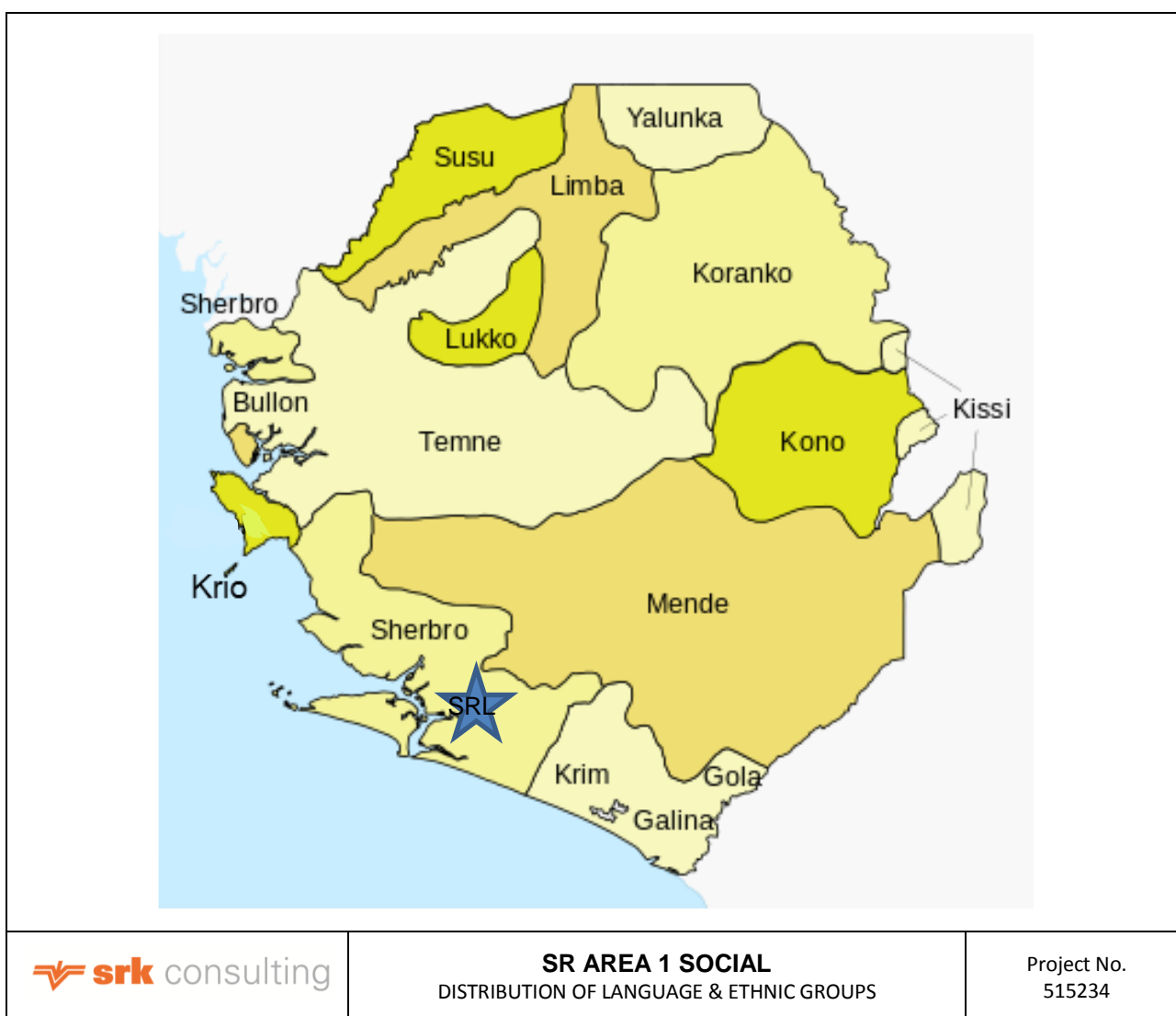
Women's Groups and Youth Groups were reportedly mostly concerned with aspects of community development. Requests for guidance and assistance from SRL were noted during the FGDs of these groups, to ensure that community development objectives were achieved. Many group participants acknowledged that such support might not be SRLs mandate, but nevertheless SRL was identified as a suitable enabling agent (SRK, 2017d).

### 4.2.3 Cultural diversity, ethnic groups and religion

Twenty languages are spoken nationwide, and the official language is English. However, Krio is the most widely spoken language in Sierra Leone, followed by Temne and Mende. Figure 4-7 shows language distribution, which is linked to ethnicity. The Mende language and people hail from the Southern and Eastern Provinces. The Moyamba District is home to the Temne, Susu, Limba, Fula and Mandingo ethnic groups, while Bonthe District is home to the Mende and Sherbro ethnic groups. The commonly spoken languages in Moyamba and Bonthe Districts are Sherbro, Mende, and Krio (ReliefWeb, 2015).

#### Study area assessment

CEMMATS (2012) reported the main ethnic groups in the study area as follows: the majority of the population (89%) were from the Mende ethnic group, followed by Sherbro (4%), Temne (3%) and the remainder comprising of Fula, Kono, Limba and Susu. This pattern was slightly different for the SRK HHS (2017a) participants, with 93% speaking Mende as their main language and 99% being able to speak Mende. Figure 4-8 reflects the reported spoken languages in households of participants of the HHS (SRK, 2017a), apart from their main home language.



Source: Mitchell, 2015

**Figure 4-7: Distribution of language and ethnic groups**

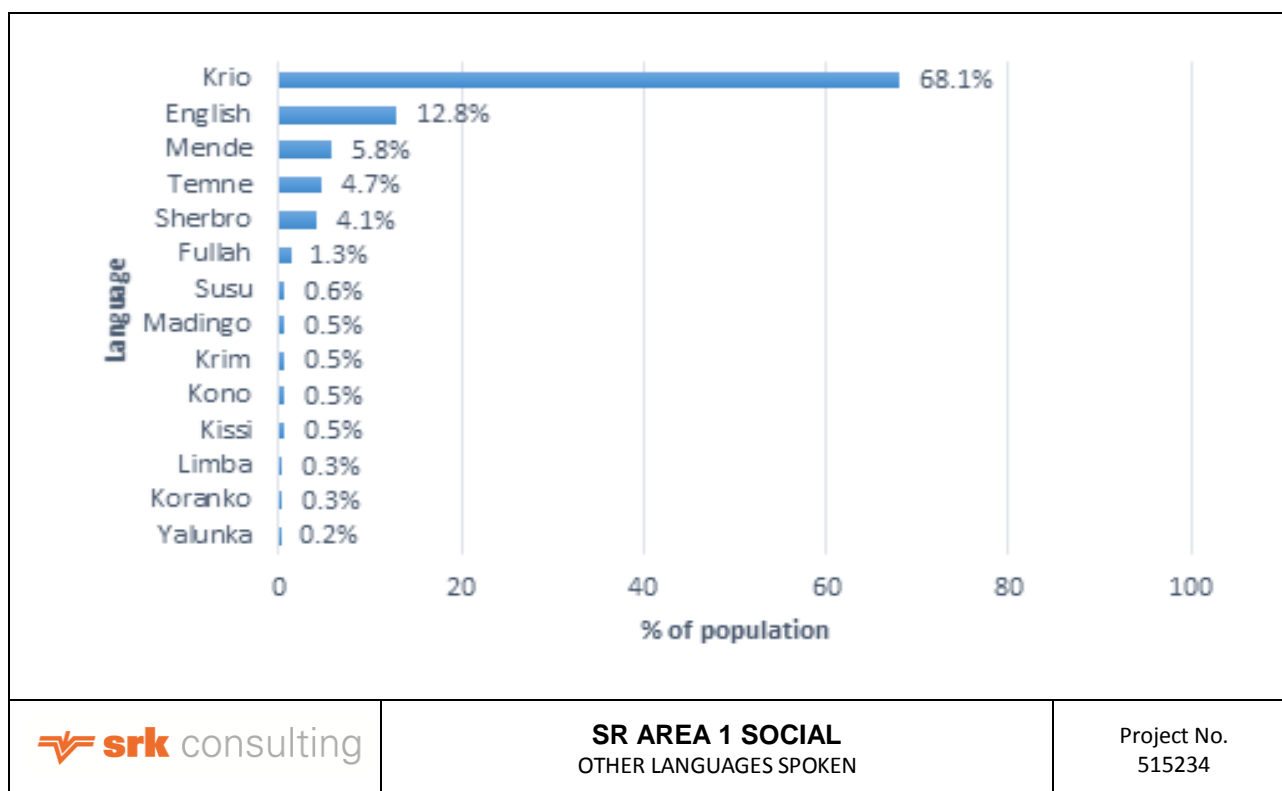
CEMMATS (2012) reported that approximately 60% of the population were followers of Islam, 30% practiced indigenous beliefs and 10% were Christians. Although sources vary in reporting the current situation, the PHC (2015) found that the most widely practiced religion in Sierra Leone was Islam, which was followed by an estimated 78% of the national population. Christianity (mainly Protestant with large Methodist and Evangelical groups) was followed by 21% of the population (World Council of Churches, 2017).

Traditional beliefs are still well entrenched in Sierra Leone, often interwoven with Christian and Islamic beliefs and practices. According to Clark (2017), religious beliefs in the country are best described as dynamic and not necessarily strictly prescriptive.

The main religion amongst participants in the HHS (SRK, 2017a) was Islam (63%), followed by Christianity (35%) as per Figure 4-9. Some households practiced both Islam and Christianity.

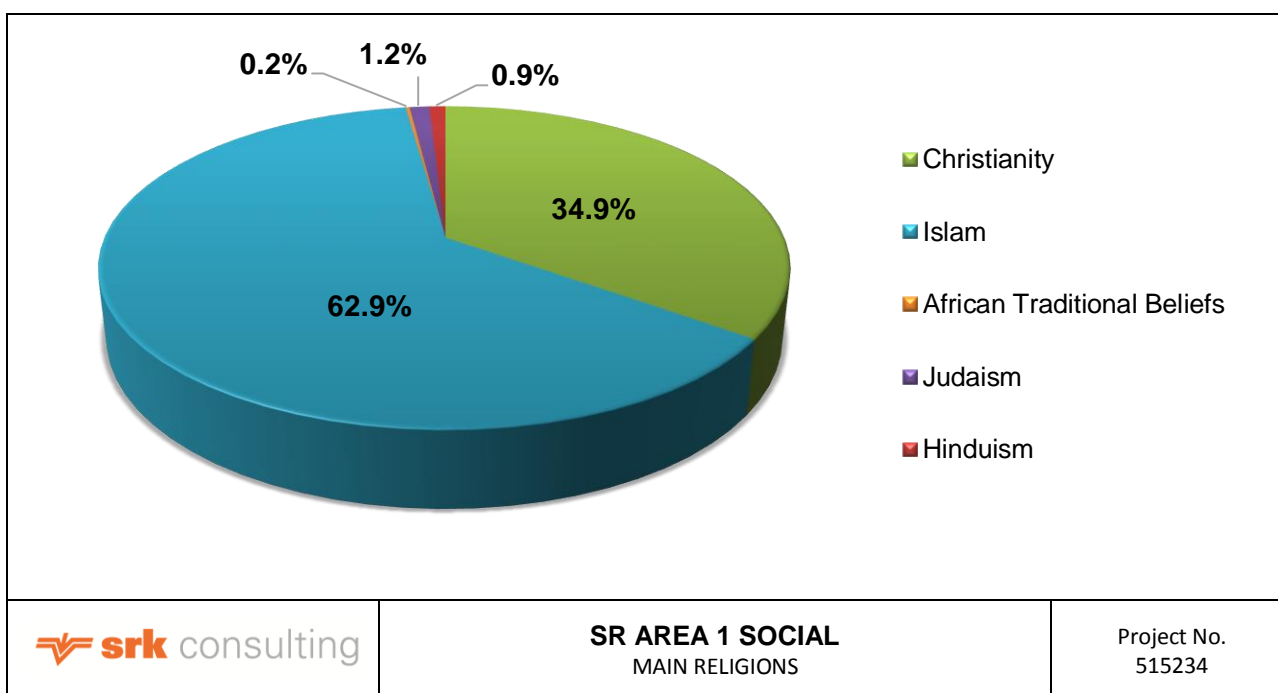
The predominant traditional belief system in the study area is based on influential secret societies for men (Poro) and women (Sande / Bondo). These secret societies are responsible for the initiation of girls and boys to adulthood. Traditional ceremonies are undertaken in numerous sacred sites, including the “society bush”, cemeteries, caves and the “shrine bush” (CEMMATS, 2012; confirmed by SRK, 2017b).

In general, ethnic groups integrate well with one another and it is suggested that conflict is very rare in the study area. Inter-marriage is commonplace (CEMMATS, 2012; confirmed by SRK, 2017b).



Source: SRK, 2017a

**Figure 4-8: Other languages spoken**



Source: SRK, 2017a

**Figure 4-9: Main religions**

#### 4.2.4 Gender roles

##### Study area assessment

SRK (2017b) found that gender roles in the study area had both similarities and differences, as illustrated in Table 4-8. Women were reportedly primarily responsible for the care and maintenance of the home and family, while men were seen as providers of food and construction of homes (SRK, 2017b). The gender roles reported by participants reflected their own perception and are not necessarily universal.

**Table 4-8: Gender roles in the local economy and livelihoods**

Male-Female responsibilities (Ecosystems)	
Male	Female
Hunt for animals and set traps	Dry animals for the market (women hunt sometimes)
Plant and harvest	Sell / generate income
Build houses and fences and mould bricks	Prepare and process food and crops
Clean and maintain water wells and boreholes	Collect water with children
Dig wells	Do laundry
Pray with women	Pray with men
Go fishing	Search for crab
Plough	Harvest weed
Slash and burn bushes or farmlands	-
Build cages for birds and animals	Clean at home
Do gardening	Women sometimes garden
Preach at church or mosque	Sing and support men
Build and maintain the chicken coops and goat pens	Clean chicken hooks and goat pens

<b>Male-Female responsibilities (Ecosystems)</b>	
<b>Male</b>	<b>Female</b>
Look after livestock	Help feed livestock
Uproot cassava	Give the uprooted cassava to livestock
Construct spiritual places	Look after spiritual places
-	Lead societal ceremonies
Remove grass from the fields	Gather the grasses and throw them away or burn them

Source: SRK, 2017b

## 4.2.5 The interface between local customs and taboos and mining

### Study area assessment

In general, mining and mine-related activities are not permitted in cultural and sacred areas. If allowed, certain rites and ceremonies have to be performed to commence with mining activities. In some cases, specific cultural sites can be relocated after the ceremonies had been performed (SRK, 2017b).

Feedback from participants of the RRA (SRK, 2017b) included some complaints that SRL had not respected cultural and sacred sites in the past, and that these sites were reportedly demolished for the purposes of mining without the correct rituals being followed. SRK observed a graveyard damaged by SRL at Foinda (SRK, 2017a). The matter was being addressed by SRL with the community during the SRK 2017 site visit. SRL is now under new management, and has re-affirmed, demonstrated and communicated their intent to respect cultural and sacred sites (SRL discussions with SRK, 2017, also refer to Table 5-10).

Participants of SRK's study (2017b, 2017c, 2017d) noted that a customary greeting payment (or 'shake hand') may be payable to a Paramount Chief as part of the protocol or social obligations that accompany the responsibility of that office. SRL has strict policy requirements relating to any 'shake hand' to ensure that SRL is not involved in any improper payments (SRL Anti-Bribery and Corruption Policy, 2017). A degree of dissatisfaction with SRL's hand shake practice was expressed by some participants (SRK, 2017b).

## 4.2.6 Vulnerable and disadvantaged groups

### Women and female headed households

In general, women in Sierra Leone are not afforded the same opportunities and access to resources as men. The reasons are complex, but the inequities are in some cases linked to traditional and cultural constructs relating to the role of women in the home and family unit. In some contexts, laws reinforce the inequities, for example in Mende law, women cannot inherit property or money (Everyculture, 2017).

UNICEF has estimated that around 33% of all civil war human rights violations involved women. Even today, sexual violence, including domestic violence, sexual assault, rape of adults and minors, marital rape, school-related sexual abuse and female genital mutilation (FGM) are recognised and sometimes documented. According to Defence for Children International (2015), few laws protect women from the perpetrators of these violations. FGM is reportedly widespread in the broader area of direct influence, at a prevalence of 90% in Moyamba and 85% in Bonthe District (Shape Consulting, 2018).

Sierra Leone has one of the highest maternal mortality rates in the world (890 women die per 100 000 live births). Many of these deaths occur among teenagers whose bodies are not yet mature enough to deliver a child, while others are due to malnutrition, infection and poor access to appropriate maternal medical care, particularly in the rural parts of the country (UNICEF, 2013).



The recent EVD outbreak claimed 3 956 lives in Sierra Leone, with 59% of the total deaths being women (Gender Concerns International, 2017). This was thought to be because women were primary care givers to those infected, increasing the risk of infection. Due to limited education or awareness campaigning, many had not been aware of the ways in which the disease is transmitted.

### **Study area assessment**

The HHS (SRK, 2017a) found that among the participants who were asked about the sources of the EVD, preparing bush meat was reported as the main source (102 participants), followed by the blood of an infected person, air, eating bush meat, eating fruit that had been bitten by bats, and the saliva of infected persons (range of 58 to 75 participants). A minority reported the sources to be the urine or faeces of infected persons, bad odours, and breast milk. The cause was ascribed to a virus by 97 participants and to God or a higher power by 155 participants. The main behaviour change that the virus resulted in was reported to be washing hands with soap and water more often (65 participants).

### **Disabled adults**

According to a World Bank estimate (2009), 130 000 people were recorded as disabled in Sierra Leone, accounting for 2.4% of the total population. This 2009 figure is still of importance, considering the preceding civil war. During the civil war, an estimated 30 000 civilians were deliberately maimed (for example having their limbs removed by rebel armies)<sup>6</sup>. As a result, the number of amputees in Sierra Leone is disproportionate when compared to international levels (Zampaglione & Ovadiya, 2009). Among other difficulties, amputees find themselves vulnerable to poverty and food insecurity due to their limited ability to secure employment or to perform livelihood activities such as farming and fishing (UNDP, 2014).

Whilst a major contributor, the civil war is not the only cause of disability among the people of Sierra Leone. There is a recognised link between poverty and disability (United Kingdom Department for International Development, 2000). In the disability-poverty cycle, disability limits access to economic, social and development opportunities, underpinning poverty. Poverty and disability in turn reduce participation and deny civil and political rights. Vulnerability and socio-cultural exclusion may flow from the cumulative circumstances above.

### **Study area assessment**

The HHS (SRK, 2017a), recorded 14 household members who were physically disabled and seven who were mentally disabled. Four household members were physically disabled because of the war. Blindness was recorded for 14 household members, deafness for two, and muteness for three. Single occurrences were recorded for neck related disabilities, epilepsy, severe headaches, semi-blindness, stress, nerves, and stroke related disabilities.

### **Orphans / Child-headed households**

At national level, an estimated 43% of households either:

- Had orphans; or
- Had children under the age of 18 living with neither parent present (ReliefWeb, 2015).

The civil war is thought to have made 310 000 children orphans, while HIV / AIDS and the outbreak of the EVD have also contributed. Statistics on how many children were orphaned during the EVD outbreak vary. According to the StreetChild report (2016), 12 000 children were orphaned while the SOS Children's Village report (2017) estimates the number at 18 000.

---

<sup>6</sup> This figure is disputed by International aid agencies, the UN and the World Bank, who believe the figure to be far higher based on comparison with neighbouring war-affected countries

Many orphaned children are breadwinners for the entire family, often at a very young age. Income earning, and livelihood strategies are likely to vary widely. SOS Children's Village (2017) had noted that thousands of children worked in small-scale mines in order to make a living. In this context, they might be required to undertake physically challenging tasks, including digging and shifting heavy rock and soil.

### **Study area assessment**

SRK has observed child labour in the study area, for example at gravel mines (SRK, 2017a and 2017b). SRL explicitly excludes child labour, and SRK has not observed child labour practices at SRL sites.

A children's home (Karen Baird Children's Home) has been operating in Moriba Town since 2010 and functions as a shelter and a school for orphans, as well as providing food and clothing for orphans and destitute children. The primary aim of the facility is to encourage youths to better themselves within their communities. There are approximately 80 children in the home, mainly war and EVD orphans (SRKc, 2017).

No child headed households were encountered in the HHS (SRK, 2017a). The youngest heads of household were 18 years old (two recorded), with six heads of households aged 20.

### **Internally Displaced Persons (IDPs)**

Although figures vary, it is estimated by the United Nations that the civil war displaced 2.6 million people across Sierra Leone (ReliefWeb, 2015). Residents fled from many villages in the SRL area during the war and only returned in the early 2000s. A study done by Josiah in 2001 suggested that 87+% of the local population had since returned (CEMMATS, 2012).

### **Study area assessment**

Informal discussions with IDPs who were children during the war and are now in their twenties, highlighted the challenges to build a new life afresh. It seems that one sibling might "sacrifice" for the other siblings. This sibling would reportedly not further his / her education but would seek employment to secure education for the other siblings (SRK, 2017).

### **Vulnerability in the study area**

Vulnerability cannot be determined without understanding the interactions between a number of socio-economic and environmental variables. Different variables uniquely contribute to a specific household's vulnerability. However, on a broad level, the majority of households in the study area are likely to be vulnerable in some respect. The prevailing poverty in most households who participated in the HHS and RRA (SRK, 2017a and 2017b) along with key social baseline conditions (unemployment, unsustainable agricultural practices with limited fertile land for agriculture and poor nutritional health) decreases their ability to escape from poverty and heightens vulnerability. Households in the study area with a lack of access to sufficient livelihoods resources are considered to be potentially vulnerable, aggravated in some cases by the presence of persons with disabilities, sick household members, elderly and children. Because of diverse combinations of vulnerability indicators among households, status has to be assessed on a case by case basis where required.

## 4.3 Housing

### 4.3.1 Housing stock and household population

The PHC (2015) estimates that the total stock of houses in Sierra Leone in 2015 was 801 417, with 61% located in rural areas and 39% in urban areas. Housing stock figures for the Southern Province showed that it accounted for 23% of the national total stock (PHC, 2015).

Average population per house nationally was 8.8 persons and ranged from a low of 7.9 persons per house in the Southern Province to a high of 9.4 persons in the Eastern Province. Sierra Leone had an average of 1.6 households per house in 2015, ranging from a low of 1.4 in the Southern Province to a high of 1.9 in the Western Area (PHC, 2015).

The 2015 PHC showed 32 538 households and 27 129 houses in the Bonthe District (an average of 1.2 households per house), 61 880 households and 53 516 houses in the Moyamba District (also an average of 1.2 households per house). Average household sizes in the Moyamba and Bonthe Districts were 5.1 and 6.2 respectively.

#### Study area assessment

SRL provides housing to specific groups of employees. There are two accommodation camps; i) Mobimbi camp for management employees, located on Mobimbi hill; and ii) Kpanguma camp for senior staff, located near the SRL clinic in proximity to the plant area. Staff from outside of the area who do not qualify to live in camps are required to find their own accommodation in the surrounding towns and those employed from the local communities reside in their private homes.

The HHS (SRK, 2017a) recorded 2 960 household members in 560 households in total, resulting in an average household size of 5.2 persons per household. The average number of households per house correlates with the Southern Province figure of an average of 1.4.

The majority of HHS participants reportedly used the main house for sleeping (SRK, 2017a). The number of rooms in the main building varied from one to 20. Kitchens were located outside for 97% of households, as were areas for cleaning<sup>7</sup>. A total of 302 households had used the bush as toilets. A total of 293 households reported to use hand-made closed-off outside areas for cleaning the body<sup>8</sup> (not including mine ponds).

Ten households reported having outside living areas, with many using open spaces around their houses during the dry season for social gatherings. House verandas were also observed as a popular place to sit and live (SRK, 2017b).

Only five participants reported to have enclosures for livestock. Nineteen households had outside storerooms. Three households had additional structures, which were used as shops, or market structures. Seven households reported to have secret society houses<sup>9</sup> (SRK, 2017a).

---

<sup>7</sup> Cleaning refers to cleaning of household equipment in this instance

<sup>8</sup> Cleaning refers to cleaning of the body (personal) in this instance

<sup>9</sup> These houses are used as the meeting place of secret societies

### 4.3.2 Housing conditions

Rural and urban regions have a spread of housing types, from traditional to modern. Much housing in Sierra Leone was recorded to be constructed in mud brick, with zinc roofing and mud floors (PHC, 2015). The majority of households in the country lived in single unit one-storey buildings (73%). About 21% lived in multiple one-storey units while only 3% lived in single unit, two-storey houses. Just 1% lived in multiple unit two-storey homes whilst only 0.2% lived in multiple units that were three or more storeys (SSL, 2014).

At provincial level, most households in the Southern Province were living in single unit one-storey structures (83%). The second most common unit of housing was multiple unit one-storey structures at 14% (SSL, 2014).

#### Study area assessment

According to CEMMATS (2012), housing in the study area consisted of a mixture of traditional structures and buildings that were more modern. Households that were relocated during previous mine expansion expansions had mostly rectangular structures, made of mud or cement brick walls and fibre concrete roofs. Similar houses were also usually found in the larger towns and villages in the study area.

SRK (2017) observed a similar situation to that described by CEMMATS (2012). Refer to Figure 4-10 for examples of housing components and Figure 4-11 for examples of housing types observed (SRK, 2017a and 2017b). Raffia palm, grass, mud and bamboo were key components of less formal structures. Sun-dried bricks, cement brick, mud and sticks were options used for walls, and corrugated iron walls were observed in the built-up areas. Plastered walls, painted and not painted, were observed. Where mud was used, erosion of the walls was often evident due to heavy rains in the wet season. Roofs consisted of corrugated iron, palm leaves, and grass thatch. Soil and concrete floors were observed, some of these floors tiled.

Fairly widespread deterioration of housing in the study area was noted across all villages and towns engaged during the RRA (SRK, 2017b). Some feedback from participants of the study was as follows (SRK, 2017b):

- Concerns about structures cracking as a result of vibrations from mining activities were reported in Kpetema only. Participants from other villages did not mention this as a concern. It has previously happened that structures had been rebuilt as a result of cracking. SRK (2017) could not source evidence that cracking in structures was caused by mining activities. Cracks were observed in houses away from mining activities, indicating that the weather and building materials played a role in the condition of houses. SRK (2017) observed that materials used to construct housing in the study area were generally not robust and susceptible to damage and quick wear, regardless of the presence of mining activities (for example, mud, thatching grass and natural wooden poles). SRK (2017) therefore did not assess the potential safety impacts as a result of damage to structures as a potential risk and impact;
- Heavy wet season rains, resulting in water runoff from roofs and down the mud walls also reportedly caused the disintegration of the walls in some Kpetema and Mogbwewa dwellings;
- In Junctiola, a participant noted that they had utilised thatch roofing previously, but since resettlement had been living in houses with zinc roofs, which were said to be uncomfortably hot in the warmer months;
- In villages resettled 20-30 years ago, some study participants suggested that inferior zinc material purchased from Chinese wholesale stores was used to build these new houses, with notable deterioration. These views on roofing material were recorded in Junctiola, Kanga and Gangama. Levels of ongoing maintenance of these homes by the owners were not discussed, but generally it seemed maintenance of homes were not undertaken regularly;

- In all the meetings at villages, the lack of access to or reduction of raffia palm resources was mentioned, with a number of stakeholders attributing this to mining activities. The stakeholders' feedback to SRK was that corrugated iron roofing was unaffordable as an alternative to many households. The reported reduction in raffia palm was clearly an issue locally, with other contributing factors including population growth and over harvesting potentially in play; and
- Leaking roofs were mentioned in Segbwema, Mogbwemo and Gangama.

Table 4-9 provides a list of SRL related resettlements that had taken place prior to SRL's recent change in ownership. The resettlements included physical and economic displacement as a result of land required for mining developments.

**Table 4-9: Previous resettlements at SRL**

Village	Chiefdom	Population	Number of houses	Year relocated
<b>Phase 1: Relocated</b>				
Gbangbatoke	Imperi	456	57	1985
Belebu	Imperi	313	31	1985
Njorkuvulahun	Imperi	162	16	1985
Gangama	Imperi	723	85	1986
Pejebu	Imperi	500	50	1987
Mondoka	Imperi	300	30	1987
Ndendemoia	Imperi	315	35	1987
Vama	Imperi	480	60	1987
Sembehun	Imperi	200	40	1988
Segbwema	Imperi	170	20	1988
<b>Phase 2: Relocated</b>				
Mbelleh I and II	Imperi	1649	328	1991
Kanga	Imperi	257	33	1991
Madina (FM)	Imperi	256	32	1994
Foinda	Imperi	1080	215	Interrupted <sup>10</sup>

Source: SRK 450300 / RAP02, 2014

<sup>10</sup> Resettlement planning for Foinda village was initiated in 1994 but was interrupted along with other mine activities by the war in 1995. With the restart of operations in 2003, the resettlement of the village was scheduled for March 2003. However, the interruption in the resettlement process and the ensuing unrest has resulted in a different situation in the village than existed in 1995 and makes it impractical, if not impossible, to resume the relocation process where it left off. The composition of the village and its households has changed (deaths, births, people arriving and others leaving, etc), buildings have been destroyed and new ones built to accommodate the current family structures. In addition, many of the valuation and compensation records had been lost so that it is difficult to determine with surety who had received compensation and who had not.



 <p>Open air wash area of palm leaves</p>	 <p>Raffia palm roof</p>	
 <p>Palm ceiling in the making (material from raffia palm)</p>	 <p>Mud and stick wall in the making</p>	
 <p>Tiled verandah floor</p>	 <p>Brick walls and corrugated iron roof</p>	
	<p><b>SR AREA 1 SOCIAL</b> HOUSING MATERIALS</p>	<p>Project No. 515234</p>

Source: SRK, 2017a and 2017b

**Figure 4-10: Housing materials**





Cooking on the veranda



Outside kitchens. Two households in one structure

Source: SRK, 2017a and b

**Figure 4-11: Housing types**

### 4.3.3 Housing demand

Formal housing demand figures were not available to the SRK team at the time of writing this report. Nationally, it seems likely that a level of demand will be driven by population growth, whilst in and around the study area, demand will probably be driven by natural population growth and in-migration.

#### Study area assessment

The indication is that approximately 10% of the household survey sample (562) rented the building and / or the land they occupied. Some households reported a second dwelling in Moriba Town, accommodating children at school, or for parents / owners working in the town. Many who used SRL accommodation also seemed to rent out their own property, where possible.

## 4.4 Education

### 4.4.1 Levels and distribution of education and literacy

Basic education is regarded as a right in Sierra Leone. School attendance is generally low, however. The PHC (2015) showed that among the 6 589 838 people aged three years and above, 55% had attended school and 44% had never attended school. Some 37% were in school at that time of the PHC survey (2015). The percentage of the national population that had never attended school was shown to be higher in rural areas (33%) than in urban areas (12%). These figures demonstrate a significant disparity, the roots of which may lie in issues of access, poverty and gender roles, among others (PHC, 2015).

The PHC (2015) showed that 88% of household heads had not completed tertiary education. An estimated 50% had completed secondary school, while 26% had completed senior secondary school, locally termed SSS, and 24% had only completed junior secondary school, locally termed JSS. In general, the education statistics for household heads showed limited education among this group – many of whom are likely to be important income earners and providers (ISS, 2014). Figures for the Southern Province showed very low levels of education among women. Around 73% of women in the Southern Province had not attended school at all at the time of the PHC survey (2015).

In the Moyamba District, the adult literacy rate was estimated by the Moyamba District Census (MDC) to be 30%. Differences in literacy between men and women were evident, with many girls dropping out of school to engage in household and working activities. Access to secondary education in the District was limited (MDC, 2014-2017). Instances of classes being held under trees and in churches and mosques had been recorded, highlighting a lack of educational facilities and infrastructure (MDC, 2014-2017).

Table 4-10 shows the distribution of educational and training facilities at District and at Chiefdom level. It is not possible to comment on the adequacy of this infrastructure without meaningful benchmarks and information on operational effectiveness.

#### Study area assessment

Refer to Section 4.6.3.



