

SOCIAL AND ECONOMIC IMPACT ASSESSMENT

DRAFT REPORT

**VALENCIA URANIUM MINE
NAMIBIA**

November 2007

Prepared for

Digby Wells and Associates

by

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EXECUTIVE SUMMARY

INTRODUCTION

The proposed Valencia Uranium Project is located within the Erongo Region on the privately owned Farm Valencia (No. 122) on the eastern side of the Khan River and about 25km to the north-east of the Rössing Uranium Mine. The extent of the area covered by the Exclusive Prospecting Licence (EPL 1496) is approximately 700 hectares.

The Valencia Deposit consists of low-grade uranium ore (approximately 0.11 kg/tonne U_3O_8 at a cut-off grade of 0.06 kg/tonne U_3O_8). Based on the resource information currently available, an estimated 117 million tonnes of ore can be mined economically. Extracting this amount of ore will produce 120 million tonnes of waste rock. Production levels are estimated at 13 million tonnes of ore annually. Based on this extraction rate the life of mine is projected to be approximately 11 years. However, ongoing exploration activities are aimed at increasing the life of mine beyond this timeframe.

In terms of labour requirements the mine is expected to employ in the region of 800 personnel during the construction phase (18-24 months) and 600 during the operational phase (11 years).

APPROACH TO THE STUDY

The approach to the study included:

- A review of the issues identified during the Scoping Process as reflected in the Final Scoping Report (Enviro Dynamics and ERM, 2007);
- A review of key planning and policy documents pertaining to the area;
- Semi-structured interviews with interested and affected parties;
- A review of social and economic issues associated with similar developments;
- A review of selected specialist studies undertaken as part of the EIA;
- A review of relevant literature on social and economic impacts; and
- The experience of the authors with similar projects elsewhere in southern Africa.

KEY FINDINGS

The key findings of the study are summarised under:

- Fit with policy and planning;
- Construction phase impacts;
- Operational phase impacts;
- Decommissioning phase impacts; and
- No-development option.

Fit with policy and planning

Strategic long-term socio-economic development planning in Namibia is informed by Vision 2030, adopted in 2004. When considered as a whole, the relevant socio-economic planning documents recognise the importance of integrated and diversified economic development that makes optimal use of the area's comparative advantages including its human capital. Emphasis is also placed on the optimal management of economic benefits from development through, for example, training, education and awareness creation. The development of infrastructure, creation of employment opportunities and development of human capital are identified as key challenges. These objectives are supported by the proposed Valencia Mine.

Support for the development of uranium projects in Namibia is also forthcoming from the Ministry of Mines and Energy. Therefore, provided that the proposed mine does not result in unacceptable environmental and socio-economic impacts, it stands to reason that the Valencia Mine would maintain its in-principle fit with wider socio-economic planning requirements for Namibia.

Construction phase impacts

The construction phase is expected to last approximately 15-18 months and employ around 800 people. Initial indications are that the majority of construction workers will be housed on the site in a specially established construction camp. The option of housing construction workers and contractors in the nearby towns of Usakos, Karibib and Arandis is also being considered. However, a final decision has not been taken at this stage of the project. In this regard, the Town Council of Usakos has indicated that they would like to accommodate workers associated with the Valencia project in the town (Usakos Town Council, pers. com., 2007). However, the findings of the study indicate the potential negative impacts associated with the construction workers outweigh the benefits.

Of the total number of construction phase jobs, approximately 480 (60%) will be unskilled, 240 (30%) semi-skilled and 80 (10%) skilled jobs. The majority of the job opportunities during the construction phase are therefore unskilled jobs. The total wage bill during the construction phase would be in the region of N\$75.6 million. Based on skills levels, N\$28.8 million would be earned by unskilled workers, N\$28.8 million by semi-skilled workers and N\$18 million by skilled workers. The bulk of the wages (76%) will therefore be earned by semi- and unskilled workers. The total capital expenditure during the construction phase will be in the region of N\$ 1.26 billion. This will be spent over a two-year period.

Based on the findings of the economic assessment, the benefits associated with the construction phase of the proposed Valencia Mine (with mitigation) would be of a very high (positive) significance due to the size of the expenditure injection and the number of potential employment and income generation opportunities involved.

The no-go option would maintain the status quo and result in no impacts. However, the opportunity costs associated with the lost employment and capital expenditure would be significant.

The findings of the social assessment indicate that key social issues affecting the operational phase include:

Potential positive impacts

- Creation of employment and business opportunities, together with training and skills development.

With the implementation of the recommended enhancement measures the benefits will be of a high (positive) significance.

Potential negative impacts

- Influx of construction workers employed on the project;
- Influx of job seekers looking for work but who are unsuccessful;
- Increased risk of stock theft, poaching and damage to farm infrastructure;
- Increased risk of veld fires; and
- Impact of heavy vehicles, specifically noise and dust.

The significance of the potential negative impacts with mitigation was assessed to be of Low-Medium significance. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented.

In terms of housing the construction workers, based on the findings of other studies, it is recommended that the construction workers be housed onsite. In this regard the potential negative impacts associated with housing the construction workers in towns such as Usakos and/or Arandis outweigh the potential benefits to the local economies of these towns. The potential benefits associated with housing construction workers in Usakos and/or Arandis are also likely to accrue to individuals who are not negatively impacted upon by the construction workers. The issue of impact equity is therefore skewed in favour of those who benefit at the cost of more vulnerable members of the community, specifically young women.

Valencia Uranium Limited has indicated that although a final decision has yet to be taken, it is likely that the majority of the construction workers will be housed on the site. This will enable Valencia Uranium Limited and the appointed contractors to exercise greater control over the construction workers and, in so doing, also increase its ability to monitor, manage and mitigate the potential impacts on family structures and social networks. The initial estimate of the total number of construction workers to be housed in the construction camp is 800.

Operational phase impacts

The operational phase is expected to create approximately 600 permanent jobs for a period of 11 years. Of this total, approximately 433 jobs (72%) are expected to be taken up by Namibians. The total wage bill for the 11-year operational phase is in the region of N\$100 million and the operational budget is estimated to be in the region of N\$1 billion. The life of mine is also expected to increase with further exploration.

Based on the findings of the economic assessment the benefits associated with the operational phase of the proposed Valencia Mine (with mitigation) would be very highly

significant (positive) due to the size of the expenditure and the number of potential employment and income generation opportunities involved.

The no-go option would maintain the status quo and result in no impacts. However, the opportunity costs associated with the lost employment and capital expenditure would be significant.

The findings of the social assessment indicate that key social issues affecting the operational phase include:

Potential positive impacts

- Creation of employment and business opportunities, together with training and skills development.

With the implementation of the recommended enhancement measures the benefits will be of a high (positive) significance.

Potential negative impacts

- Influx of job seekers looking for work but who are unsuccessful;
- Impact on infrastructure and services;
- Impact on tourism;
- Impact on traffic.

The significance of the potential negative impacts with mitigation was assessed to be of low-medium significance. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented.

Decommissioning phase

The major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. The potential impacts without mitigation are rated as high (negative). With mitigation, the impacts are assessed to be medium (negative).

No-development option

For all of the issues identified there would be no impact as it maintains the current status quo. However, the potential opportunity costs in terms of the employment and capital expenditure are regarded as high (negative).

RECOMMENDATIONS

Based on the findings of the economic assessment, when considering the costs and benefits of the proposed mine, it is likely that the proposed mine will achieve a net benefit provided the financial projections of the proponent prove reasonably accurate, and provided that adequate mitigation and enhancement measures are instituted.

Based on the findings of the social assessment the mine will create significant employment and business opportunities for the Erongo Region. In order to enhance the

local employment and business opportunities the mitigation measures listed in the report should be implemented.

The mitigation measures listed in the report to address the potential negative impacts during the construction phase, specifically the presence of construction workers and influx of job seekers, should also be implemented.

LIST OF ABBREVIATIONS

CBS: Central Bureau of Statistics (formerly the CSO)
CSO: Central Statistics Office
EIA: Environmental Impact Assessment
EPL: Exclusive Prospecting License
FDI: Foreign Direct Investments
GDP: Gross Domestic Product
HAN: Hospitality Association of Namibia
HDI: Human Development Index
HIV: Human Immunodeficiency Virus
LED: Local Economic Development
MET: Ministry of Environment and Tourism
NamPower: Namibia Power Corporation
NamWater: Namibia Water Corporation
NDP: National Development Plan
NDP2: National Development Plan Number 2 for the years 2001 - 2006
NPC: National Planning Commission
RDP: Region Development Plan
SIA: Social Impact Assessment;
SME: Small/medium-sized Enterprises

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SECTION 1: INTRODUCTION

2.1 INTRODUCTION

Tony Barbour and Hugo van Zyl were appointed by Valencia Uranium Limited to undertake an independent specialist Social and Economic Impact Assessment as part of the Environmental Impact Assessment (EIA) for the proposed Valencia Uranium Mine in Namibia. The report is in a draft stage and should not, in whole or part, be reproduced for use in other documentation without the consent of the authors.

2.2 PROJECT DESCRIPTION

The proposed Valencia Uranium Project is located within the Erongo Region on the privately owned Farm Valencia (No. 122) on the eastern side of the Khan River and about 25km to the north-east of the Rössing Uranium Mine. The extent of the area covered by the Exclusive Prospecting Licence (EPL 1496) is approximately 700 hectares. A locality map of the proposed Valencia Uranium Project is provided in Figure 1.1.

The Valencia Deposit consists of low-grade uranium ore (approximately 0.11 kg/tonne U_3O_8 at a cut-off grade of 0.06 kg/tonne U_3O_8). Based on the resource information currently available, an estimated 117 million tonnes of ore can be mined economically. Extracting this amount of ore will produce 120 million tonnes of waste rock. Production levels are estimated at 13 million tonnes of ore annually. Based on this extraction rate the life of mine is projected to be approximately 11 years. However, ongoing exploration activities are aimed at increasing the life of mine beyond this timeframe.

The mine will be developed as an open pit operation. The extent of the proposed pit is approximately 1,400 m long and 700 m wide and the maximum depth of the pit is expected to be approximately 350 m. It is envisaged that a conventional load and haul method will be used to transport ore to a processing plant.

The mining activities at Valencia will be similar to those at Rössing Uranium Mine and will involve drilling and blasting, loading and hauling (using an open pit excavator and haul truck operation), disposal of waste rock, and the processing of ore. Ore will be crushed and milled to reduce the ore to a slurry, prior to uranium extraction.