**Table 4-10: Educational facilities at District and Chiefdom level**

Description	Moyamba District	Upper Banta	Lower Banta	Bagruwa	Bonthe District	Imperi	Jong
Nr of pre-primary schools prior to 2012	-	-	-	-	-	-	-
Nr of pre-primary schools as of 2015	12	-	-	-	23	13	12
Nr of primary schools prior to 2012	48	17	40	-	219	39	37
Nr of primary schools as of 2015	105	20	48	37	-	43	43
Nr of junior secondary schools 2012	46	2	9	-	28	10	10
Nr of junior secondary schools as of 2015	12	2	7	3	-	11	7
Nr of senior secondary schools 2012	102	-	-	-	7	1	3
Nr of senior secondary schools as of 2015	-	-	-	-	-	3	2
Nr of Technical Vocational Institutes 2012	2	-	-	-	4	1	-
Nr of Technical Vocational Institutes as of 2015	2	-	-	-	-	2	2
Home Economics Centres	2	-	-	-	2	-	-

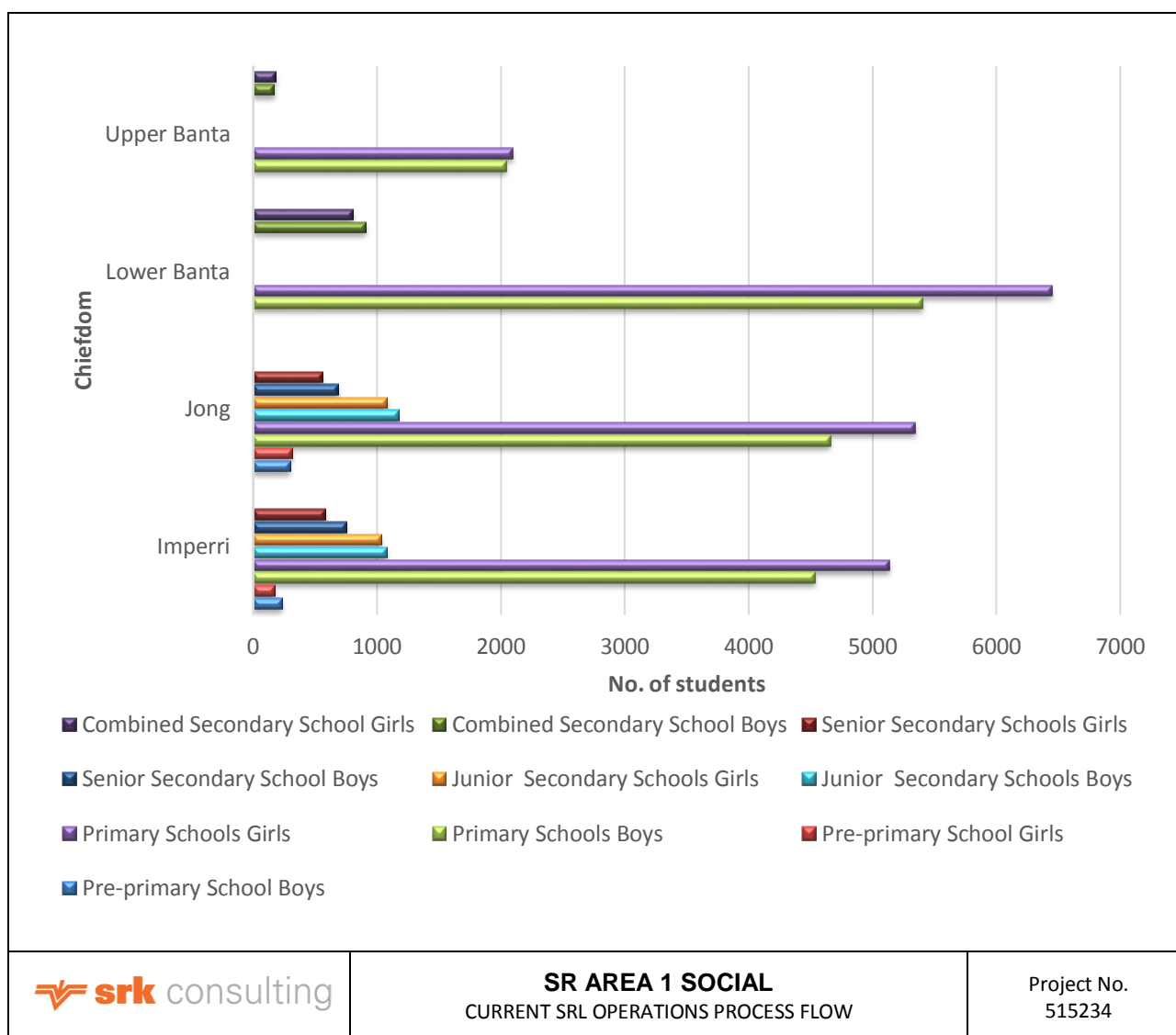
Source: CEMMATS, 2012; Ministry of Education Science and Technology in Bonthe and Moyamba Districts, 2017

#### 4.4.2 School attendance

Information provided by the Ministry of Education Science and Technology in Bonthe and Moyamba Districts showed a significant difference between the enrolment of boys and girls at various levels of education (2017). Figure 4-12 shows that enrolment dropped for both groups at progressively higher levels, but that the drop was more pronounced among girls.

##### Study area assessment

According to information from CEMMATS (2012), there were only four senior secondary schools in the entire study area in 2012. Data from 2015 (Ministry of Education Science and Technology in Bonthe and Moyamba Districts, 2017) suggests this has changed, with at least five senior secondary schools. The CEMMATS 2012 report concluded that the lack of senior secondary schools at the time probably limited the number of girls completing school, but that the causes of accelerated school leaving among girls were mainly rooted in economic and social factors, including the involvement of young girls in subsistence agricultural activities at home, as well as early pregnancy and child bearing.



Source: Ministry of Education Science and Technology in Bonthe and Moyamba Districts, 2017

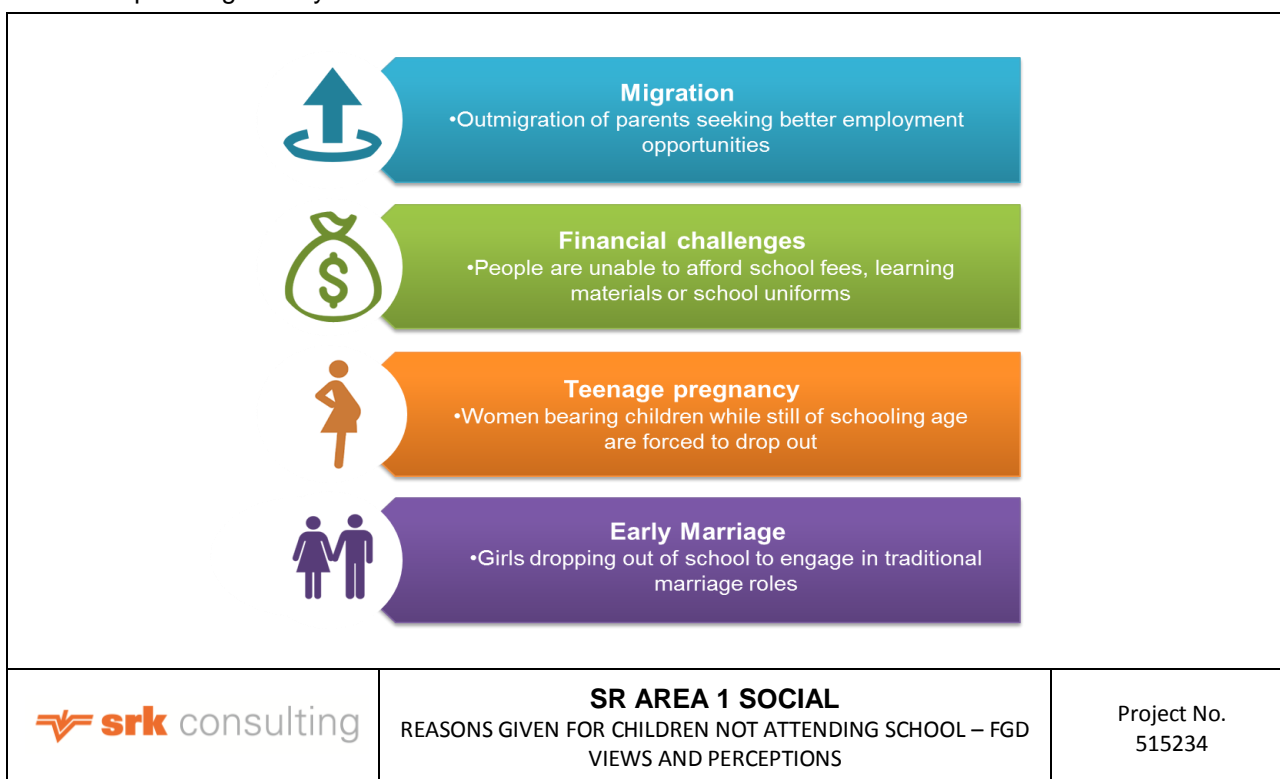
**Figure 4-12: School enrolment in the study area**

In an FGD with the Education Department and school principals (SRK, 2017d), participants expressed a number of views and perceptions related to the reasons for children not attending school (refer to Figure 4-13) – among these the cost of transport was not mentioned in the FDG, but was mentioned during the RRA and HHS (SRK, 2017a and 2017b).

The RRA (SRK, 2017b) implied a link between the ability of parents to pay to send their children to school and income. While participants noted that primary school was subsidised by the government, some suggested that the cost of uniforms, transportation of children to and from school, books and stationary, rendered education unaffordable, often resulting in parents' inability to send their children to school. During the HHS and RRA (SRK 2017a and 2017b), specifically at the introductory meetings with the Village Chiefs, the following views were expressed regarding school attendance – notably teenage pregnancy was not mentioned, as was mentioned in the FDG (SRK, 2017d):

- A shortage and or absence of schools, particularly secondary schools, was noted as a concern in almost every village visited for the RRA, with the majority of school children having to travel to Moriba Town every day. In the instance of Mokaba and Canal Junction, secondary and primary school classes were reported to be undertaken in one facility, whereby primary school took place from 8:30am – 12:00pm, with secondary school being undertaken in the afternoon. This could be the case for other villages, but was not specifically mentioned to SRK (2017d);

- In Nitti (Foya), Mogbwemo, Gangama, Gbangbaia, Segbwema, Modagba and Junctiola children were said to travel long distances to Moriba Town (on foot) to get to secondary school. The absence of transport (school bus) was claimed to be a reason for children dropping out of school;
- In Victoria, Kpetema, and Gangama, some farmers expressed the view that reductions in farmland area and / or inability to produce a healthy yield prevented them from sending their children to school. Instead, children of school going age were reportedly either sent to relatives in bigger urban hubs (such as Freetown) to be supported, or remained at home to help with livelihood activities;
- Sending children to secondary school and above was said by a number of participants to be unaffordable because of the cost of school fees compared to income;
- Many participants complained of a lack of teachers and lecturers at both local and regional level. Participants in Kpetema thought that this was partly due to poor wages received by teachers. SRK derives that these low wages could be attributed to the majority of teachers being unregistered and unqualified;
- In general, there was a perception that only those with an education were employable to well-paid jobs, and those without it were only able to access casual, unskilled labour jobs;
- In Kpetema, it was mentioned that women were seen to be accessing administration jobs (for example secretarial), which encouraged female learners to continue with education;
- Poor facilities and materials in Kpetema were further stunted by the theft of chairs, materials and even football goal posts;
- Segbwema participants suggested that, while facilities were to be found in their old villages, formal schooling facilities had not been provided in the resettled villages. This problem was said to be further compounded by a lack of transport and support to scholars in these villages. SRK observed schools in close proximity to Segbwema in other villages. Further investigation revealed that villages felt strongly about having their own village schools despite the close proximity of schools in other villages (SRK, 2017b); and
- The lack of a tertiary facility in Kanga or surrounds was suggested to be a reason for children not pursuing tertiary education.



Source: SRK, 2017d

**Figure 4-13: Reasons given for children not attending school – FGD views and perceptions**

These perceptions are supported by information from the NGO, Schooling For Life, which states that while education in Sierra Leone is obligatory for all children and officially “free of charge”, a shortage of schools and teachers, and a general lack of resources have made this implementation extremely hard (Schooling For Life, 2016).

### 4.4.3 Training facilities

#### Study area assessment

There is a technical and vocational institute in the study area, which is a joint initiative of SRL and other development partners. The institute, Jackson and Devon Anderson Technical and Vocational Institute (JADA), offers technical and vocational training and education to the surrounding communities, specifically focusing on those of Sierra Leonean citizenship. JADA was established and funded by Dwight Anderson in 2010. The institution was established in response to a felt need among people in the rutile and bauxite mining communities. The main objective for opening the institution was and still is, to enable the youth within the District to acquire technical skills so that they can participate in the labour market (CEMMATS, 2012; SRK, 2017c). SRL pays the staff salaries, and is also responsible for supplying water, electricity and security services.

The facility provides two-year training in electrical, automobile, mechanical and civil engineering, and business management, as well as a year course in information technology up to diploma level. In 2012, there were 335 enrolled students. The institution currently has 103 students of which 15 are females and 88 are males. The institution has faced challenges relating to lack of the following (feedback from the principal of JADA, SRK, 2017c):

- Adequate classrooms and equipment;
- Financial support from the Government;
- Staff assistance: teachers have had no salary increase since 2010, no annual leave and no study leave; and
- Affiliation with other institutions will help in terms of sharing courses / course material and providing support, but because of problems experienced with staff retention and provision of staff accommodation, affiliations have not materialised as intended.

The Ruby Rose Educational Resource Centre at the SRL mine promotes adult literacy. It was established in 2008 and is co-funded by the American philanthropist, Melonie Kastman and SRL. The centre is utilised daily by primary and secondary school pupils from Moriba and Kpetema towns. In 2016, 1 250 students visited the centre. The centre also offers courses, including adult education (attended by nine males and two females) and skills training in tailoring (attended by two males and eight females). The centre employs five staff members (four males and one female) including a chief librarian, assistant librarian, adult literacy teacher, tailoring teacher and cleaner (SRK, 2017c).

SRL's contribution to the centre is the organisation of training for community women in artwork (beads, decoration of table clothes and mats etc.). SRL also provides electricity and running water to the centre. Some reported challenges that face the centre include (SRK, 2017c):

- Limited funding to expand the centre;
- Limited accommodation and classrooms for visitors and students;
- Lack of tools and equipment for skills training;
- Demand for other skills areas (e.g. catering);
- Leaking roofs (children's library is out of use and closed to the public because the roof caved in);
- Limited staff; and
- The meal and school feeding programme for visiting pupils was discontinued due to a lack of funds. The reasons underpinning withdrawal of funding were not discussed, but other sources mentioned corruption as a contributor.

In an attempt to address unequal access to education, a skills centre for women only was built at Madina (FM) in the Imperi Chiefdom, which as of 2012 offered adult literacy classes and various skills training courses to an estimated 60 women. Courses offered included weaving, soap making and tailoring (CEMMATS, 2012).

## **4.5 Public health**

Refer to the Shape (2018) for details on the following:

- Mortality rates;
- Morbidity rates and infectious diseases; and
- Nutrition levels.

The noise and the air quality specialist studies (SRK, 2018(1); Acusolv, 2018) assess the noise and air quality levels against acceptable standards.

### **4.5.1 Dust and noise irritation**

#### **Study area assessment**

Some participants of the study (SRK, 2017a and 2017d) reported that noise and dust pollution from mining operations were a concern in some communities and were mentioned specifically in Foinda and Nyandehun. Participants in Matagelema, Moriba Town, and in villages along the haul roads were generally more concerned about noise and dust from trucks (as opposed to mining operations). A distinction was not made between trucks from different companies, and whether the dust and noise nuisance were different among them.

SRK observed the trucks moving through the villages, and spent a day in Nitti (Foya), which is on the haul road to Nitti Port. The noise of the trucks was experienced as intrusive (SRK, 2017b). SRK's observation was that many of the trucks that were driven irresponsibly and over the speed limit were not SRL trucks. SRL (2017) confirmed that a 30 km / hr speed limit had been implemented for all SRL vehicles, and SRL vehicles were tracked by GPS to deter SRL drivers from exceeding the speed limit.

Dust was mentioned by some participants as a source of irritation. Participants mentioned that it covered the interior and exterior of their houses, and covered pedestrians walking on the haul roads. Dust did not emerge as a main concern in the baseline study possibly because the fieldwork was done in the rainy season.

### **4.5.2 Crime and social ills**

According to the National Crime and Safety Report (2015), theft of property was the dominant crime (Table 4-11).

**Table 4-11: Most common crimes at national level**

Crime	Sierra Leone (% of crimes)
Theft of property	33
Crop theft	18
Livestock theft	24
Assault	11
Robbery	3
Pick-pocketing / bag snatching	3
Housebreaking	3
Land grabbing	1
Murder	0.7
Sexual assault	0.8
Theft of motor vehicle	0.3

Source: Crime and Safety Report, 2015

Theft of property (42%) and livestock (19%) were reported to be the dominant crimes in the Southern Province as per Table 4-12 (Crime and Safety Report, 2015).

Theft and robbery were a major concern for respondents in the Moyamba (55%) and Bonthe (39%) Districts in 2012. Attacks against households was the greatest concern for respondents in Bonthe District (42%) (Action on Armed Violence, 2012).

**Table 4-12: Most common crimes at provincial level**

Crime	Southern Province (% of crimes)
Theft of property	42
Crop theft	18
Livestock	19
Assault	14
Land grabbing	1.5
Housebreaking	1.5
Theft of motor vehicle	0.4

Source: Crime and Safety Report, 2015

Violence against children and youth in Sierra Leone is a continuing challenge. As reported by a national sample in a study by Prelis and Sankaiuah (2015), the most experienced form of violence was violence at home, which included beating, insults and child neglect.

Violent crimes against children and youth, as reported by respondents included (Preli and Sankaiuah, 2015):

- Violence against females;
- Child exploitation;
- Exclusion and community violence; and
- Violence at school.

Despite national legislation punishing these forms of violence, few recourse mechanisms are available to victims, and prevention work needs to be developed (Preli, and Sankaiuah, 2015: 29).

### Study area assessment

Crime was raised as a concern in most FGDs (SRK, 2017d). A broad perception was that law and order was not enforced in the study area due to public sector resource constraints. Migration of job seekers and employees of SRL into study area villages was said to be a driver of crime. According to the FGD held with the Community Investigation Department and Family Support Unit, crimes possibly associated with SRL operations included syphoning of fuel and prostitution (SRK, 2017d).

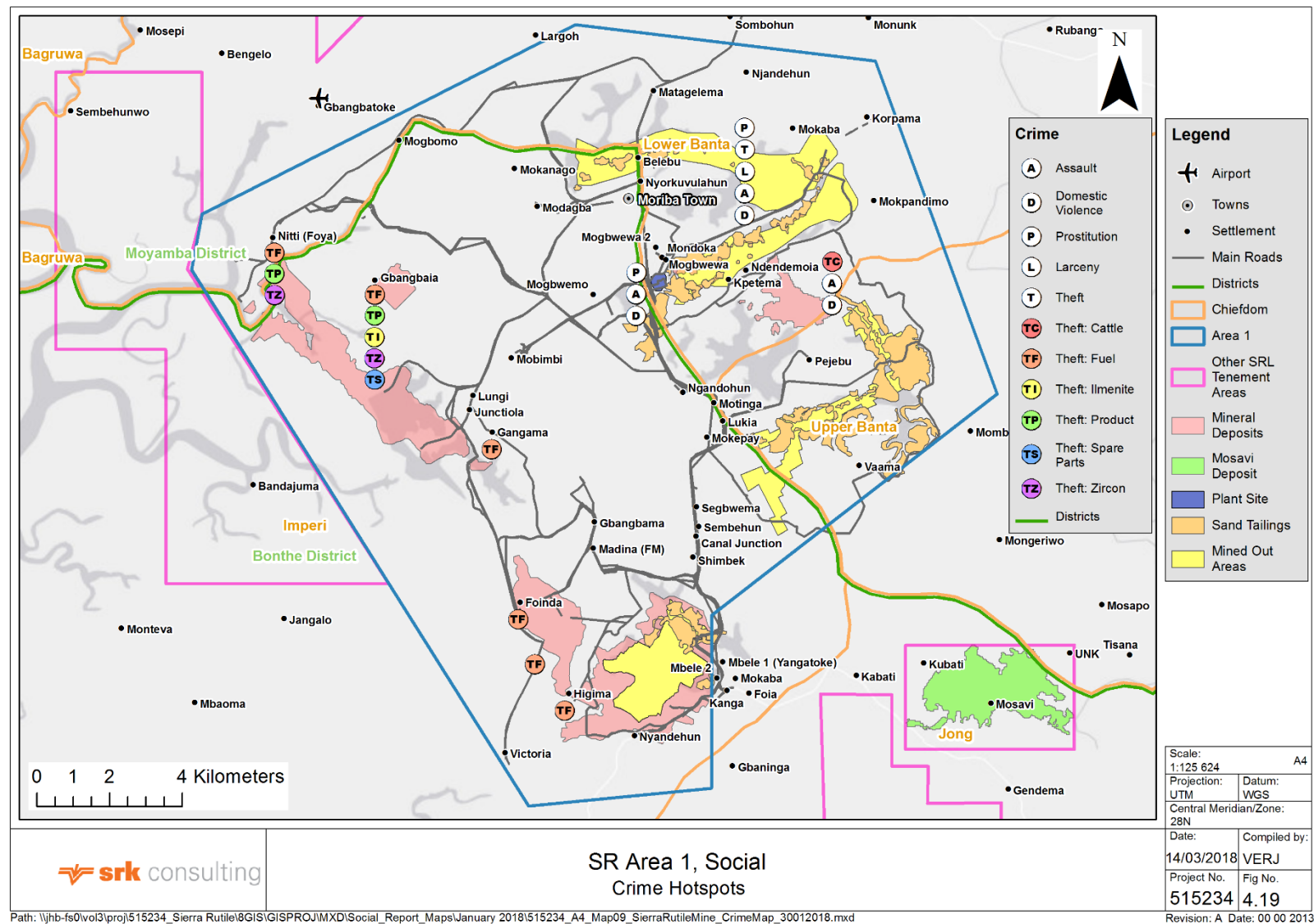
According to feedback from SRL, syphoning of fuel from SRL is a major but illegal economic activity (SRL, 2017). Mention of syphoning of fuel was also made in one village meeting, where the participant implied that some security guards were complicit in making it possible to steal fuel (SRK, 2017a).

Participants in several FGDs suggested that children and the youth often resorted to theft due to their unemployment status (SRK, 2017d). The instance of domestic violence and assault were connected with a rise in alcohol abuse. Crimes said to be of concern in the study area included:

- Commercial sex work (Moriba Town and Mogbwemo);
- Drug and alcohol abuse;
- Assault (Kpetema, Moriba Town and Mogbwemo);
- Domestic violence;
- Child abuse;
- Child neglect;
- Child rape;
- Livestock theft (Kpetema);
- Fuel theft;
- General theft by children;
- Road attacks; and
- Arson.

Figure 4-14 visually represents identified crime hotspots in the study area, as per the experience of the Crime Investigation Department and the Family Support Unit (SRK, 2017d).

SRL informed SRK (2017) that the company liaised on an ongoing basis with local police to monitor social changes in crime patterns, as well as with existing crime control organisations, such as the Criminal Investigation Department, local community policing forums and other crime prevention organisations to monitor social changes in crime patterns and to implement crime prevention measures.



Source: SRK FGD with Community Investigation Department and family support unit, 2017

**Figure 4-14: Reported crime hotspots in the study area**



## 4.6 Economy and livelihoods

### 4.6.1 Economic structure and trade

Gross Domestic Product (GDP<sup>11</sup>) in Sierra Leone had experienced strong growth of on average 8% per year between 2003 and 2014, albeit off a low base. Growth was well above average in 2012 (15.2%) and 2013 (20.7%) (IFC, 2017). The twin shocks of the international commodities downturn and EVD outbreak in 2014 / 15 resulted in the collapse of iron ore prices and closure of the two major iron ore companies in Sierra Leone (Bank of Sierra Leone, 2016), and caused a notable retraction of the national economy. GDP growth reduced to 4.6% in 2014 and the economy contracted by 20.5% in 2015. Growth rebounded to 6.1% in 2016, with GDP of Le23 848 billion, equivalent to US\$3.9 billion and US\$11.1 billion in terms of purchasing power parity (PPP<sup>12</sup>). GDP per capita<sup>13</sup> decreased from US\$803 (US\$2 100 PPP) in 2014 to US\$577 (US\$1 700 PPP) in 2016. Sierra Leone GDP per capita ranks 212 out of 230 countries, demonstrating the high poverty in the country (IFC, 2017, CIA World Factbook, 2017). The International Monetary Fund (IMF, 2017) expects medium-term growth of around 6.5% by 2020.

The primary agricultural sector accounts for 60.6% of GDP and remains the backbone of the economy. Growth in the agricultural sector has been moderate, at 3.0% in 2015. The secondary industrial sector, dominated by mining, collapsed following the twin shocks in 2014 / 15. The sector contracted 73.9% in 2015, mainly on account of an 83.7% decline in mining attributable to a 96.5% slump in iron ore production (from 19.4 million tonnes in 2014 to 0.8 million tonnes in 2015). The sector now contributes 6.5% to GDP and includes mining of diamonds, iron ore, rutile and bauxite as well as small-scale manufacturing (beverages, textiles, footwear). The tertiary services sector accounts for 32.9% of GDP and has shown very low growth of 0.51% in 2015 (CIA World Factbook, 2017, Bank of Sierra Leone, 2016). However, better-than-expected services growth, notably tourism and commerce, was an important component in subsequent economic recovery (IFC, 2017).

Sierra Leone runs a trade deficit of US\$646 million. While iron ore used to account for more than 75.0% of export value, the collapse in the sector has significantly reduced the importance of this commodity. Diamonds accounted for 24.5% of export value in 2016, followed by iron ore at 21.2% of export value (IFC, 2017). Other export products are rutile, cocoa, coffee and fish (CIA World Factbook, 2017).

Low fiscal revenue is a key structural problem, despite significant efforts to enhance revenues in recent years. Revenue of Le2 889 billion in 2016 was 12.2% of GDP, below pre-crisis levels of 12.6% of GDP in 2013. Taxes and royalties accounted for 94.0% of fiscal revenue, driven primarily by personal income tax (Le936 billion in 2016), goods and services tax (Le666 billion), import duties (Le382 billion) and corporate income tax (Le324 billion). Mining royalties and licenses generated revenue of Le156 billion in 2016, down from Le235 billion in 2013. Grants (not included in revenue above) have reduced to 3.1% of GDP, down from 5.4% of GDP in 2015 at the height of the EVD outbreak and are expected to reduce further as a percentage of GDP.

<sup>11</sup> Gross Domestic Product measures the value of output produced within the domestic economy, regardless of who owns the factors of production. GDP at market prices measures the value of domestic output inclusive of indirect taxes on goods and services.

<sup>12</sup> Purchasing power parity aims to determine the exchange rate of two currencies by aligning the purchasing power of the currencies. In other words, the expenditure on a similar commodity must be same in both currencies when accounted for by the exchange rate. The purchasing power of each currency is determined in the process.

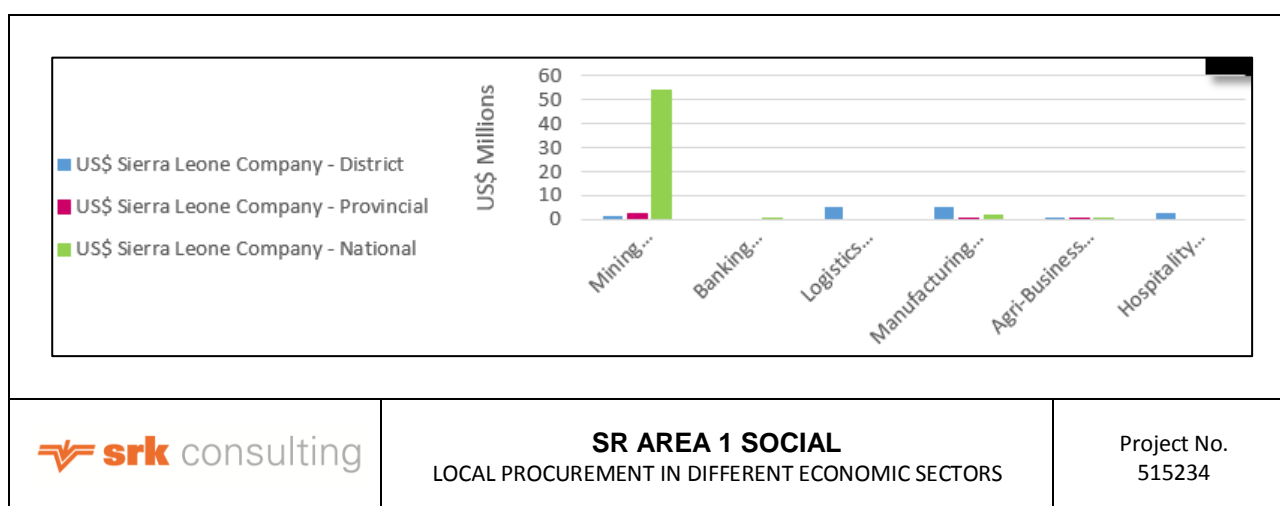
<sup>13</sup> Per capita GDP divides GDP by the number of people in the country. The per capita GDP is especially useful when comparing countries, because it shows the relative performance, and wealth, of countries.

Sierra Leone ran a budget deficit of 8.3% of GDP in 2016, significantly worse than expected. The government must increase domestic revenue mobilization to finance the authorities' Agenda for Prosperity (A4P), the medium-term anchor for economic development (IMF, 2017)

Public and publicly guaranteed (PPG) external debt amounted to US\$1.53 billion in 2016, equivalent to 41.3% of GDP. PPG has increased from 21.3% of GDP in 2013, mainly due to debt incurred for post-Ebola recovery and infrastructure construction. Multilateral creditors account for approximately 85% of PPG, while commercial creditors account for 15% as of 2016. The latter mostly consists of arrears accumulated prior to and during the civil conflict. Domestic debt amounted to 14.6% of GDP in 2016. Total public debt was 55.9% of GDP. Sierra Leone is at moderate risk of debt distress (IFC, 2017).

### Contribution of the mining sector and SRL

Mining companies account almost solely for local procurement of goods in services amongst the economic sectors monitored for local content contribution. The majority of procurement benefits national companies (DAI and GIZ, 2017, see Figure 4-15), given the lack of capacity of local businesses.



Source: DAI and GIZ, 2017

**Figure 4-15: Local procurement in different economic sectors**

SRL has the highest procurement spending amongst the four companies monitored for local content (DAI and GIZ, 2017), at some US\$20 million in 2016, almost all of which goes to companies outside of the immediate mine region.

Considering SRL's contribution to the economy, capital expenditure on the construction of Gangama was approximately US\$38 million over a 30-month period. Of this, 52% was paid to foreign suppliers, 36.5% to local suppliers and 11.5% to payroll and stocks withdrawal. Capital expenditure on the construction of Gbeni was a further US\$10.3 million, primarily to foreign suppliers.

Total SRL expenditure on workforce and goods and services was US\$70.2 million in 2016, of which US\$56.5 million were spent on goods and services (US\$19 million of this was spent on goods and services in Sierra Leone) (DAI and GIZ, 2017). It is therefore assumed that US\$13.7 million was spent on payroll. The 2016 SRL expenditure is equivalent to 1.8% of Sierra Leone GDP.

Changes in output, employment and/or prices give rise to changes in demand for a range of goods and services, which in turn generate a further round of income and employment effects. Multipliers estimate these knock-on effects of e.g. an investment on output and employment in the economy. Effects are typically direct, indirect and induced:

- Direct economic effects occur through the employment of staff and direct procurement from suppliers, e.g. raw materials, equipment and contractors, in the sector where the shock occurs;
- Indirect economic effects arise mainly as a result of suppliers and service providers procuring goods and services from other businesses in other sectors; and
- Induced economic effects occur through increased demand from households earning additional income from direct and indirect effects of increased demand.

Multipliers are difficult to determine, and various estimates exist. A World Bank (2006) study estimated a rural output multiplier of 2.5<sup>14</sup> and an urban output multiplier of 2, as the higher import content (leakage) of urban output reduces the multiplier effect. For comparison, Mendez-Parra (2015) calculated output multipliers of between 2.07 and 2.36 for different sectors of the Tanzanian economy. Local content performance analysis of ten companies in Sierra Leone by DAI and GIZ (2017) derived multipliers for various sectors. Multipliers are highest for the logistics, agri-business and banking sectors (1.8–1.71), and lowest for the mining sector (1.45) (see Figure 4-15). However, sector multipliers are based on incomplete information and a limited sample of companies and are thus indicative only (Table 4-13).

**Table 4-13: Economic multipliers for different sectors in Sierra Leone**

Sector	No of companies considered	Multiplier
Mining	4	1.45
Banking	2	1.71
Agri-business	1	1.79
Logistics	1	1.80
Manufacturing	1	1.43
Hospitality	1	1.51
<i>Aggregated</i>	<i>10</i>	<i>1.49</i>

Source: DAI and GIZ, 2017

The study estimated a multiplier of 1.56 for SRL, the highest multiplier of the four mining companies assessed. SRL's total economic contribution to the economy of Sierra Leone, including indirect and induced effects, was estimated at US\$109 553 671 in 2016 (DAI and GIZ, 2017), the highest of the four mining companies assessed. Based on those figures, SRL's total contribution in 2016 was equivalent to 2.8% of GDP, which is highly significant for a single operation, and illustrates the small size of the economy of Sierra Leone. Estimates of ongoing operational expenditure were not available, and it is not clear what component of the 2016 expenditure was directly related to the mine expansion.

A broad overview of SRL's tax payments in 2015, as reported in SRL (2015), is provided below:

- Personal income tax in Sierra Leone is paid at a sliding scale of up to 35% (SRL, 2018). Payroll of US\$13.7 million<sup>15</sup> could thus generate up to US\$4.8 million personal income tax if all employees were taxed at the maximum rate. SRL reports paying Pay As You Earn (PAYE) personal income taxes of US\$4.3 million in 2015, which is equivalent to approximately 2.7% of government income from mining royalties and licenses that year<sup>16</sup>;
- SRL reports paying royalties of US\$4.1 million in 2015, which is equivalent to approximately 20.3% of government income from mining royalties and licenses that year<sup>17</sup>;

<sup>14</sup> I.e. for each Le 1 invested, at least a further Le 1.5 will be generated by the multiplier effect

<sup>15</sup> Total SRL expenditure on workforce and goods and services was US\$70.2 million in 2016, of which US\$56.5 million were spent on goods and services (US\$19 million this expenditure was spent on goods and services in Sierra Leone) (DAI and GIZ, 2017). It is therefore assumed that US\$13.7 million was spent on payroll.

<sup>16</sup> Personal income tax generated revenue of Le650 billion in 2015 (IMF, 2017), equivalent to US\$151.2 million at an exchange rate of approximately 4 300 (www.xe.com)

<sup>17</sup> Mining royalties and licenses generated revenue of Le87 billion in 2015 (IMF, 2017), equivalent to US\$20.2 million at an exchange rate of approximately 4 300 (www.xe.com)

- SRL reports paying corporate (minimum turnover) tax of US\$3.7 million in 2015, which is equivalent to approximately 6.5% of government income from corporate income tax that year<sup>18</sup>; and
- SRL also makes significant additional contributions to community development projects. Community development expenditure amounted to Le1.01 billion (approximately US\$135,000) in the second half of 2016, and Le1.26 billion (approximately US\$202,000) in the second quarter of 2017 (SRL, 2018). The combined amount of those three quarters is approximately half of total surface rent payment made by SRL in 2018, which is another payment aimed at communities. These payments benefit various development project, such as education (e.g. school structures, furniture and teacher stipend) and health (e.g. water supply).

#### 4.6.2 Livelihoods

Agriculture is the largest and most important sector in the Moyamba District. It provides a livelihood for approximately 71% of the population. Crops grown in the District include palm oil, cereals (maize, rice, sorghum and millet) and starch food crops (yam and cassava). In addition, cashew nuts, hot pepper, ginger, pineapple and sugarcane are popular farm products. The majority of the farmers have smallholdings of 0.5 to 2 hectares, which they operate as basic subsistence food production units. Livestock farming is small and underdeveloped. Households typically own chickens, goats and some cattle (Humanitarian Response, 2015). In the coastal Chiefdoms, salt production has traditionally been an important economic activity (CEMMATS, 2012).

##### Study area assessment

In the study area and surrounds, bauxite, rutile, zircon and ilmenite are mined. With small urban nodes, the country and the study area's population are largely reliant on rural, agricultural livelihoods. Sources of livelihoods included agriculture, fishing, and logging. Land in the study area for agricultural practices and trees for logging have reduced to mostly make space for mining according to the CEMMATS, 2012 study. The fish population is on the decrease mostly as a result of overfishing (CEMMATS, 2012).

The major weekly trade activities are in Gbangbatok in the Lower Banta Chiefdom, and goods are traded directly with suppliers coming by boat from Freetown, Guinea (Humanitarian Response, 2015), and Yalgoi (SRL, 2017).

While fisheries were noted as the second most important livelihood activity in the two Districts, the activity was found to be almost purely for subsistence. In the study area fishing was largely undertaken by men in dugout canoes, using wall mats. Women were also known to fish, but with smaller hand nets (CEMMATS, 2012).

CEMMATS assessed livelihood dependencies and activities in 2012, and SRK (2017) found that these had not changed significantly since that time, apart from the fact that irrigation was not mentioned by participants nor observed by SRK (the SRK study did take place in the wet season, which may have played a role). In the study area, CEMMATS (2012) reported that subsistence agriculture was the most common livelihood activity, with "upland and swamp rice farming" described as the most important, followed by cultivation of cassava, potatoes, yams, groundnuts, maize, sorghum, millet, sesame and pineapples. Tree cultivation included palm oil, coffee, cocoa, kola nut and bananas. At the time of the 2001 EIA, 60% of household land was reportedly being used for food crop farming, while the remaining 40% was used for tree cultivation (CEMMATS, 2012).

<sup>18</sup> Corporate income taxes generated revenue of Le245 billion in 2015 (IMF, 2017), equivalent to US\$57 million at an exchange rate of approximately 4 300 (www.xe.com)

Garden products and crops were also found to be important for livelihoods, particularly among women. These typically consisted of egg plants, beans, spring onions, tomatoes, beans, egusie<sup>19</sup>, okra and krain-krain<sup>20</sup>. Crops were found in the CEMMATS study to be largely irrigated and grown on river and stream banks, and on the banks of dams and ponds created by rutile mines. Contrary to CEMMATS (2012), SRK (2017) had not observed crops irrigated grown on river and stream banks, nor on dams and ponds. Small livestock, including goats, ducks, sheep, pigs and chickens were recorded as well (CEMMATS, 2012). This was confirmed through observation by SRK (2017).

In 2012 (CEMMATS), households in the study area consumed approximately 57% of food crops grown, 37% was sold and 5% was gifted to family or friends. In many instances, households were not able to grow enough food to support their sustenance needs and were required to buy additional food to survive. Since the civil war, bartering and crop exchange had become an important means of acquiring food and supplies in the study area. Local people reporting to the CEMMATS study (2012) suggested that land take and land degradation due to mining had decreased the land available and its appropriateness for agricultural activity. This view remains to be fully confirmed by stakeholders in the current environment. However, as shown by statistical data elsewhere in this report, land distribution, population growth and density, as well as farming practices should be considered as additional contributing factors.

There was a fish-breeding programme initiated by SRL in the Belebu Pond, which had fostered an artisanal fishing industry (CEMMATS, 2012). According to the SRL Annual Report (2016), the Company had stocked its ponds and surrounding lakes with 327 960 fish during that year.

Other notable income-generating activities in the study area included those listed below (CEMMATS, 2012), with goods and services sold within the local villages, towns and communities or taken to the larger markets in Mokaba and Gbangbatok:

- Local spaza shops;
- Cassava processing;
- Petty trading;
- Palm oil processing;
- Labour outsourcing;
- Wood-cutting for fuel;
- Bush meat hunting and sales; and
- The sale of forest products.

Participants did not mention bauxite mining as an important activity in the livelihoods context.

The HHS and RRA (SRK, 2017a and 2017b) found that agriculture was the most important livelihood activity in most villages (barring villages closest to the ocean and mining ponds, where fishing activities were more common).

Many participants in the RRA said that manual labour was the only means of farming in the study area, and that mechanical systems were not available or affordable. Additionally, tools used to prepare land for crop, livestock and tree farming were said to be mostly either ineffective or non-durable (SRK, 2017b).

<sup>19</sup> These are fat and protein rich seeds from squashes and melons, which are dried and then used in food, including soups and stews

<sup>20</sup> A West African jute plant, which is a source of fibre. The leaves are used as a vegetable, mostly in stews in Sierra Leone

Over 30 crops were identified by SRK through the RRA, HHS and in field observations. Participants of the HHS (SRK, 2017a) reported that the most common crops used for livelihoods were groundnuts (24%) cassava (20%), maize (10%) and peppers (8%). The majority of participants named cassava (33%) as the most important livelihood crop, followed by groundnuts (24%) and maize (10%). Additionally, while it was not a crop farmed by the majority of the participants, upland rice was identified as the third most important livelihood crop by 9% of participants. Figure 4-16 depicts the most common crops out of the 1 107 crops identified in the HHS (SRK, 2017a). Most crops, including groundnuts, cassava and maize were said to be farmed all year round, while rice was grown at the start of the wet season (SRK b, 2017).

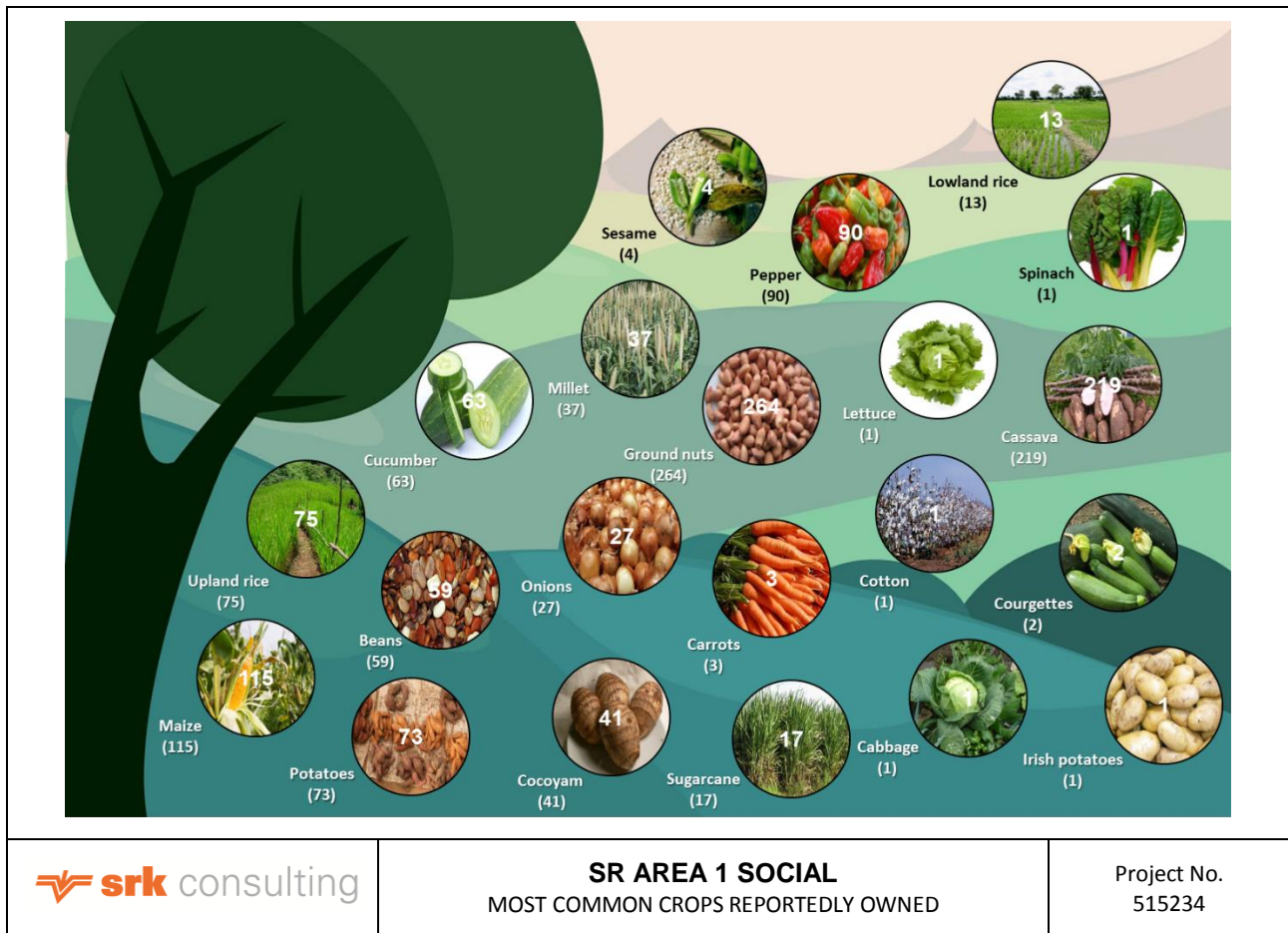
The biggest productivity issue listed by participants in the RRA (SRK, 2017b) was a low crop yield. Mine pond flooding was suggested by some to be a causal factor in this context. Other challenges mentioned in RRA discussions included high labour costs, ineffective / non-durable tools, low quality crops and poor soil fertility levels. Soil fertility and competition for land were most cited in resettled villages.

The ESHIA soil and land use study (ESS, 2018) has shown that the agricultural potential of the soils that are being disturbed by mining is poor, with a land capability rating of moderate to poor subsistence arable land to moderate grazing land potential in terms of the classification used. The soil nutrients are generally low and the soil permeability high with very low clay contents for the majority of the soils that are likely to be impacted.

Fruit and nut trees were found to be an important resource, with a wide variety of tree types present in the study area. The trees most often reported in the HHS (SRK, 2017a) included mango trees (23%), banana trees, oil palm trees, and coconut trees (all three 11%) and orange trees (8%). The same trees were also reported by participants to be the most important trees in terms of livelihoods. These and other trees described by the 1 207 responses in the HHS are illustrated in Figure 4-17.

Livestock were also identified as an agricultural livelihood source in the study area, however not at the same level as crops and trees. This, said RRA participants (SRK, 2017b), was a result of the cost of keeping livestock and the limited space in which to keep them. Chickens were kept by 60% of all HHS participants, followed by goats (19%), ducks (12%) and sheep (8%). In order of importance, most participants (60%) reported that chickens were the most important livestock, followed by goats (21%), ducks (8%) and sheep (8%). See Figure 4-18 for the frequency of mentions of each animal from a total sample of 618 responses.

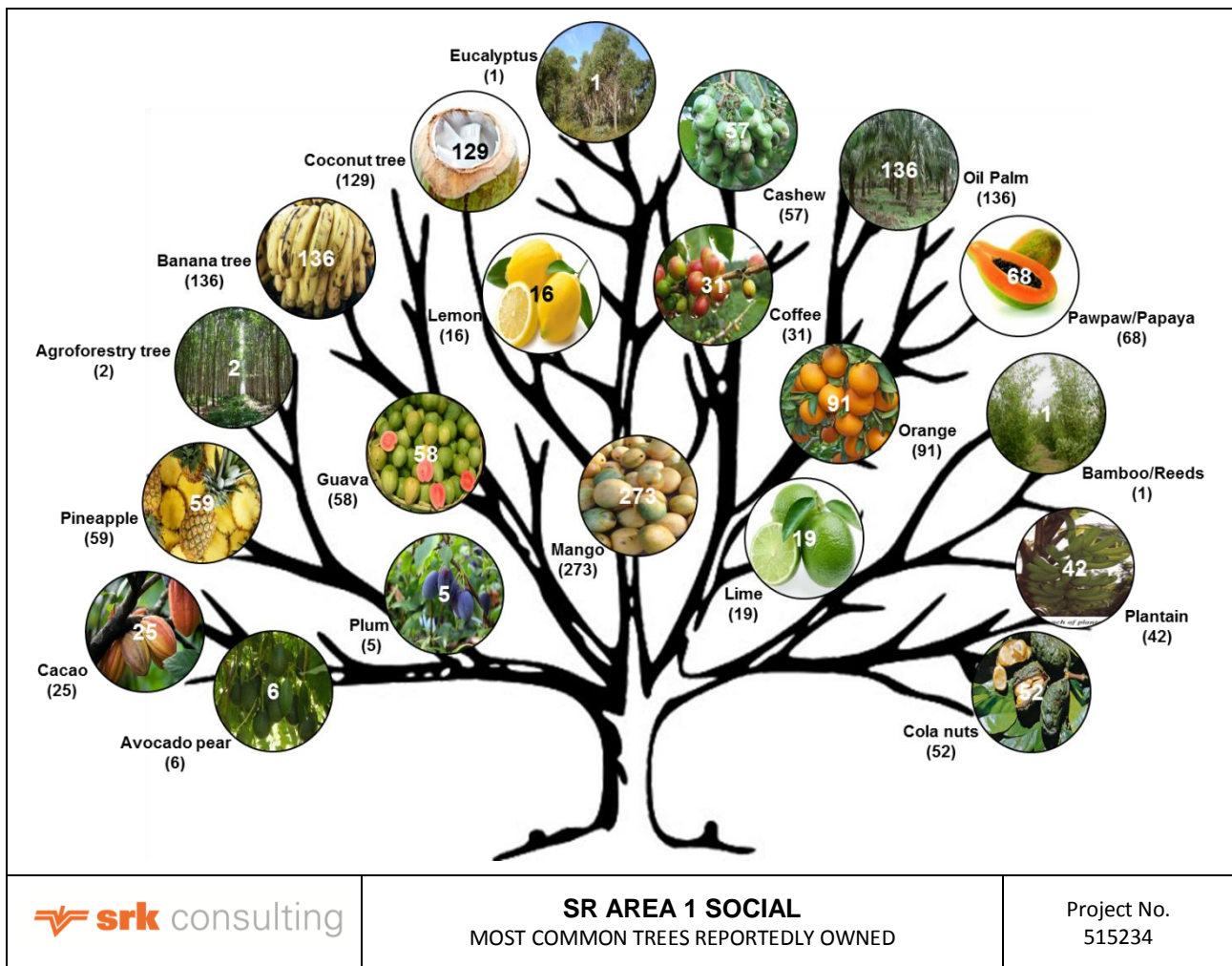
In summary, Figure 4-21 maps the reported and observed natural resources in the study area. It gives an indication of the nature and spread of services.



Source: SRK, 2017b

**Figure 4-16: Most common crops reportedly owned**

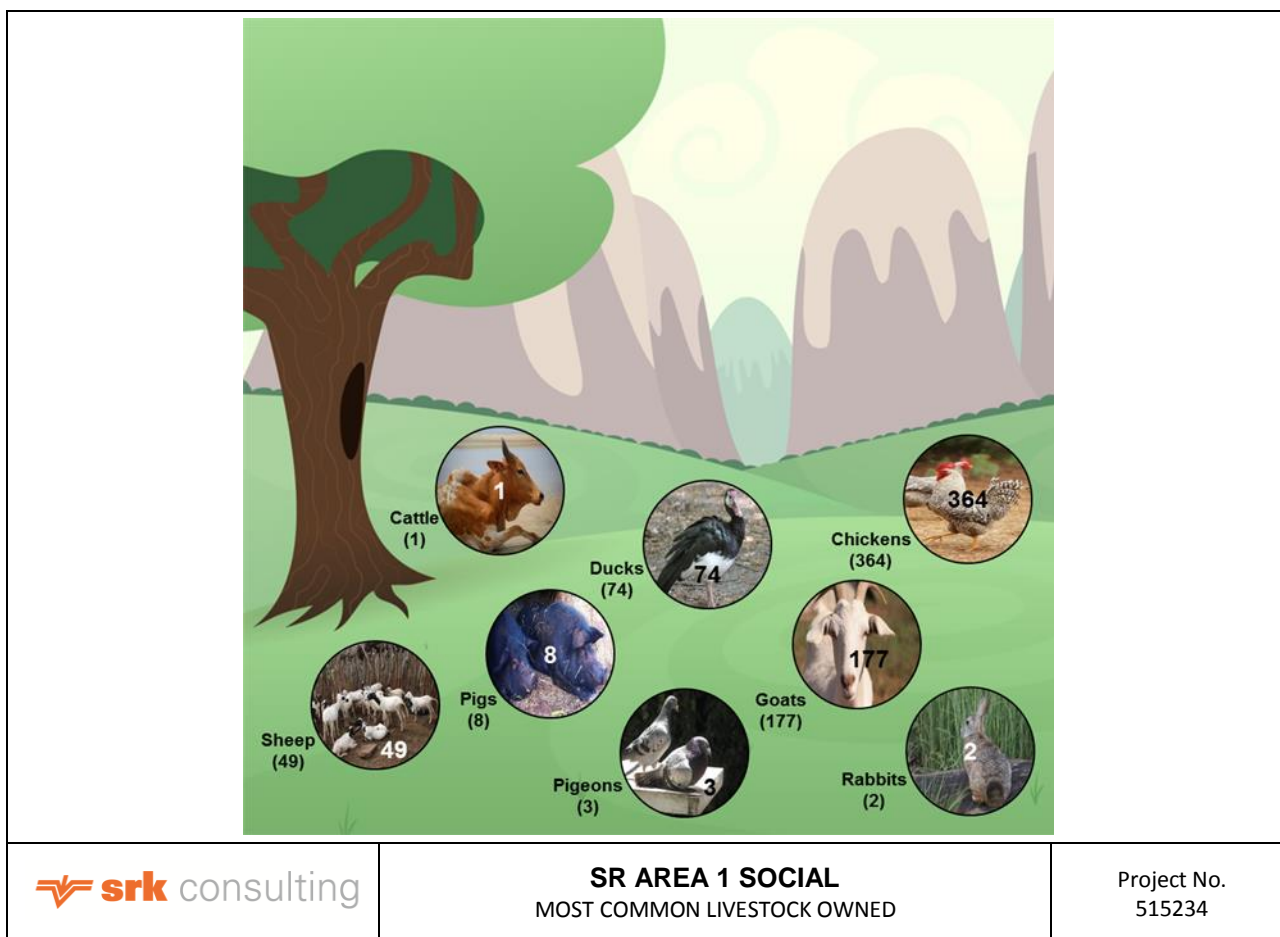




Source: SRK, 2017b

**Figure 4-17: Most common trees reportedly owned**

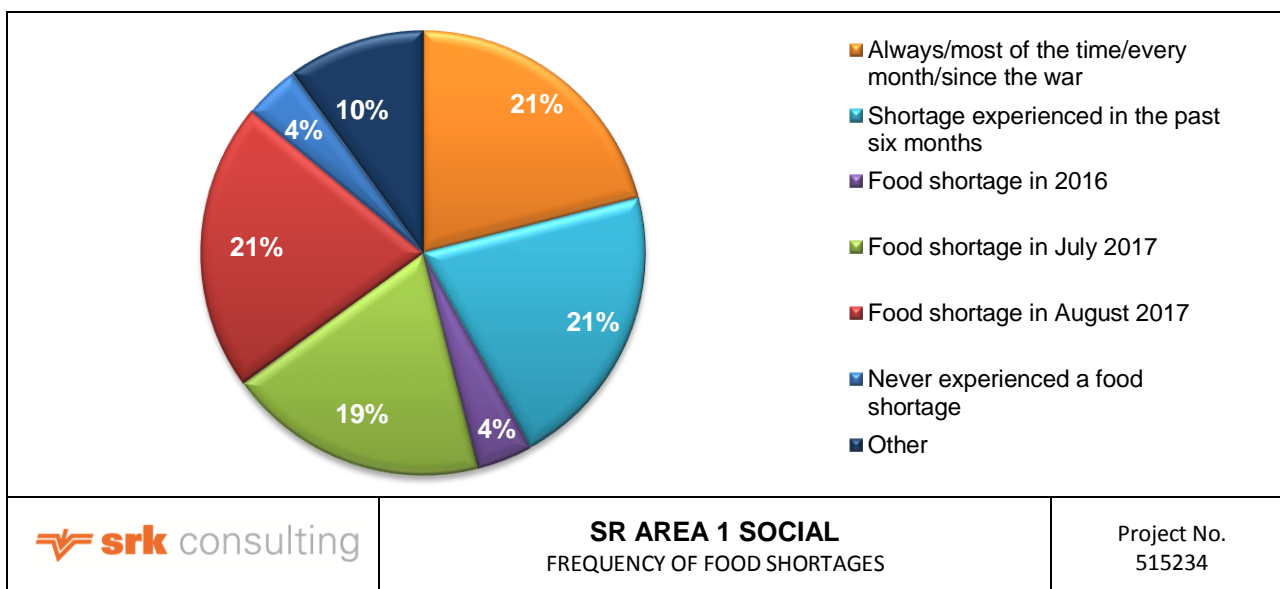




Source: SRK, 2017b

**Figure 4-18: Most common livestock owned**

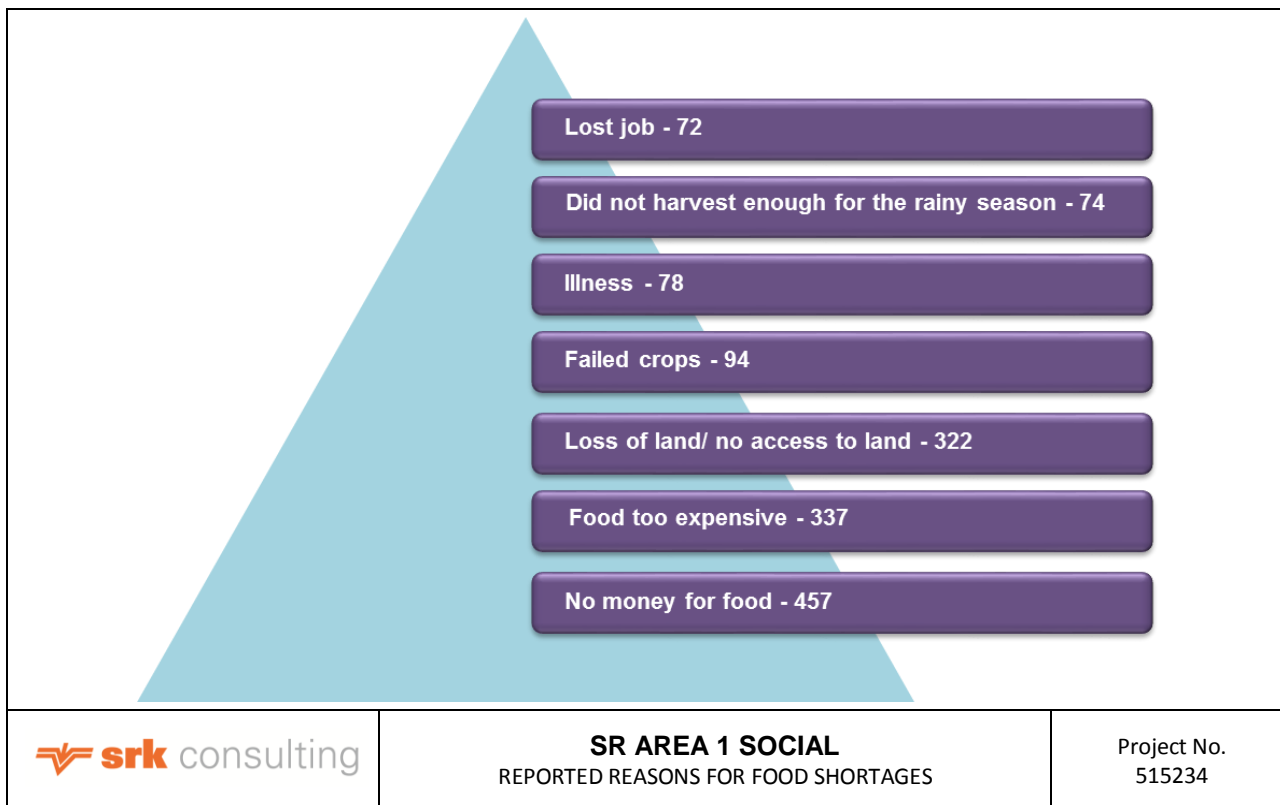
A total of 55% of HHS participants (SRK, 2017a) reported that they experienced a food shortage. For just under half of these (21%), the frequency was always / most of the time / every month since the war. A total of 21% reported a shortage experienced in the past six months, 19% in July 2017, and 21% in August 2017. Only 4% reported that they never experienced a food shortage, and 4% in 2016 only (see Figure 4-19).



Source: SRK, 2017a

**Figure 4-19: Frequency of food shortages**

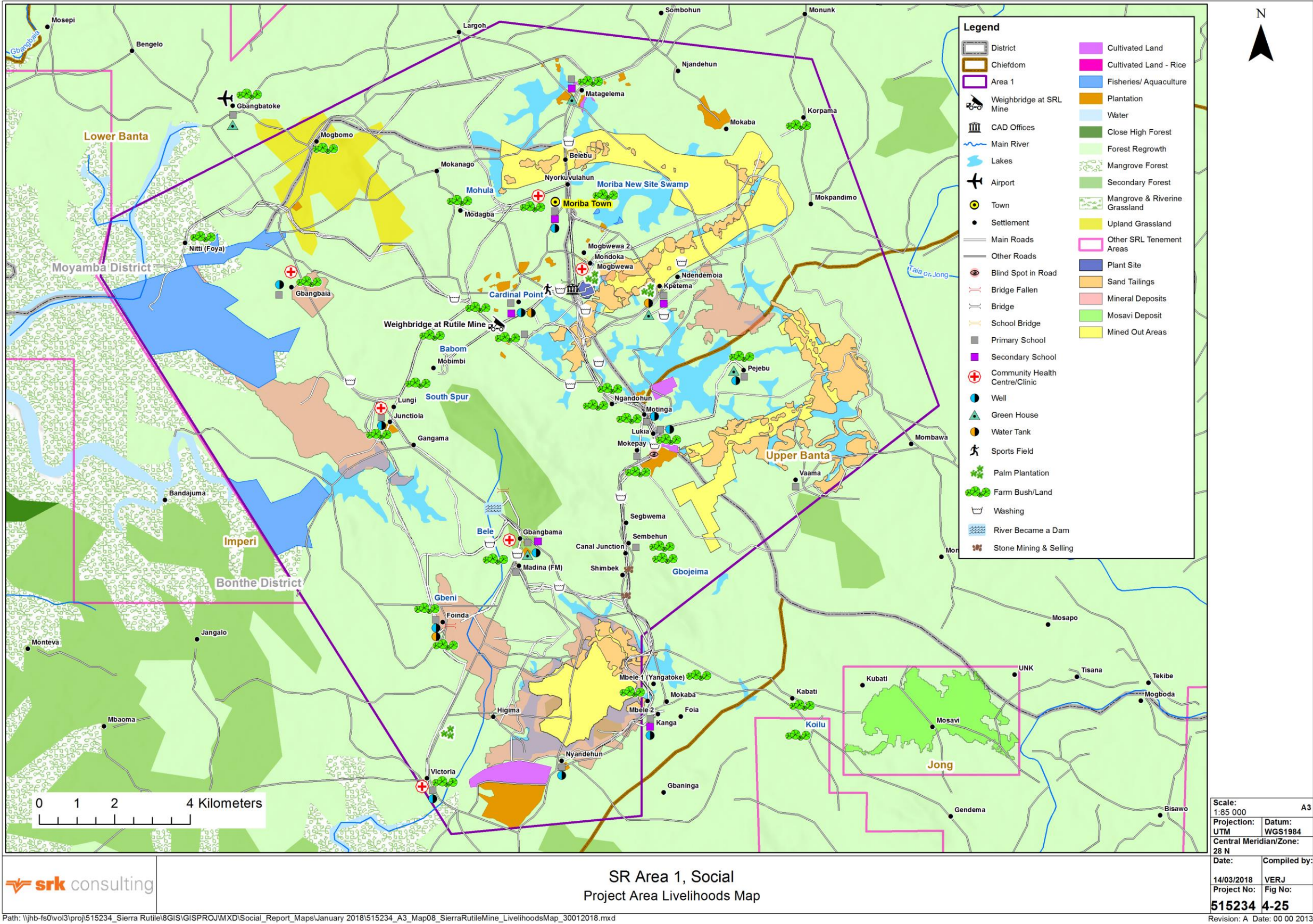
Reasons given by participants for experiencing these food shortages are summarised in Figure 4-20 below. Reliance on money to provide for food is evident. A majority of households suggested that they had no money to buy food (457 participants), and that food was too expensive (337 participants). Male participants mentioned unemployment more than female participants, who felt that not harvesting enough food for the rainy season was an important reason for food shortages.



Source: SRK, 2017a

**Figure 4-20: Reported reasons for food shortages**





Source: SRK, 2017a and 2017b

**Figure 4-21: Observed and reported livelihoods sources and ecosystems services**



### 4.6.3 Employment, unemployment and key employment sectors

Employment sectors on national level is discussed in Section 4.6.1.

In terms of employment on a national level, in 2014 the labour force participation rate was 57% (International Labour Organisation (ILO), 2017). Men and women engage in nearly identical proportions in the labour force (ILO, 2017). The unemployment rate reported by ILO (2017) was 4.7% in 2014<sup>21</sup>. Youth unemployment is estimated at 9.5% (ILO, 2017).

Most people in Sierra Leone (89%) are classified as self-employed (World Bank, 2017), primarily reflecting the informal sector with low productivity jobs. Self-employment is most prevalent in the agricultural sector (91% of workers), followed by the services sector (78%), manufacturing and utilities (72%), mining (51%) and construction (46%). Fewer than 10% of workers have salaried jobs (Statistics Sierra Leone, 2015).

#### Study area assessment

In terms of the study area, levels of reported employment were low. Of the males who answered the HHS question (SRK, 2017a), close to 50% were unemployed, 37% were students or scholars, while the rest were employed formally (14%). Amongst female participants, 60% were unemployed, 36% were students or scholars and only 4% were employed.

It seems reasonable to infer a link between education and employment status in the study area (SRK, 2017a). Of the males no longer going to school, 14% had a junior secondary school education, and 13% a senior secondary school education. Only 5% had completed vocational training, and 3% had a degree or a post-graduate degree. Similarly, 13% of females had a junior secondary school, but only 7% of females had a senior secondary school education. Only 2% had completed vocational training, and 1.2% had a degree or a post-graduate qualification. Whilst it cannot be stated that people with senior and post school education are the only ones employed, it is striking how closely these figures mirror the employed percentages. Kpetema participants directly associated employment with education and skills level, however a participant claimed to know a household in which four qualified members were unable to find employment. There were feelings of resentment evident towards migrant workers among many of the RRA participants (SRK, 2017b), with a number feeling that migrant workers were favoured for employment.

The role of women in trade and business was said to be improving by members of the organised business FGD. Women were actively trying to start their own enterprises, including shops, and were said to be as engaged as men in the trade and business community (SRK, 2017d).

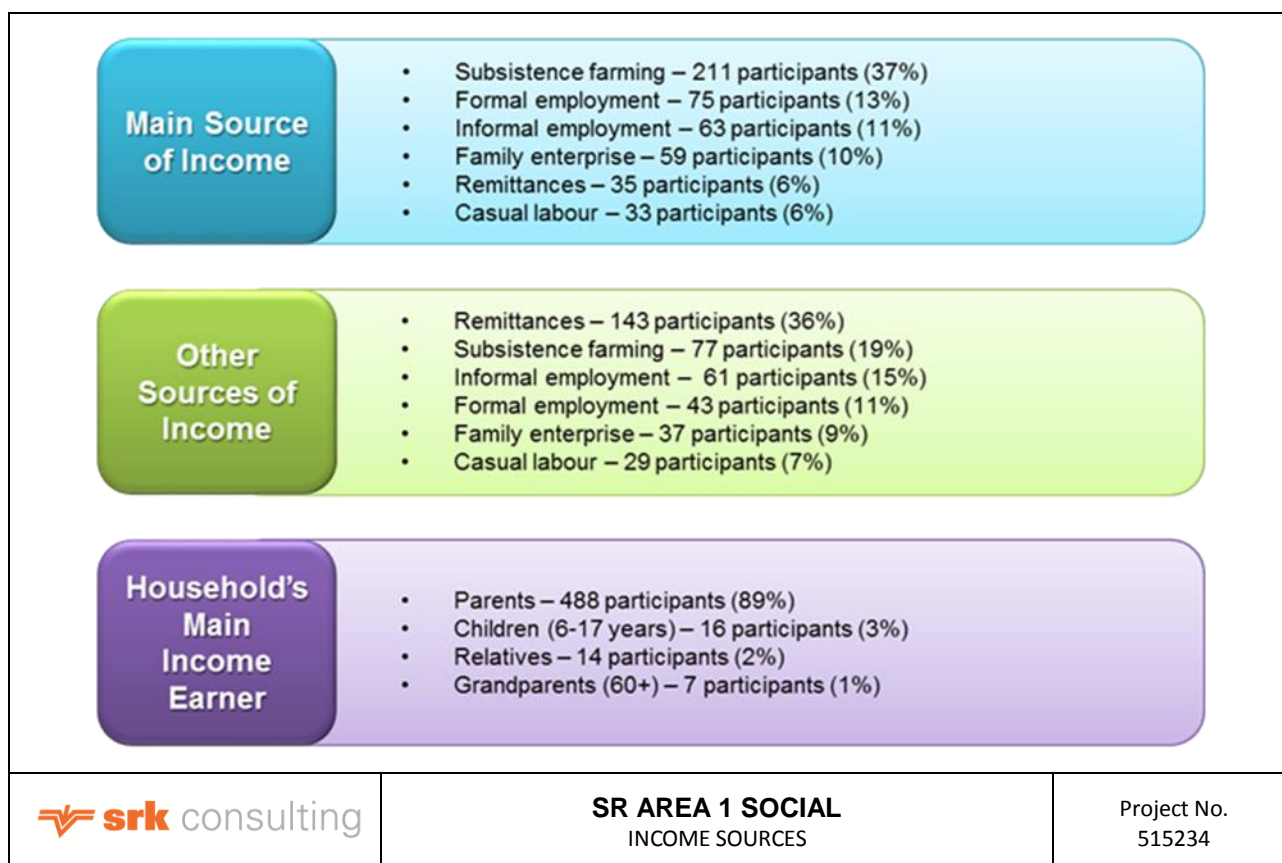
The use of credit facilities to develop businesses and small and medium enterprises in the study area was noted in the FGD with organised business (SRK, 2017d). Many relied on these facilities to start or expand their businesses but found themselves financially pressured to make repayments.