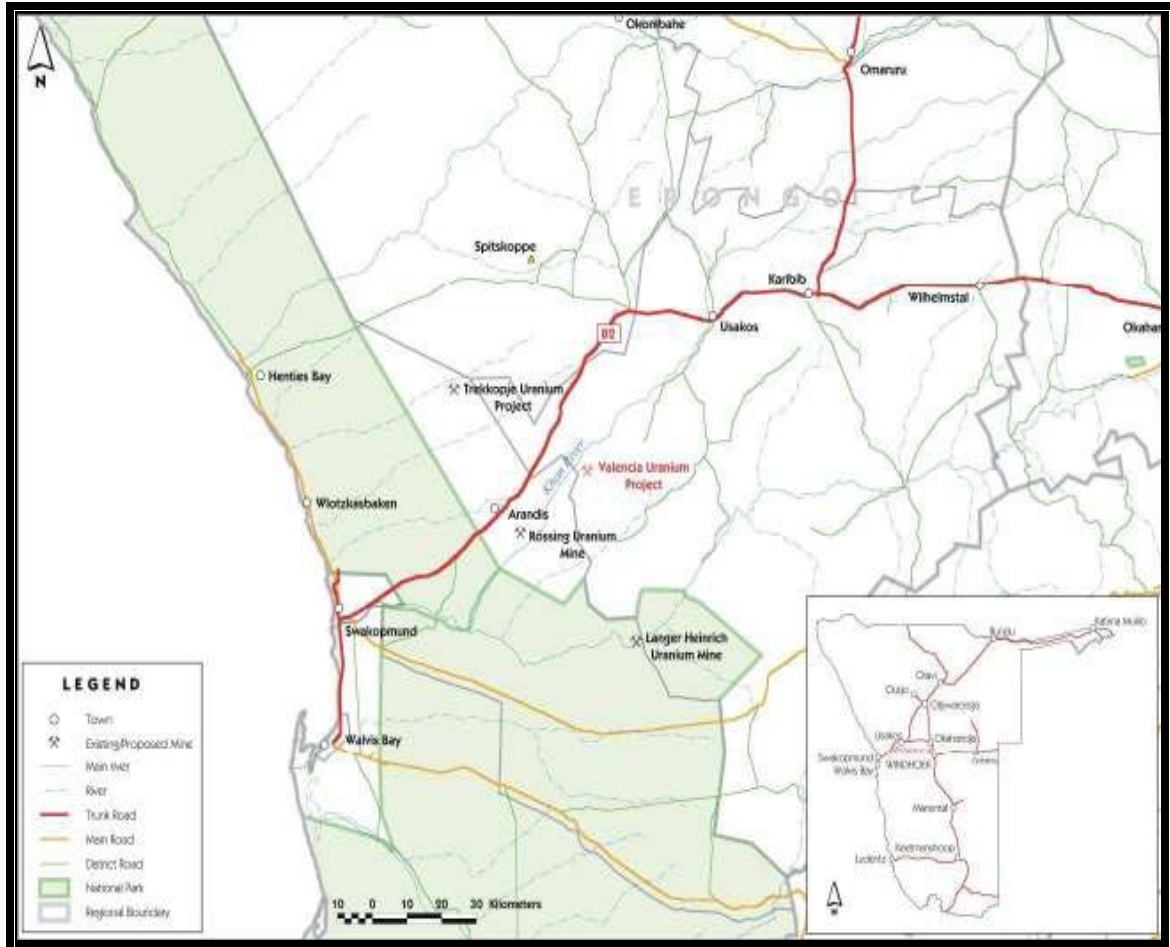


Figure 1: Regional Location of the Valencia Mine (Enviro Dynamics and ERM, 2007)

The processing of ore will take place on site and will likely follow a similar process to that used by the Rössing Uranium Mine, namely:

- Acid leaching;
- Separation of uranium bearing solution by cyclones, rotoscopes and thickeners;
- Pumping of waste material (slimes and sands) to a tailings dam for final disposal;
- Recovery of uranium from a “pregnant solution” through a continuous ion exchange (CIX) process;
- Precipitation of ammonium diurnate or “yellow cake”;
- Filtering, drying and roasting of “yellow cake” to produce the final product, which is uranium oxide (U_3O_8) in powder form; and
- Packing of the product in steel drums for transport to Walvis Bay harbour after which it will subsequently be exported overseas.

The key infrastructure requirements for the mine will be associated with the following:

- *Power:* The proposed mine will require a power supply of 20 MW. The majority of this will be for the process plant and associated infrastructure. This power will be supplied by Namibia Power Corporation (NamPower). Allowance is also being made to generate power on-site for construction and as a back-up supply.
- *Water:* The mine will require approximately 3 million m³ of water annually. The proponents are in discussion with the Namibia Water Corporation (NamWater) regarding the supply. Based on discussions with NamWater this demand will be met by the construction of a desalination plant at the coast. The construction of a pipeline to the proposed mine site will also be required. An EIA for the proposed desalination plant has been commissioned and was in the process of being completed at the time of undertaking the SIA for the Valencia mine;
- *Road Access:* For the construction phase, initial access to the site will be via Usakos via the D1914 gravel road. For the operational phase, two access routes were investigated by Africon Namibia (Africon, Interim Report, March 2007). These include accessing the main road linking Swakopmund and Usakos by crossing the Khan River Valley, and another following the Namib Naukluft Park Road. The route via the Namib Naukluft Park Road has been ruled out due to environmental considerations.

In terms of labour requirements the mine is expected to employ in the region of 800 personnel during the construction phase (18-24 months) and 600 during the operational phase (11 years).

2.3 PROJECT MOTIVATION

The motivation for the project is linked to the current shortage of uranium oxide (U₃O₈) on the International market. This is due to significant growth experienced in the nuclear power industry, mainly as a result of rapid economic growth in China and India. Demand for uranium for use in nuclear reactors planned across the globe presently exceeds supply. The price of U₃O₈ presently reflects this shortage of U₃O₈ worldwide; prices are currently at historical highs of over US\$ 100 per pound compared to US\$7 per pound in 2001 (Bonner, pers. comm., 2007). These prices and the expected continuing demand for U₃O₈ supports the motivation of the proposed mine.

2.4 ALTERNATIVES

The alternatives assessed by the Social and Economic Assessment include:

- Alternative access route options for the operational phase of the project;
- Alternative accommodation options for the construction phase; and
- The no-development, or no-go option.

2.5 APPROACH TO THE STUDY

2.5.1 Economic assessment

The approach adopted for the economic assessment component of the study involved the following steps in line with accepted EIA practice:

- Investigate the existing economic context within which the project would be established;
- Identify economic impacts;
- Evaluate economic impacts;
- Recommend mitigation measures.

Guidance on the approach was taken from the recently released Department of Environmental Affairs and Development Planning (Western Cape, South Africa) guidelines on economic specialist input to EIA processes (Van Zyl *et al.*, 2005). These guidelines were developed based on international best practice, making them equally applicable in Namibia and have been endorsed by the South African Department of Environmental Affairs and Tourism (DEAT).

Information was gathered from the following sources in order to investigate the existing economic situation that would be affected by the project:

- Information generated during focus group and one-on-one meetings with representatives from the key organisations and groups. The focus on representatives from key organisations and groups was due to the limited time available in the field;
- Census 2001 data; and
- Local Economic Development (LED) and planning documents.

Once financial viability (and associated risks) and fit with policy and planning guidelines had been considered, the impacts identified as relevant based on information from existing sources, consultations with the public and nature of the project and receiving environment have been assessed.

Details on the approaches used to assess impacts are contained in the individual sections dealing with the impacts. Impact significance rating was carried out in accordance with the guidelines provided by Digby Wells and Associates contained in Appendix A.

2.5.2 Social assessment

The approach to the study is based on the Western Cape Department of Environmental Affairs and Development Planning Guidelines for Social Impact Assessment (SIA) (Barbour, 2007). The key activities in the social assessment process embodied in the guidelines include:

- Describing and obtaining an understanding of the proposed intervention (type, scale, location), the communities likely to be affected and determining the need and scope of the SIA;
- Collecting baseline data on the current social environment and historical social trends;
- Identifying and collecting data through consultation with affected individuals and communities on the SIA variables and social change processes related to the proposed intervention;
- Assessing and documenting the significance of social impacts associated with the proposed intervention; and

- Identifying alternatives and mitigation measures.

The activities listed above required the following data gathering techniques:

- Review of demographic data from the 2001 Census Survey and other relevant sources;
- Review of relevant planning and policy frameworks for the area;
- Site specific information collected during sites visit to the area and interviews with interested and affected parties;
- Review of information from similar projects, including the Langer Heinrich EIA and Rössing's Sustainability Study (Golder & Associates, 2003);
- Review of selected specialist studies undertaken as part of the EIA; and
- Identification of social issues associated with the proposed project.

The list of stakeholders and organisations interviewed is contained in Appendix B.

2.6 ASSUMPTIONS AND LIMITATIONS

2.6.1 Assumptions

- All technical, financial (i.e. business plan and costs) and other information provided by the proponent, the proponent's project team and other official sources are assumed to be accurate.

2.6.2 Limitations

- The quantification of economic impacts in order to inform the assessment of the significance of impacts was not possible for all of the impacts. Where possible, quantification focused on those impacts considered to be most important in the overall assessment. Assessments of impact significance that were made without quantification (and based on a consideration of the likely magnitudes of impacts and/or expert judgements) are, however, considered adequate unless otherwise specified;
- The demographic data used in the study are largely based on the 2001 Census. While these data do provide useful information on the demographic profile of the affected area, they are in some cases dated. Wherever possible, this data have been supplemented with data from more recent sources, including meetings with the relevant municipalities in the area.

2.7 SPECIALIST DETAILS

Tony Barbour is an independent specialist with 18 years experience in the field of environmental management. In terms of SIA experience, Tony Barbour has undertaken in the region of 20 SIAs and is the author of the Guidelines for Social Impact Assessments for EIAs commissioned by the Department of Environmental Affairs and Development Planning (DEA&DP) in the Western Cape. Tony Barbour has also developed SIA Guidelines for the South African Department of Water Affairs and Forestry (DWAF).

Hugo van Zyl is an independent specialist with 10 years experience in the field of economic assessment. Hugo van Zyl has undertaken a wide range of economic assessments for EIA studies and is the author of the Guidelines for Specialist Economic Assessments for EIAs commissioned by the DEA&DP in the Western Cape.

2.8 DECLARATION OF INDEPENDENCE

This is to confirm that Tony Barbour and Hugo van Zyl, the specialist consultants responsible for undertaking the study and preparing the Draft Social and Economic Assessment Report, are independent and have no vested or financial interests in the proposed Valencia Uranium Mine facility being either approved or rejected.

2.9 REPORT STRUCTURE

The report is divided into four Sections, namely:

- Section 1: Introduction;
- Section 2: Description of the study area;
- Section 3: Identification of key issues; and
- Section 4: Summary of key findings and recommendations.

SECTION 2: DESCRIPTION OF THE STUDY AREA

2.1 INTRODUCTION

The significance of impacts is often highly dependent on the socio-economic environment or context within which these occur. For example, job creation in a small local community with a stagnating economy will be far more significant than it would be in a larger community with a healthy economy. In order to offer such baseline information to the impact assessment this section describes the socio-economic environment focusing on the local area and region where the majority of impacts are likely to be felt. The main information sources used were Census 2001 data and other planning documentation.

Given the scale of the project the economic context primarily includes Census 2001 information on Namibia, the Erongo Region, Swakopmund, Walvis Bay, Karibib constituency (including the towns of Karibib and Usakos) and Arandis constituency. Census information is supplemented by more recent estimates where available primarily from information provided at the meetings with the local municipalities.

2.2 LOCATION OF TOWNS AND SETTLEMENTS

The proposed Valencia Uranium Mine is located in the Erongo Region of Namibia. The total population of the Erongo Region is approximately 110,000, which constitutes 6.7% of the total population of Namibia. The closest towns to the mine are Usakos to the east, Arandis and Swakopmund to the west and the harbour port of Walvis Bay to the south west. The permanent employees of the Valencia Mine will likely find accommodation in the nearby towns of Usakos, Arandis and Swakopmund during the operational phase of the project. In this regard the Town Council of Usakos has indicated that they would strongly support employees from Valencia setting up residence in the town. During the construction phase the option of housing staff on-site in temporary housing is being considered. The alternative options are Usakos, Karibib and Arandis.