As illustrated in Figure 4-22, the main source of income for households in the study area who partook in the HHS (SRK, 2017a) was reported to be subsistence farming (38%). The second most common income source was found to be remittances (36%) from family members working elsewhere. Of the 13% that identified their main source of income as formal employment, 95 participants were currently working for SRL, while a further 20 had worked for SRL previously. Additionally, 41 participants had family members currently working at SRL, while 26 had family members who had previously worked for SRL.

<sup>21</sup> It is expected that neither rate captures the actual number of jobless, as typically many jobless people do not formally register as such.

In the HHS and RRA (SRK, 2017a and 2017b), participants claimed that they used the majority of their income to pay for school fees, food, medication and utilities. Additional income generated by a job would be used for repairing houses, school fees, food, roofing, and vocational and technical training. School fees were not reported as the main expenditure in previous studies. CEMMATS (2012) reported that in 2001 approximately 58% of the household income was spent on purchasing food and 14% was used for health and medical care. School expenses and clothing accounted for 11% and 8% respectively. The use of income changed slightly in 2012, with the majority of households reportedly spending their income on food. This was ascribed to the increase in food prices (CEMMATS, 2012).

The majority of households surveyed (908 participants) did not have bank accounts, nor did they belong to a village savings scheme.



Source: SRK, 2017a

**Figure 4-22: Income sources**

Kpetema and Ndendemoia RRA participants (SRK, 2017b) expressed the view that “uneducated people” should also be considered for jobs at SRL, should they have the necessary skills and experience. However, SRL requires employees to have the West African Senior School Certificate. A basic requirement in the Mines and Minerals Operational Regulations of 2013 is that people need to be trained and declared competent to do their work (SRL, 2017).

A number of Village Chiefs noted that employment with SRL might be expected as a form of compensation for the loss of land, in addition to surface rent. Surface rent was considered by some to be inadequate when compared to the losses land owners experienced as a result of the mining activities. It was argued that the rent became insignificant when divided between all the land owners. The subjective assessment of the balance between rent and the cost of land loss requires careful assessment to arrive at a sound conclusion.

SRL provided additional context (2017) noting that the number of people in the land holding families had grown, which meant the same land area had to be divided amongst more people. The same applies to the land for which rent is paid, where the increase in population means more people have to make a living out of the same finite resource. In 2018 SRL paid Le5 168 682 000 surface rent, a 3% increase on the rent paid in 2017 (Awoko, 2018).

### **Businesses in the study area that contribute to employment**

Stone and gravel mining was identified as an important employer in the study area, based on the HHS (SRK, 2017a). Typically, stone miners employed family labour (unpaid, provide food in exchange for work in some instances). Youth organised themselves into labour groups and mined for one another on a rotational basis and once again, while it is unpaid, each youth took turns to provide food in exchange for work. According to feedback from a stone mine worker (SRK, 2017c), income from stone mining ranged from Le50 000 – Le300 000 (US\$6.00 – US\$40.00) per month. Feedback from the interviewee was that SRL and Vimetco were the largest customers, using the stones and gravel for civil works including bridges, camp houses, spillways and mining pond bank construction. Most of the stones and gravel were sourced in the nearby Gbangbama and Mobimbi Hills. SRL informed SRK (2017) that stones and gravel were no longer purchased from stone miners, and that employees were prohibited from purchasing from these stone miners on behalf of SRL. SRL's key concern was the use of child labour by the stone miners, which is strictly prohibited by SRL in its value / supply chain.

There is a 30.68 ha Sierra Tropical Pineapple farm in the study area. It employs 133 Sierra Leonean staff and one expatriate (34 females and 100 males) between the ages of 21 and 50 years old. Sierra Leonean employees were sourced from Nyandahun, Tassoh, Victoria, Matakan and Mokaba. Skills levels varied from unskilled to certified through the JADA institute and salaries reportedly ranged between Le 669 000 (US\$90.00) and Le 770 000 (US\$100.00) gross per month (SRK, 2017c).

The African Lion Agriculture Oil Palm plantations in the Imperi (1 600 ha) and Upper Banta (1 000 ha) Chiefdoms employ 850 Sierra Leonean staff (600 seasonal and 250 contract planters), as well as two expatriates. Of the seasonal employees, 90% were male, and 10% female. Of the contract planters, 50% were female and 50% male. Skills levels were reported to be 96% unskilled, 3% semiskilled and 1% skilled. Salaries for Sierra Leonean staff reportedly ranged from Le550 000 (US\$72.00) to Le3000 000 (US\$394.00) a month. Staff were employed from Mondokor, Madina (FM), Hemabu, Mokpandimo, Njandahun, Mokongolie and Mokpangambu villages (SRK, 2017c).

The Beowulf security company is owned by Afghan, UAE and African partners and is a registered private security company in Sierra Leone. The company employs 515 Sierra Leoneans and four expatriate staff. Beowulf currently hires staff from Imperi, Upper Banta, Lower Banta and Bagruwa Chiefdoms. A few employees were brought from Freetown at the beginning of the contract and function as office managers and commanders. Staff members were aged between 27 and 59 years old, while skills levels ranged from senior secondary school certificates to diploma holders. Salaries reportedly ranged from Le770 000 (US\$100.00) to Le3 000 000 (US\$400) a month (SRK, 2017c).

The greenhouse project is an initiative that could develop into a key employment sector. It is sponsored by SRL and ATS (SRK, 2017c), which commenced in 2015. The project supports five vegetable groups each with greenhouse kits (greenhouse, drip line irrigation, fertilizer, seeds, pesticides) and trains farmers on modern agricultural techniques. The five groups selected for the project were existing groups and were part of a cooperative called Gbotima Farmers Federation, which was established by ATS Community Engagement Activity Program in 2013. A total of 93 farmers are part of the cooperatives, 40 males and 53 females. The projects are located in the Imperi, Jong, Lower Banta and Upper Banta Chiefdoms. ATS sources less than 20% of its supply needs from local farmers and aims to increase it by 100%. However, lack of capital, quality training and support after training remain a challenge (SRK, 2017c).

Fresh Salone, an agribusiness company in Freetown supplied the greenhouse kits, and also provided the training for the farmers on how to use the technology in growing vegetables and fruits for the market. The crops initially planted by the farmers during their first growing season were tomato, sweet pepper, sweet melon and cucumber which were done in the greenhouses and water melon which was planted in an open field (SRK, 2017c).

### **SRL contribution to employment**

SRL is the largest employer in the study area, and one of the largest private sector employers in Sierra Leone (SRL, 2015). SRL has generated the direct employment of:

- 115 workers (34 nationals and 81 expatriates) during construction;
- 2 614 workers, comprised of 1 871 SRL employees (1 739 nationals and 39 expatriates) and 743 main contractor staff (725 nationals and 18 expatriates) during operation; and
- 300 casual employees.

SRL spent US\$4.4 million on payroll during the construction of Gangama Phase over an approximately 30-month period. US\$13.7 million was spent on payroll in 2016<sup>22</sup>. While information on average local wages is not available, 93% of SRL's workforce is national, and the income benefit will accrue predominantly at a national level.

MacGillivray *et al.* (2017) calculated the average employment multiplier in developing countries as 7.8, i.e. each direct worker is associated with more than seven additional indirect and induced jobs or livelihoods. The high multiplier is likely a function of labour intensive production as a result of low mechanisation, poor education and low skill sets, meaning that a high proportion of the increased expenditure is directed to labour, the largest factor of production in most sectors (based on Mendez-Parra, 2015). Based on the above multiplier, direct employment at the project may have generated up to:

- 897 indirect and induced employment opportunities during construction; and
- 19 605 indirect and induced employment opportunities during operation.

People who benefit directly or indirectly from the project also support a number of dependants. Based on the average household size of 5.2 persons and assuming one income earner per household, each income earner on average supports 4.2 dependants. Assuming that 22 000 nationals derive income from direct, indirect and induced employment (or reduced underemployment) related to the project, an additional 92 400 dependants could benefit (albeit to a modest extent considering the generally low earnings in the informal economy and the high dependency ratio).

When comparing the number of potential beneficiaries to the population of the study area, which is estimated at 20 800, it is clear that the benefits of employment extend beyond the direct project area.

Employment also conveys skills that make people more employable in this large sector and increase their chances of earning a higher income in the long term. SRL dedicated 0.2% of manhours to training in 2016, below national targets for mining companies (DAI and GIZ, 2017).

### **Other economic sectors in the study area include:**

- Medicine / pharmaceuticals;
- Electronics;
- Food;
- Stationary;

<sup>22</sup> Total SRL expenditure on workforce and goods and services was US\$70.2 million in 2016, of which US\$56.5 million were spent on goods and services (US\$19 million this expenditure was spent on goods and services in Sierra Leone) (DAI and GIZ, 2017). It is therefore assumed that US\$13.7 million was spent on payroll.

- Building materials;
- Furniture; and
- Taxi / transportation services.

An economy based on local markets seems important to communities in the study area, allowing them to buy and sell produce and goods. RRA participants in Moriba Town expressed the view that while they had an existing market, another, larger one would be required to accommodate the growing populace. In Matagelema, a market existed prior to the war, however a new one has not been established since then (SRK, 2017b).

Poor road conditions and access problems resulted in increased transport costs and hence more expensive goods and services, according to the FGD with organised business. The presence of SRL was reported to be important to trade and business in the study area, because it encouraged buyers and sellers to the study area (SRK, 2017d).

## 4.7 Land ownership, land use and ecosystem services

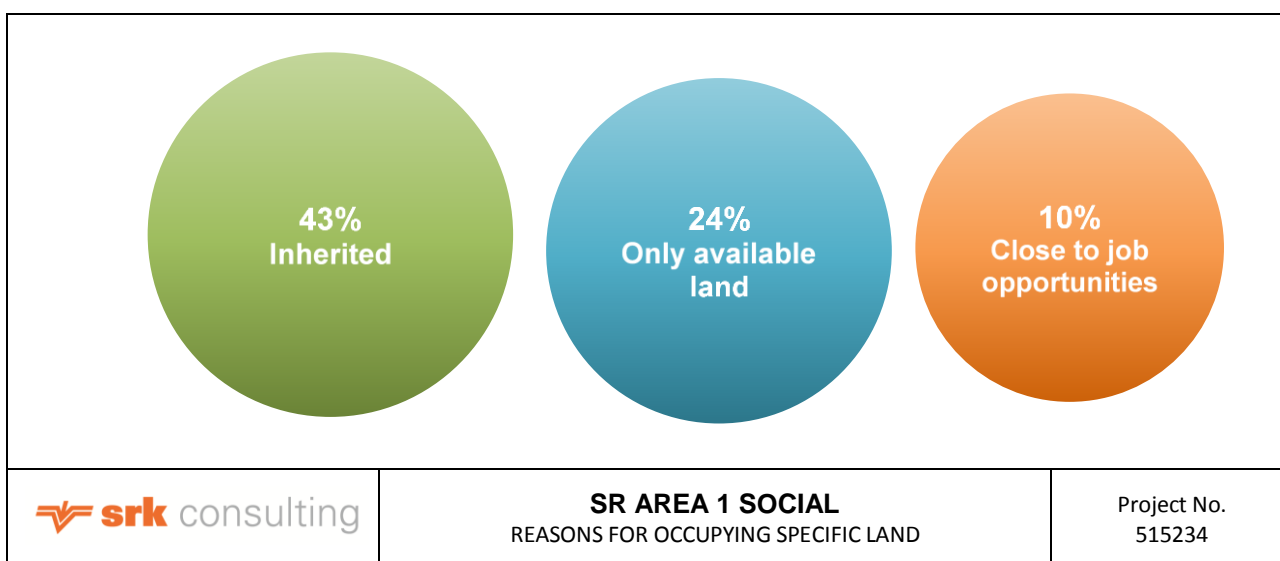
### 4.7.1 Land ownership

In terms of law in Sierra Leone, all land is owned communally. In traditional areas, Paramount Chiefs mediate local access and use. Typically, family elders grant households small agricultural plots (average 1.2 hectares). Refer to Section 2.2.4 regarding land access and land use arrangements between owner or lawful occupier of any land and a mineral right holder.

#### Study area assessment

Participants in the HHS (SRK, 2017a) were asked about land ownership, and the information is reflected in this section. The information reflects the interpretation of land ownership by participants and may not align with formal legal provisions and arrangements.

The majority of participants in the HHS (SRK, 2017a) reported they had inherited their land from family members. Of these, 472 participants claimed to have secure ownership of their land through a title deed or a receipt. Some 13 participants “owned” their land with no proof of ownership, 11 rented and five reported using / occupying the land illegally. The most cited reasons for occupying specific land was as per Figure 4-23, namely ownership by inheritance. Only 18 participants reported disputes regarding land.



Source: SRK, 2017a

**Figure 4-23: Reasons for occupying specific land**

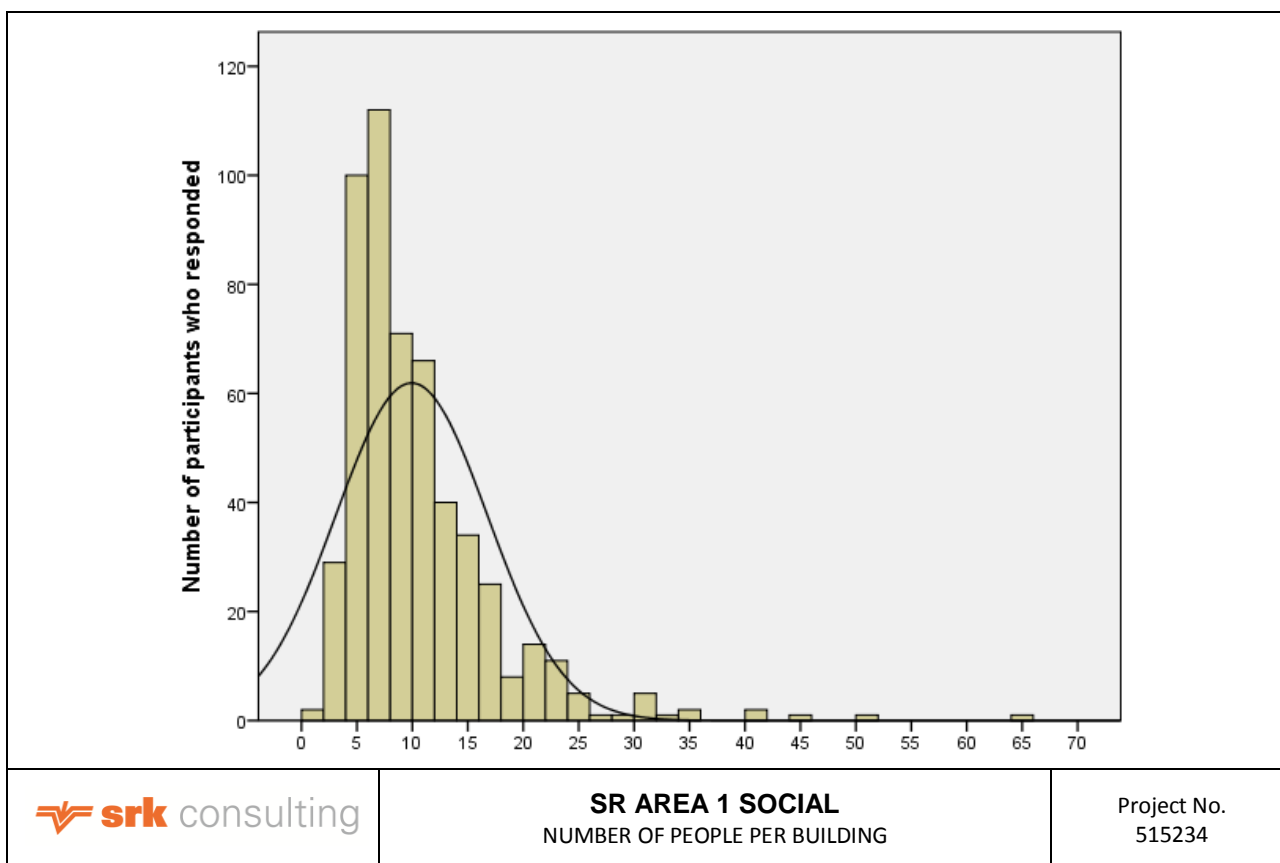


Of those who did not own the land they occupied, the majority said it was privately owned land. A total of 27 said the land was owned by SRL.

According to the feedback given by participants of the HHS (SRK, 2017a), land and building owners largely resided in Moriba Town, Mogbwemo, Gbangbama, Gangama, Junctiola, Nyandehun, Foinda, and Gbangbaia. Of all participants, 27 reported to stayed on surface rent areas, 230 on private land and 281 on family land. Only eight reported they lived and worked on communal land. It seems likely from this feedback that locally understood concepts of “private” and “communal” may not align with legal interpretations (SRK, 2017a).

Multiple household occupation of buildings was reportedly common. Two households per building were reported by 186 participants (33%). Ninety-nine (18%) had three households per structure and 38 (7%) had four (see Figure 4-24).

A total 25% of HHS participants reported to have a residence or other building elsewhere and had access to it. Of these, 49 (9%) had buildings in Moriba Town, eight (1.4%) each in Gbangbatok, Mogbwemo and Bo. Travel to these buildings was reportedly done on foot (43%), motorbike (35%) and / or (mine) bus (14%). For the biggest group (90 participants) it took up to an hour to travel to these places (SRK, 2017a).



Source: SRK, 2017a

**Figure 4-24: Reported number of people per building**

## 4.7.2 Land use

### Study area assessment

Slash and burn agriculture was mentioned as the most common land use practice in the study area (SRK, 2017a and 2017b). This is similar to CEMMATS' report (2012), which reported that crop rotation using fallow periods was common, with a cycle of approximately 15 years. As land availability has decreased due to a combination of growing population, poor agricultural practice and land management and mining activity, these periods have reduced to as little as four years (CEMMATS, 2012).

According to CEMMATS (2012), slash and burn has been practiced in the region for years: "This has resulted in patches of remnant forests that reflect typical species of the original vegetation, prior to agricultural development". As a result of a history of slash and burn, "numerous succession vegetation stages exist throughout the area. The continued cycle limits growth to the early succession stages where weedy and invasive species typically dominate. Some primary growth species do occur in fallow areas but are typically not allowed to mature. In addition, some species common to primary forests are not likely to re-grow in fallow fields or other disturbed areas".

SRK (2017a and 2017b) was informed by participants that the situation had not changed since 2012. Typically, slash and burn was performed in the dry season in preparation for the planting of crops in the wet season. It was described as an important method due to the perceived poor soil fertility levels in parts of the study area. An alternative reason given for slash and burn was that it was the most affordable method to clear land, since mechanised clearing was too expensive. Leaving land fallow was not listed as a viable option, as a reported shortage of arable land meant that land which was available had to be used with very short intervals between crops.

As confirmed by various SRK (2017) studies, the persistent and increasingly frequent application and utilisation of slash and burn practices, has resulted in significant environmental and ecosystem services impacts, which in turn negatively impacts agricultural productivity.

Slash and burn cultivation is a widely used traditional land use system across rural Africa. Typically, slash and burn involve farmers clearing small patches of land for agricultural production by under-brushing, felling and burning existing natural vegetation (Tabi *et al*, 2013). The method is favoured by many because it is the fastest and cheapest way to prepare land where access to land and equipment is difficult. As populations continue to increase in rural areas, more fields are required to feed and sustain families. Where formal, existing fields are not available or are too small, slash and burn methods ensure quick access to new, arable land (Tabi *et al*, 2013).

Although efficient, slash and burn agriculture is widely regarded as unsustainable (EcoLogic, 2018; Okese, 2018, Hauser *et al*, 2013) because the soils nutrition value is depleted in a relatively short space of time, rendering that specific plot nutrient-deficient and non-arable (Pantami *et al*, 2010). In addition to this, the continued destruction of forested areas and bushveld is resulting in deforestation, soil erosion, habitat destruction and increased air pollution (EcoLogic, 2018).

Interestingly, 84% of households reported land shortages in the 2001 ESIA, and this was one of the key concerns conveyed to SRK (SRK, 2017a and 2017b).

Remaining forests are restricted to tree lines along steep hilly areas, rivers, streams and as buffers around areas of cultural importance. Where forests have regrown, local people collect wood for building material and fuel. People also collected material for use in rope and string making, brushes and for medicinal reasons. Hunting for bush meat was also noted (CEMMATS, 2012 and SRK, 2017b).

Contrary to the 2012 findings (CEMMATS), hunting of birds and collecting of bird eggs were no longer a common practice (SRK, 2017b). Trapping of animals continued to be common (CEMMATS, 2012 and SRK, 2017b).

Palm wine and palm oil are made from oil palms, while raffia palm fronds are used for thatching of roofs. Traditional weave baskets were used for fishing in mine ponds, streams, rivers and mangroves. Fish traps, fishing rods, and hooks were used in deeper waterbodies (CEMMATS, 2012 and SRK, 2017b). According to participants of SRK's study (2017b), and observations by SRK (2017), the presence of mine ponds made access to agricultural land and plantations more difficult in some cases. Competition for remaining arable land was reported to be growing as the population continued to rely on subsistence farming for food and livelihoods (SRK, 2017b).

### 4.7.3 Ecosystem services

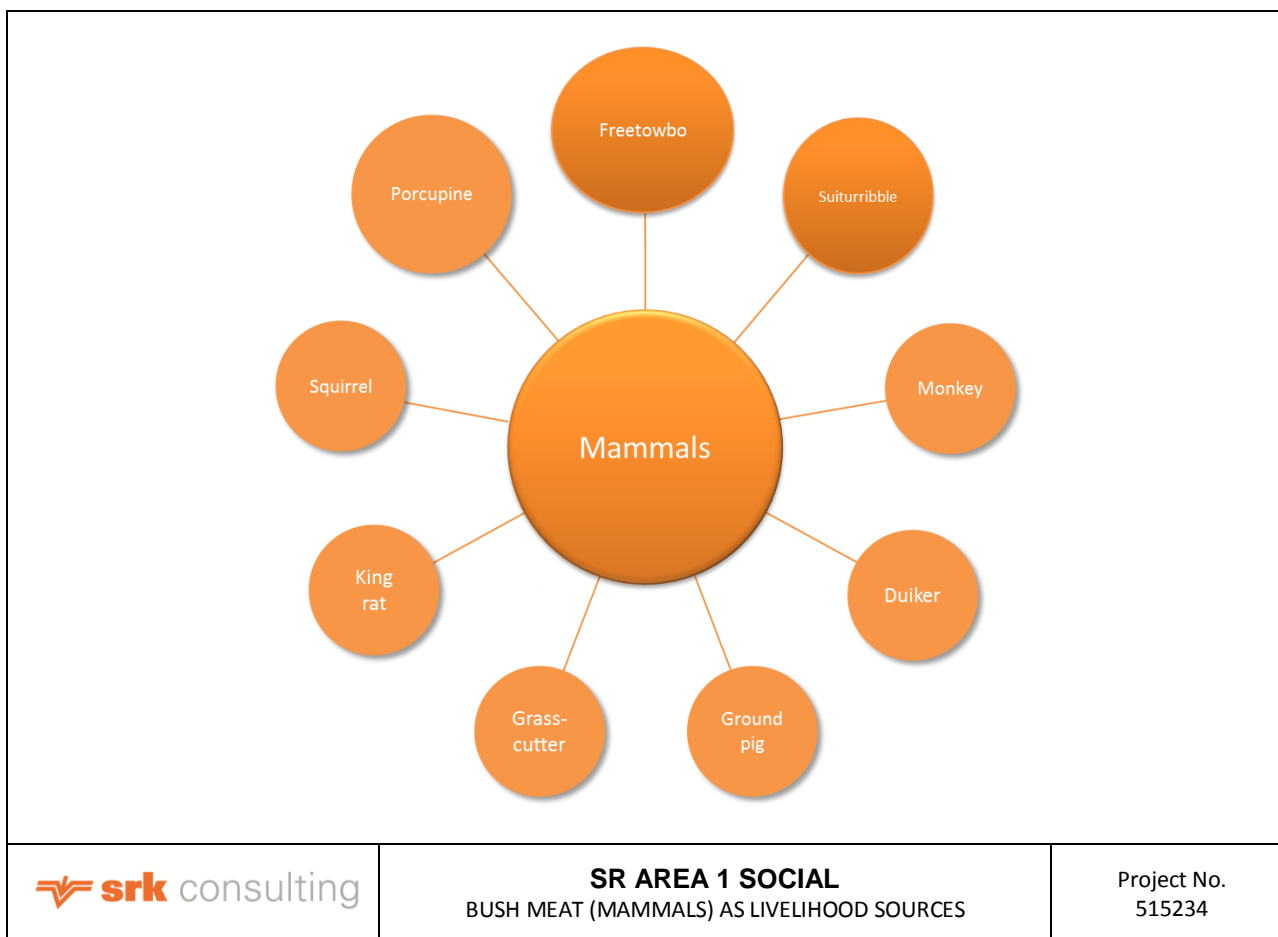
#### Study area assessment

According to findings in the biodiversity study conducted by Scientific Terrestrial Services for this ESHIA (STS, 2018), local communities' reliance on ecosystem services has put significant pressure on natural resource in the study area. Forested areas, "swamps" (which could refer to inland or mangrove swamps) and freshwater resources that the study area communities rely on for a number of ecosystem services were reported to be in varying states of damage and reduced functionality (SRK, 2017b). The causes are likely to be multi-faceted and interlinked, but local opinion sometimes attributed single causes.

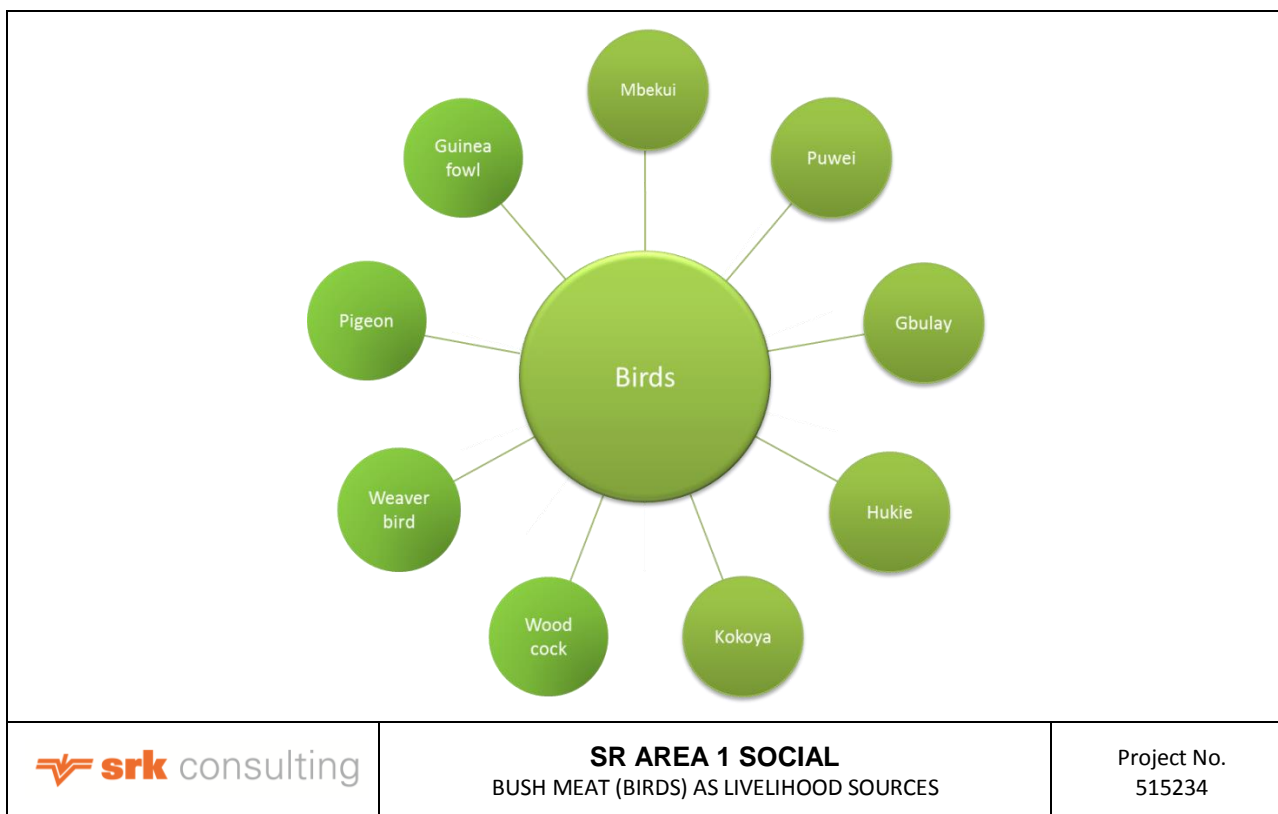
Flooding of mine ponds over the years had reportedly seen the deposition of sediment in "swamps" and freshwater systems, which had in the opinion of some decreased the biodiversity of the systems on which communities relied. The freshwater systems and ocean are used for fishing by many of the study area, including Victoria, and were said to be depleted of the crustaceans and fish that people used for both subsistence and incomes. The "swamps" were used for the collection of raffia palms, which are used to make thatching materials for roofs. A commonly held but unsubstantiated view is that raffia palms had been killed by sediment linked to mining activity, and participants reported the use of different and less effective thatching materials for their roofs. SRK (2017) could not verify this information through information sources other than the impacted communities.

Other ecosystem services in the "swamps" include the collection of medicinal plants, which were said to be still commonly used in many of the villages in the study area. Medicinal plants mentioned in the RRA included palms, Gbangbei, Yunbuyambia, Ogobai, Gbogie and Jibui (SRK, 2017b).

The collection of firewood, as well as the production of charcoal, was another observed ecosystem-based service being utilised in a number of villages. The extent of tree harvesting for the purposes of making charcoal could not be determined (SRK, 2017b). General tree harvesting and reduced access to areas with tree coverage may underpin a reported community concern regarding reduced opportunity for the hunting and logging activities required for both subsistence and income. Bush meat and fish were reported to be an important source of protein in the study area, and a number of preferred species were mentioned (Figure 4-25 - Figure 4-27). Fish were caught in nets, baskets or on hooks, while bush meat was largely caught in handmade traps (smaller animals) and snares (larger animals).

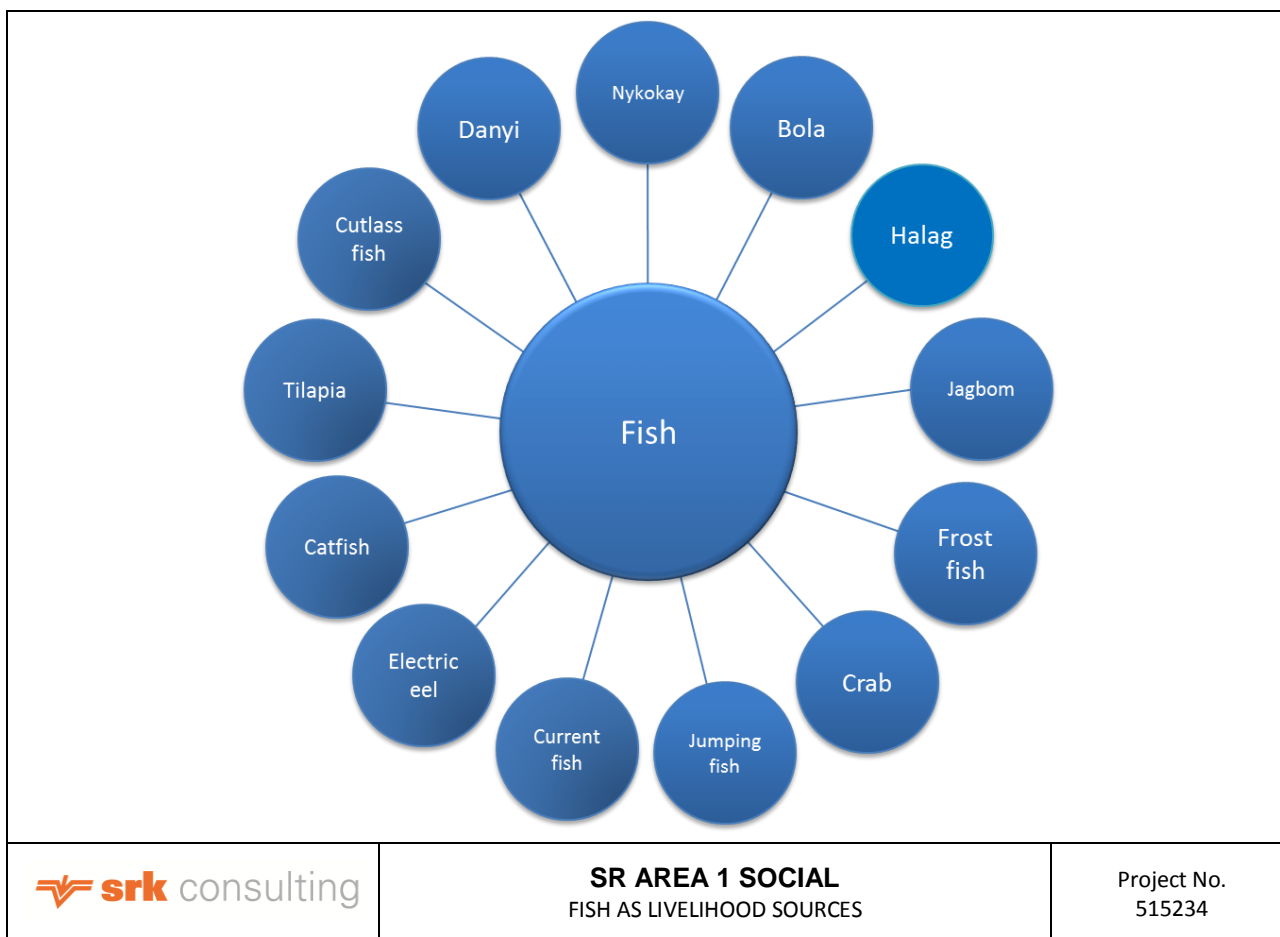


Source: SRK, 2017b

**Figure 4-25: Reported mammals (bush meat) as livelihood sources**

Source: SRK, 2017b

**Figure 4-26: Reported birds (bush meat) as livelihood sources**

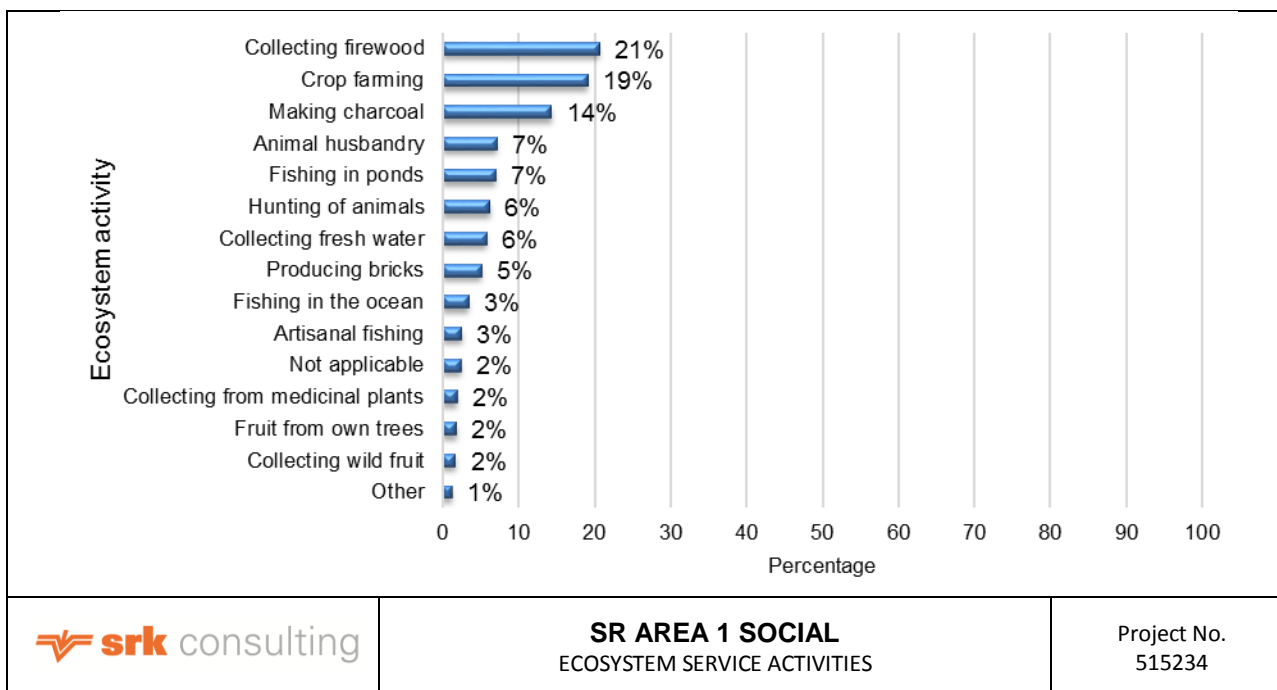


Source: SRK, 2017b

**Figure 4-27: Reported fish as livelihood sources**

A breakdown of the most common ecosystem services for own household use is summarised in Figure 4-28, as reported by participants in the HHS (SRK, 2017a). “Plum tree” sticks and branches in particular were used for a number of purposes, due to flexibility and strength, for example brooms, fencing, ceilings and walls. SRK assumes these “plum tree” sticks come from a variety of tree species with strong branches that can be used for the purposes described.

Cotton trees were seen being used for dug out boats. Grass and bamboo were used for thatch, baskets, ceilings, roofs, and fencing. Mangroves were mentioned as a popular source of firewood, since it did not have to be dried in order to burn. Refer to Figure 4-21 for the location of important ecosystems services – note that this is not a comprehensive mapping of these services, but based on SRK field observations and feedback from the RRA participants (SRK, 2017b).



Source: SRK, 2017a

**Figure 4-28: Ecosystem service activities**

Figure 4-29 and Figure 4-30 below, illustrate some uses of natural resources in the area.



Source: SRK, 2017b

**Figure 4-29: Examples of livelihoods sources and strategies**



	
Calabash in the making for water container and ladle	Catching rain water
	
Fish to be dried	Fish for sale
	
Boat made of tree trunk (cotton tree)	Charcoal bags (leaves are used to close the bag)
	
Sticks (multiple tree species) used for protecting tree against goats	Sticks (multiple tree species) and Palm leave screen protecting building against the rain
	
<b>SR AREA 1 SOCIAL</b> EXAMPLES OF ECOSYSTEMS SERVICES ACTIVITIES	
Project No. 515234	

Source: SRK, 2017b

**Figure 4-30: Examples of ecosystems services activities**

## 4.8 Utilities and services

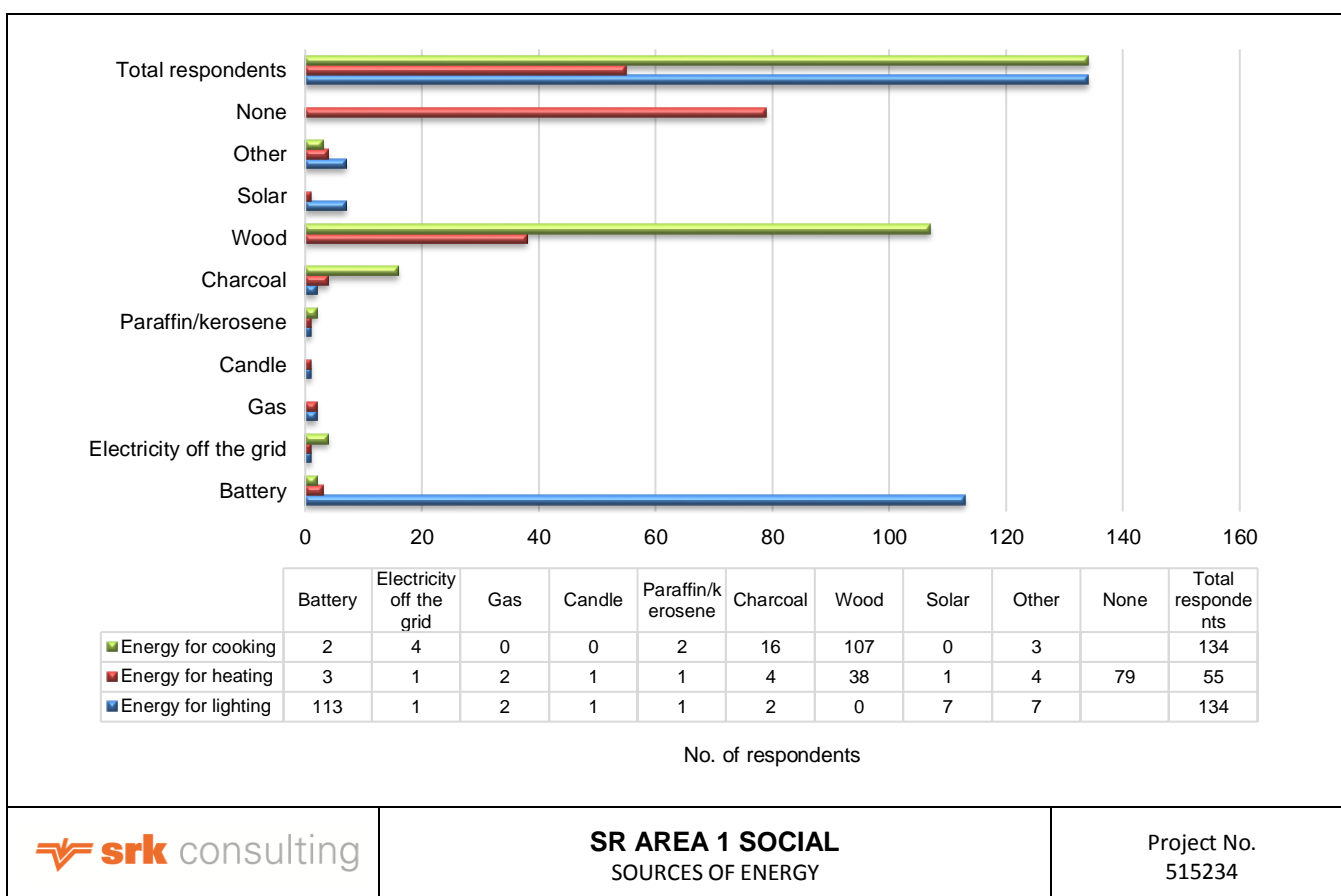
### 4.8.1 Electricity

The Bumbuna hydropower plant has contributed to Sierra Leone making significant strides in encouraging industrial investment as well as providing electricity to its villages and towns (African Development Bank Group (AFDB), 2011). However, electrification of the country remains at just below 10%, focused in Freetown and the urbanised Western Area.

#### Study area assessment

In the study area, Mobimbi and Kpanguma are supplied with electricity from the SRL power plant. These towns were built by SRL for employees and their families (CEMMATS, 2012 and SRK, 2017).

Figure 4-31 shows responses from the 134 HHS participants (SRK, 2017a) who were asked to identify their main source of energy for cooking, heating and lighting. The question was only asked in approximately every 10<sup>th</sup> household interview (Figure 4-31). Wood was the preferred means of generating energy for cooking for 107 participants, while batteries were the most cited means of generating energy for light amongst 113 participants. Only 38 participants used wood as the major source of energy for warming. 79 participants said they did not use energy for heating (the fact that the SRK study was completed in the warm wet season probably explains this response, as people reportedly do get very cold in winter, as is evidenced by the wearing of heavy jackets and woollen wear). Charcoal was more readily available and used as a source for energy in Moriba Town and Mogbwemo.



Source: SRK, 2017a

**Figure 4-31: Sources of energy**



## 4.8.2 Roads

Basic infrastructure is largely underdeveloped in Sierra Leone. The country lies in the bottom six of the Africa Infrastructure Development Index (AFDB, 2011) and the civil war as well as the EVD outbreak disrupted improvements to the country's infrastructure for close to a decade. The road network in Sierra Leone is largely in a state of disrepair and in need of extensive work. The previously existing railway network built during colonial times is no longer functioning after it was closed in 1974. The only operating railway system is privately owned and used to transport iron ore between the port of Pepel and the Marampa iron ore mine. The Shandong iron ore mine (formerly African Minerals Limited) railway links the Tonkolili mine with the Pepel Port. A haul road links Marampa iron ore mine (formerly London Mining) with the Tofayim River Terminal (Beale, 2004 and SRK, 2017b).

The refurbishment of the road network is regarded as a national priority to improve access to the interior of the country and important agricultural production hubs. Such access would encourage higher contributions to the national and provincial GDPs due to ease of access to resources and markets. Improved roads are also considered to have potential to contribute to the alleviation of high poverty levels (AFDB, 2011).

Much of the Southern Province of Sierra Leone relies on canals and water networks for transportation of people and goods; however, this transport system is largely informal (CEMMATS, 2012).

### Study area assessment

With the exception of the roads servicing the mines in the study area, road conditions are inadequate throughout the Districts and access along most roads is restricted, if not entirely impossible, during the wet season (May to October). Moreover, there are villages within riverine areas that are only accessible by boat. While the roads systems in and around the study area have been improved since the initiation of mining operations in the area, the operation of mine ponds has occasionally led to the flooding of access roads. Alternative routes were created, but these may be less convenient and longer for travellers (CEMMATS, 2012). SRL have provided formalised boat crossings (water taxis) in certain locations for people to cross the mine ponds (SRK, 2017).

It was reported by participants (SRK, 2017a, 2017b, 2017c, 2017d) that the government provided very little support in developing or maintaining the national road network. SRL supports the maintenance of roads around the study area and on the access roads from Moyamba junction to the study area (SRK, 2017b).

Roads in the study area were observed to be in good condition between the SRL offices and mine infrastructure (SRK, 2017). However, the roads between villages, towns and outlying agricultural land and "swamps" were in varying condition, often poor. Participants in FGDs suggested the condition of the roads as a barrier to business development in local communities (SRK, 2017d).

Transport in the study area was described as expensive, and many chose to walk or used bicycles and motorbikes as means of transport (SRK, 2017b). It was noted that there was limited private motor vehicle traffic (sedans or light pickup trucks) on the various roads around the study area, but motorcycles were common (SRK, 2017).

## 4.8.3 Water supply and access

According to a mapping exercise by the Ministry of Energy and Water Resources (MoEWR) in 2012, Moyamba District had 1 700 water points while Bonthe District had 3 656. The main water sources were piped supplies, wells, boreholes, streams and rivers. The exercise suggested that there were only 966 functional water points, with 364 points requiring maintenance or repair work in Moyamba District. In Bonthe District nearly 800 water points were not working and 275 of these sources needed repair.

The Ministry of Education, Science and Technology school census of 2012 / 2013 reported that in Moyamba District, 115 schools (20%) had access to piped or borehole drinking water in the school compound. Other schools were using untreated water sources. The District had 307 schools (54%) with sanitation facilities inside the school compound (Humanitarian Response, 2015).

In Bonthe District, 344 schools (47%) had safe drinking water sources (piped and boreholes) inside the school compound while others were using wells, streams and untreated water sources. An estimated 499 (69%) schools had access to toilet facilities within the school compound (Humanitarian Response, 2015).

### **Study area assessment**

In the study area CARE, an NGO based in the United States of America, initiated a five-year water, sanitation and waste expansion prior to the beginning of the civil war. The expansion, which was further supported and funded by SRL, included the provision of 56 wells and 1 785 pit latrines in 41 villages in the study area and its immediate surrounds. However, much of this infrastructure was damaged or fell into neglect during the war and is either no longer operational or has been abandoned (Humanitarian Response, 2015).

Participants of the SRK social baseline study (SRK, 2017a and 2017b) reported that SRL used to take water samples and clean the wells but reported that quality testing had not happened in recent years (Mogbwemo, and Kpetema), which contributed to a reluctance to use the water from wells. Poor hygiene around shallow wells were observed during the SRK 2017 site visit, which would require the treatment and cleaning of the well water on occasion (SRK, 2017). Access to safe drinking water was raised as a concern at most village meetings, more specifically Kanga, Moriba Town, Ndendemoia, Nitti (Foya), Segbwema and Victoria. It was alleged that the flooding of potable water sources by water and / or sediment from the mine ponds contaminated water. It has been reported that some people travel greater distances in order to access potable water they believe to be safe. Results from the surface water report (SRK, 2018(4)) suggest that the water quality in the study area and water quality of mine ponds are generally of an acceptable standard, with notable instances where the quality of the water exceeded drinking water guidelines at locations northwest of Mokpandimo, Foinda, Foya (Nitti), north of Gbangbaia, Mogbwemo, west of Kpetema, North of Ndendemoia and Mogbwemo. However, this was unlikely to affect the aesthetic and taste of the water.

As illustrated in Table 4-14, the majority of households who participated in the HHS (SRK, 2017a) reportedly sourced their potable water from non-mechanical wells (26 participants) and mechanical wells (21 participants). In a number of instances, wells were shallow and hand dug, and were therefore often empty during the dry season (mentioned at Canal Junction, Gangama, Nitti (Foya), Victoria). When wells are dry, alternative water sources were said to include the mine ponds (Matagelema), "swamps" (Canal Junction), natural ponds [Nitti (Foya)], and river water (Gangama, Victoria). Wells overflowing were observed in Mondorko, Kpetema, and Nitti (Foya). Moriba Town was reported to have only one functional borehole. Mogbwemo had several functional boreholes and protected deep wells. Many villages were reported to have boreholes that were not functional [for example three in Matagelema, two in Ndendemoia and one in Gangama, a number in Kanga and neighbouring villages, Foya (Nitti)].

In Foinda, there was said to be only one borehole (hand-pump) and three wells, but these were not producing water (SRK, 2017b). The stream used to be the alternative, but since its diversion by SRL it was reported to have become muddy and was no longer deemed suitable for drinking water. SRL provided two water tanks to Foinda, but these were not kept full according to participants. Some also questioned the quality of the water provided in the tanks. Victoria had one well that provided water. Higima mentioned using the mine ponds for potable water. Korpama had one well, but due to problems with the well, the river was used instead (SRK a and 2017b, 2017; SC RHIA, 2017).

In some villages, although wells were in working condition and full, residents were nervous to drink from them. This was because bodies had allegedly been thrown into wells during the war, or the mine ponds were thought to have contaminated the water. This, and problems accessing “clean”, functioning wells, had resulted in some opting to use “swamps” for both domestic use and drinking water. Of the HHS participants (SRK, 2017a), 18 said their households were sourcing their water from rivers or dams (SRK assumes participants referred to the mine pond as dams) and 13 participants’ households from unprotected springs. Rain water was only available during the wet season and collected in containers, rather than in storage tanks (SRK, 2017b; confirmed by the SC RHIA, 2017). It became evident that participants had contrasting opinions about the water quality of the mine ponds, with some considering it safe to use and others considering it to be contaminated and unsafe to use.

**Table 4-14: Main source of water**

Source	Number of Participants	Villages of participants who mentioned these sources
Communal tap	35	Lukia, Madina (FM), Mogbwemo, Mogbomo Junction, Pejebu
Protected well, not mechanical	26	Foya (Nitti), Gbangbama, Kanga, Kpetema, Matagelema, Mokepay, Moriba Town, Segbwema, Shimbek, Victoria
Mechanical well	21	Foia, Kpetema, Yangatoke, Mokepay, Moriba Town, Nyandehun, Njorkuvulahun, Pejebu, Segbwema, Victoria
River / dam (mine ponds)	18	Foia, Gangama, Gbangbaia, Gbangbama, Kanga, Lungi, Modagba, Motinga, Ngandohun, Nyandehun
Unprotected spring	13	Canal Junction, Foia, Gbangbaia, Korpama, Lungi, Yangatoke, Mokepay
Borehole	10	Foia, Mogbwewa, Mogbomo Junction, Moriba Town, Njorkuvulahun
Protected spring, not mechanical	6	Foinda, Gbangbaia, Mokepay, Ngandohun
Tap in house / yard	4	Njorkuvulahun, Mogbomo Junction. This information should be confirmed, since there are no taps in these villages according to the knowledge of the SRK team
Communal tank	1	Foinda

Source: SRK, 2017a

Of the households that participated in the HHS (SRK, 2017a) approximately two thirds of households agreed that they had access to sufficient water (73 of 128). All Lungi and Pejebu households reported that they did not have access to sufficient water. For the majority, the water point was less than an hour’s walk away, with 25 households reporting that it took them 30-50 minutes; for 11 households the water points are 1-2 hours away.

Figure 4-32 illustrates some observed water sources in the study area. The majority of HHS participants (SRK, 2017a) did not treat their water (82 participants), while 27 participants used chlorine. In Foya and Modagba especially, participants let water stand and settle before using it (15 participants).

Waterbodies, specifically the fresh water streams, rivers and dams (mine ponds) were used for a number of domestic activities including washing, and these were noted extensively in the study area, and observations (SRK, 2017b) are demonstrated on the livelihoods map in Figure 4-21.

			
Open well turned mechanical well (Nitti)	Swimming pool source of water in dry season (Nitti)		
			
Water well cover (Junctiola)	Empty water tanks (Foinda)		
		<b>SR AREA 1 SOCIAL</b> EXAMPLES OF WATER SOURCES IN THE STUDY AREA	Project No. 515234

Source: SRK, 2017b

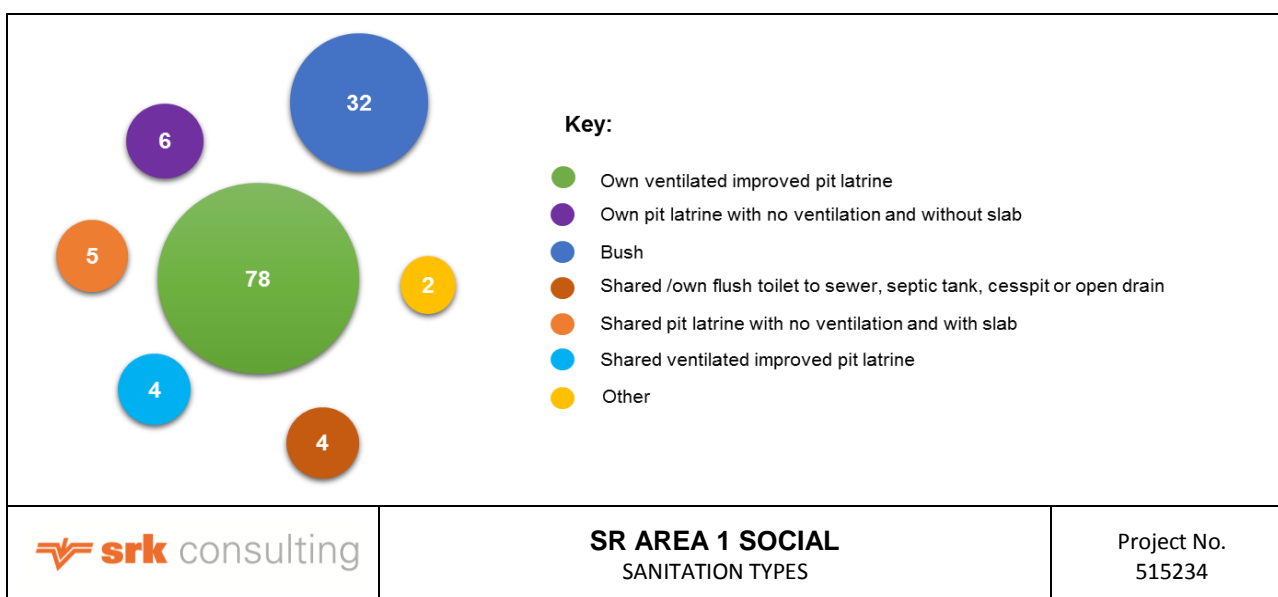
**Figure 4-32: Examples of water sources in the study area****4.8.4 Sanitation**

According to the PHS (2015), access to sanitation in Sierra Leone is poor. Of the national population, 53% used communal flush toilets, with private pits being the second most used option (20%). The Southern province population used mainly communal pit (38%) and communal bush and / or river beds (31%). At a District level, in Bonthe, 58% of people relied on communal bush and / or river beds for their sanitary usage, with 26% making use of communal pits. In Moyamba District, communal pits were used by 35% of people in the census, with 31% accessing private pits (marginally higher than communal bush and or / river beds (28%).

**Study area assessment**

Ownership and use of sanitation facilities was highest in the urban settlements (Moriba Town, Mogbwemo, and Matagelema) and lowest in the more rural villages (Shape, 2018). Access to sanitation in the study area was reportedly limited, and largely, participants claimed to use their own ventilated improved pit latrine (78 participants) and the bush (32 participants) for latrines. SRK (2017a and 2017b) observed that many of pit latrines were in actual fact not improved. A summary of sanitation facilities in the study area is provided in Figure 4-33.





Source: SRK, 2017a

**Figure 4-33: Sanitation types**

For ablutions, people were mostly observed to be bathing in hand-made structures using buckets outside of their homes and in both mining ponds and fresh water streams.

There were limited hand washing facilities recorded in HHS responses (SRK, 2017a), with 44 of the 134 participants claiming to have a hand washing facility at their house (34%). Of the 134, 45 (34%) said they used soap / detergent to wash their hands, 56 (42%) said they did not wash their hands, and 32 (24%) said they sometimes did.

In terms of refuse disposal, the majority of HHS participants (62%) claimed to have their own waste disposal area. An example is given in Figure 4-34. A further 21% made use of a community waste pit, 11% dumped their refuse anywhere, and 1% burnt their waste. At the Moriba Town meeting the SRK team attended (SRK, 2017a), mention was made that the main refuse disposal source has to be moved due to the fact that it is situated amongst household structures.



Source: SRK, 2017b

**Figure 4-34: Waste pit and latrine observed**

#### 4.8.5 Bridges and boats

There are extensive waterbodies in the study area, many of which are crossed by the local people daily, via boat or bridges. Boats are an important means of crossing waterbodies in some of the villages. Villagers use these boats as a means of accessing amenities, crops, forested areas (for hunting and wood collection) and for fishing in the waterbodies and sea (SRK, 2017a and 2017b). SRL has provided formalised crossings / 'water taxis' in some locations to cross the mine ponds safely (SRK, 2017).

Some community built "hand bridges" (pedestrian bridges without railings) are poorly constructed and maintained. Instances of drowning and falling into waterbodies from the bridges were noted in villages including Madina (FM), Modagba and Foinda. Drowning was also mentioned by villagers from Gangama and all the FDGs (SRK, 2017d). Responsibility for bridge construction and maintenance resides with communities and in some instances with SRL (refer to Figure 4-21, Figure 4-35 and Figure 4-36 for observed bridges in the study area).

The following information was shared with the SRK team (SRK, 2017b):

- The bridge between Victoria and Tassoh is broken and impassable;
- At Foinda, villagers have to use an alternative road due to mining activities, increasing their travel cost. A trip that used to cost Le10 000 on a motorbike (Okada) reportedly cost Le30 000 using the longer route. SRL (2017) reported to SRK that this diversion was agreed upon with the stakeholders, and that it was required due to the significant safety risk the alternative poses;
- Reportedly, the school children have a longer route to travel to their school in Madina (FM). Although this river / stream is used for laundry, the water is reportedly no longer as clean as it was. It is now connected to mining activities (refer to Figure 4-21 for an indication where laundry and washing activities were noted and Figure 4-35). SRL (2017) reported to SRK that this bridge linked the mine with the village, and a diversion around the mine was constructed in consultation with the community since access to the mine is prohibited due to the significant safety risk it poses;
- Gbangbama farmers are no longer able to access certain agricultural fields via the old road, since the road is now covered by a mine pond. The long alternative route is a pathway through the bush, requiring a river crossing. At the time the SRK team was visiting (August 2017), the bridge was no longer stable and SRL (2017) reported to SRK that materials were sourced to fix the bridge (refer to Figure 4-21 and Figure 4-35). A solution to this problem was proposed by community members, i.e. SRL to provide boats to cross the mine pond, similar to what is provided at Gangama;
- Gangama farmers are provided with boats by SRL to cross ponds in order to access their fields;
- The bridge between Mogbwewa and Mogbwewa 2 is referred to as the "school bridge" since it is the access route to school in Mogbwewa 2 for children of Mogbwewa. This bridge allegedly became the alternative route to the school due to road diversions implemented for the mine activities. Requests for assistance with the bridge have been submitted to SRL, to enable children to access the school during the wet season when the bridge tends to be flooded. In addition, villagers now have to cross a canal to access their fields. Although access bridges have been built across the canal, these bridges are experienced as too narrow since they did not allow for more than a pedestrian at a time to cross it. In some instances, farmers had made their own bridges;
- Some of the bridges (not necessarily mining related), such as one in Madina (FM), were constructed by creating mud banks across the waterbodies, and are reportedly unstable and prone to disintegration during the wet season, particularly during flooding. During high water episodes, many of the bridges are covered, and cannot be used for access; and
- Modagba can only be reached by bridge. This bridge is a solid hand bridge, but reportedly tends to flood in the rainy season. Flooding was said to have increased as a result of the river's link to the mine pond. The mine pond is located on land that was previously used as agricultural fields for the village.

		
Access bridge to agricultural fields (Gbangbama)	Access bridge made by villages to have a shorter distance to cover to a major road (Foinda)	
	<b>SR AREA 1 SOCIAL</b> EXAMPLES OF BRIDGE CONDITIONS IN THE STUDY AREA	Project No. 515234

Source: SRK, 2017b

**Figure 4-35: Examples of bridge conditions in the study area**

	 	
School bridge (Mogbwewa)	SRL constructed access bridges to agricultural fields (Mogbwewa)	
	<b>SR AREA 1 SOCIAL</b> EXAMPLES OF BRIDGE CONDITIONS - MOGBWEWA	Project No. 515234

Source: SRK, 2017a

**Figure 4-36: Examples of bridge conditions at Mogbwewa**

## 4.9 Intangible assets

The Sierra Leone National Museum in Freetown contains valuable and interesting historical, ethnographic, and archaeological collections. Other museums include the Sierra Leone National Railway Museum, also in Freetown. Bunce Island, a national historic site, was once home to a British slave castle that operated from the 1670s until 1808 (Encyclopaedia Britannica, 2017).

### Study area assessment

The study area does not host a museum. Areas of significant cultural interest have not been formally established (SRK, 2017). CEMMATS (2012) reported that the possibility of finding intact historical and archaeological remains was low due to centuries of agricultural slash and burn activities. CEMMATS (2012) reported that *nomoli* figurines might be found, which are spiritual symbols allegedly used to aid farming activities. Caves occur in the study area (CEMMATS, 2012), but these are known only by local people. These caves might have historical and archaeological value. CEMMATS (2012) mentioned the villages Hemabu, Jangaloh and Nyandehun as significant centres for herbal medicine and divination since pre-colonial times.

CEMMATS (2012) reported that the “Foot-in-Stone” artefact was identified during the March 2001 field studies for the SRL EIA at that time. This artefact located east of Yangatoke. The site is where Solondo, the founder of old Mbelleh, allegedly left his foot imprint in a stone and his wife left imprints for her resting stool. The area has been left untouched although encroachment from settlements is occurring.

A tall, high grave for a human being was pointed out to SRK (2017) in the area of Segbwema. This grave was supposed to be moved to make space for mining related activities, but the driver of the site clearing equipment claimed to have been stopped by a ghost to clear the gravesite. Subsequently the grave was left intact.

When asked about areas of historical and cultural significance, the majority of the participants referred to mosques and church buildings. The lack of Barris and / or the inability to maintain these buildings was mentioned as a key area of concern. The Barri, also used as a venue for Native Administration Courts to sit, is a “community hall” where community meetings are held, and other gatherings take place. It is regarded as a central point where decisions are made. Assistance from SRL with maintenance and provision of these buildings have been requested by various villages.

The areas where secret societies meet had not been identified, since the disclosure of the location of these areas was not allowed. Mining activities had reportedly historically impacted on some of these areas, sometimes without allowing for the necessary cleansing rituals prior to transitioning to a new area. In order for these rituals to happen prior to mining activities proceeding, the communities had to be informed timeously about the land clearance and mining plan. SRL (2017) communicated to SRK that all the rituals required to cleanse the land had been conducted in accordance to local requirements since late 2016.



## 4.10 Quality of life indicators

Quality of life, although difficult to quantify, is a useful means of comparing the baseline in the study area to quality of life standards in Sierra Leone and on a global scale. Quality of life is a complex concept that has multiple interacting dimensions (Eurostat, 2017). The purpose of using these indices, as opposed to the standard GDP, is to ensure a holistic understanding of conditions. This ensures that trade-offs and interactions between each indicator are measured based on more than just material wellbeing, also taking into account social indicators, economic indices and subjective well-being.

Numerous indexes have been developed to ascertain quality of life, including the HDI, the World Happiness Report and the Economist Intelligence Unit's Where-To-Be-Born Index (previously the quality-of-life index). For the purposes of this report, Sierra Leone's scores in the first two indices are captured in Table 4-15, accompanied by a brief description of each index's variables considered in calculation a score. Sierra Leone has not been scored against Where-To-Be-Born Index, and therefore not listed in Table 4-15.

**Table 4-15: Recognised quality of life indexes, including Sierra Leone's ranking**

Index	Sierra Leone Score	Sierra Leone Ranking	Sierra Leone change in rank	Brief description of variables
HDI (2016)	0.420	179 <sup>th</sup> of 188 countries in 2015	Dropped three places from 2014	Based on a composite calculation which considers the following indicators: <ul style="list-style-type: none"> <li>Life expectancy at birth;</li> <li>Expected years of schooling;</li> <li>Gross National Income (GNI) per capita (2011 PPPUS\$);</li> <li>Inequality-adjusted HDI;</li> <li>Gender Development Index;</li> <li>Multidimensional Poverty Index;</li> <li>Employment to population ratio (% ages 15 and older);</li> <li>Homicide rate (per 100 000 people);</li> <li>Exports and imports (% of GDP);</li> <li>Internet users (% of population);</li> <li>Carbon dioxide emissions per capita (tonnes); and</li> <li>Population total.</li> </ul>
World Happiness Report (2017)		106 <sup>th</sup> of 155 countries in 2017	Climbed five places from 2016	Unlike other determinants of quality of life, the World Happiness Report does not use an index. Rather, rankings are based on answers to a life evaluation question asked in the questionnaire using the Cantril ladder. Respondents are asked to think of a ladder, with the best possible life for them being a 10, and the worst possible life being a 0. From here, they are asked to rate their own current lives on that 0 to 10 scale.

### Study area assessment

Using the information derived from this baseline, a high level, qualitative opinion of quality of life in the study area has been undertaken in Table 4-16 below.