The town of Usakos is located approximately 80km to the north-east of the site on the southern banks of the Khan River. The total population of the town and its surrounding villages and settlements, e.g. Tubusis, Spitzkoppe, Goabeb, /Ubib, and Kudubis is approximately 12,000 (Usakos Municipality, 2007). Usakos origins are linked to the railway workshops built to service the narrow-gauge Otavi railway line, completed in 1906. The town prospered until 1960 when the old steam locomotives were replaced by diesel engines. Various initiatives have been initiated by the local Council to attract investment to the town, including the establishment of a brewery at the old abattoir.

The town of Arandis was established by Rössing Uranium Mine in 1976 to house its employees. However, in 1994 Arandis was handed over to the Government of Namibia

and it is now an independent town with its own administration. Before the handover, Rössing Uranium Mine provided services such as water and electricity, which were heavily subsidised. As a result of a weak tax base and limited economic activity in the town, the Arandis Town Council remains reliant on the Government to subsidise running costs. The residents of Arandis are also heavily reliant on Rössing Uranium Mine for their livelihoods. Of all the challenges associated with Rössing Uranium Mine's proposed life extension and closure, the future sustainability of Arandis is regarded as one of the critical aspects. As a result, Rössing Uranium is developing strategies to strengthen the town's future sustainability (Golder and Associates, 2003).

Swakopmund is located on the coast and recognised as Namibia's primary coastal holiday town. In this capacity the town caters for local residents and a growing number of visitors from South Africa and overseas. The town also provides support services and staff accommodation for a large number of employees of the Rössing and Langer Heinrich Uranium Mines. Rössing still remains the single largest employer of people in the two towns of Arandis and Swakopmund.

Walvis Bay is the principal port of Namibia. In addition to onshore fish processing, the harbour functions as a key export facility for processed fish, mining products and beef.

2.3 LAND USE

The proposed Valencia Mine is to be located on the western edge of the farm Valencia owned by Mr. J.F Horn. The stock carrying capacity of the farms in the area is regarded as marginal. The farms located in close proximity to the proposed mine are Namibplaas (Mr Eric Meyer), Bloemhof (Mr Piet de Man); he is very ill and does not stay on the farm any more) and Vergenoeg. Mr Meyer lives in Swakopmund and until recently Mr De Man lived on the farm. Based on the available information there are permanent residents in the farm Vergenoeg. The majority of the farms in the area are visited over weekends and are largely used for recreational purposes. Some of the farm owners have indicated that they intend to retire on their farms and are considering the development of tourist facilities (Eco.plan, 2006; Meyer, pers. comm., 2007). Livestock farming was practiced previously, but this is no longer economically viable. Hunting is also being practiced on some of the farms (Eco.plan, 2006), but this does not provide a primary source of income to the farmers.

The land to the west and northwest of the proposed mine is owned by the State and consists of un-subdivided communal land (Figure 2.1). The rural communities that live in these areas are poor and their livelihoods are based on small-scale livestock farming, small-scale mining and trading of semi-precious stones, as well as community based tourism initiatives. The closest rural communities to the proposed mine live in the vicinity of the Spitzkoppe, approximately 60km north of the site.

The area in the vicinity of the Valencia Uranium Project has not been developed as far as tourism is concerned. However, there are a number of well known tourist attractions located within a 60km radius of the site, including the Welwitschia Plains and Moon Landscape, located 40km and 50km southwest of the site respectively. The Spitzkoppe, a well know tourist attraction, are located approximately 60km to the north west of the site. In terms of tourism potential, the North-west Tourism Master Plan (MET, 2000) rates the region within which the Project falls as one with few attractions of International

appeal and a low wildlife population. Locally, the land surrounding the Project is scenically attractive. The North-West Tourism Master Plan lists luxury and mid-market lodges and community camp-sites as tourism development options for the zone in which the Valencia Uranium Project is included.

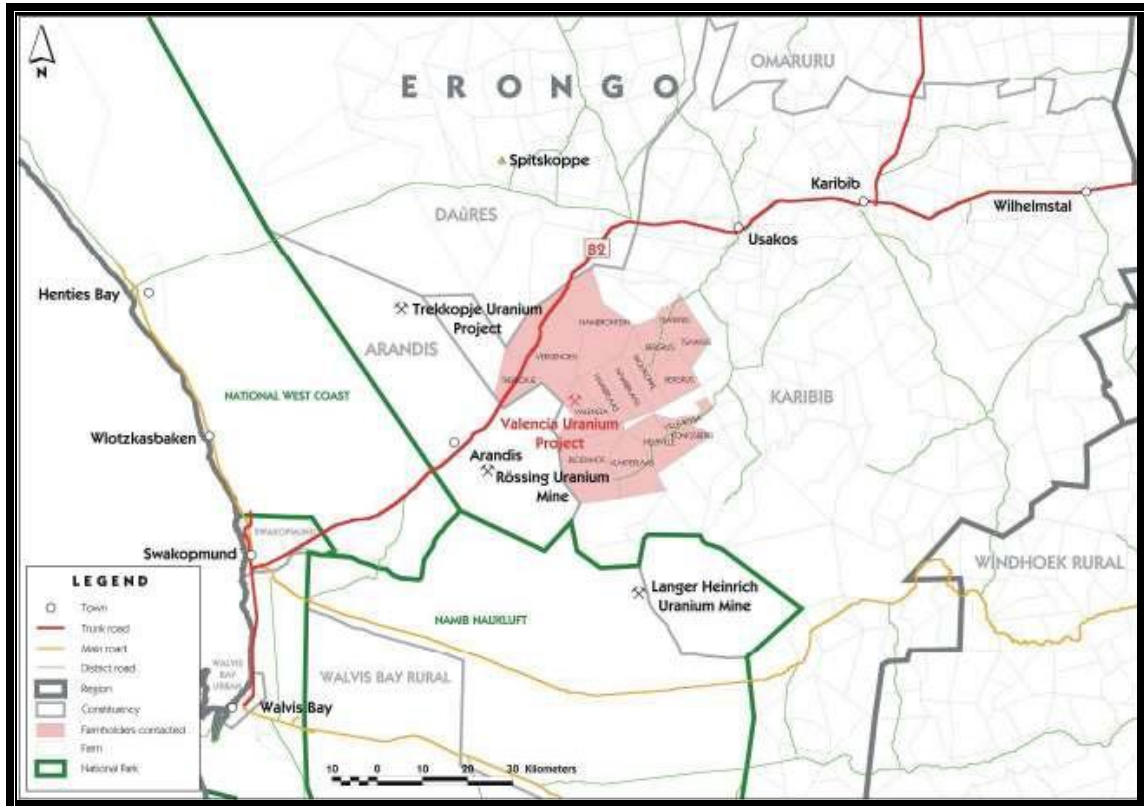


Figure 2: Surrounding commercial farms (Enviro Dynamics and ERM, 2007)

The potential development constraints of tourism in the area include the lack of accessibility, the lack of potable water supply, the lack of electricity and the area's relative distance from existing established tourist routes. Representatives from the Hospitality Association of Namibia (HAN) confirmed that the proposed mine site is located in an area not frequently used by tour operators (W. Schenck, pers. comm).

2.4 ECONOMIC GROWTH AND SECTOR TRENDS

Namibian Gross Domestic Product (GDP) growth has been relatively robust in recent years (6.7% in 2002, 3.5% in 2003, 6.6% in 2004, 4.7% in 2005 and 2.9% in 2006). Total GDP for 2006 was valued at N\$44.5 billion, with 18.2% coming from primary industries (including agriculture, fishing and mining), 19.3% from secondary industries and 54.1% from tertiary industries (NPC, 2007).

The mining sector was responsible for approximately 8.3% of GDP in 2006, 5% of which came from diamond mining. The most recent employment estimates indicate that the sector supported roughly 7,500 jobs in 2004 (SSS, 2006). Export revenues are also

dominated by mining with 52% of total foreign exchanged earnings coming from this source, 25% from fish and fish products and 13% from live animals, meat and animal products. The dominance of primary products in exports makes Namibia particularly vulnerable to fluctuations in world markets where prices for these products are determined. In the Erongo Region, fishing, mining and tourism are the key drivers of economic activity. Fishing activity is centred around Walvis Bay where the harbour also plays an important role as a key national logistical link to the rest of the world. The most prominent current mining operations in the Erongo Region include uranium mines at Rössing and, more recently, Langer Heinrich, the Navachab Gold Mine and marble extraction operations near Karibib and salt mining along the coast at Cape Cross (north of Swakopmund), and Walvis Bay. .

2.5 MUNICIPAL SERVICES

Access to household services in Swakopmund and Arandis are generally good and reflect those for the Erongo Region with over 95% of households having access to safe drinking water, in-house toilet facilities and roughly three quarters with electricity for lighting (**Error! Reference source not found.** Households in the Karibib constituency have lower service levels, 84% of households have access to safe drinking water, 35% are without toilet facilities and less than half of the households have electricity for lighting. These access levels are relatively similar to those for Namibia as a whole and are probably a reflection of the greater proportion of people living in rural areas within the Karibib constituency and not necessarily the levels in the towns that fall within the Karibib constituency, namely Usakos and Karibib.

Table 1: Household services levels (2001)

	Namibia	Erongo	Swakopmund	Walvis Bay	Karibib	Arandis
% of households with:						
Safe water	87%	96%	100%	99%	84%	96%
No toilet facility	54%	12%	5%	1%	35%	12%
Electricity for lighting	32%	73%	79%	90%	42%	73%
Access to radio	80%	89%	85%	93%	91%	89%
Wood/charcoal for cooking	62%	40%	No data	No data	No data	40%

Source: Census 2001

National census statistics indicate that 62% of people in Erongo live in formal housing while 21% live in improvised housing. Seventy nine percent of people in Arandis live in formal houses and 11% in improvised houses. However, Hoadley *et al.*'s (2005) socio-economic survey of Arandis did not find any improvised houses in Arandis using the National Development Plan (NDP) 3 definition.

Recent economic growth in Namibia and in the Erongo Region, partially fuelled by recent uranium projects in the area (i.e. Rössing expansion, Langer Heinrich), and expectations around further expansion (i.e. Valencia and potentially others) has resulted in serious concerns regarding the availability of housing. In Swakopmund, where the pressure to develop is highest, the municipality and other relevant authorities are in the process of reviewing six applications from private developers to supply approximately 2,000 serviced erven in the next few years (F. Holtzhausen, Swakopmund Municipality, pers. com., 2007). This is a substantial increase above the estimated 11,000 households in

Swakopmund. Arandis recently sold 270 stands for the future development of houses and this would also substantially increase the number of households from the 900 that are currently located there (C. Namene, Arandis Town Council, pers. com., 2007). Usakos Town Council has also reserved land for future residential development and indicated their preparedness to supply the housing needs that would arise out of the Valencia Project (Usakos Town Council, pers. com., 2007).

Housing development discussions with the Department of Housing and Rural Development indicated that the process of applying for and getting approval for the new residential erven takes approximately two years (Department of Housing and Rural Development, pers. com., 2007). This timeframe represents a potential risk in terms of available housing for new mines such as Valencia.