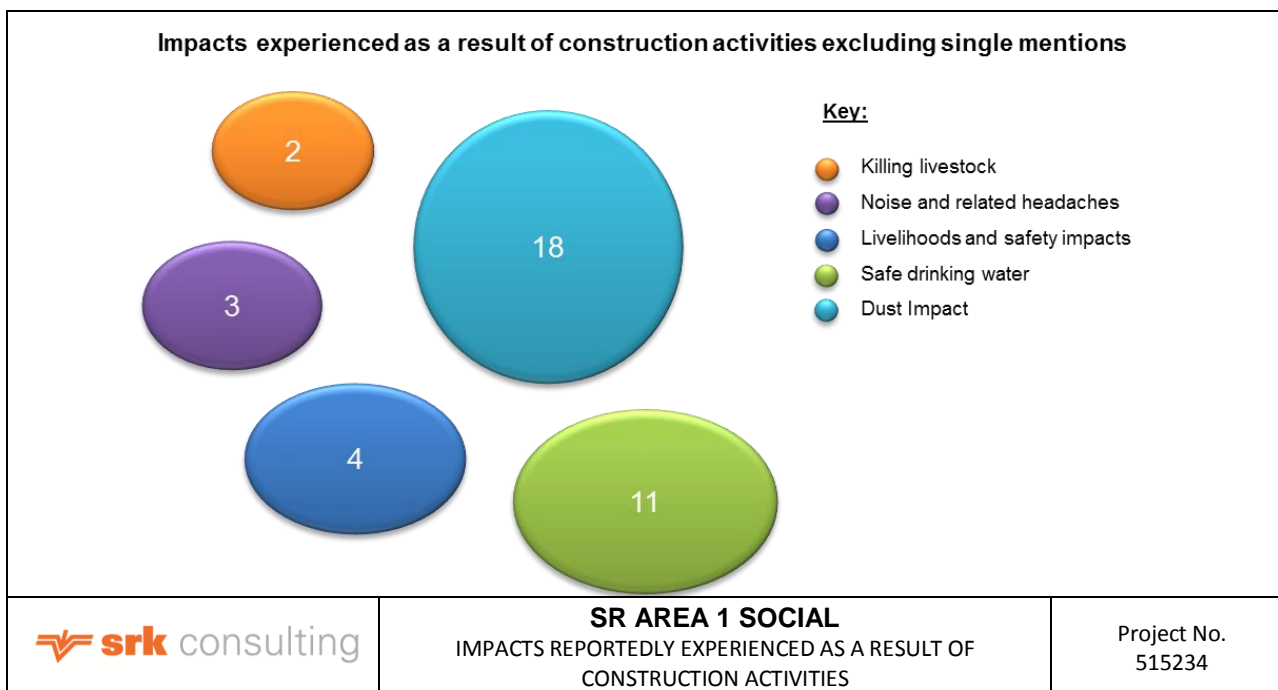
**Table 4-16: High level opinion on quality of life in the study area**

Dimension	Basic quantitative indicators available for Sierra Leone that contribute to quality of life	Qualitative information at study area level that could contribute to quality of life
Health	<ul style="list-style-type: none"> <li>Life expectancy at birth: 58.2 years.</li> </ul>	<ul style="list-style-type: none"> <li>Limited use of mosquito nets; and</li> <li>Low levels of detailed knowledge regarding HIV / Aids and EVD.</li> </ul>
Political stability and security	<ul style="list-style-type: none"> <li>Political stability and security ratings: 108th out of 194 countries (2017 estimate).</li> </ul>	<ul style="list-style-type: none"> <li>Stable, potentially volatile.</li> </ul>
Family life	<ul style="list-style-type: none"> <li>Divorce rate (per 1 000 population): 5.6 (2008 estimate).</li> </ul>	<ul style="list-style-type: none"> <li>Divorce not common in the study area.</li> </ul>
Climate and geography	<ul style="list-style-type: none"> <li>Latitude, to distinguish between warmer and colder climates: average deviation of temperatures more than 14 degrees C: 3 months with less than 30mm rainfall (December to March).</li> </ul>	<ul style="list-style-type: none"> <li>Similar to the national conditions;</li> <li>Instances of flooding in the wet season; and</li> <li>Low soil nutrition and high permeability.</li> </ul>
Job security	<ul style="list-style-type: none"> <li>Unemployment rate: 3% (subsistence agriculture considered as formal employment, therefore the actual rate could be considered much higher).</li> </ul>	<ul style="list-style-type: none"> <li>Subsistence agriculture predominant economic activity in the study area.</li> </ul>
Gender equality	<ul style="list-style-type: none"> <li>Parliamentary seats held by women: 13.2%.</li> </ul>	<ul style="list-style-type: none"> <li>High dropout rate for girls going into secondary school.</li> </ul>
Quality of life summary for study area:	<p>Quality of life factors in the study area generally align with those of Sierra Leone. A number of factors which appear to negatively affect general well-being amongst people in the study area include food shortages, unemployment and idleness, lack of sanitation and health services. Other factors which appear to be improving and may affect quality of life perceptions positively in the study area include improving access to education (including school attendance), diverse number of businesses, and road access to markets and town centres.</p>	

## 4.11 Construction impacts

### Study area assessment

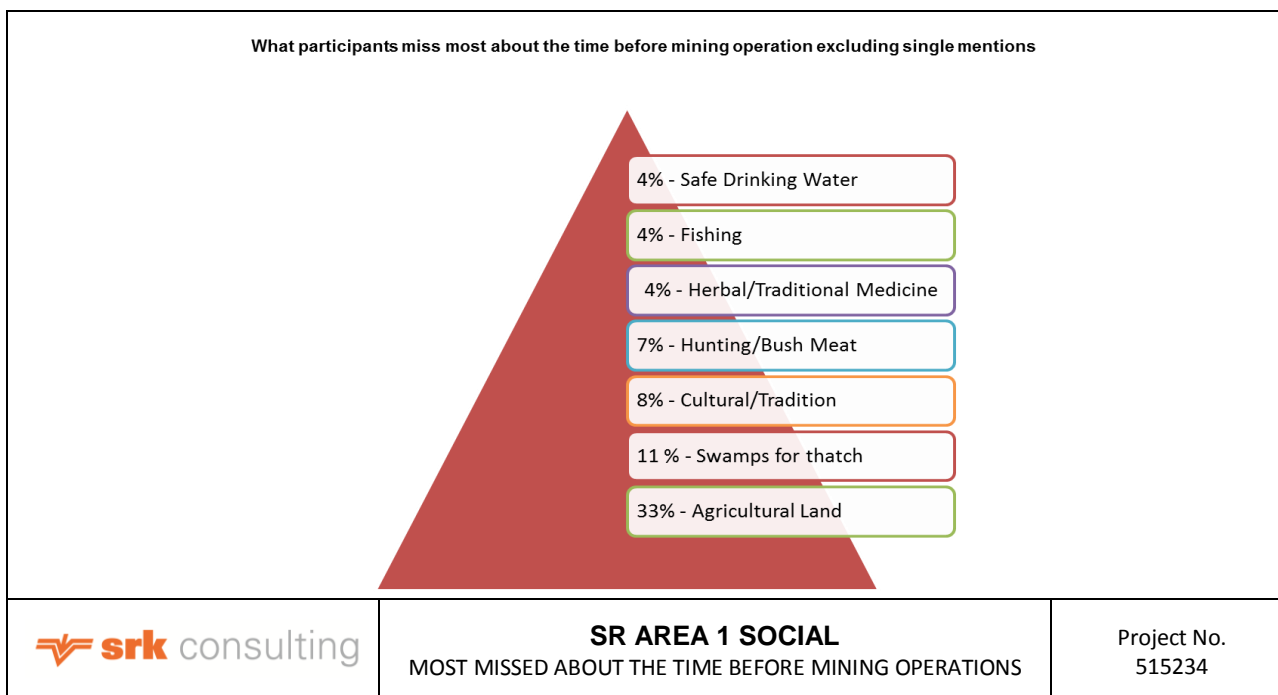
Participants were asked questions about the impacts experienced as a result of the mine's construction activities (Figure 4-37). A total of 57 participants answered this section in the HHS (SRK, 2017a). Those who were exposed to construction activities in the past ten years mentioned impacts related to dust, specifically effects related to health and having dirty clothes (18). Impacts on livelihoods and safety were mentioned by those who were exposed to construction activities more than ten years ago (4). Water quality / lack of safe drinking water was mentioned by 11 participants. Noise and related headaches (3), employment (1), killing of livestock (2) were mentioned by a minority. Loss of land, loss of "swamp" area, restricted movement, lack of employment, lack of vegetation, lack of transport, food shortage, flooding, and lack of schooling were mentioned by one participant each.



Source: SRK, 2017a

**Figure 4-37: Impacts reportedly experienced as a result of construction activities**

What participants missed most about the time before the mining started (See Figure 4-38) included the agricultural land, mentioned by 33% of the participants (76 participants responded to this question), “swamps” for thatch mentioned by 11%, culture / tradition by 8%, herbal / traditional medicine by 5%, hunting / bush meat by 7%, safe drinking water and fishing by 4%. Other, lesser mentions included coffee, cacao, fruit, employment, quality education, and quality houses.



Source: SRK, 2017a

**Figure 4-38: Most missed about the time before mining operations**

Participants mentioned the following they liked most about the presence of SRL: employment (9), construction (2), and then single mentions included: development, surface rent, building schools, toilets, and the JADA.

## 5 Social Impact Assessment

### 5.1 Introduction

This section of the report describes the social impacts of current activities and potential social impacts associated with proposed expansion. The section starts with an overview of the impact assessment methodology, followed by a summary of the social changes and impacts that were identified. Impacts are subsequently assessed in accordance with this assessment methodology. Significance ratings are assigned to the impacts, before and after the assumed implementation of proposed management and mitigation measures to enhance positive impacts or to avoid and / or minimise negative impacts during operation and rehabilitation / post-closure expansion (Section 1.2.3). Where management measures are already in place for current activity impacts, significance after enhancement or elaboration is assessed.

### 5.2 Impact assessment methodology

The overall impact assessment is conducted in an integrated manner that links the biophysical components with the socio-economic components of the environment. The focus of this section is the socio-economic component. The main objective of the impact assessment is to determine the significance of an impact before and after the implementation of mitigation measures. The significance of the unmanaged impact needs to be determined so there is an appreciation of what could occur in the absence of management measures and of the effectiveness of the proposed management measures.

For the purposes of this study, the significance of an impact can be positive high, medium or low or negative high, medium or low. The definition of positive and negative high, medium and low are explained in Table 5-1.

**Table 5-1: Definition of significance**

Significance+		
High+	Medium+	Low+
A beneficial impact that helps to justify the expansion. Major long-term positive to permanent change.	An important positive impact. Insufficient impact by itself to justify expansion implementation. Positive medium-long term effect.	Small positive impact. Medium to short term effects.
Significance-		
High-	Medium-	Low-
A very serious negative impact, resulting in a long-term change which cannot be mitigated.	A serious negative impact, resulting in a long-term change which must be managed.	An acceptable negative impact which requires mitigation. Insufficient by itself to prevent the development, only in combination of other negative impacts.

The first step in defining significance requires that consequence is defined. Consequence is made up of three characteristics, namely magnitude, spatial scale and duration. Each of these characteristics must to be rated as per Part A of Table 5-2. The second step is to determine a single rating for impact consequence based on the ratings given to the three characteristics (magnitude, spatial scale and duration). This is illustrated in Part B of Table 5-2, showing that consequence can have a rating of low, medium or high. A low consequence indicates that key characteristics of change (magnitude, extend and duration) will occur at a minor level, and a medium and high consequence at a medium and major level respectively.

The following informs the decision about the ratings to be given to the three characteristics:

- Standards and guidelines (thresholds);
- Scientific evidence;
- Professional judgment;
- Points of reference from comparable cases; and
- Levels of stakeholder concern.

Once consequence has been determined, the impact significance rating is ascertained, as per Part C of Table 5-2. Significance is a function of the impact consequence rating (from Part B) and the probability / likelihood of the impact occurring. The probability of an impact occurring can be definite, possible or unlikely.

Part D of Table 5-2 defines the confidence level or the level of uncertainty of the specialist in the impact prediction and the effectiveness of the proposed management measures. Sources of uncertainty in impact prediction include:

- Scientific uncertainty: limited understanding of an ecosystem or affected stakeholders and the processes that govern change;
- Data uncertainty: restrictions introduced by incomplete, contradictory or incomparable information, or by insufficient measurement techniques; and
- Policy uncertainty: unclear or disputed objectives, standards or guidelines.

There are several approaches that can be used to address uncertainty in impact prediction, including:

- 'Best' and 'worst' case prediction to illustrate the spread of uncertainty;
- Attaching confidence limits to impact predictions; and
- Sensitivity analysis to determine the effect of small changes in impact magnitude.

**Table 5-2: The process of allocating an impact significance rating**

<b>PART A: DEFINING CONSEQUENCE IN TERMS OF MAGNITUDE, DURATION AND SPATIAL SCALE</b> <i>Use these definitions to define the consequence in Part B</i>		
Consequence characteristics	Rating	Definition
<b>MAGNITUDE</b>	<b>Major</b>	<p>Substantial deterioration or harm to receptors; receiving environment has an inherent value to stakeholders; receptors of the impact are of conservation importance; or identified threshold often exceeded.</p> <p>Irreparable damage to highly valued items of great cultural significance or complete breakdown of the social fabric.</p> <p>Experienced by all the people within the study area, i.e. all Chiefdoms within which the study area falls.</p>
	<b>Moderate</b>	<p>Moderate / measurable deterioration or harm to receptors; receiving environment moderately sensitive; or identified threshold occasionally exceeded.</p> <p>Manageable, somewhat repairable damage to structures / items of cultural significance. Ongoing serious social issues that can potentially erode the social fabric.</p> <p>Not experienced by all the people within the study area; experienced by a large sector of the people within the study area, i.e. within one, two or three Chiefdoms within which the study area falls.</p>
	<b>Minor</b>	<p>Minor deterioration (nuisance or minor deterioration) or harm to receptors; change to receiving environment not measurable; or identified threshold never exceeded.</p> <p>Low-level repairable damage to structures of cultural significance. Ongoing general social issues that will not damage the social fabric.</p> <p>Not experienced by all the people within the study area, only by a small sector of the people within the study area, i.e. some of the villages.</p>
	<b>Minor+</b>	<p>Minor improvement; change not measurable; or threshold never exceeded.</p> <p>Low level social benefits, which will improve the livelihoods and quality of life of very few people.</p> <p>Not experienced by all the people within the study area, only by a small sector of the people within the study area, i.e. some of the villages.</p>
	<b>Moderate+</b>	<p>Moderate improvement; within or better than the threshold; or no observed reaction.</p> <p>Average, on-going positive benefits, which will improve the livelihoods and quality of life of some groups within the host community / impacted community.</p> <p>Not experienced by all the people within the study area; experienced by a large sector of the people within the study area, i.e. within one, two or three Chiefdoms within which the study area falls.</p>
	<b>Major+</b>	<p>Substantial improvement; within or better than the threshold; or favourable publicity.</p> <p>Noticeable, ongoing social benefits, which will improve the livelihoods and quality of life of the host community / impacted community.</p> <p>Experienced by all the people within the study area, i.e. all Chiefdoms within which the study area falls.</p>
<b>SPATIAL SCALE</b>	<b>Site or local</b>	Site specific or confined to the study area.
	<b>Regional</b>	May be defined in various ways, e.g. cadastral, catchment, topographic.
	<b>National / International</b>	Nationally or beyond.
<b>DURATION</b>	<b>Short term / reversible / unsustainable</b>	Less than 3 years.

	Medium term / partially reversible / sustainable	3 to15 years.				
	Long term / irreversible / sustainable	>15 years.				
B: DETERMINING CONSEQUENCE RATING						
Rate consequence based on definition of magnitude, spatial extent and duration						
			SPATIAL SCALE / POPULATION			
			Site or Local	Regional	National	
MAGNITUDE						
Minor	DURATION	Long term	Medium	Medium	High	
		Medium term	Low	Low	Medium	
		Short term	Low	Low	Medium	
Moderate	DURATION	Long term	Medium	High	High	
		Medium term	Medium	Medium	High	
		Short term	Low	Medium	Medium	
Major	DURATION	Long term	High	High	High	
		Medium term	Medium	Medium	High	
		Short term	Medium	Medium	High	
PART C: DETERMINING SIGNIFICANCE RATING						
Rate significance based on consequence and probability						
			CONSEQUENCE			
			Low	Medium	High-	High+
PROBABILITY (of exposure to impacts)	Definite	Medium	Medium	High-	High+	
	Possible	Low-	Low+	Medium	High-	High+
	Unlikely	Low-	Low+	Low-	Low+	Medium
PART D: CONFIDENCE LEVEL						
High	Medium		Low			

## 5.3 Framework for impact assessment

The assessment of social impacts is complex because of the multi-faceted nature of human systems and organisation, the potential inter-connectedness of impacts, and differing implications of the same impacts for different receptors.

The following perspectives have guided the SIA presented in this report:

- The SIA must be based on sound social assessment and the comprehensive description and understanding of social and economic baseline conditions;
- Impacts are defined as the social and economic consequences of current activities and expansion driven changes in the baseline environment;
- Impacts might flow directly from expansion activities (for example loss of access to land due to construction activities), or they might be indirect. Indirect impacts could be a consequence of the expansion itself (for example increased local spending by local people employed during construction), or they might be a secondary outcome (for example investment in business because of optimism regarding the presence of SRL);
- Impacts can be positive or negative. The same change in baseline conditions might be experienced as positive by one section of an affected community, and as negative by another; and
- The management of impacts is addressed in the ESHMP (SRK, 2018(6)). Responses to impacts could range from focused and specific mitigation and compensation to broad and inclusive contributions to sustainable development, for example in the form of integrated management plans.

In overview, the impact contexts considered are the following:

- *Health and safety:* This context speaks to changes and impacts related to community mental and physical health and safety as a result of SRL's construction and operational activities, and as a result of demographic and cultural changes due to an influx of job seekers, employees, and those who want to indirectly benefit from the presence of SRL (businesses). Physical health changes and impacts are discussed in the SC RHIA (2017), whilst the focus in this SIA is on mental health impacts;
- *Population, political, community and local governmental structures and organisation:* this includes changes and impacts related to power and authority, community organisation, development planning, access to decision making, voluntary organizations (CBOs and NGOs), support networks, community stability, response to change, trust in political and social institutions as a result of Iluka's policy implementation, community development initiatives, relationships with authorities, adherence to legal obligations, and an influx of people;
- *Use of land and access to resources:* this includes baseline changes and impacts related to the use of and access to natural resources such as land and water, and resources of cultural significance, and to location and settlement based on access to such resources, as a result of SRL's construction and operational activities, and population changes as a result of in- and out-migration patterns due to the presence of SRL;
- *Economy, work and livelihoods:* this context includes changes and impacts related to national and regional economic networks, local industrial and commercial diversification, traditional production systems, new markets, consumer demand, entrepreneurial opportunities, tax income, export of profits, differential opportunities, employment levels and patterns, commercial and labour organization, access to jobs and employment equity, labour exploitation and household and community livelihoods as a result of SRL's direct construction and operational activities, implementation of SRL's community development initiatives and policies, and adherence to legal obligations;
- *Use of and access to infrastructure and social services:* the social services context includes changes and impacts related to services infrastructure (water, energy, education, roads, communication) and demand for these services, due to SRL's direct construction and operational activities, and population changes as a result of in- and out-migration patterns due to the presence of SRL, implementation of SRL's community development initiatives, and policy implementation. Health impacts are considered under this change process, particularly in relation to demand for and access to health services; and



- *Population, social divisions and vulnerable groups*: this context focuses on changes and impacts around equity (for example the distribution and circulation of compensation), non-participation, unmet expectations, prevailing social tensions and divisions, and the status of vulnerable groups such as the elderly, women, children and the disabled as a result of SRL's direct construction and operational activities.

The identification and description of impacts follows the method described in this section. To retain a focus on baseline changes and impacts specifically related to the study area, it is useful to consider the expansion-related drivers of change. For example, the most direct social change and impact of the SRL expansion is the loss of land (change) and resultant economic displacement (impact) of small-scale farmers in the footprint areas of the mine ponds, plant, and associated road routes as a result of the need for land for mining. Other impacts are less direct, and many are positive, such as the injection of new sources of income into a depressed local economy, driven by an increase in population numbers due to an influx of job seekers, employees and those seeking indirect economic benefit.

## 5.4 Social and economic impacts

### 5.4.1 Health and safety

The impacts related to health and safety in the social context are:

- **Impact HS1:** Increased crime as a result of the influx of job seekers, employees and business owners.
- **Impact HS2:** Instances of drowning due to mine ponds, resulting in mental health impacts on next of kin and the broader community.
- **Impact HS3:** Increased traffic resulting in experiencing irritation relating to dust and noise.
- **Impact HS4:** Altered movement patterns to access services, fields, natural resources and villages resulting in frustration.

Physical health changes and impacts are discussed in the SC RHIA (2017).

**Impact HS1: Increased crime as a result of the influx of job seekers, employees and business owners.**

The development of the mining operations at SRL has stimulated an influx of people into the area, increasing the population size. The social baseline findings in Section 4.5.5 indicate that this influx is not only due to SRL's activities, but also other economic and infrastructure developments, which attract job seekers and employees of businesses active in the area.

Some participants of the social baseline study (SRK, 2017) raised concerns that the influx of job seekers, employees and business owners into the area increased the incidence of crime. Crimes that were reported in the study area included syphoning of fuel from the SRL operations, general theft, commercial sex work, drug and alcohol abuse, assault and domestic violence. Some crimes such as general theft was attributed to unemployed youths, with domestic violence and assault were connected with a rise in alcohol abuse.

While an influx of people into developing areas do contribute to an increase in crime, the social baseline findings (Section 4.5.5) indicate that the incidence of social pathologies, including crime, increased in areas where there was a combination of poverty, lack of education, vulnerability, higher population numbers, and opportunities to benefit from criminal activities. In light of the numerous drivers that encourage the people to move to the study area, which has a socio-economic profile that triggers crime, the extent to which SRL has affected criminal activity in the area cannot be determined, even should local statistics be available to compare against national and provincial data.

With the information available, the potential impact of crime as a result of an influx of job seekers, employees of SRL and business owners specific to the expansion was therefore determined to be of a medium-low negative significance before mitigation because it was already occurring prior to the expansion, and not only as a result of SRL's influence, and unlikely to be significantly changed by

recent and planned developments. After recommended mitigation, the significance of the impact was deemed to be low negative. After closure of the mine, the impact will not be maintained. Refer to Table 5-3.

**Table 5-3: Impact HS1: Increased crime as a result of the influx of job seekers, employees and business owners.**

<b>Impact HS1</b>								
	<b>Magnitude</b>	<b>Duration</b>	<b>Scale</b>	<b>Consequence</b>	<b>Probability</b>	<b>SIGNIFICANCE</b>	<b>+ / -</b>	<b>Confidence</b>
<b>Before Management</b>	<i>Moderate-Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Medium-Low</b>	<i>Possible</i>	<b>Medium-Low</b>	-	<i>Medium</i>
<b>Opportunities for mitigation and management</b> External measures <ul style="list-style-type: none"> <li>Continue to liaise with local police to monitor social changes in crime patterns;</li> <li>Continue to liaise with existing crime control organisations, such as the Criminal Investigation Department, local community policing forums and other crime prevention organisations; and</li> <li>In consultation with the local leadership, implement measures to decrease the in-migration of potential job seekers into the area through the development and implementation an Influx Management Plan in conjunction with relevant external stakeholders, and include crime management measures.</li> </ul> Internal measures <ul style="list-style-type: none"> <li>Strengthen security measures on mine premises;</li> <li>Minimise opportunities for criminal activity;</li> <li>Continue to communicate the recruitment policy and process regularly to local people;</li> <li>Continue to improve job opportunities for local women at the mine;</li> <li>Continue to ensure that potential workers are screened including doing criminal background checks;</li> <li>Continued dyeing of SRL fuel to identify fuel theft culprits;</li> <li>Ensure construction workers and contractors are always clearly identifiable by wearing proper uniforms displaying the logo of the construction company;</li> <li>Ensure that SRL workers, contractors and security are always issued with identification tags;</li> <li>Encourage workers to recognize and report suspicious activity and signs of burglary;</li> <li>Develop and communicate crime prevention measures that employees can take;</li> <li>Establish clear rules and regulations for access to the expansion site; and</li> <li>Opportunities to educate and upskill local people to an employable level are explored and will be implemented once a feasible option(s) had been identified.</li> </ul> Closure measures <ul style="list-style-type: none"> <li>Adhere to the mine closure plan to manage crime flux in the study area following closure.</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Short term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	-	<i>Medium</i>
<b>After management: post closure</b>	Will not occur as a result of the presence of SRL, although a residual impact will be present.						+	<i>High</i>

**Impact HS2: Instances of drowning and risk thereof due to mine ponds, resulting in mental stress on next of kin and the broader community.**

The presence of mine ponds (including historical and currently active ponds), as well as naturally occurring estuarine systems, has reportedly resulted in occurrences of drownings in and around the study area. The mental health implications and trauma experienced by the next of kin and the broader community of these victims were specifically noted in Madina (FM), Modagba, Foinda and Ganga (Section 4.8.5). The nature of drowning requires next of kin and the broader affected community to cope with both the trauma of the drowning event as well as the grief affiliated with the loss of a community member. This is an intangible and emotive impact, and with preventative measures it could be minimised / avoided.

The occurrence and risk of drowning cannot be ascribed to recent and planned developments, and the presence of the mine ponds only. Historically, drownings have occurred in mine ponds and estuarine systems. Due to the fact that drownings seldom occur, and the mental health impact is not and will not be experienced by all the people in the study area, but definitely by those who had lost a person to drowning, the impact has been deemed as being of minor magnitude and medium negative consequence and significance in an unmitigated scenario. The implementation of management measures resulted in similar ratings, but with a reduction in the likelihood of a drowning occurring, and hence the reduction in the number of people experiencing mental health stress as a result. The “unlikely” probability rating after mitigation therefore reflects that less people will experience the mental health stress (Table 5-4). Once ponds have been drained / water levels reduced, the risk of drowning will be reduced and the impact unlikely to occur.

**Table 5-4: Impact HS2: Instances of drowning due to mine ponds, resulting in mental health stress on next of kin and the broader community.**

Impact HS2								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Minor</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Definite</i>	<b>Medium</b>	-	<i>High</i>
<b>Opportunities for mitigation and management</b> <b>Operation</b> <ul style="list-style-type: none"> <li>Continue to provide boat taxis to cross ponds to access agricultural fields and villages, and continue to ensure that all safety measures are adhered to;</li> <li>Continue to maintain bridges that give access to agricultural fields and villages;</li> <li>Place warning signs, indicating the risk of drowning and incorporating clear imagery and local languages;</li> <li>Should a drowning occur at an SRL site, SRL will investigate the incident, giving feedback to the next of kin and broader community timeously and identify preventative measures for implementation; and</li> <li>Continue safety briefings at local schools and Court Barris.</li> </ul> <b>Closure</b> <ul style="list-style-type: none"> <li>In accordance with the Closure and Rehabilitation Plan timeframes and methodology, reduce the water levels in the mine ponds, which will assist in mitigating incidences of further drownings.</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Unlikely</i>	<b>Low</b>	-	<i>Medium</i>
<b>After management: post rehabilitation</b>	<i>Highly unlikely to occur, but the mental health impact on next of kin and community members of a drowning that occurred during operation will still be present albeit not as acute.</i>						+	<i>High</i>

### Impact HS3: Increased traffic and activities resulting in irritation relating to dust, and noise.

The extension of mine operations, including current expansion activities, has resulted in an increase in heavy vehicle and mine personnel vehicle traffic on roads. In the villages of Matagelema, Moriba Town and those located on the haul roads, irritation due to noise and dust from the road were mentioned. In Foinda (Nitti) particularly, the speed and frequency of trucks reportedly caused noise and dust irritation for other road users including pedestrians, and households living by the road side (refer to Section 4.5).

The roads are not only used by SRL trucks, but also trucks from other companies in the area such as Vimetco. A 30 km / hr speed limit had been implemented for all SRL vehicles when travelling through villages, and SRL vehicles are tracked by GPS to deter SRL drivers from exceeding the speed limit. It is therefore unlikely that SRL trucks are the main contributors to the noise and dust generation.

Without mitigation, the impact was found to be of medium negative consequence and significance. Following mitigation, the impact received a low consequence and low negative significance rating. Post closure SRL vehicles will no longer be on the road. Refer to Table 5-5.

**Table 5-5: Impact HS3: Increased traffic resulting in irritation relating to dust and noise.**

Impact HS3								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Definite</i>	<b>Medium</b>	-	<i>High</i>
Opportunities for mitigation and management <ul style="list-style-type: none"> <li>Continue to enforce the 30 km / hr speed limit; and</li> <li>Continue to deal with drivers exceeding the limit through the disciplinary process that has been implemented.</li> </ul> Dust <ul style="list-style-type: none"> <li>Adhere to measures stipulated in the Air Quality Management Plan.</li> </ul> Noise <ul style="list-style-type: none"> <li>Adhere to measures stipulated in the Noise Management Plan.</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	-	<i>Medium</i>
<b>After management: post closure</b>	<i>Will not occur as a result of SRL vehicles.</i>						+	<i>High</i>

**Impact HS4: Altered movement patterns to access services, fields, natural resources and villages resulting in dissatisfaction and frustration.**

As a result of mine ponds and other mine related infrastructure, traditional movement patterns and access had been altered in some areas. The current and planned mining activities contribute to continuation of the situation (Section 4.8 of the social baseline study).

Without mitigation, the impact was found to be of negative medium consequence and significance. Following mitigation, the impact received a low negative consequence and low significance rating. Post closure, people will most likely be able to return to previous movement patterns due to the draining of mine ponds. Refer to Table 5-6.

**Table 5-6: Impact HS4: Altered movement patterns to access services, fields, natural resources and villages resulting in dissatisfaction and frustration.**

<b>Impact HS4</b>								
	<b>Magnitude</b>	<b>Duration</b>	<b>Scale</b>	<b>Consequence</b>	<b>Probability</b>	<b>SIGNIFICANCE</b>	<b>+ / -</b>	<b>Confidence</b>
<b>Before Management</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Definite</i>	<b>Medium</b>	-	<i>High</i>
<b>Opportunities for mitigation and management</b> <b>Operation</b> <ul style="list-style-type: none"> <li>Continue with time saving through dedicated bus services to transport SRL workers to the work;</li> <li>Where possible, future operation and construction planning to include considerations regarding access and movement patterns before infrastructure is placed;</li> <li>Continue with provision of taxi boats, bridges and alternative roads; and</li> <li>Maintain a Grievance Management Procedure to allow local people to report concerns relating to access and movement.</li> </ul> <b>Rehabilitation and closure</b> <ul style="list-style-type: none"> <li>Consider current and historical movement patterns in closure rehabilitation; and</li> <li>Plan for maintenance of infrastructure services by third parties in instances where access cannot be shortened / returned to what it was.</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	-	<i>Low</i>
<b>After management: rehabilitation</b>	<i>Highly unlikely to occur, but may occur in isolated instances where movement patterns could not be adapted to suit local people. Frustration might be experienced during the transition period.</i>						+	<i>Low</i>

## 5.4.2 Population, political structures and organisations

Social impacts associated with population, political structures and organisations are as follows:

- **Impact PP1:** Community disruption due to influx of non-local job seekers, employees and business owners.
- **Impact PP2:** Increased pressure on infrastructure and social services due to influx, impacting on quality of life.

**Impact PP1: Community disruption due to influx of non-local job seekers, employees and business owners.**

Local and non-local job seekers and their families may move / have moved into the study area. The social baseline study results (see 4.5.5. of the social baseline) suggest influx continues to be focused in the built-up nodes including Mogbwemo, Matagelema and Moriba Town. The social baseline study also indicates low employment and skills levels in the study area. A significant portion of those individuals currently employed by, or who could be employed at SRL in future, are from outside of the study area. Influx was noted to come particularly from northern Sierra Leone (see Figure 4.4). Influx into the smaller, more rural villages in the study area was not a notable finding in the social baseline study, and the impact on smaller, decentralised villages is seen to be negligible.

Community disruptions, including migrants not affiliating with local leadership and communal structures has led allegedly, in some instances, to tension and issues relating to social cohesion. Influx has occurred in the study area prior to the current phase of this expansion, so any additional community disruption as a result of influx specific to this expansion are difficult to isolate.

The impact was deemed to carry a negative medium significance prior to mitigation and a negative low significance after mitigation. Post closure, the impact will not occur as a result of SRL mining activities, since people will not move into the area as a result of opportunities presented by the mine. However, some residual impact might be present. Refer to Table 5-7.

**Table 5-7: Impact PP1: Community disruption due to influx of non-local job seekers, employees and business owners.**

Impact PP1								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Possible</i>	<b>Medium</b>	-	<i>High</i>
<b>Opportunities for mitigation and management</b> <ul style="list-style-type: none"> <li>• Preparation and implementation of a code of practice to guide the management and onsite behaviour of construction and operational teams. The code should include terms relating to community relations, culturally appropriate behaviour and conduct towards women specifically;</li> <li>• Procurement of goods and services should continue to be only done through a formal process;</li> <li>• Develop and implement an Influx Management Plan in conjunction with the relevant external stakeholders;</li> <li>• Apply approach to recruitment as set out in the relevant national legislation;</li> <li>• Continue to communicate the recruitment policy and process regularly to local people and contractors;</li> <li>• Inform local communities about the construction and operation timeframes and the Grievance Management Procedure;</li> <li>• Opportunities to educate and upskill local people to an employable level are explored by SRL and will be implemented once a feasible option(s) had been identified; and</li> <li>• Engage regularly with the Paramount Chiefs to manage and monitor influx and housing / site allocations.</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	-	<i>Medium</i>
<b>After Management: post closure</b>	<i>Will not occur as a result of SRL activities, but some residual impact may be present.</i>						+	<i>High</i>

**Impact PP2: Increased pressure on infrastructure and social services due to influx, impacting on quality of life.**

Job seekers and their families may move or have moved into the study area, thus competing with local residents for basic services including water supply and energy sources. Referring to the social baseline information, the study area has existing health, education and housing shortages (Section 4.3 of the social baseline study). The existing infrastructure and housing is currently deemed by locals to be insufficient to support the existing population and the incoming population, according to feedback from some participants that partook in the baseline data collection process. A continuation of influx might intensify this shortfall. Migrant workers might rent backrooms or establish informal settlements (as has resulted in the urban sprawl seen in Moriba Town outwards), thereby exacerbating the existing situation.

Furthermore, the government is tasked with the provision of water, electricity, and sanitation and waste services. This is unlikely to happen due to human and financial resource constraints. The maintenance of current SRL facilities for SRL's workforce, the development of facilities for SRL's external workforce, and the provision of construction accommodation on site in the future might reduce these impacts.

The impact was deemed to carry a negative medium significance prior to mitigation and a negative low significance after mitigation, since the increased pressure was present prior to the mine expansion activities. After closure, the impact will not occur as a result of mining activities, since people will not move into the area as a result of opportunities presented by the mine. Refer to Table 5-8.

**Table 5-8: PP2: Increased pressure on infrastructure and social services due to influx, impacting on quality of life.**

Impact PP2								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Possible</i>	<b>Medium</b>	-	<i>High</i>
<b>Opportunities for mitigation and management</b> <ul style="list-style-type: none"> <li>• In consultation with the local leadership, implement measures to decrease the in-migration of potential job seekers into the area through the development and implementation an Influx Management Plan in conjunction with relevant external stakeholders;</li> <li>• Continue to provide construction accommodation on site for employees that do not come from the study area in the existing SRL camps;</li> <li>• Opportunities to educate and up-skill local people to an employable level are explored by SRL and will be implemented once a feasible option(s) have been identified; and</li> <li>• Engage regularly with the Paramount Chiefs to manage and monitor influx and housing / site allocations.</li> </ul>								
<b>After Management</b>	<i>Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	-	<i>Medium</i>
<b>After Management: post closure</b>	<i>Will not occur as a result of SRL activities, but some residual impact may be present.</i>						+	<i>High</i>



### 5.4.3 Use of land and loss of access to resources

Social impacts associated with the use of land and loss of access to resources are as follows:

- **Impact LR1:** Loss of (or loss of access to) land, crops and livelihood resources in the expansion footprint areas due to mining activities.
- **Impact LR2:** Loss (or loss of access to) cultural resources and sites due to mining activities restricting / encompassing land.
- **Impact LR3:** Increase in fishing and aquaculture opportunities as a result of mine ponds (existing and non-rehabilitated).
- **Impact LR4:** Perceived decrease in the quality of drinking water and perceived unsuitability of mine pond water for drinking, resulting in lack of access to drinking water.
- **Impact LR5:** Increased access to domestic water due to existence of mine ponds.

**Impact LR1: Loss of (or loss of access to) land, crops and livelihood resources in expansion footprint areas due to mining activities.**

Over the years, SRL's mining activities have resulted in land take and loss of access to land. The loss of land and reduced access to land has reportedly impacted on livelihoods resources such as agricultural activities, medicinal plants, and bushmeat. Previous mitigation measures that were implemented to manage the impacts related to loss of livelihoods resources included cash compensation for crops, payment of surface rent, providing access to existing agricultural fields where the mine has disrupted access routes, and stocking mine ponds with fish. SRL still provides access to agricultural land by providing boat taxis, alternative roads, and bridges. However, many of these diversions have resulted in more time and money required to get to fields.

Although SRL's mining activities have resulted in land take and some loss of access to land and livelihoods resources, the increase in population in the area has also resulted in an increase in competition for these livelihoods resources.

As part of this ESHIA, the current rehabilitation practise was reviewed, and an improved Conceptual Mine Closure Plan (SRK, 2018(5)) was developed. The Mine Closure Plan (SRK, 2018(5)) aims to progressively restore land post mining to a land use capability of subsistence farming.

Rivers are also livelihoods resources, and fish stocks have allegedly decreased as a result of the mining activities. Fish stock is impacted by water quality, water quantity, and habitat (including cover, spawning areas flow and depth of water column). The activities of the mine could affect these three aspects to an extent, in addition to aspects such as over fishing and fishing methods used. Using traditional fish trapping methods are easier in the rivers than in the mine ponds. For fishing in mine ponds, baited hooks or gill nets are most effective. It is likely that gill nets are not accessible to fishermen due to the cost implications. Traditional methods are therefore relied on to access this source of protein, placing additional pressure on those who depend on mine ponds for fish (STS, 2018).

According to stakeholders, the occurrence of flooding has also increased as a result of mining activities. However, as per the surface water specialist study conducted as part of this ESHIA (SRK, 2018(4)), localised flooding has occurred as a result of the mine ponds, but in general, the mine ponds have reduced flood peaks when compared to natural systems. Post rehabilitation, the lowering of the pond water levels, will result in the riverine systems returning closer to its original state, which may again increase flooding. However, it will also result in more land being available for agricultural activities and establishment of other livelihoods resources.

The remaining land and natural resources not impacted by mining activities were and still are used extensively to provide for an increase in livelihoods needs due to the population increase. Extensive use has led to a reduction in the period for land lying fallow, affecting the fertility of land and hence the productive use of land. Over exploitation of forests (for wood and charcoal making, bushmeat hunting) and other natural resources such as raffia palm and medicinal plants, continue as a result of ongoing population growth.

The impact was deemed to carry a negative medium significance prior and after mitigation during operation. Post closure, the impact is deemed to carry a positive medium significance, since more land will be available. Refer to Table 5-9.

**Table 5-9: Impact LR1: Loss of and / or loss of access to land, crops and livelihood resources in expansion footprint areas due to mining activities.**

<b>Impact LR1</b>								
	<b>Magnitude</b>	<b>Duration</b>	<b>Scale</b>	<b>Consequence</b>	<b>Probability</b>	<b>SIGNIFICANCE</b>	<b>+ / -</b>	<b>Confidence</b>
<b>Before Management</b>	<i>Moderate</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Definite</i>	<b>Medium</b>	-	<i>High</i>
<b>Management Measures</b> <b>Operation</b> <ul style="list-style-type: none"> <li>As intended, design and implementation of GIIP Resettlement Action Plans (RAP), inclusive of livelihood restoration measures for all new physical displacement;</li> <li>As intended, design and implementation of GIIP Livelihood Restoration Plans for economic-only displacement;</li> <li>Consider supporting an NGO to facilitate breeding cane rat ("cutting grass") and rabbits (or similar small livestock as may be culturally appropriate), as sources of bush meat;</li> <li>SRL is exploring the implementation of improved / modernised fishing and aquaculture opportunities during operation and closure in co-operation with relevant NGOs;</li> <li>SRL is considering supporting the development of agricultural training courses in co-operation with relevant NGOs.</li> <li>Identify areas to be protected from exploitation for livelihoods needs in collaboration with the communities;</li> <li>Consider supporting an NGO to protect medicinal plants, setting up / supporting expansions where medicinal plants can be grown / sold / getting an NGO involved to possibly take some of the medicinal products into the western pharmaceutical market (if suitable);</li> <li>Consider hydroponic / aquaponic systems (either at household / village level) for improved crop yields as part of closure planning; and</li> <li>Integrate with the rehabilitation team to determine if it is possible to set up raffia palm groves.</li> </ul> <b>Rehabilitation</b> <ul style="list-style-type: none"> <li>Increase agricultural land availability post mining where practicable, as per the Mine Closure and Rehabilitation Plan.</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Definite</i>	<b>Medium</b>	-	<i>Medium</i>
<b>After Management: rehabilitation</b>	<i>Moderate</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Definite</i>	<b>Medium</b>	+	<i>Medium</i>

**Impact LR2: Loss (or loss of access to) cultural resources and sites due to mining activities restricting / encompassing land.**

Mining activities have in the past resulted in the loss of some cultural resources and have restricted access to others, according to feedback provided by participants of the social baseline study (Section 4.9). The expansion had not and is not likely to impact on any cultural resources going forward. As a result, the impact was deemed to carry a negative low significance prior and after mitigation. Post closure, the impact will not occur as a result of the presence of SRL. Refer to Table 5-10.

**Table 5-10: Impact LR2: Loss (or loss of access to) cultural resources and sites due to mining activities restricting / encompassing land.**

<b>Impact LR2</b>								
	<b>Magnitude</b>	<b>Duration</b>	<b>Scale</b>	<b>Consequence</b>	<b>Probability</b>	<b>SIGNIFICANCE</b>	<b>+ / -</b>	<b>Confidence</b>
<b>Before Management</b>	<i>Minor</i>	<i>Short term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	-	<i>Medium</i>
<b>Management Measures</b> <ul style="list-style-type: none"> <li>Consult proactively with communities to identify culturally significant sites prior to accessing areas for future expansion;</li> <li>Where possible, identify culturally significant sites; and where possible, ensure expansion infrastructure does not encroach on these sites;</li> <li>Where site loss cannot be avoided, negotiate a culturally appropriate response;</li> <li>Where loss of access occurs, providing alternative access must be made a priority;</li> <li>Design and implement a Chance Finds Procedure to guide actions where cultural sites are discovered;</li> <li>Conduct an archaeological / cultural heritage survey for areas to be disturbed / well ahead of mining; and</li> <li>Develop a Cultural Heritage Resources Management and Monitoring Plan.</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	-	<i>Medium</i>
<b>After Management: post closure</b>	<i>Will not occur as a result of SRL activities.</i>						+	<i>High</i>

**Impact LR3: Increase in fishing and aquaculture opportunities as a result of mine ponds (existing and non-rehabilitated).**

The presence of mine ponds has given rise to an additional aquaculture / fishing livelihood option for some of the adjacent mine communities (Section 4.6 of the social baseline). Given that fishing and aquaculture activities support local livelihoods, the impact significance is set at positive low. With the implementation of enhancement measures, this significance rating can increase from low to medium positive during operation and after closure. Refer to Table 5-11.

**Table 5-11: Impact LR3: Increase in fishing and aquaculture opportunities as a result of mine ponds (existing and non-rehabilitated).**

Impact LR3								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Minor+</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low+</b>	<i>Definite</i>	<b>Low+</b>	+	<i>Medium</i>
<b>Management Measures</b> <ul style="list-style-type: none"> <li>SRL is exploring the implementation of improved / modernised fishing and aquaculture opportunities during operation and closure in co-operation with relevant NGOs; and</li> <li>SRL is considering supporting the development of agricultural training courses in co-operation with relevant NGOs.</li> </ul>								
<b>After Management: operation</b>	<i>Moderate+</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Medium+</b>	<i>Possible</i>	<b>Medium+</b>	+	<i>Medium</i>
<b>After Management: rehabilitation</b>	<i>Moderate+</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium+</b>	<i>Possible</i>	<b>Medium+</b>	-	<i>Medium</i>

**Impact LR4: Perceived decrease in the quality of drinking water and perceived unsuitability of mine pond water for drinking, resulting in lack of access to drinking water.**

A perception exists amongst some people in the study area that the SRL activities negatively impact on the quality of potable water, and that water from the mine ponds is not suitable to drink. Results from the surface water report suggest that the water quality in the study area and water quality of mine ponds are generally an acceptable standard, with some instances where the quality of the water exceeded drinking water guidelines. Water quality in the study area may be affected by both natural and anthropogenic factors, as such the perception that any decrease in water quality is a result of mining activities alone, is unfounded. Of the 19 surface water monitoring points, only eight were noted to have exceeded the drinking water guidelines.

After mitigation, the significance of the impact changes from medium to low negative (Table 5-12). After closure, the perception is likely to no longer exist, because of the cessation of mining activities and drying of ponds.

**Table 5-12: Impact LR4: Perceived decrease quality of drinking water and perceived unsuitability of mine pond water for drinking, resulting in perceived lack of access to drinking water.**

Impact LR4								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Definite</i>	<b>Medium</b>	-	<i>Medium</i>
<b>Management Measures</b> <ul style="list-style-type: none"> <li>Raise awareness about the quality of the water, the causes of water of unacceptable quality, and the characteristics of unsuitable water (colour, odour); and</li> <li>Give feedback about the reasons why wells are no longer being treated, and the alternatives should communities wish to treat their own wells.</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	-	<i>Medium</i>
<b>After Management: rehabilitation</b>	<i>Will not occur as a result of SRL activities.</i>						+	<i>Medium</i>

### Impact LR5: Increased access to domestic water due to existence of mine ponds.

Although prohibited, some members of communities do make use of mine ponds for domestic purposes because it is accessible and / or there are no immediate sufficient alternatives. Some communities, on the other hand, do not make use of this water, as instructed by SRL, despite the reported need for domestic water outlined in Section 4.8.3 of this report.

After mitigation, the significance of the impact changes from positive low to medium during operation (Table 5-13). After closure, SRL mine pond water for domestic use will be reduced due to the draining of some ponds and reduction of water levels in others, resulting in a low negative impact from a water availability point of view.

**Table 5-13: Impact LR5: Increased access to domestic water due to existence of mine ponds.**

Impact LR5								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Minor</i>	<i>Short term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	+	<i>High</i>
<b>Management Measures</b> <ul style="list-style-type: none"> <li>• Communicate consistent messages about the use of mine ponds; and</li> <li>• Develop a policy / guidelines for workers about what is expected of them as SRL workers, and the ways in which to handle situations where they observe ponds being used; and</li> <li>• Investigate community complaints regarding water availability and / or quality, and where necessary, provide alternative water sources to the impacted communities.</li> </ul>								
<b>After Management: operation</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	+	<i>Medium</i>
<b>After Management: rehabilitation</b>	<i>Minor</i>	<i>Short term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	-	<i>High</i>

#### 5.4.4 Economy, work and livelihoods

Social impacts associated with economy, work and livelihoods are as follows:

- **Impact EW1:** Contribution to national and regional economic growth due to investment.
- **Impact EW2:** Increased government income due to payment of taxes and royalties.
- **Impact EW3:** Continued employment and income opportunities as a result of on-going and expanded operations at SRL.
- **Impact EW4:** Opportunities for local business due to procurement by SRL.
- **Impact EW5:** Lease payment income as a result of mining activities.

**Impact EW1: Contribution to national and regional economic growth due to investment.**

Capital expenditure on the construction of Gangama was approximately US\$38 million over a 30-month period. Of this, 52% was paid to foreign suppliers, 36.5% to local suppliers and 11.5% to payroll and stocks withdrawal. Capital expenditure on the construction of Gbeni was a further US\$10.3 million, primarily to foreign suppliers.

Total SRL expenditure on workforce and goods and services was US\$70.2 million in 2016, of which US\$56.5 million were spent on goods and services (US\$19 million of this was spent on goods and services in Sierra Leone) (DAI and GIZ, 2017). It is therefore assumed that US\$13.7 million was spent on payroll. The 2016 SRL expenditure is equivalent to 1.8% of Sierra Leone GDP.

Changes in output, employment and/or prices give rise to changes in demand for a range of goods and services, which in turn generate a further round of income and employment effects. Multipliers estimate these knock-on effects of e.g. an investment on output and employment in the economy.

Multipliers are difficult to determine, and various estimates exist. A World Bank study (2006) estimated a multiplier of 1.56 for SRL, the highest multiplier of the four mining companies assessed. SRL's total economic contribution to the economy of Sierra Leone, including indirect and induced effects, was estimated at US\$109 553 671 in 2016 (DAI and GIZ, 2017), the highest of the four mining companies assessed. Based on those figures, SRL's total contribution in 2016 was equivalent to 2.8% of GDP, which is highly significant for a single operation, and illustrates the small size of the economy of Sierra Leone. Estimates of ongoing operational expenditure were not available, and it is not clear what component of the 2016 expenditure was directly related to the mine expansion.

The above estimates refer primarily to the formal (measured) economy. Due to the largely informal nature of Sierra Leone's economy, the project will also increase demand (and therefore production) in the informal economy, especially locally. The benefits of economic growth include increased income (including in the informal economy locally), lower unemployment / underemployment and increased tax base and revenues.

The reported contribution is largely related to ongoing operations, and thus part of the baseline. The output effect of the expansion and upgrading of the mine could not be isolated. However, expansion provides an opportunity to extend the mining operation and associated economic stimulus.

The significance of the impact is positive medium during operation. After closure the positive impact will cease, since SRL will no longer contribute to the Sierra Leone economy. Refer to Table 5-14.



**Table 5-14: Impact EW1: Contribution to national and regional economic growth due to investment**

Impact EW1								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ /-	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Regional</i>	<b>Medium</b>	<i>Probable</i>	<b>Medium</b>	+	<i>Medium</i>
<b>Opportunities for mitigation and management</b> <ul style="list-style-type: none"> <li>Procure goods and services from local or national suppliers as far as possible, and</li> <li>Procure ancillary services for goods purchased overseas, such as installation, customisation and maintenance, from national companies as far as possible.</li> </ul>								
<b>After Management: operation</b>	<i>Moderate</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Possible</i>	<b>Medium</b>	+	<i>Medium</i>
<b>After Management: post closure</b>	<i>The impact will cease after closure of the mine.</i>							

### Impact EW2: Increased government income due to payment of taxes and royalties.

The government of Sierra Leone receives revenue from SRL's operation in the form of taxation (including income tax, goods and services tax, corporate tax and import duties, all of which will apply to SRL) and royalties. Payments are governed by the Sierra Rutile Agreement (Ratification) Act, 2002 (see Section 2.2.1), and specifications include:

- Royalty at 3.5% of total sales;
- Income tax at no less than 3.5% of turnover or no more than 37.5% of profits;
- Import duties at 5% for import of mining machineries and plant equipment; and
- All third party-party contractors undertaking refurbishment work at the plant sites are exempt from paying local taxes, immigration and labour fees and income tax.

SRL's tax payments in 2015, as reported in SRL (2015), is:

- Personal income tax in Sierra Leone is paid at a sliding scale of up to 35% (SRL, 2018). Payroll of US\$13.7 million could thus generate up to US\$4.8 million personal income tax if all employees were taxed at the maximum rate. SRL reports paying PAYE personal income taxes of US\$4.3 million in 2015, which is equivalent to approximately 2.7% of government income from mining royalties and licenses that year;
- SRL reports paying royalties of US\$4.1 million in 2015, which is equivalent to approximately 20.3% of government income from mining royalties and licenses that year; and
- SRL reports paying corporate (minimum turnover) tax of US\$3.7 million in 2015, which is equivalent to approximately 6.5% of government income from corporate income tax that year.

The government revenue is largely related to ongoing operations, and thus part of the baseline. The revenue effect of the expansion and upgrading of the mine could not be isolated. However, expansion provides an opportunity to extend the mining operation and associated government revenue.

The significance of the impact is medium positive during operation. After closure the positive impact will cease, since SRL will no longer contribute to the Sierra Leone economy. As government revenue is related to tax regimes and company performance, no mitigation and optimisation measures are identified. Refer to Table 5-15.

**Table 5-15: Impact EW2: Increased government income due to payment of taxes and royalties.**

Impact EW2								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ /-	Confidence
<b>Before Management</b>	<i>Minor</i>	<i>Medium term</i>	<i>National</i>	<b>Medium</b>	<i>Probable</i>	<b>Medium</b>	+	<i>Medium</i>
<b>Opportunities for mitigation and management</b>								
<ul style="list-style-type: none"> <li>• Continue adhering to legislative tax and royalty payments.</li> </ul>								
<b>After Management: operation</b>	<i>Moderate</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Possible</i>	<b>Medium</b>	+	<i>Medium</i>
<b>After Management: post closure</b>	<i>The impact will cease after closure of the mine.</i>							

### **Impact EW3: Continued employment and income opportunities as a result of ongoing and expanded operations at SRL.**

Employment provides many socio-economic benefits to employees and their dependants, including:

- Improved material wealth and standard of living;
- Enhanced potential to invest and improved access to social services such as education and health services;
- Enhanced skills transferred to previously unskilled workers, facilitating employment prospects of such workers; and
- Contribution to a sense of independence, freedom and pride, which may promote a good work ethic.

The project is expected to create various types of employment:

- Direct employment, including employees and main contractors, at the project;
- Indirect employment, including sub-contractors and suppliers; and
- Induced employment, including employment generated by increased spending by businesses and by (community) households earning an income from the project.

Mining companies in Sierra Leone contribute significantly to employment but employ fewer nationals relative to other sectors (such as logistics, manufacturing, agriculture or hospitality). However, SRL is the only one of four mining companies assessed as part of the local content performance that meets five out of six targets for local employment (DAI and GIZ, 2017).

SRL is the largest employer in the study area, where only 13% of HHS participants reported that they were formally employed, and one of the largest private sector employers in Sierra Leone (SRL, 2015). The project has generated the direct employment of:

- 115 workers (34 nationals and 81 expatriates) during construction;
- 2 614 workers, comprised of 1 871 SRL employees (1 739 nationals and 39 expatriates), 743 main contractor staff (725 nationals and 18 expatriates), and approximately 300 casual workers during operation.

SRL spent US\$4.4 million on payroll during the construction of Gangama Phase over an approximately 30-month period. US\$13.7 million was spent on payroll in 2016. While information on average local wages is not available, 93% of SRL's workforce is national, and the income benefit will accrue predominantly at a national level.

Direct employment at the project may have generated up to:

- 897 indirect and induced employment opportunities during construction; and
- 19 605 indirect and induced employment opportunities during operation.

Observations during field work support the notion of ongoing growth in ATS agriculture, petty trading, stone mining, charcoal and motorbike taxi sectors (see Section 4.6.2). Although illegal, the theft of fuel, scrap steel and product from SRL has created an alternative form of income for local opportunists. The increased demand for housing in the project area from workers and job seekers has increased income opportunities of the local population from the renting of rooms and beds.

Indirect and induced opportunities will be almost exclusively for Sierra Leone nationals. Based on the characteristics of the labour market in Sierra Leone (see Section 4.6.3), it is expected that the majority of indirect and induced employment opportunities will be in the informal economy. However, a significant proportion of new jobs, including direct employment, will be in the formal economy and associated with the benefits of formal employment: insurance, regular income and improved standard of living.

Because of the low unemployment rate in Sierra Leone, many employment opportunities created by the project in the informal economy are likely to manifest as a reduction in underemployment (or an increase in income for those already employed in the informal economy).

People who benefit directly or indirectly from the project also support a number of dependants, and an additional 92 400 dependants could benefit (albeit to a modest extent considering the generally low earnings in the informal economy and the high dependency ratio). When comparing the number of potential beneficiaries to the population of the study area, which is estimated at 20 800, it is clear that the benefits of employment extend beyond the direct project area.

Employment also conveys skills that make people more employable in this large sector, and increase their chances of earning a higher income in the long term. SRL dedicated 0.2% of manhours to training in 2016, below national targets for mining companies (DAI and GIZ, 2017). It must be noted, however, that most of the employment opportunities are related to ongoing operations and are thus part of the baseline. The employment effect of the expansion and upgrading of the mine could not be isolated, but is likely to be relatively minor. However, expansion provides an opportunity to extend the mining operation and associated benefits derived by the local and regional community from direct, indirect and induced employment.

After mitigation, the significance of the impact changes from positive low to positive medium during operation. After closure the positive impact will cease, since those employed at that time will lose their jobs at SRL. However, alternative income opportunities may be identified with implementation of management measures. Refer to Table 5-16.

**Table 5-16: Impact EW3: Continued employment and income opportunities as a result of ongoing and expanded operations at SRL.**

Impact EW3								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ /-	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Site or local</i>	<i>Medium</i>	<i>Possible</i>	<i>Low</i>	+	<i>Medium</i>
<b>Opportunities for mitigation and management</b> <b>Operation</b> <ul style="list-style-type: none"> <li>Ensure fair access to information about jobs through the local radio station, the CAD office, and Chiefs;</li> <li>Ensure access to jobs is transparent and in line with SRL's Human Resources and Anti-bribery and Corruption policies;</li> <li>Continue to raise awareness amongst employees and communities about SRL's Anti-bribery and Corruption Policy;</li> <li>Facilitate fair access to jobs through the SRL Local Content policy;</li> <li>Promote job security as per the SRL local employment policy;</li> <li>Develop a Downscaling and Retrenchment Plan; and</li> <li>Opportunities to educate and upskill local people to an employable level are being explored and will be implemented once a feasible option(s) had been identified.</li> </ul> <b>Closure</b> <ul style="list-style-type: none"> <li>Update the social closure risk and SIA three years prior to closure, conduct a final update in preparation for closure, inclusive of pre-closure measures to minimise the impact of job losses at mine closure;</li> <li>Implement business, life skills and investment training in the context of the in-house training programme. Training to be linked to counselling regarding the LOM and the implications of decommissioning and closure;</li> <li>Investment and money management counselling for employees; and</li> <li>Proactive planning for closure consequences and timely advice to current employees.</li> </ul>								
<b>After Management: operation</b>	<i>Moderate</i>	<i>Long term</i>	<i>Site or local</i>	<i>Medium</i>	<i>Possible</i>	<i>Medium</i>	+	<i>Medium</i>
<b>After Management: post closure</b>	<i>Moderate</i>	<i>Long terms</i>	<i>Site or local</i>	<i>Medium</i>	<i>Possible</i>	<i>Medium</i>	+	<i>Medium</i>

#### Impact EW4: Opportunities for local business due to procurement by SRL.

SRL has the highest procurement spending amongst the four companies monitored for local content (DAI and GIZ, 2017), at some US\$ 20 million in 2016, almost all of which goes to companies outside of the immediate mine region.

Procurement of goods and services by SRL therefore provides very few opportunities for local (Sierra Leone) individuals and businesses, but is nevertheless significant. Over time, it is anticipated that SRL's operations may promote new local (Sierra Leone) producers of goods and services. The intensity of this benefit is limited by the capacity of local industries to supply the development.

Dry mining activities will prolong the LOM, which in turn ensures the ongoing procurement of goods and services in general. The procurement of local goods and services in the short and long-term could positively impact recipients in the study area and surrounds, given prevailing levels of unemployment and poverty.

Procurement-specific mitigation measures should be further investigated by SRL, to ensure any action taken to enhance access and / or build capacity of local businesses is appropriately targeted. The undertaking for mitigation measures for this impact will begin to address the long-term implications of mine closure and the need for local contractors and businesses to diversify and become self-sufficient and viable without SRL.

This impact has a low positive significance before management and a potential medium positive significance with management during operation. The impact will no longer occur once the mine has been closed. Refer to Table 5-17.

**Table 5-17: Impact EW4: Opportunities for local business due to procurement by SRL.**

Impact EW4								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	+	<i>Medium</i>
<b>Opportunities for mitigation and management</b> <ul style="list-style-type: none"> <li>• Procure locally wherever possible and formalise procurement approaches in policies and procedures;</li> <li>• Monitor implementation of local recruitment;</li> <li>• Monitor incidences of corruption and nepotism;</li> <li>• Facilitate appropriate business training and provide assistance where local response to procurement opportunities can be enhanced;</li> <li>• Ensure fair access to information about tenders/opportunities; and</li> <li>• Support training of small and medium business enterprises.</li> </ul>								
<b>After Management: operation</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Possible</i>	<b>Medium</b>	+	<i>Medium</i>
<b>After Management: post closure</b>	<i>Opportunities will no longer be available at SRL, although residual impacts might be present due to training and assistance provided by SRL.</i>						-	<i>High</i>

### Impact EW5: Lease payment income for land owners as a result of mining activities.

SRL pays surface rent in line with the Sierra Leone legislative requirements. In 2018 SRL paid Le5 168 682 000 in surface rent, a 3% increase on the rent paid in 2017 (Awoko, 2018) and equivalent to US\$821 743<sup>23</sup>. The surface rent income to land owners could therefore have a significant impact if managed. The feedback from land owners were that the income was not deemed sufficient and should be increased, especially in light of the lack of other benefits from the mine.

With sufficient financial acumen and the appropriate application of the surface rent, the income could have a significant positive impact. SRL provided additional context (2017) noting that the number of people in the land holding families had grown, which meant the same land area had to be divided amongst more people. The same applies to the land for which rent is paid, where the increase in population means that more people have to make a living out of the same finite resource.

This impact has a medium positive significance before management and a potential high positive significance with management. The impact will no longer occur once the mine has been closed and the land has been returned to the landowning families post successful rehabilitation. Refer to Table 5-18.

**Table 5-18: Impact EW5: Lease payment income for land owners as a result of mining activities.**

Impact EW5								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Local</i>	<b>Medium</b>	<i>Definite</i>	<b>Medium</b>	+	<i>Medium</i>
<b>Opportunities for mitigation and management</b> <ul style="list-style-type: none"> <li>• Work with the land owners to assess the possibilities for enhancing the benefits of the income; and</li> <li>• Discuss expectations and use of income for local infrastructure development and maintenance.</li> </ul>								
<b>After Management: operation</b>	<i>Major</i>	<i>Long term</i>	<i>Local</i>	<b>High</b>	<i>Definite</i>	<b>High</b>	+	<i>Low</i>
<b>After Management: post closure</b>	<i>The benefit will cease after mine closure.</i>						-	<i>High</i>

<sup>23</sup> At an exchange rate of 6 289.9 quoted in CIA Factbook (2017)

### 5.4.5 Uses of and access to infrastructure and services

Social impacts associated with the access to infrastructure are as follows:

- **Impact SS1:** Improved infrastructure where provided by SRL (roads, water, sanitation etc.) due to SRL investment, resulting in better quality of life.

#### Impact SS1: Improved infrastructure due to SRL investment, improving quality of life.

Roads in the study area are important access routes to markets, schools and places of work. The continued maintenance and development of roads will facilitate business development in the study area and encourage economic activities outside of SRL's operations. The baseline is described in Section 4.8.2.

Improved infrastructure has been provided by SRL, which has resulted in an improved quality of life for people in the study area. SRL has indicated that while they will continue to maintain the road infrastructure relevant for current and future operations, they will not develop any new infrastructure programmes. Instead, the Community Development Committee established by SRL with the communities, will be responsible to identify development projects for implementation. SRL will fulfil a mentoring and supporting role to national, district and local government and non-profit organisations active in the study area, will help facilitate provision and maintenance of infrastructure.

As such, SRL's role in the continued maintenance and, where applicable, expansion of the road infrastructure network is seen to be a positive impact, particularly following suggested management measures. This impact has a positive low significance before management and a potential positive medium significance with management during operation and after closure. Refer to Table 5-19.

**Table 5-19: Impact SS1: Improved road infrastructure where provided by SRL, resulting in better quality of life.**

Impact SS1								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Short term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	+	<i>Medium</i>
<b>Opportunities for mitigation and management</b> <ul style="list-style-type: none"> <li>• Education provision to local business and government on the maintenance of roads provided by SRL;</li> <li>• Continue to provide infrastructure maintenance for existing SRL supported infrastructure; and</li> <li>• Implement regular briefing sessions with relevant Paramount Chiefs and sectoral ministries represented by local government. These meetings should clarify roles and responsibilities and SRLs role and contribution.</li> </ul>								
<b>After Management: operation</b>	<i>Moderate</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Possible</i>	<b>Medium</b>	+	<i>Medium</i>
<b>After Management: post closure</b>	<i>Moderate</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Possible</i>	<b>Medium</b>	+	<i>Medium</i>



### 5.4.6 Social divisions and vulnerable groups

Social impacts associated with social divisions and vulnerable groups are as follows:

- **Impact SD1:** Dissatisfaction over limited jobs due to high unemployment and poverty in the study area.
- **Impact SD2:** Distrust in leadership due to corruption (or unfair advantage) or perceptions thereof.
- **Impact SD3:** Dissatisfaction over perceived procurement inequities.
- **Impact SD4:** Dissatisfaction over perceived preferences in development investment, and engagement.
- **Impact SD5:** Disproportionate impacts on vulnerable groups due to their status in the community / study area.

**Impact SD1: Dissatisfaction over limited jobs due to high unemployment and poverty in the study area.**

Expansion of SRL operations has created an expectation of further and significant employment. Against the background of unemployment, poverty, and the dependency on subsistence agriculture (the main economic activity in the country), the finite number of jobs that SRL, the main employer in the area, can provide for the local community has promoted and may continue to promote a level of dissatisfaction. This is particularly true of the youth, many of whom voiced their frustration at an inability to find employment at SRL.

Tension between the mine and communities may occur should employment benefits not be evident and / or be deemed inadequate. The dissatisfaction impact has a negative medium significance before management and a potential negative low significance with management during operation. Post closure jobs will not be provided by SRL, and dissatisfaction about job losses may be present; this is dealt with in EW1. Refer to Table 5-20.

**Table 5-20: Impact SD1: Dissatisfaction over limited jobs due to high unemployment and poverty in the study area.**

Impact SD1								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Definite</i>	<b>Medium</b>	-	<i>High</i>
<b>Opportunities for mitigation and management</b> <ul style="list-style-type: none"> <li>• Implement mitigation measures as described in EW1;</li> <li>• Develop and maintain regular communication with local communities and other stakeholders to minimise tensions relating to employment and expansion benefits; and</li> <li>• In consultation with the local leadership, implement measures to decrease the in-migration of potential job seekers into the area through the development and implementation an Influx Management Plan in conjunction with relevant external stakeholders.</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	-	<i>Medium</i>
<b>After Management: post closure</b>	<i>The dissatisfaction will cease after mine closure, although dissatisfaction with closure may occur.</i>						+	<i>High</i>

### Impact SD2: Distrust in leadership due to corruption (or unfair advantage), or perceptions thereof.

Dissatisfaction over alleged corrupt or unfair practices were raised. If leadership is seen by local people to benefit unfairly or illegally from this relationship, a lack of trust in the leadership and in SRL might ensue. Erosion of trust in leadership can have many consequences, including social division and the emergence of alternative power groupings.

Currently, this has a negative medium significance however if managed correctly as per SRL's current practices, the impact significance would present as negative low during operation and after closure. After closure, some distrust in leadership may still remain in the short term. Refer to Table 5-21.

**Table 5-21: Impact SD2: Distrust in leadership due to corruption (or unfair advantage) or perceptions thereof.**

Impact SD2								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Possible</i>	<b>Medium</b>	-	<i>Medium</i>
<b>Opportunities for mitigation and management</b> <ul style="list-style-type: none"> <li>• Strict adherence to the SRL's Anti-Bribery and Corruption Policy is enforced;</li> <li>• SRL to continue to acknowledge and respect local customs, in accordance with SRL's Anti-Bribery and Corruption Policy;</li> <li>• SRL to continue to encourage stakeholders to report evidence regarding alleged bribery and corruption to SRL for investigation;</li> <li>• Clarification and elaboration of recruitment and employment policies and practices during stakeholder engagement processes by SRL;</li> <li>• Clarification and elaboration of compensation policies and practices during stakeholder engagement processes by SRL;</li> <li>• Ensure fair access to information about jobs and compensation; and</li> <li>• Ensure the CAD team is adequate in size, and competent.</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Short term</i>	<i>Site or local</i>	<b>Low</b>	<i>Unlikely</i>	<b>Low</b>	-	<i>Medium</i>
<b>After Management: post closure</b>	<i>The impact will cease after mine closure, although residual distrust in local leadership might remain.</i>						+	<i>Medium</i>

### Impact SD3: Dissatisfaction over perceived procurement inequities.

The expansion of SRL operations may create an expectation of further and significant local procurement opportunities. Dissatisfaction is evident in the study area, where the social baseline suggests that opportunities have allegedly proven to be marred by reportedly corrupt or unfair practices (Section 4.5). While this may only be a perception, it is one which can result in conflict between local service providers and SRL should it not be managed effectively.