Aside from housing, the availability of water is regarded as a key potential constraint to development in the region and particularly nearer the coast. Swakopmund currently uses approximately 3 million m³ per annum from the Omdel aquifer. It is likely that any significant increases in demand beyond this would require desalination. In order to meet the increased demand associated with the proposed uranium mining projects in the region. NamWater is planning to develop a desalination plant to the north of Swakopmund. A separate EIA is being undertaken for the proposed desalination plant. The desalination plant will be modular in design with an initial design capacity of 15 million m³ per annum. The estimated cost of the plant is N\$1 billion (Johan Botha, NamWater, pers. com., 2007). The water from the desalination plant will cost in the region of N\$ 10-12 m³ against the current cost of N\$ 5.8 m³ for the water from the Omdel aquifer. However, in terms of the discussions with the mining companies, the residents of Swakopmund and Arandis are expected to pay a lower rate while the mining companies will be required to pay the higher rate (Johan Botha, NamWater, pers. com., 2007). The positive externality associated with the desalination plant is that the water will be mixed with the water from the Omdel scheme, which will improve the overall quality of the water supplied to the residents of Swakopmund and Arandis at no extra charge. A final decision on the pricing of the water and the cost to the mining sector has however not been taken by NamWater.

Usakos currently makes use of five of the eight boreholes in the town for water provision and excess capacity exists.

Hoadley *et al.* (2005) note that health services in Erongo are generally good, but that the high prevalence of HIV/AIDS is a serious problem. The Erongo Region has the second highest HIV prevalence in the country. The HIV prevalence rate among youth (under 29 years) was estimated at 25.9% and operational studies done on pregnant women in 2004 showed a prevalence rate of 28% in Swakopmund and 25.7% in Walvis Bay. In terms of medical services infrastructure, Usakos has one state hospital, one clinic, one consulting room for a private practitioner and a private hospital that is currently closed down, but still relatively well equipped.

2.6 POPULATION CHARACTERISTICS

2.6.1 Population and Household Size

Census results of 2001 indicate that Namibia's population was 1.83 million at the time of the survey. The Erongo region had a population of 107,663 people, 80% of which was urban, while that of Swakopmund was 26,310, Karibib 12,084 and Arandis 7,500 (Table 2). More recent estimates are that national population grew to reach two million for the first time in 2006 and that population growth rate stands at approximately 0.59%. Current estimates from the Town Councils consulted are that Usakos has a population of 7,000, Arandis 5,000, Swakopmund 45,000 and Walvis Bay roughly 56,000 inhabitants. These numbers were based on the polio immunization campaign that was carried out in late 2006.

The age profiles for the Karibib and Arandis constituencies Karibib constituency and Arandis Town? are very similar to those for Namibia as a whole with close to a quarter of their populations falling into the 5-14 years age cohort and between 55% and 59% falling into the 15-59 years cohort. The age profile for the Erongo Region as a whole (and that of Swakopmund and Walvis Bay) is older than that for Namibia with 64% of people falling into the 15-59 age cohort as opposed to 52% for Namibia as a whole.

Table 2: Population by area and age group (2001)

	Namibia	Erongo	Swakopmund	Walvis Bay	Karibib	Arandis
Population	1,830,330	107,663	26,310	44,234	12,084	7,500
Age composition, percent:						
Under 5 years	13%	11%	10%	10%	13%	11%
5 -14 years	25%	18%	17%	15%	23%	22%
15 - 59 years	52%	64%	67%	70%	55%	59%
60+ years	7%	6%	6%	5%	8%	7%

Source: 2001 Census

Household sizes in the Erongo Region are significantly smaller at 3.8 persons per household when compared to the Namibian average of 5.1 persons per household (see Table 3). Household sizes in Swakopmund are particularly low probably reflecting greater affluence in the town and the large retired community that resides there. Households in Walvis Bay are similar to those in Erongo averaging 3.9 persons per household.

Table 3: Household numbers and size (2001)

	Namibia	Erongo	Swakopmund	Walvis Bay	Karibib	Arandis
Private households:						
Number	346,455	27,496	7,526	10,897	2,966	1,906
Average size	5.1	3.8	3.4	3.9	4	3.9

Source: 2001 Census

2.6.2 Literacy and Education

Literacy rates are generally high in Namibia with 81% of people over 15 years literate. Literacy rates are particularly high in the Erongo Region where 92% are literate (see Table 4). The literacy rate in Swakopmund and Arandis is even higher at 96% and 97%, respectively while Karibib has an 86% literacy rate. School attendance rates mirror literacy rates with the higher rates of non-attendance in areas with lower literacy rates. The high literacy rates in the Erongo Region are likely to enhance the potential to maximise local employment opportunities associated with the proposed mine.

Table 4: Literacy and school attendance (2001)

	Namibia	Erongo	Swakopmund	Walvis Bay	Karibib	Arandis
Literacy rate, 15+ years	81%	92%	96%	94%	86%	97%
Education, 15+ years:						
Never attended school	15%	8%	5%	5%	14%	5%
Currently at school	34%	9%	10%	8%	9%	13%
Left school	45%	79%	82%	82%	75%	80%

Source: Census 2001

Usakos has one secondary school, two junior schools, a private school and four crèches. It also boasts a youth centre recently revamped to the value of N\$3 million. The discussions with representatives from the Usakos Municipality indicate that Usakos has capacity to accommodate more pupils. This is not the case in Swakopmund. The town planner for Swakopmund indicated that the majority of schools in Swakopmund have reached their carrying capacity (Günter Hülsmann, pers. com., 2007). This may have implications in terms of where staff members employed at the mine chose to settle.

The potential workforce in Arandis for new and expanding enterprises is largely unskilled or has relatively low skill levels (Hoadley *et al.*, 2005). Arandis has a sizeable number of unemployed youth, but there are no signs that attempts are being made to provide skills to them for active participation in the economy. Most have secondary schooling but lack marketable skills beyond this level. No data are available, but it is most likely that a similar situation exists in other smaller towns such as Usakos.

1.1.1 Employment and Income Sources

The Census results of 2001 indicate that unemployment in the Erongo Region and Walvis Bay at 34% was slightly higher than the national average of 31% (Table 5). Unemployment in Arandis at 36% was closer to the Erongo average while the percentage in Karibib (29%) and Swakopmund (30%) was closer to the national average. More up to date figures are not available for unemployment. It is, however, safe to say that it remains a major challenge. As one would expect from a low rainfall area, agriculture plays a very small role in income generation in Erongo (accounting for only 1% of total income sources) compared to the national average of 28%. Wages and salaries dominate income generation in Erongo, accounting for two thirds of incomes. This is in keeping with the dominance of non-agricultural sectors such as mining, fishing, tourism and manufacturing. The income source profile for Arandis is similar to that of Erongo while that of the Karibib constituency shows a greater reliance on agriculture (9% of incomes) and remittances when compared to the Erongo Region as a whole.

Table 5: Labour force, unemployment and main income sources (2001)

	Namibia	Erongo	Swakopmund	Walvis Bay	Karibib	Arandis
% of population in labour force	54%	71%	76%	77%	53%	69%
Unemployment %	31%	34%	30%	34%	29%	36%
Main source of income:						
<i>Farming</i>	28%	4%	1%	1%	9%	1%
<i>Wages & salaries</i>	41%	67%	73%	78%	49%	65%
<i>Cash remittances</i>	6%	8%	7%	6%	14%	9%
<i>Business, non-farming</i>	9%	8%	9%	7%	7%	7%
<i>Pension</i>	11%	10%	8%	6%	15%	15%

Source: Census 2001

Employment in Arandis is predominantly provided by Rössing Mine and is subdivided as follows (Hoadley *et al*, 2005):

Employment Sector	Number of people employed
Rössing Uranium Mine:	494
Rössing Foundation	12
Government:	123
Business:	121
National Institute of Mining Technology	65

Employment in Usakos is more focused on the provision of goods and services to surrounding villages and settlements, as well as its function as a transport hub. The Usakos Town Council is currently in negotiations with the Central Government to have the mechanical workshop for the railways that used to operate in Usakos re-opened. Discussions held with representatives of the Usakos Municipality indicate that they are strongly in favour of Valencia Mine and would like to investigate opportunities to enhance the potential benefits for the town of Usakos. In this regard, the town has well established infrastructure and services and also has affordable land that is available for housing (Joseph Jantze, CEO Usakos, pers. com., 2007).

The average annual Namibian household income was estimated at N\$43,520 during the 2003/2004 income and expenditure survey. Household incomes in the Erongo Region were higher at approximately N\$53,410 per annum for the same time period (CBS, 2006). There are clear indications that household incomes have improved over the last decade as the share of households designated as 'severely poor' - defined as those spending more than 80% of their total income on food - appears to have more than halved from 9% in 1993/94 to 4% in 2003/04. Poverty remains a predominantly rural phenomenon with 42% of all households in the rural areas classified as poor, compared to just 7% in the urban areas. Per capita income is three times higher in urban areas than in rural areas.

Income inequality remains very high with a national Gini-coefficient of 0.6 (down from 0.7 in 1993/94).

SECTION 3: ASSESMENT OF KEY IMPACTS

3.1 INTRODUCTION

The identification of the key socio-economic issues and concerns was based on:

- A review of the issues identified during the Scoping Process as reflected in the Final Scoping Report (Enviro Dynamics and ERM, 2007);
- A review of key planning and policy documents pertaining to the area;
- Semi-structured interviews with interested and affected parties;
- A review of relevant literature on social and economic impacts;
- The experience of the authors with similar projects.

The criteria used to assess the significance of the impacts are listed in Appendix A. The list of stakeholders and organisations interviewed is contained in Appendix B.

Once financial viability (and associated risks) and the fit with key policy and planning documents for the area and Namibia had been considered, the impacts identified as relevant based on information from existing sources, consultations with the public and nature of the project and receiving environment were assessed. The assessment component of the report is divided into two main sections, namely:

- Economic impacts; and
- Social impacts.

These two sections consider the potential impacts associated with the construction, operational and decommissioning phases of the proposed mine. A number of the economic and social impacts overlap and are, in some instances similar, specifically employment and business opportunities associated with the proposed mine. An assessment of the no-development option and decommissioning is also provided.

3.2 FINANCIAL VIABILITY AND RISKS

Long-term positive economic impacts can only be achieved if a project is financially sustainable i.e. financially viable in the long term with enough income to cover costs. Project alternatives that do not meet this criterion are thus not worth investigating further unless their lack of financial viability stems from distortions that make them artificially unviable. With this in mind, the viability of project alternatives is briefly considered in this section before continuing with the assessment of impacts.

The primary responsibility for showing the financial sustainability of the mine lies with the project proponent. The proponent has indicated that they are confident that financial viability can be achieved. Their view of the market for uranium has led to the belief that the development would indeed be a financial success. This is reflected in the Company's

willingness to invest roughly N\$1.2 billion in the construction of the project. Risks do however apply to the investment, as they would to similar investment decisions. In essence, the demand for, and price of, uranium needs to live up to the proponent's expectations in order for the project to be financially viable.

With regards to demand there are a number of supporting factors that should result in continued robust demand. Plans for significant nuclear power plant construction in China and India, plans for the first nuclear power plants in the United States since the 1970s, and continued political instability in major oil producing nations and increased pressure to substitute fossil fuels due to their contribution to global warming paint a very positive picture for the uranium price looking ahead (SSS, 2006). Future price levels are, however, a debatable subject and predictions in this regard vary widely. Some analysts predict long term prices well over US\$100/lb (Katusa, 2007), while others are of the opinion that prices would decline between US\$40/lb and US\$60/lb (Grigor, 2007). Figure 3.1 shows the uranium price over a 20-year period and illustrates its meteoric rise from roughly US\$10/lb in 2003 to a high of US\$135/lb in June 2007 and back down to US\$92/lb in mid-November 2007. The previous high was approximately US\$43/lb, which was achieved in the late 1970s at the height of the oil crisis.

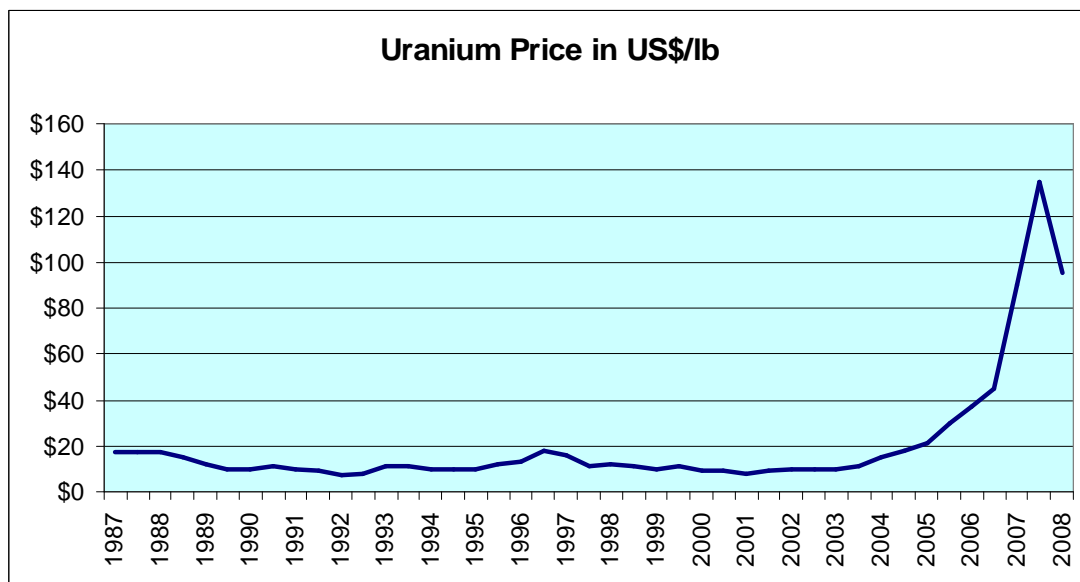


Figure 3: Uranium price over time (Source: UxC.com)

In order to estimate likely future demand and price levels, Forsys Metals Corp (FSY) conducted an in-depth review of market conditions at the outset of the project and found that demand should remain robust. For their pre-feasibility study they assumed a uranium price of US\$100 for the first three years of operation and US\$75 thereafter (Snowden, 2007). These price levels would result in a high degree of financial viability and return on the project allowing for the mining of lower grade ores. Estimates are difficult, but if the price was to drop to below US\$60, there would probably be a need for some scaling back of mining – i.e. low grade ores that were a viable prospect at high prices could no longer be mined profitably. This assumes that no other higher-grade deposits are found in the interim. A significant decrease beyond US\$60 would probably result in further scaling back and, should they prove severe and sustained, may even

force closure. It should be noted, however, that longer-term pricing contracts often contain price floors that can ensure continued viability even if spot prices drop. Should Valencia Uranium be able to use these to their advantage, the possibility of serious losses and even closure would be reduced.

Current market conditions are thus supportive of the financial viability of the project. However, risks remain given the nature of the uranium market particularly in the recent past. The current price of US\$92 augers well, but only two years ago it was US\$30, which was the assumed price level Paladin used in reaching its decision to go ahead with its Langer Heinrich Mine (SSS, 2006).

The primary implication of the level of financial risk associated with the project (and mining in general) is that adequate funds need to be set aside so that the mine could be properly shutdown and rehabilitated should market conditions force premature closure. It is imperative that these funds be set aside in a trust, or similar instrument, that is only accessible for clearly defined purposes with prior approval from the relevant authorities. Contingency plans also need to be carefully considered with regard to the potential for socio-economics impacts such as potential retrenchments. The need for this is illustrated by the impact of retrenchments at Rössing Mine on the town of Arandis during the 1990's.

3.3 PLANNING CONSIDERATIONS

A critical aspect of assessing economic desirability is whether the proposed development complements the socio-economic planning vision and policies for the area. The proposed mine thus ideally needs to be in line with what is envisaged in the planning documents in order to complement the optimal spatial distributions of economic activity as envisaged in these plans and policies. Alternatively, if the development is not aligned with existing planning, there is or would be a need for clear and compelling reasons why a deviation from planning should be considered.

The same rationale applies to an assessment of the social impacts and opportunities. In this regard legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. A key component of the SIA process therefore requires the assessment of the proposed development in terms of its consistency with key planning and policy documents of the area. As such, if the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported.

At a strategic long-term level, socio-economic development planning in Namibia is informed by Vision 2030 adopted in 2004. This vision has eight major objectives namely to:

- Ensure social equality;
- Consolidate peace and political stability in the country;
- Develop competitive human resources and an efficient public sector;

- Develop a globally competitive economy;
- Provide a high standard of living for all;
- Ensure the sustainable development of the country's "natural capital";
- Achieve knowledge- and technology-based economic growth; and
- Achieve regional integration and international stability.

Socio-economic planning actions are dominated by periodic National Development Plans (NDPs), which provide comprehensive guidance regarding the desired direction of development. These plans are revised approximately every five years and the NDP 3 is currently in draft form as the period covered by NDP 2 (i.e. 2001-2006) has come to an end. NDP 3 (2007-2011) is geared towards the acceleration of economic growth and the deepening of rural development, and is considered to be the first systematic attempt to translate Namibia's overarching growth plan, Vision 2030, into concrete policies and actions (Sasman, 2007). Table 6 illustrates the links between draft objectives outlined in NDP 3 and the overarching priorities of Vision 2030.

Table 6: Links between Vision 2030 and NDP 3

Priority (Vision 2030)	Objective (NDP 3)
1. Equality and Social Welfare	<ul style="list-style-type: none"> • Reduction of inequality • Promotion of cultures and traditions • Rights of women and children
2. Peace and Political Stability	<ul style="list-style-type: none"> • Participatory democracy • Territorial integrity • Consolidation of the rule of law
3. Productive and Competitive Human Resources and Institution	<ul style="list-style-type: none"> • Modernisation of the education sector • Efficiency of public service
4. Competitive Economy	<ul style="list-style-type: none"> • Development of infrastructure • Job creation • Enterprise creation
5. Quality of life	<ul style="list-style-type: none"> • Improved access to healthcare • Combating HIV/AIDS • Combating malnutrition
6. Productive utilisation of Natural Resources and Environmental Conservation	<ul style="list-style-type: none"> • Managed use of natural assets • Protection of the environment • Energy supply
7. Knowledge based and technology driven nation	<ul style="list-style-type: none"> • Development of Information Technology and Communications
8. Regional and International Stability and Integration	<ul style="list-style-type: none"> • Strengthening regional integration • Forming development partnerships • Contribution to international stability

Source: FDFA, 2007

Although national planning sets the tone for development, more emphasis has been placed on regions to play a more active role in development supported by the Decentralisation Enabling Act of 2000. In 2000, the Erongo Region Development Plan

(RDP) was drawn up by the Erongo Regional Council and emphasised the need to widen the economic base of the region to increase the regional income and create work opportunities for its inhabitants.

Considered as a whole, socio-economic planning documents for Namibia recognise the importance of integrated and diversified economic development that makes optimal use of the area's comparative advantages, including its human capital. Emphasis is also placed on the optimal utilisation of economic benefits from development through, for example, training, education and awareness. The development of infrastructure, creation of employment opportunities and development of human capital are identified as key challenges.

Support for the development of uranium projects in Namibia is also forthcoming from the Ministry of Mines and Energy. Therefore, provided that the proposed mine does not result in unacceptable environmental and socio-economic impacts, it stands to reason that the Valencia Mine would maintain its in-principle fit with the wider socio-economic planning requirements for Namibia. The assessment section (Section 3) of this report and the other specialist reports that form part of the EIA process provide the necessary information to allow the decision-making authorities to make an informed decision in this regard.

3.4 ECONOMIC IMPACTS OF THE CONSTRUCTION PHASE

The construction and operational phases of the project will both result in a spending injection into the area that would lead to increased economic activity best measured in terms of impacts on employment and associated incomes in the local area and region.

All new expenditures will lead to direct, indirect and induced impacts on employment and incomes. Taking employment as an example: impacts would be direct where people are employed directly on the proposed project (e.g. jobs such as construction workers), indirect - where the direct expenditure associated with a project leads to jobs and incomes in other sectors (e.g. purchasing building materials maintains jobs in that sector) and induced; where jobs are created due to the expenditure of employees and other consumers that gained from the project. Direct impacts are the most important of the three categories as they are more likely to be felt in the local area. Their estimation also involves the lowest level of uncertainty. The quantification of indirect and induced impacts is a far less certain exercise due to uncertainty surrounding accurate multipliers particularly at a local and regional level. This uncertainty makes it inadvisable to quantify indirect employment unless an in-depth analysis is clearly required. Potential direct employment and income impacts are consequently quantified here and likely indirect impacts are borne in mind qualitatively when providing overall impact ratings.

3.4.1 Construction phase expenditure

Construction expenditure would constitute a significant positive injection of new investment in the economy. Preliminary estimates indicate that a total of approximately N\$1.26 billion would be spent on all aspects of the entire construction phase over a period of 15 months (see Table 7 below).

Table 7: Construction phase expenditure

Expenditure category	Total expenditure (N\$)	2008 Expenditure (N\$)	2009 Expenditure (N\$)
Earthworks	134,170,000	80,502,000	53,668,000
Civils	107,470,000	42,988,000	64,482,000
Structural Steel	61,820,000	18,546,000	43,274,000
Platwork	159,900,000	47,970,000	111,930,000
Mechanical Equipment	531,300,000	212,520,000	318,780,000
Piping	51,800,000	10,360,000	41,440,000
Vehicles and Cranage	8,800,000	2,640,000	6,160,000
Infrastructure Inclusive of Buildings	75,000,000	22,500,000	52,500,000
Power supply (incl backup)	100,000,000	50,000,000	50,000,000
Road Construction	30,000,000	30,000,000	-
TOTAL (excl contingencies & owners costs)	1,260,260,000	518,026,000	742,234,000

Source: Valencia Uranium Limited (2007)

The development has the potential to have a significant positive impact on commercial activity in the local area during construction given its size. During the construction phase the building construction, civil and other construction and specialist industrial machinery sectors would benefit substantially. The structural metal products, wholesale and retail trade and brick making sectors would also stand to gain due to indirect linkages. The expansion would also provide a major injection for contractors and workers in the area who would in all likelihood purchase goods and services in the region leading to positive indirect impacts. Table 8 gives an indication of what percentage of construction expenditure would go to local Namibian companies. The majority of these companies are likely to be located in the main towns of Walvis Bay, Swakopmund and Windhoek.

Imports would primarily come in the form of specialised machinery, structural steel, piping and platwork. Less specialised inputs such as earthworks, buildings, civil works and road construction would primarily be sourced from Namibian companies or the Namibian subsidiaries of South African (SA) companies.