Without mitigation, a negative medium significance rating was determined however mitigation would aid in changing this perception to negative low. After closure some dissatisfaction may still remain in the short term. Refer to Table 5-22.

**Table 5-22: Impact SD3: Dissatisfaction over perceived procurement inequities.**

Impact SD3								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Possible</i>	<b>Medium</b>	-	<i>Medium</i>
<b>Opportunities for mitigation and management</b> <ul style="list-style-type: none"> <li>Implement mitigation measures as described in EW1.</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Short term</i>	<i>Site or local</i>	<b>Low</b>	<i>Possible</i>	<b>Low</b>	-	<i>Medium</i>
<b>After Management: post closure</b>	<i>The impact will cease after mine closure, although residual dissatisfaction might remain.</i>						+	<i>Medium</i>

### Impact SD4: Dissatisfaction over perceived preferences in development investment and engagement.

SRL has undertaken social and development expansions under its community development programme. Against the background of ongoing operations and potential expansion, these activities are likely to continue through the Community Development Committee. An ongoing challenge for SRL is to ensure that, through the Community Development Committee, community development investment is fairly distributed among the settlements and communities impacted by SRL. If inequities in development investment are perceived, and especially if unfair practices are assumed, dissatisfaction will continue.

With and without mitigation, a negative medium significance rating was determined during operation. After closure, some dissatisfaction may still remain in the short term. Refer to Table 5-23.

**Table 5-23: Impact SD4: Dissatisfaction over reduced development investment inequalities.**

Impact SD4								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Definite</i>	<b>Medium</b>	-	<i>High</i>
<b>Opportunities for mitigation and management</b> <ul style="list-style-type: none"> <li>• Active participation in the Community Development Committee, and mentoring and support for this initiative;</li> <li>• Promote and support participatory community development planning;</li> <li>• Ensure adequate application and access to the Grievance Management Procedure as well as reasonable response turnaround times;</li> <li>• Pursue joint social services and infrastructure expansions and programmes with NGOs (with a focus on education) through the Community Development Committee; and</li> <li>• Production and dissemination of information on development investments and activities, based on monitoring and evaluation results and reports.</li> </ul>								
<b>After Management: operation</b>	<i>Moderate</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Possible</i>	<b>Medium</b>	-	<i>Medium</i>
<b>After Management: post closure</b>	<i>The impact will cease after mine closure, although residual dissatisfaction might remain.</i>						+	<i>Medium</i>

### Impact SD5: Disproportionate impacts on vulnerable groups due to their status in the community / study area.

Vulnerable groups in the study area (specifically youth, elderly, women, children and disabled) may be disproportionately subject to negative impacts of mining and may have reduced access to positive benefits such as access to employment albeit short term and for unskilled labour, although this has not been identified as a key concern in an assessment of the social baseline data. These disadvantages may be underpinned by social and structural relationships, marginalisation and lack of access to information about mitigation measures and beneficial activities, and therefore not as a result of the conduct of the mine only. Community development expenditure amounted to Le1.01 billion (approximately US\$135 000) in the second half of 2016, and Le1.26 billion (approximately US\$202 000) in the second quarter of 2017 (SRL, 2018).

With and without mitigation, a negative medium significance rating was awarded. After closure, some vulnerable groups may be advantaged, and others disadvantaged depending on their unique situations. Refer to Table 5-24.

**Table 5-24: Impact SD5: Disproportionate impacts on vulnerable groups.**

Impact SD5								
	Magnitude	Duration	Scale	Consequence	Probability	SIGNIFICANCE	+ / -	Confidence
<b>Before Management</b>	<i>Moderate</i>	<i>Long term</i>	<i>Site or local</i>	<b>Medium</b>	<i>Definite</i>	<b>Medium</b>	-	<i>Low</i>
<b>Opportunities for mitigation and management</b> <ul style="list-style-type: none"> <li>• Identification of vulnerable groups and understanding the sources of marginalisation and disadvantage; and</li> <li>• Inclusion of requirements to consider vulnerable groups in all mitigation measures and developmental activities (the latter including recruitment, procurement, training and capacity building and stakeholder engagement).</li> </ul>								
<b>After Management: operation</b>	<i>Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Definite</i>	<b>Medium</b>	-	<i>Low</i>
<b>After Management: post closure</b>	<i>Minor</i>	<i>Medium term</i>	<i>Site or local</i>	<b>Low</b>	<i>Definite</i>	<b>Medium</b>	-	<i>Low</i>

## 5.5 Overview and discussion of impacts

The identified impacts associated largely with current activities are a mix of positive and negative. The proposed SRL expansion may be argued to embody more positive than negative socio-economic impacts. In both cases, if positive impacts are reinforced and entrenched, and negative impacts are appropriately and effectively mitigated, ongoing operations and proposed changes can play an enhanced role as an important driver of social and economic development.

The positive impacts are potentially sharpened by the depressed local economy and the poverty of many study area residents. These circumstances also bring risk, especially where the benefits of SRL are seen to be reaching only a few beneficiaries, and where SRL is expected to take the role of government. In this context, the cost-effective distribution of benefits and the management of expectations are key challenges.

Specific issues related to the impacts are the following:

- Positive impacts are currently spread across a range of receptors (from households to government). These impacts largely relate to jobs, incomes, procurement and the payment of taxes and levies; and
- Some negative impacts are potentially severe for small but vulnerable groups of receptors (for example loss of access to land, crops and livelihood resources).

Table 5-25 presents an overview of the socio-economic impacts identified, assessed and rated.

**Table 5-25: Overview of impacts**

Impact Name (abbreviated)	+ / -	Consequence		Significance	
	Impact type	Before Mgt.*	After Mgt.	Before Mgt.	After Mgt.
<b>Health and Safety</b>					
Impact HS1: Increased crime as a result of the influx of job seekers, employees and business owners.	-	Medium-Low	Low	Medium-Low	Low
Impact HS2: Instances of drowning and risk thereof due to mine ponds, resulting in mental health stress impacts on next of kin and the broader community.	-	Medium	Low	Medium	Low
Impact HS3: Increased traffic resulting in irritation relating to dust and noise.	-	Medium	Low	Medium	Low
Impact HS4: Altered movement patterns to access services, fields, natural resources and villages resulting in dissatisfaction and frustration.	-	Medium	Low	Medium	Low
<b>Population, political structures and organisations</b>					
Impact PP1: Community disruption due to influx of non-local job seekers, employees and business owners.	-	Medium	Low	Medium	Low
Impact PP2: Increased pressure on infrastructure and social services due to influx, impacting on quality of life.	-	Medium	Low	Medium	Low
<b>Use of land and loss of access to resources</b>					
Impact LR1: Loss of (or loss of access to) land, crops and livelihood resources in the	-	Medium	Low	Medium	Medium

Impact Name (abbreviated)	+ / -	Consequence		Significance	
	Impact type	Before Mgt.*	After Mgt.	Before Mgt.	After Mgt.
expansion footprint areas due to mining activities.					
Impact LR2: Loss (or loss of access to) cultural resources and sites due to mining activities restricting / encompassing land.	-	Low	Low	Low	Low
Impact LR3 Increase in fishing and aquaculture opportunities as a result of mine ponds (existing and non-rehabilitated).	+	Low	Medium	Low	Medium
Impact LR4: Perceived decrease in the quality of drinking water and perceived unsuitability of mine pond water for drinking, resulting in lack of access to drinking water.	-	Medium	Low	Medium	Low
Impact LR5: Increased access to domestic water due to existence of mine ponds.	+	Low	Medium	Low	Medium
<b>Economy, work and livelihoods</b>					
Impact EW1: Contribution to national and regional economic growth due to investment.	+	Medium	Medium	Medium	Medium
Impact EW2: Increased government income due to payment of taxes and royalties.	+	Medium	Medium	Medium	Medium
Impact EW3: Continued employment and income opportunities as a result of ongoing and expanded operations at SRL.	+	Medium	Medium	Low	Medium
Impact EW4: Opportunities for local business due to procurement at SRL.	+	Low	Medium	Low	Medium
Impact EW5: Lease payment income for land owners as a result of mining activities.	+	Medium	High	Medium	High
<b>Use of and access to infrastructure and services</b>					
Impact SS1: Improved road infrastructure where provided by SRL, resulting in better quality of life.	+	Low	Medium	Low	Medium
<b>Social divisions and vulnerable groups</b>					
Impact SD1: Dissatisfaction over limited jobs due to high unemployment and poverty in the expansion area.	-	Medium	Low	Medium	Low
Impact SD2: Distrust in leadership due to corruption (or unfair advantage), or perceptions thereof.	-	Medium	Low	Medium	Low
Impact SD3: Dissatisfaction over perceived procurement inequities.	-	Medium	Low	Medium	Low
Impact SD4: Dissatisfaction over perceived preferences in development investment, and engagement.	-	Medium	Medium	Medium	Medium
Impact SD5: Disproportionate impacts on vulnerable groups due to their status in the community / expansion area.	-	Medium	Low	Medium	Medium

The ESHMP (SRK, 2018(6)) presents proposed management measures to reduce the significance of negative impacts. It is based on the preceding impact assessment and analysis, and it addresses mitigation and development requirements and opportunities. The timing of management actions is considered, including imperatives before and during construction. The key elements of closure planning and management are also considered, but not in detail.



## 6 Conclusions

This report presents the SIA undertaken by SRK for SRL. This document in turn informs the overall ESHIA and ESHMP (SRK, 2018(6)). Apart from legal and regulatory compliance, the overarching purpose of the SIA is to provide a framework and platform for the mitigation of negative impacts associated with SRL's expansions in the study area, and the enhancement of positive and beneficial impacts.

All mining has the potential to deliver a net positive social and developmental outcome to neighbouring communities and other stakeholders. It is hoped that this SIA will contribute to this ideal in the case of SRL and its expansion.

### Prepared by

SRK Consulting - Certified Electronic Signature



515234/43173/Report

6548-2032-7829-BRAV

This signature has been printed digitally. The Author has given permission for its use for this document. The details are stored in the SRK Signature Database

---

Victoria Braham

Social & Environmental Scientist

SRK Consulting - Certified Electronic Signature



515234/43173/Report

2246-4984-1057-BRAN

This signature has been printed digitally. The Author has given permission for its use for this document. The details are stored in the SRK Signature Database

---

Anita Bron

Principal Social Scientist

### Technical review by

SRK Consulting - Certified Electronic Signature



515234/43173/Report

1875-9410-6125-HART

This signature has been printed digitally. The Author has given permission for its use for this document. The details are stored in the SRK Signature Database

---

Tim Hart

Social and Development Consultant

### Reviewed by

SRK Consulting - Certified Electronic Signature



515234/43173/Report

3443-7225-7585-MAVA

This signature has been printed digitally. The Author has given permission for its use for this document. The details are stored in the SRK Signature Database

---

Vassie Maharaj

Partner

## 7 References

- Acusolv 2018. Sierra Rutile Study area 1- Environmental, Social and Health Impact Assessment: Specialist Noise Study. South Africa (Acusolv, 2018).
- Action on Armed Violence. 2012. Sierra Leone Armed Violence Baseline Survey Report: An Assessment of Armed Violence and Perceptions of Security in Sierra Leone. Sierra Leone, Freetown.
- Anchor Environmental Consultants 2018. Sierra Rutile Study area 1- Environmental, Social and Health Impact Assessment: Specialist Estuarine Study. South Africa (Anchor, 2018).
- Awoko. 2018. Available online: <https://awoko.org/2018/02/14/sierra-leone-news-sierra-rutile-limited-pays-le5-17-billion-surface-rent-to-land-owners/>, accessed January 2018.
- Bank of Sierra Leone. 2016. Annual Report and Statement of Accounts for the year ended 31st December 2015. Available online: <https://www.bsl.gov.sl/BSL%20ANNUAL%20REPORT%20-%202015%20pdf.pdf>, accessed January 2018.
- Beale, P.M. 2004. Sierra Leone Narrow Gauge: Narrow Gauge Branch Lines Series. Midhurst, West Sussex, UK: Middleton Press.
- CEMMATS. 2012. Sierra Rutile Limited (SRL) Environmental and Social Impact Assessment. Sierra Leone, Freetown.
- Central Intelligence Agency. 2016. "Life Expectancy At Birth". In The World Factbook. Available online: <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2102rank.html>, accessed June 2017.
- Central Intelligence Agency. 2016. Sierra Leone. In The World Factbook. Available online: <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2102rank.html>, accessed June 2017.
- Central Intelligence Agency. 2017. The World Factbook: Sierra Leone. Available online: <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2102rank.html>, accessed June 2017 and January 2018.
- Clark, A. 2017. Religion and Beliefs of Sierra Leone. Leaf Group Ltd. Available online: <http://classroom.synonym.com/religion-beliefs-sierra-leone-5307.html>, retrieved June 2017.
- Defence for Children International. 2015. A Mountain to Climb: Gender-Based Violence and Girls' Right to Education in Sierra Leone, 1-37.
- Department for International Development (DFID). 2000. Disability, Poverty and Development.
- Earth Science Solutions 2018. Environmental, Social and Health Impact Assessment: Specialist Soils and Land Capability Studies. South Africa (ESS, 2018).
- Ecologic.org. (2018). Slash and Burn Agriculture. EcoLogic Development Fund. [online] Available at: <http://www.ecologic.org> [Accessed 14 Mar. 2018].
- Everyculture. 2017. Culture of Sierra Leone: History, People, Clothing, Traditions, Women, Beliefs, Food, Customs, Family. 2017. Everyculture.com. Available online: <http://www.everyculture.com/Sa-Th/Sierra-Leone.html>, accessed June 2017.
- Farzaneh, N. 2013. Sierra Leone: An Evaluation of Teenage Pregnancy. Pilot Expansions in Sierra Leone. Evaluation Report: UNICEF.
- Gender Concerns International. 2017. The Situation of Women in Sierra Leone. Available online: <http://www.genderconcerns.org/country-in-focus/sierra-leone/the-situation-of-women-in-sierra-leone/>, accessed June 2017.
- Hauser, S & Norgrove, Lindsey. (2013). Slash-and-Burn Agriculture, Effects of. Encyclopedia of Biodiversity. 5. 551-562. 10.1016/B978-0-12-384719-5.00125-8.

Humanitarian Response. 2015. Office for the Coordination of Humanitarian Affairs: District Level. Sierra Leone.

ILO (International Labour Organisation). 2017. Country Statistics Sierra Leone. Available online: [http://www.ilo.org/ilostat/faces/oracle/webcenter/portalapp/pagehierarchy/Page21.jspx?\\_afLoop=72354195153331&\\_afWindowMode=0&\\_afWindowId=1djjvffqqi\\_1#!%40%40%3F\\_afWindowId%3D1djjvffqqi\\_1%26\\_afLoop%3D72354195153331%26\\_afWindowMode%3D0%26\\_adf.ctrl-state%3D1djjvffqqi\\_33](http://www.ilo.org/ilostat/faces/oracle/webcenter/portalapp/pagehierarchy/Page21.jspx?_afLoop=72354195153331&_afWindowMode=0&_afWindowId=1djjvffqqi_1#!%40%40%3F_afWindowId%3D1djjvffqqi_1%26_afLoop%3D72354195153331%26_afWindowMode%3D0%26_adf.ctrl-state%3D1djjvffqqi_33), accessed January 2018.

International Finance Corporation (IFC). 2017. Sierra Leone Request for a three-year arrangement under the extended credit facility – Press Release; Staff Report; and Statement by the executive Director for Sierra Leone. IMF Country Report No. 17 / 154. Available online: <http://www.imf.org/en/Publications/CR/Issues/2017/06/22/Sierra-Leone-Request-for-a-Three-Year-Arrangement-Under-the-Extended-Credit-Facility-Press-44986>, accessed January 2018.

Lam, D and Leibbrandt, M. 2013. Global Demographic Trends and their Implications for Employment: Background Research Paper. High-level Panel on the Post- 2015 Development Agenda. Retrieved from [http://www.post2015hlp.org/wp-content/uploads/2013/05/Lam-Leibbrandt\\_Global-Demographic-Trends-and-their-Implications-for-Employment.pdf](http://www.post2015hlp.org/wp-content/uploads/2013/05/Lam-Leibbrandt_Global-Demographic-Trends-and-their-Implications-for-Employment.pdf).

Mitchell, A. 2015. Ethnic groups in Sierra Leone. Retrieved from <http://creativecommons.org>.

National Advocacy Coalition on Extractives (NACE). 2009. Sierra Leone at the Crossroads: Seizing the Chance to Benefit from Mining. Available online: <http://www.christianaid.org.uk/Images/sierra-leone-at-the-crossroads>, accessed June 2017.

Okese, K. 2018. Slash and Burn: Its Negative Effects on Agriculture and Enviroment. [online] Agrihome Expressions. Available at: <http://agrihomegh.com> [Accessed 14 Mar. 2018].

Pantami SA, Voncir N, Babaji GA, Mustapha S. 2010. Effect of burning on soil chemical properties in the dry sub-humid savanna zone of Nigeria. *Researcher*. 2(7):78-83

Prelis, S. and Sankaiuah, J.J. 2015. The Worst Forms of Violence Against Children and Youth in Sierra Leone. Research Report, Sierra Leone.

Schooling For Life. 2016. Sierra Leone: Education. Available online: <http://schoolingforlife.net>, accessed June 2017.

Scientific Terrestrial Services 2018. Sierra Rutile Study area 1- Environmental, Social and Health Impact Assessment: Specialist Terrestrial, Aquatic and Wetland Ecological Studies. South Africa (STS, 2018).

SHAPE Consulting Limited 2018. Sierra Rutile Study area 1- Environmental, Social and Health Impact Assessment: Specialist Rapid Health Impact Assessment. South Africa (SHAPE, 2018)

Sierra Leone Crime and Safety Report. 2015. Product of the Research and Information Support Centre (RISC). 13 January 2015.

Sierra Leone. 2015. Economic Freedom. Available online: <http://www.heritage.org/index/country/sierraleone>, accessed June 2017.

Sierra Leone. 2015. Population forecasts: Median age of the Total Population. Available online: <https://knoema.com/atlas/Sierra-Leone/topics/Demographics/Population-forecast/Median-age>, accessed 2017.

Sierra Leone. 2015. ReliefWeb. Available online: <http://reliefweb.int/country/sle>, accessed September 2017.

Sierra Leone. 2016. Median age. Available online: <https://en.actualitix.com/country/sle/sierra-leone-median-age.php>, accessed September 2017.

- SOS Children's Village International. 2017. SOS Children's Village Freetown. Available online: <http://www.sos-childrensvillages.org/where-we-help/africa/sierra-leone/freetown>, accessed 2017.
- SRK, 2014. 450300/RAP02. Previous Resettlement Activities by SRL: Lessons Learnt. Prepared for SRL.
- SRK, 2017a. House Hold Survey.
- SRK, 2017b. Rapid Rural Appraisal.
- SRK, 2017c. Interviews.
- SRK. 2017d. Focus Group Discussions.
- SRK 2018(1). Sierra Rutile Project Area 1- Environmental, Social and Health Impact Assessment: Specialist Air Quality Impact Assessment. South Africa (SRK 2018(1)).
- SRK 2018(4). Sierra Rutile Project Area 1- Environmental, Social and Health Impact Assessment: Surface Water Study. South Africa (SRK 2018(4))
- SRK 2018(5). Sierra Rutile Project Area 1- Environmental, Social and Health Impact Assessment: Mine Closure Plan. South Africa (SRK 2018(5)).
- SRK 2018(6). Sierra Rutile Area 1: Draft Environmental, Social and Health Impact Assessment and Management Plan. South Africa (SRK 2018(6))
- SRK 2018. Sierra Rutile Project Area 1- Environmental, Social and Health Impact Assessment and Environmental, Social and Health Management Plan. South Africa.
- SRL. 2015. Sierra Rutile Limited Annual Report and Accounts 2015. Available at: <https://sierrarutile.iluka.com/wp-content/uploads/2017/11/sierrarutile2015ar.pdf>, accessed February 2018.
- SRL, 2017. SRK discussions with SRL review team.
- Statistics Sierra Leone (SSL) and ICF Macro. 2009. Sierra Leone Demographic and Health Survey 2008. Calverton, Maryland, USA: Statistics Sierra Leone (SSL) and ICF Macro.
- Statistics Sierra Leone (SSL) and ICF Macro. 2013. Sierra Leone Demographic and Health Survey 2014. Rockville, Maryland, USA: Statistics Sierra Leone (SSL) and ICF International.
- Statistics Sierra Leone. 2013 / 2014. Integrated Household Survey. Government of Sierra Leone.
- Statistics Sierra Leone. 2015. Population and Household Census. Planning for a Better Future for Sierra Leone.
- Statistics Sierra Leone. 2015. Sierra Leone 2014 Labor Force Survey Report. Available online: [https://www.statistics.sl/wp-content/uploads/2016/06/sierra\\_leone\\_labour\\_force\\_survey\\_report\\_2014.pdf](https://www.statistics.sl/wp-content/uploads/2016/06/sierra_leone_labour_force_survey_report_2014.pdf), accessed June 2017 and January 2018.
- Statistics Sierra Leone. 2017. Moyamba District Census. Sierra Leone. Available online: <https://www.citypopulation.de/php/sierraleone-admin.php?adm1id=33>, accessed 2017.
- StreetChild. 2016. One Year on from Ebola: Sierra Leone's Ebola-Hit Children Still in Desperate Need. UK.
- Tabi, F., Mvondo, Z., Boukong, A., Mvondo, R. and Nkoum, G. 2013. Changes in soil properties following slash and burn agriculture in the humid forest zone of Cameroon. African Journal of Agricultural Research, 8(18), pp.1990-1995.
- United Nations Development Programme (UNDP). 2014. Reaching Out to People Living with Disabilities in Sierra Leone. Available online: <http://www.undp.org>, accessed 2017.

United Nations International Children's Emergency Fund (UNICEF). 2015. Children in Africa: Key Statistics on Child Survival, Protection and Development. Division Data, Research and Policy. Sierra Leone.

Vanclay, F. 2003 International Principles for Social Impact Assessment, Impact Assessment & Expansion Appraisal 21(1), 5-11. Available online:<http://dx.doi.org/10.3152/147154603781766491>, accessed January 2018.

World Bank (2017). World Development Indicators Sierra Leone. Available at: <http://databank.worldbank.org/data/reports.aspx?source=2&series=SL.UEM.TOTL.FE.ZS&country=#> accessed January 2018.

Zampaglione, G. and Ovadiya, M. 2009. Escaping Stigma and Neglect: People with Disabilities in Sierra Leone, 1-41. World Bank.

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.

## **Appendices**

## **Appendix A: Fieldworkers**



## List of Fieldworkers

Name and Surname	Contact number	Qualification	Languages spoken	Experience	Current position
Matthew Tucker (M) 28 yrs.	076-487-883	B.Sc Development and Economics, Diploma in Agricultural Science	English, Mende and Krio	Used to work for SRL as field assist and process operator (2009)	Unemployed
Alfred Kpanabom (M) 49 yrs.	078-609-903	B.Sc. Agric Education	English, Mende and Krio	Sierra Rutile household surveys in Area 1	Adult literacy teacher at Ruby Rose Educational Resource Centre
Priscilla Lombi (F) 32yrs.	076-904-894/ 088-837-603	Diploma in community development studies	English, Mende and Krio		Student at JADA
Francis Palmer (M) 48yrs.	078-319-932	Masters in Environmental Management and Quality Control B. Sc. Education	English, Mende and Krio	Has experience in surveys. Hails from Gondoma Village in Area 1	Manager in charge of Standards Department, Sierra Leone Standards Bureau
Augusta Nuwoma (F) 35yrs.	076-542-876/ 030-818-333	B.Sc. Development Studies	English, Mende and Krio	Extensive knowledge of the study area Civil society and women's right activist	Principal of Every Nation Academy National Coordinator Women's Initiative Forum for Empowerment (WIFE)
Beahtao Sallo (M) 37 yrs.	076-696-113/ 076-406-326	Higher Teacher's Certificate	English, Mende and Krio	Unemployed	Enumerator for World Vision

## Picture of Fieldworkers



---

<sup>1</sup> Fieldworkers from left to right: Matthew Tucker, Alfred Kpanabom, Priscilla Lombi, Francis Palmer, Augusta Nuwoma and Beahtao Sallo.

## **Appendix B: Attendance Registers**



# Sierra Rutile Limited Area 1 ESIA, Southern Province, Sierra Leone

## FOCUS GROUP DISCUSSION ATTENDANCE REGISTER

Focus Group Discussion Attendance Registry- NGOs/CBOs

Date: 22 August 2017

Time: 13:00pm to 15:00pm

Venue: Sierra Rutile Resource Centre

No.	TITLE	FIRST NAME	LAST NAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
1	MR	CHRISTOPHER	IBRAHIM	RUBY ROSE EDUC RESOURCE CENTRE	MORIBATOWN
2	MR	ALFRED	SENESE	Community Empowerment Movement	MOGBLEMO
3	Mr.	Edmond	Tuah	N.M.I.D	Mogbwemo
4	MR	Josie	Kpanabom	CADEM	Mogbwemo.
5	MR.	JONATHAN B.	MARGAI	UNICEF	Gbangbama

No.	TITLE	FIRST NAME	SURNAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
6	Mr	Foday	Sheniff	L.P.P.B	Monbu Bm-
7	<del>Mr</del>	Denis	Ngeba	concern citizen (NMJD)	Gbangbana
8	Rev.	Francis	Rogers	community dev. committee	monibatan
9	Mr	Musa	Kpanalon	NMJD	Mon. Sa. Joub
10					
11					
12					



# Sierra Rutile Limited Area 1 ESIA, Southern Province, Sierra Leone

## FOCUS GROUP DISCUSSION ATTENDANCE REGISTER

Focus Group Discussion Attendance Registry- Women's Group

Date: 23 August 2017

Time: 15:00pm to 17:00pm

Venue: Sierra Rutile Resource Centre

No.	TITLE	FIRST NAME	LAST NAME	ORGANISATION (Please do not use acronyms)	ADDRESS/TOWN/VILLAGE
1	Mrs	MAGSah	Amara		Monba Town
2	Miss	Marima	Ednah		Lungi
3	Mrs	Marigina	Jaltah		Gbanpang
4	Miss	Alimatu	Katekpeh		<del>Gan</del> gatoke
5	Mrs	Maniata	Lavai		Yan gatoke

No.	TITLE	FIRST NAME	SURNAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
6	Mrs	Mamie	Soluku		Junction
7	Mrs	Konah	Kpalga		Lengi
8	Mrs	Iye	Gofia		Gangbina
9					
10					
11					
12					

# Sierra Rutile Limited Area 1 ESIA, Southern Province, Sierra Leone

## FOCUS GROUP DISCUSSION ATTENDANCE REGISTER

Focus Group Discussion Attendance Registry- Organised  
Business

Date: 23 August 2017

Time: 13:00pm to 15:00pm

Venue: Sierra Rutile Resource Centre

No.	TITLE	FIRST NAME	LAST NAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
1	MISS	Mary	Bompah		Mogbwema
2	Mr	Alpha M.	Bah		Meribea Town
3		ALPHA	Masseguah		B. B. U
4		Isah	Florida-Caulton		Chair Lady
5	Mr.	Umanu	Amanu		Meribea Town



No.	TITLE	FIRST NAME	SURNAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
6	Mr.	Dennis	Mingo		Moriba Town
7	Mr.	Muctau	Bavie		Moiba Town
8	Mr	MANOUA	TSARILE		MOKABA
9	MR	John J.	KAMARA		MOIBA TOWN
10	Mr.	Senesies	Anare	UCD	Maribona
11					
12					

# Sierra Rutile Limited Area 1 ESIA, Southern Province, Sierra Leone

## FOCUS GROUP DISCUSSION ATTENDANCE REGISTER

Focus Group Discussion Attendance Registry- Family Support  
Unit & CID

Date: 23 August 2017

Time: 10:00am to 12:00 noon

Venue: Sierra Rutile Resource Centre

No.	TITLE	FIRST NAME	LAST NAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
1	ASP	Abu - Bakari	Bangura	Sierra Leone Police	Moriba Town Police Barracks
2	D/pc	Abdul W. Kawa	Kawa	Sierra Leone Police	Moriba Town Police Barracks
3	Insp	Ibrahim Soyne	Kamara	Sierra Leone Police Force	Moriba Town Police Barracks
4	D/pc	Fatmata J. Sandy	Sandy	Sierra Leone Police	Moriba Town Police Barracks
5	Insp	Konneh M.T.S.	Konneh	Sierra Leone Police	Moriba Town Police Barracks



# Sierra Rutile Limited Area 1 ESIA, Southern Province, Sierra Leone

## FOCUS GROUP DISCUSSION ATTENDANCE REGISTER

Focus Group Discussion Attendance Registry- Landowners

Date: 22 August 2017

Time: 10:00am to 12:00am

Venue: Sierra Rutile Resource Centre

No.	TITLE	FIRST NAME	LAST NAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
1	Mrs	Theresa	Gbanga	Land owner	Yungatoka
2	Chief	Makaya	Isaac	Land owner	Kanga
3	Miss	Jamie	Baylay	Land owner	Kanga
4	Chief	AFERD	Tuayame	Land owner	Lungi
5	Chief	Joe	Koyie	Land owner	Junction-6

No.	TITLE	FIRST NAME	SURNAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
6	Chief	Yusuf	Lagba	Land Owner	Kpongbanua
7	Chief	Osman	Bangdie	Land Owner	Mbellehiti
8	Chief	Thomas	Foday	Land Owner	Mbellehiti Yangatako
9					
10					
11					
12					

# Sierra Rutile Limited Area 1 ESIA, Southern Province, Sierra Leone

## FOCUS GROUP DISCUSSION ATTENDANCE REGISTER

Focus Group Discussion Attendance Registry- Ward Councillors

Date: 22 August 2017

Time: 15:00pm to 17:00pm

Venue: Sierra Rutile Resource Centre

No.	TITLE	FIRST NAME	LAST NAME	ORGANISATION (Please do not use acronyms)	ADDRESS/TOWN/VILLAGE
1	<i>Councillor</i>	Alhaji	Mrs. Kanneh	<i>Bonthe Dist. Local Council</i>	<i>Magbawemo Town</i>
2	<i>Councillor</i>	Jacob	Villa	<i>Bonthe D Council</i>	<i>Mbelleh II</i>
3					
4					
5					



# Sierra Rutile Limited Area 1 ESIA, Southern Province, Sierra Leone

## FOCUS GROUP DISCUSSION ATTENDANCE REGISTER

Focus Group Discussion Attendance Registry- Youth Groups

Date: 22 August 2017

Time: 08:00am to 10:00am

Venue: Sierra Rutile Resource Centre

No.	TITLE	FIRST NAME	LAST NAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
1	Mr	Foday	Saunders	Youth leader Gbangbama	Gbangbama
2	Mr	Boima	McKaye	Youth leader Tunchin-la	Tunchin-la
3	Mr	Jenisa	Akpanna	Youth leader Moriba Foflon	Moriba Foflon
4	Mr	Vandy	Caulker	Youth leader Mogbwe Town	Mogbwe
5	Mr	Patrick	Tuayemie	Youth leader Kabelem section	Grom grom

No.	TITLE	FIRST NAME	SURNAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
6	Mr	MOSES	Seesic	Youth leader Lungu	Lungu Village Kohle Kay
7	Mr	MORINA	Kipaka	Youth leader Junction	Junction Kohle Kay
8	Mr	MOSES	TOMMY	Youth leader Gangama	Junction Kohle Kay
9	Mr	Solomon	M. Goba	Youth leader Bigo Section	Gbangbama
10					
11					
12					



# Sierra Rutile Limited Area 1 ESIA, Southern Province, Sierra Leone

## FOCUS GROUP DISCUSSION ATTENDANCE REGISTER

Focus Group Discussion Attendance Registry - Education  
Department & School Principals

Date: 23 August 2017

Time: 08:00am to 10:00am

Venue: Sierra Rutile Resource Centre

No.	TITLE	FIRST NAME	LAST NAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
1	Mr.	Abubakar	Blengo	Technical & Vocational School	Mogbwemo II Moriba Town
2	Mr	Alusine	Bai Kamara	Ahmadigya Muslim Secondary School Mogbwemo	Mogbwemo Town
3	Rev	Simeon	Kamanda	UCC Junior for School Mogbwemo	Mogbwemo
4	Mr.	Mustapha	LEBBE	Islamic Primary School Mogbwemo	Mogbwemo
5	Pst.	Joseph, M.	Yamba	Leper Christian Academy U.S.S.	Moriba Town

No.	TITLE	FIRST NAME	SURNAME	ORGANISATION (Please do not use acronyms)	ADDRESS/ TOWN/ VILLAGE
6	MR	Solomon	A.J. Beahai	Evengnation Academy Mogbwemo	Mogbwemo
7	MR.	ROBERT F.	KYAMAHA	IMPERE SEC. SCH M / TOLIKU	MORIBA TOLIKU
8	Mr.	Tommy S.B.	Gbangbon	Ada Gorvie Jr Secondary school	Moriba Town
9	Rev	Isata	Kaura	Jackson And Devon Anderson	Kpanguma Sura Ritta
10	MR	IBRAHIM	KURUMA	ICS/JSS	MORIBA TOLIKU
11					
12					

## SRK Report Distribution Record

Report No. 515234\_Socio-economic Baseline

Copy No. 1

Name / Title	Company	Copy	Date	Authorised by
Main Report	SRL	1	March 2018	V Maharaj

Approval Signature:



This report is protected by copyright vested in SRK (South Africa) (Pty) Ltd. It may not be reproduced or transmitted in any form or by any means whatsoever to any person without the written permission of the copyright holder, SRK.