Table 8: Proportion of local construction phase expenditure per geographic area

Expenditure category	% Construction Expenditure in Namibia	Comment
Earthworks	80	Major SA contractors that will be used are Namibian Registered
Civils	80	Major SA contractors that will be used are Namibian Registered
Structural Steel	30	Major SA contractors that will be used are Namibian Registered. Steel supply and fabrication will be done in SA
Platework	30	Major SA contractors that will be used are Namibian Registered. Platework supply and fabrication will be done in SA
Mechanical Equipment	30	Major SA contractors that will be used are Namibian Registered.
Piping	30	Major SA contractors that will be used are Namibian Registered. Piping supply and fabrication will be done in SA
Vehicles and Cranage	80	Assumed that vehicles and cranes will be supplied locally or imported in by local suppliers
Infrastructure Inclusive of Buildings	80	Major SA contractors that will be used are Namibian Registered.
Power supply (incl backup)	100	Through NamPower with possible use of local consultants. Backup generators supplied locally or imported by local suppliers
Road Construction	100	Namibian Company

Source: Valencia Uranium Limited (2007)

3.4.2 Construction phase employment opportunities

In order to estimate direct temporary employment during construction, standard construction industry estimates for labour requirements were sourced from Valencia Uranium Limited. It should be borne in mind that the estimates should not be regarded as precise and are meant to give an indication of potential employment impacts only.

Table 9 outlines the total construction phase employment that would be associated with the project. Approximately 800 contract jobs of 15-month duration each would be associated with all construction expenditure, the majority of which would be low and medium skilled positions in keeping with the nature of the construction required. Approximately 100% of unskilled, 70% of semi-skilled and 40% of skilled workers would come from Namibia and mostly from the Erongo Region resulting in 680 job opportunities for Namibians. Note that these estimates are based largely on an assessment of the availability of labour in these areas and it is the proponent's intention to use a greater proportion of local labour if people are available and/or willing to be trained.

Table 9: Estimated direct temporary employment during construction

	Total number of workers needed				Duration of employment contracts for construction
	Skilled	Semi-skilled	Unskilled	Total	
Construction - all workers	80	240	480	800	15 Months
Anticipated % from Namibia	40%	70%	100%		
Construction - from Namibia	32	168	480	680	

Source: Valencia Uranium Limited (2007)

3.4.3 Construction phase income from wages

Direct household income impacts would flow from all wages paid during construction. These were estimated by multiplying the projected number of direct jobs associated with the construction phase of the project (see Table 10) with the assumed average monthly salaries for each skill category. Again, these estimates are to be treated as indicative. The results of this exercise (Table 10) indicate that total incomes of N\$75 million would be associated with the construction phase. Approximately N\$56 million of this total would accrue to Namibian workers.

Table 10: Direct household income impacts during construction

	Total annual income per skills level (N\$)				Duration of employment contracts for construction
	Skilled	Semi-skilled	Unskilled	Total	
Construction - all workers	18,000,000	28,800,000	28,800,000	75,600,000	15 Months
Anticipated % from Namibia	40%	70%	100%		
Construction - from Namibia	7,200,000	20,160,000	28,800,000	56,160,000	

In addition to the above direct employment and associated income opportunities, a significant number of temporary indirect opportunities would be associated with the project. These would stem primarily from expenditure by the proponent in the local area and region as well as expenditure by workers hired for the construction phase. This income would be spent in the local economy of towns such as Usakos, Karibib, Arandis, Swakopmund and Walvis Bay.

3.4.4 Impact assessment of construction phase expenditure

An assessment of the significance of the combined impacts of project-related expenditure associated with the construction phase on commercial activity (reflected in increased employment and incomes) is presented in Table 11. Impacts with enhancement measures would be of a very high (positive) significance during construction at a regional level given the size of the expenditure injection and the number of potential employment and income generation opportunities involved. The no-

go option would maintain the status quo and result in no positive impacts. However, the opportunity costs associated with the lost employment and capital expenditure would be significant.

Table 11: Impact assessment of project expenditure on employment and incomes during the construction phase

	No Mitigation	Mitigation
Extent	Regional (4)	Regional (4)
Severity	Medium (3)	Medium-High (4)
Duration	Short-Medium Term (2)	Short-Medium Term (2)
Consequence	9	10
Probability	High (5)	High (5)
Status	Positive	Positive
Confidence	High	High
Significance	High (50%)	Very High (60%)

Recommended enhancement measures

In order to enhance local employment and business opportunities associated with the construction phase the following measures should be implemented:

Employment

- Where possible, Valencia Uranium should implement a 'local's first' policy for jobs. This should also apply to contracting firms. However, due to the low skills levels in the area, the majority of skilled posts are likely to be taken by people from outside the area;
- Valencia Uranium Limited should investigate the option of establishing recruitment offices in Usakos, Karibib, Arandis and Swakopmund prior to the commencement of the construction phase in order to identify locals who can be employed on the project. A skills audit should also be undertaken to assess the ability to maximise the opportunities for local residents;
- The local authorities, community organisations and leaders should be informed of the final decision regarding the project and the potential job opportunities for locals;
- Where required, training and skills development programmes should be initiated prior to the initiation of the construction phase; and
- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.

Business

- Valencia Uranium Limited should develop a database of local firms that qualify as potential service providers (construction companies, catering companies, waste collection companies, etc.) prior to the commencement of the tender process. These companies should be notified of the tender process and invited to bid for project-related work;
- Where possible, Valencia Uranium Limited should assist firms to fill in and submit the required tender forms;
- Local businesses should ensure that they identify and cater for the needs of the construction workers (to maximise spending of wages within the local economy); and

- The local chamber of Commerce and hospitality industry should identify strategies aimed at maximising the potential benefits associated with the project.

Note that while preference to local employees and firms can be justified, it should be based on competitive business principles in order to maximise overall welfare. Salaries for local employees and payments to local service providers thus need to be competitive relative to non-locals.

The experience at Rössing Mine also indicates the advantages associated with the provision of basic financial management skills to employees if the benefits of their pay packages are to be meaningful. Despite good pay packages, a large proportion of workers were found to be under financial stress in the Arandis socio-economic review (Hoadley *et al.*, 2005). In this regard Valencia Uranium should provide life skills training to new employees that include a course on basic financial management. This will also assist to address potential socio-economic impacts associated with the decommissioning phase of the project.

In keeping with National Government aims to spread economic opportunities more evenly, it is recommended that Usakos be investigated as an option for housing construction workers that are not accommodated on-site. Capacity exists in the town to host workers and the Town Council has expressed strong support for linking up with the Valencia Project. The other candidate towns (Swakopmund and Arandis) have benefited from other projects in the past and will benefit from the new proposed uranium mines, such as the Trekkopje Uranium Project. In addition, the findings of the study indicate that the capacity of community services in Swakopmund, specifically schools, is limited. The cost of land in Usakos will also be considerably cheaper than in Swakopmund. Unlike Arandis, Usakos also has the advantage that is it not a mining town whose development is solely based on mining. This is likely to improve the chances of achieving long-term sustainability once the mine closes.

3.5 ECONOMIC IMPACTS OF THE OPERATIONAL PHASE

3.5.1 Operational phase expenditure

The key operational phase impacts associated with expenditure by the proponent and therefore as a direct result of the proponent's actions would come in the form of increased spending on operations at the mine and plant. Operational cost would total approximately N\$1 billion once the mine is fully operational, including staff expenditure of approximately N\$100 million (Table 12)

Table 12: Expenditure during operations

Expenditure category	Annual operational costs (N\$)
Reagents	455,000,000
Water	33,000,000
Power	55,000,000
Fuel & lubricants	97,000,000
Labour	109,000,000
Maintenance	102,000,000
Miscellaneous	13,100,000
Equipment (financed)	150,000,000
Total Opex	1,014,100,000

Source: Valencia Uranium Limited

Table 13 provides information on what percentage of additional operational expenditure would go to Namibian suppliers. Local utility companies such as NamWater and NamPower would be key local beneficiaries along with fuel and lubricant suppliers.

Table 13: Operational expenditure in Namibia

Expenditure category	% Operating Expenditure Local	Comment
Reagents	10%	Imported through warehouse facility in Walvis Bay.
Water	100%	NamWater
Power	100%	NamPower
Fuel & lubricants	100%	Local supplier
Labour	90%	Labour can be sourced locally
Maintenance	10%	Some spares for mechanical equipment etc could be sourced locally
Miscellaneous	50%	Product drums could be made locally. Laboratory equipment and supplies imported
Equipment (financed)	70%	Mining Contractor costs - SA based & locally registered

Source: Valencia Uranium Limited

3.5.2 Operational phase employment opportunities

For the operational phase, approximately 600 permanent employment opportunities would be created. Approximately 100% of unskilled, 60% of semi-skilled and 50% of skilled workers would come from Namibia and mostly from the Erongo Region resulting in 433 opportunities for Namibians (see Table 13).

Table 14: Estimated direct employment during operations

	Number of employees			
	Skilled	Semi-skilled	Unskilled	Total
All employees	90	306	204	600
Anticipated % of employees from Namibia	50%	60%	100%	
Employees from Namibia	45	183.6	204	433

Source: Valencia Uranium Limited

3.5.3 Operational phase employment income

Jobs associated with the operational phase (Table 15) would translate into significant income injections into the region and country. Out of total salaries paid (i.e. N\$100 million), approximately N\$55 million would accrue to Namibians (Table 15).

Table 15: Estimated direct incomes during operations

	Total annual income per skills level (N\$)			
	Skilled	Semi-skilled	Unskilled	Total
All employees	27,000,000	61,200,000	11,832,000	100,032,000
Anticipated % of employees from Namibia	50%	60%	100%	
Employees from Namibia	13,500,000	30,600,000	11,832,000	55,932,000

In addition to the above direct employment and associated income opportunities, indirect opportunities would be associated with the operational phase of the project. These would be of a low to medium significance and stem primarily from increased expenditure by Valencia Uranium Limited in the local area and region.

3.5.4 Impact assessment of operational phase expenditure

An assessment of the significance of the combined impacts of project-related expenditure during the operational phase (reflected in increased employment and incomes) based on the findings above is presented in Table 16. Impacts with enhancement would be highly significant during the operational phase at a regional level given the size of the expenditure and the number of potential employment and income generation opportunities involved.

The no-go option would maintain the status quo and result in no impacts. However, the opportunity costs associated with the lost employment and capital expenditure would be significant.

Table 16: Impact assessment of project expenditure on employment and incomes during the operational phase

	No Mitigation	Mitigation
Extent	Regional (4)	Provincial (4)
Severity	Medium-High (4)	High (5)
Duration	Medium-Term (3)	Medium-Term (3)
Consequence	11	12
Probability	High (5)	High (5)
Status	Positive	Positive
Confidence	High	High
Significance	High (55%)	Very High (60%)

Recommended enhancement measures

The enhancement measures listed in Section 3.4.4 to enhance local employment and business opportunities also apply to the operational phase.

3.5.5 Increased royalties, taxes and foreign exchange inflows

The majority of the impacts associated with project expenditure outlined above would flow to the local area around the mine and region. Positive impacts would also be felt at a national macro-economic level, particularly in the form of royalty payments, income or corporate tax and foreign exchange inflows from the sale of uranium to overseas buyers. Note that positive impacts on the general national production measured using GDP would also be significant although these are not measured here.

Table 17 presents rough estimates on the most likely range of magnitudes for these impacts for the life of the mine based on Valencia’s pre-feasibility study. Figures are all in net present value terms and show that, provided that uranium prices remain in a similar range to those expected by the proponent, royalties would come to between N\$250 million and N\$300 million over the eleven year life of the mine. Corporate income tax rates are yet to be decided on, but based on prevailing rates, between N\$800 million and N\$1.3 billion should accrue to the national fiscus. Foreign exchange inflows of between US\$2 billion and US\$2.5 billion (Table 17) are also expected and would have a significantly positive impact on the balance of payments even when imports required for the project are considered.

Table 17: Increased royalty, taxes and foreign exchange flows

Impact category	Net Present Value of impacts for the life of the mine
Royalties paid to National Government	N\$250 million - N\$300 million
Income tax paid to National Government	N\$800 million - N\$1.3 billion
Foreign exchange inflows	US\$2 billion - US\$2.5 billion

An assessment of the significance of the combined impacts of the project on key national macro-economic variables (reflected in increased royalties, income tax and foreign exchange inflow) based on the findings above is presented in the table below. Impacts would have high significance at a national level given the size of the direct inflows involved and the potential for significant indirect impacts (e.g. government

revenues would also receive a boost from VAT payments made by the proponent when purchasing local goods and from income tax payments from Valencia Uranium Limited employees).

Table 18: Impact assessment on increased royalty, taxes and foreign exchange flows

	No Mitigation	Mitigation
Extent	National (5)	N/A
Severity	High (4) (Positive implications)	N/A
Duration	Medium-Term (3)	N/A
Consequence	12	N/A
Probability	High (5)	N/A
Status	Positive	N/A
Confidence	High	N/A
Significance	High (60%)	N/A

No mitigation is required.

Assessment of No-Go option

There is no impact as it maintains the current status quo. However, the potential opportunity costs in terms of foregone employment and capital expenditure are high.

3.6 ECONOMIC IMPACTS OF THE DECOMMISSIONING PHASE

The decommissioning phase for the mine is expected to be of a relatively short duration. Approximately 130 workers would be required over six months with roughly 100 of these coming from Namibia (see Table 19). Total salaries paid during this phase would be approximately N\$3 million.

Table 19: Estimated direct employment during decommissioning

	Total number of workers needed				Duration of employment contract for decommissioning
	Skilled	Semi-skilled	Unskilled	Total	
All workers	20	56	54	130	6 months
Anticipated % from Namibia	50%	60%	100%		
From Namibia	10	33.6	54	98	

Source: Valencia Uranium Limited

An assessment of the significance of the combined impacts of project-related expenditure associated with decommissioning (reflected in increased employment and incomes) based on the findings above is presented in **Error! Reference source not found..** Decommissioning would be a smaller component resulting in medium

significance impacts with mitigation. The no-go would maintain the status quo and result in no impacts.

Table 20: Impact assessment of project expenditure on employment and incomes during the decommissioning phase

	No Mitigation	Mitigation
Extent	Regional (4)	Regional (4)
Severity	Very low (1)	Low (2)
Duration	Short Term (1)	Short Term (1)
Consequence	6	7
Probability	High (5)	High (5)
Status	Positive	Positive
Confidence	High	High
Significance	Very low (30%)	Low (35%)

Recommended enhancement measures

The mitigation measures listed in Section 3.4.4 to enhance local employment and business opportunities also apply to the decommissioning phase.

3.7 SOCIAL IMPACTS OF THE CONSTRUCTION PHASE

The key social issues affecting the construction phase include:

Potential positive impacts

- Creation of employment and business opportunities, and the opportunity for skills development and onsite training.

Potential negative impacts

- Influx of construction workers employed on the project;
- Influx of job seekers looking for work but who are unsuccessful;
- Increased risk of stock theft, poaching and damage to farm infrastructure;
- Increased risk of veld fires; and
- Impact of heavy vehicles, specifically noise and dust.

3.7.1 Creation of employment and business opportunities

Based on the information provided by Valencia Uranium Limited the construction phase is expected to last approximately 15-18 months and employ in the region of 800 people. The majority of these jobs are likely to be filled by men. The construction phase will be broken down into a civil and building phase, including earthworks and structures, followed by an installation and machinery phase. Initial indications are that the majority of construction workers will be housed on the site in a specially established construction camp. The option of housing construction workers and contractors in the nearby towns of Usakos, and Arandis is also being considered. However, a final decision has not been taken yet. In this regard the Town Council of Usakos has indicated that they would like to accommodate workers associated with the Valencia Project in the town (Usakos Town Council, pers. com., 2007).

Of the total number of construction phase jobs approximately 480 (60%) will be unskilled, 240 (30%) semi-skilled and 80 (10%) skilled jobs. The majority of the job opportunities during the construction phase are therefore unskilled jobs. The total wage bill during the construction phase would be in the region of N\$75.6 million. Based on skills levels N\$28.8 million will be earned by unskilled workers, N\$28.8 million by semi-skilled workers and N\$18 million by skilled workers. The bulk of the wages (76%) will therefore be earned by unskilled and semi-skilled workers. The majority of these workers are expected to be Namibians. Depending on the level of local employment, a percentage of the wage bill associated with the construction phase will be earned by local residents. Given the relatively low-income levels in the area this represents a significant opportunity for both the community and the local economy.

The total capital expenditure during the construction phase will be in the region of N\$ 1.26 billion. This will be spent over a two-year period.

The employment opportunities associated with the proposed development are likely to represent a significant positive socio-economic opportunity for the local and regional economy. In terms of employment opportunities for the inhabitants of the Erongo Region, these are likely to be largely confined to the unskilled and semi-skilled job categories. Workers employed and trained during the construction phase would also be in a position to gain skills and experience that would enable them to apply for work on other construction projects in Namibia. In this regard the proposed development of other uranium mines in the area would benefit from the skills and experience of the workers employed at the Valencia Mine. Likewise, the workers employed at Valencia will benefit from the employment opportunities associated with the other mining projects in the area.

In terms of business opportunities, the expenditure of N\$1.26 billion during the construction phase will create business opportunities in the national, regional and local economy. In addition, a proportion of the total wage bill of N\$5.6 million earned by construction workers over the 15-18 month construction phase will be spent in the regional and local economy. This will also create additional opportunities for local businesses in Usakos, Karibib, Arandis and Swakopmund.

The local hospitality industry is also likely to benefit during the construction phase. These benefits are associated with accommodation and meals for professionals (engineers, quantity surveyors, etc.) and other personnel involved on the Project. The local economy will therefore benefit from the injection of capital associated with the construction phase of the Project.

The local service industry is also likely to benefit during the construction phase. The potential opportunities for the local service sector would be linked to catering, cleaning, security, etc. Experience from other large construction projects indicates that the potential opportunities are not limited to onsite construction workers but also to consultants and product representatives that will be needed by the project. Information from PPC's Dwaalboom Cement Factory construction project in South Africa indicates that over a period of a month (22 August –20 September 2007) there were 1,671 project-related visitors to the Dwaalboom site, which equates to 64 project related visits per day. This creates significant opportunities for the local hospitality sector.

Table 21: Impact assessment of employment and business creation opportunities during the construction phase

	No Mitigation	Mitigation
Extent	Local-Regional/Provincial (4)	Local-Regional/Provincial (4)
Severity	Medium (3)	Medium-High (4)
Duration	Medium-Short Term (2) (Limited to the construction phase)	Medium-Short Term (2) (Limited to the construction phase)
Consequence	9	10
Probability	High (5)	High (5)
Status	Positive	Positive
Confidence	High	High
Significance	High (45%)	High (50%)

In an area where unemployment levels are relatively high (34% for the Erongo Region), the opportunity to create employment opportunities, even if it is temporary employment, is regarded as a significant (high) positive impact.

Assessment of No-Go option

There is no impact as it maintains the current status quo. However, the potential opportunity costs in terms of the employment and capital expenditure are regarded as high.

Recommended enhancement measures

The recommended enhancement measures are listed in Section 3.4.4.

3.7.2 Influx of construction workers

The presence of construction workers during the construction phase poses a potential social risk to the communities in the towns of Usakos and Arandis, and to a lesser extent Swakopmund. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on the local community. In this regard there are two potential areas of concern, namely:

- The disruption of existing family structures and social networks; and
- Stress on existing municipal services. This aspect is discussed in Section 3.8.3.

The potential impact on family structures and social networks are linked to the potential behaviour of male construction workers, including:

- An increase in alcohol and drug use;
- An increase in crime levels;
- The loss of girlfriends and or wives to construction workers;
- An increase in teenage and unwanted pregnancies;
- An increase in prostitution; and
- An increase in sexually transmitted diseases (STDs).

These aspects are all interrelated, specifically the links between alcohol, drugs, sexual behaviour (including prostitution) and crime. Table 21 assesses the significance of the potential impact on construction workers on the local communities.

Increase in alcohol and drug use

The experience with many large construction projects is that there is an increase in alcohol and drug use associated with the presence of construction workers. The majority of these men have disposable incomes, which can be spent on alcohol and drugs. In addition, these men are removed from the normal day-to-day norms and responsibilities of their local domestic context.

Increase in teenage and unwanted pregnancies, sexually transmitted diseases and prostitution

The experience with many large construction projects where single male workers are housed in compounds either on or off the site is that there is an increase in teenage and unwanted pregnancies, sexually transmitted diseases and prostitution associated with the project. The majority of these men also have disposable income, which in areas with high unemployment and low-income levels can also create opportunities for prostitution.

Unplanned and/or unwanted pregnancies can also have a significant impact on family and social networks. The immediate impacts are on the single mothers and their families and the pressure (time and financial) required to support another member of the family. Women who fall pregnant may also be victimised by members of the local community and in some instances may also be ostracised by their families. The chances of young, single, mothers breaking the poverty cycle is also greatly diminished. This has implications for the mother, her family and the child. In the longer term, unplanned and/or unwanted children also place increased pressure on social services, such as schools and clinics in the area.

The increased risk of prostitution may lead to:

- Deterioration in community values;
- Stigmatisation and victimisation of local women who become involved in prostitution. Local women who resort to prostitution may find themselves ostracised by their families and the local community; and
- Secondary crime associated with prostitution, such as drugs and fights, etc.

The presence of a large number of single males in the community will also increase the risk of STDs being introduced to and/or spreading within the community, specifically HIV/AIDS. In this regard the Erongo Region has the second highest HIV incident rate in Namibia.

Increase in crime levels

The concerns relating to crime are often closely related to the potential anti-social behaviour linked to the construction workers, specifically where alcohol, drugs and prostitution are involved. The concerns in this context include:

- Sexual assaults and rape;
- Fights, and violent crime, such as assaults (stabbings and shootings); and
- Murder.

Loss of wives and/or partners to construction workers

The local communities will be vulnerable in terms of the potential impacts on family and social networks caused by losing partners and/or wives to construction workers. The loss of partners and/or wives to construction workers will impact on the family and social networks and create tension and conflict both within the affected families and between the construction workers and the affected parties. This tension may result in violence, in the form of fights, stabbings, shootings and even murder.

Increased spending power in the local economy

The influx of workers will also result in additional spending in the local economy. The influx of workers will, therefore, also have a positive socio-economic benefit. The benefits of wages spend during the construction phase are discussed in Section 3.4.

Table 22: Assessment of impact of construction workers on local communities

	No Mitigation	Mitigation
Extent	Local-Regional (4)	Local-Regional (4)
Severity	Medium (3)	Minor-Medium (2)
Duration	Medium-Short Term (2) (The threat of the impact occurring in limited to the construction phase. However, in some instances the duration of the impact, such as STDs, may be permanent)	Medium-Short Term (2) (The threat of the impact occurring in limited to the construction phase. However, in some instances the duration of the impact, such as STDs, may be permanent)
Consequence	9	8
Probability	Medium (3)	Low-Medium (2)
Status	Negative Positive (linked to additional spending in the local economy)	Negative Positive (linked to additional spending in the local economy)
Confidence	Medium-High	Medium-High
Significance	Low-Medium (27%)	Low (16%)

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

Based on the findings of other studies it is recommended that the construction workers be housed on site. In this regard the potential negative impacts associated with housing the construction workers in towns such as Usakos and/or Arandis outweigh the potential benefits to the local economies of these towns. The potential benefits associated with housing construction workers in Usakos and/or Arandis are also likely to accrue to individuals who are not negatively impacted upon by the construction workers. The issue of impact equity is therefore skewed in favour of those who benefit at the cost of more vulnerable members of the community, specifically young women.

Valencia Uranium Limited has indicated that although a final decision has yet to be taken it is likely that the majority of the construction workers will be housed on site. This will enable Valencia Uranium Limited and the appointed contractors to exercise greater

control over the construction workers and, in so doing, also increase its ability to monitor, manage and mitigate the potential impacts on family structures and social networks. The initial estimate of the total number of construction workers to be housed in the construction camp is 800 people.

The mitigation measures that can be considered to address the typical social impacts associated with construction workers include:

Policy level mitigation measures

- Implementation of a basic employment policy for the construction phase that seeks to maximise the number of locals employed on the project, including those that need to be housed in the construction camp.

In order to maximise the benefits for local residents it is recommended that Valencia Uranium Limited implements the following criteria when identifying construction workers to be employed during the construction phase, specifically unskilled and semi-skilled workers:

- Construction workers should be recruited from localities that are nearby the Valencia Mine (Walvis Bay, Swakopmund, Arandis, Usakos, Karibib and Omaruru); and
- Construction workers should be able to provide proof of having lived in one of the above towns for five years or longer.

These employment criteria have a number of social advantages, namely:

- It increases the ability of construction workers to go home over weekends. The findings of the study undertaken at the Berg River Dam in the Western Cape, South Africa (Dr Shakti Malan, 2007), indicate that it is important for workers to be able to return to their homes and families on a regular basis. Not only does this benefit the workers themselves, but it also reduces potentially negative interaction between the construction workers and the local community, which in turn, reduces the potential risks to the local community; and
 - It reduces the risk of construction workers staying behind once their contract comes to an end. Workers who have lived in an area for five or more years are likely to have established social roots in the area and are less likely to want to stay at the mine when their contracts come to an end.
- In order to maximise the number of locals employed during the construction phase Valencia Uranium Limited should:
 - Establish an Employment Forum. The forum should consist of representatives from the Erongo Region and local communities in the area, specifically the towns of Usakos, Karibib, Arandis and Swakopmund;
 - Establish a Community Liaison Forum to ensure transparent communication between the mine and local communities;
 - A key function of the Employment Forum should be the establishment of a recruitment/labour desk for the construction phase and the development of a database of locally available skills in the area. The desk should be set up as early as possible. Labour offices should be established in Swakopmund, Arandis and Usakos to enable job seekers to register for the project;
 - The Employment Forum should also identify potential labour employment brokers who are familiar with the area and the skills available.

- Valencia Uranium Limited should establish a Monitoring Forum for the construction phase. The Forum should be established before the construction phase commences and include key stakeholders including representatives from the adjacent farmers and local authorities, specifically Usakos, Arandis and Swakopmund. The role of the Forum would be to monitor the construction phase and the implementation of the recommended mitigation measures.
- Valencia Uranium Limited should, in consultation with representatives from the Forum, develop a code of good conduct for the construction phase. The code should outline what types of behaviour and activities by construction workers are not permitted. Construction workers who breach the code of good conduct should be dismissed by Valencia Uranium Limited. All dismissals must comply with the Namibia's labour legislation;
- Workers who are dismissed by Valencia Uranium Limited and/or the relevant contractor must be transported back to their hometown within two days of being dismissed. The contractor will be responsible for ensuring that this takes place and must provide proof to Valencia Uranium Limited;
- Valencia Uranium Limited, in consultation with the Forum, should develop a mechanism for dealing with complaints associated with the construction phase in an efficient and transparent manner;
- The contractor(s) must transport all construction workers back to their hometowns within two days of their contracts coming to an end. The contractor(s) must provide proof of this to Valencia Uranium Limited;
- Valencia Uranium Limited should implement an HIV/AIDS awareness programme for all construction workers.

Site-specific mitigation measures for construction workers

- The following facilities should be considered for the workers:
 - Pool tables, table tennis tables, dart boards and other board games, such as chess, etc.;
 - DSTV and DVD library;
 - Library, that includes a subscription to local daily newspapers;
 - Lounge (smoking and non-smoking) area for relaxing;
 - Barbeque area and facilities;
 - Gymnasium / exercising equipment;
 - Facilities for making tea and coffee;
 - A kitchen area(s) for preparing their own food if they so wish, including stoves, microwaves, fridges, etc.; and
 - A canteen where meals are served.
- Valencia Uranium Limited should investigate the provision of subsidised transport to enable workers to return to their homes as often as possible. The possibility of returning home over weekends would be possible for most construction workers if the employment criteria listed above are implemented. The findings of the Berg River Dam Project study (Dr Shakti Malan, 2007) indicate that being able to return home as often as possible was a critical issue in terms of the workers' well-being;
- Valencia Uranium Limited should assess the religious needs of the construction workers and provide free transport to those workers who want to attend churches located in towns such as Usakos, Karibib and Arandis. The option of providing services on the site should also be investigated. The findings of a review of the

construction phase of the Berg River Dam Project in South Africa indicated that the majority of construction workers attend church on Sundays (Dr Shakti Malan, 2007);

- The cultural food preferences of different race groups should be recognised and accommodated;
- Access to the construction camp should be strictly controlled. No non-construction workers should be allowed into the construction camp;
- Valencia Uranium Limited should liaise with the local authorities to assess the potential impact on existing services and amenities and look at ways of addressing these issues in a co-operative and constructive manner; and
- Valencia Uranium Limited should implement an HIV/AIDS awareness programme for construction workers.

3.7.3 Influx of job seekers

The experience from other large construction projects is that they attract job-seekers to the area. As in the case of construction workers employed on the project, the actual presence of job seekers in the area does not in itself constitute a social impact. However, the manner in which they conduct themselves can impact on the local community.

The two main areas of concern associated with the influx of job seekers are:

- Impacts on existing social networks and community structures; and
- Impacts on the capacity of existing community facilities and services (see Section 3.8.3).

These issues are similar to the concerns associated with the presence of construction workers and are discussed above.

In many cases the job seekers become “economically stranded” and decide to stay in the area. When this happens there is a risk that their families will also move to the area, which increases the potential impact on existing community facilities (see Section 3.8.3). Due to their unemployed state, people are usually not in a position to pay for municipal services, which in turn places additional pressure on the local authorities. The lack income can also result in an increase in crime. Based on the findings of the SIA this is the current situation in Arandis. The influx of job seekers and their families can also result in the establishment of illegal and informal settlements. Table 23 assesses the impact of the influx of job seekers.

Table 23: Assessment of impact of influx of job seekers

	No Mitigation	Mitigation
Extent	Local-Regional (4)	Local-Regional (4)
Severity	Medium (3)	Minor-Medium (2)
Duration	Medium-Medium Term (3) (Likely to spill over into the operational phase)	Medium-Short Term (3) (Likely to spill over into the operational phase)
Consequence	10	9
Probability	Medium (3)	Low-Medium (2)

Status	Negative	Negative
Confidence	Medium-High	Medium-High
Significance	Low-Medium (30%)	Low (18%)

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

It is almost impossible to prevent people from moving into an area in search of job opportunities. However, as indicated above, Valencia Uranium Limited should ensure that the employment criteria favour local residents from the area. In addition, Valencia Uranium Limited should liaise with the local authorities and establish a Forum to monitor and identify potential problems that may arise due to the influx of job seekers to the area.

3.7.4 Safety, stock theft, poaching and damage to farm infrastructure

The presence of a large number of construction workers living in the construction camp on the site may pose a threat to the local farmers and also result in stock theft and poaching. In the process, farm infrastructure, such as fences and gates may be damaged. Stock and game losses may also result from gates being left open and/or fences being damaged.

Table 24: Assessment of impact of stock theft and damage to farm infrastructure

	No Mitigation	Mitigation
Extent	Local (4) (Rated as 4 due to potential severity of impact on local farmers)	Local (2) (Rated as 2 due to potential severity of impact on local farmers)
Severity	Medium (4) (If substantial livestock / game losses are incurred)	Minor-Medium (2)
Duration	Short-Medium Term (3) (Likely to spill over into the operational phase)	Short-Short Term (3) (Likely to spill over into the operational phase)
Consequence	11	7
Probability	Medium (3)	Low-Medium (2)
Status	Negative	Negative
Confidence	Medium-High	Medium-High
Significance	Low-Medium (33%)	Low (14%)

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

The detailed mitigation measures should be outlined in the Environmental Management Plan (EMP) for the construction and operation phases. The mitigation measures that can be considered to address the potential impact on livestock, game and farm infrastructure include:

- Valencia Uranium Limited should liaise with the Mr. Horn to identify the best location for the establishment of a construction camp;
- Valencia Uranium Limited should establish a liaison committee with the adjacent landowners and develop a code of conduct for workers to address conflicts that may arise. The code of conduct must be adhered to by the contractors and their workers;
- Valencia Uranium Limited should compensate farmers in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in an agreement of good conduct to be signed between Valencia Uranium Limited and all adjacent and neighbouring landowners;
- Valencia Uranium Limited should ensure that all construction workers are informed of the consequences of stock theft and trespassing on adjacent farms at the outset of the construction phase; and
- Valencia Uranium Limited should ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. . All dismissals must be in accordance with Namibia's labour legislation.

3.7.5 Increased risk of veld fires

The presence of a large number of construction workers on the site does pose an increased risk of veld fires that in turn pose a threat to the livestock and game of farmers in the area. In the process, farm infrastructure may be damaged or destroyed.

Table 25: Assessment of impact of increased risk of veld fires

	No Mitigation	Mitigation
Extent	Local (4) (Rated as 4 due to potential severity of impact on local farmers)	Local (2) (Rated as 2 due to potential severity of impact on local farmers)
Severity	Medium (4) (If substantial areas are affected)	Minor-Medium (2)
Duration	Short-Medium Term (3) (Likely to spill over into the operational phase)	Short-Short Term (3) (Likely to spill over into the operational phase)
Consequence	11	7
Probability	Medium (3)	Low-Medium (2)
Status	Negative	Negative
Confidence	Medium-High	Medium-High
Significance	Low-Medium (33%)	Low (14%)

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

The potential increased risk of veld fires can be effectively mitigated. The detailed mitigation measures should be outlined in the Environmental Management Plan (EMP) for the construction and operation phases. The aspects that should be covered include:

- Ensure that open fires on the site for cooking or heating are not allowed;
- Provide fire fighting equipment onsite; and
- Provide fire fighting training to selected construction staff.

3.7.6 Impact of heavy construction vehicles

The movement of heavy vehicles along the D1914 between Usakos and the mine site will result in noise, dust and safety impacts for other road users and adjacent landowners. However, the majority of the farms are not occupied on a full time basis and the road and the area are not regarded as important tourist routes (W. Schenck, Hospitality Association of Namibia, pers. comm., 2007). The impacts are therefore likely to be low. In addition, it is expected that the access road across the Khan River will be completed within the first year of the construction phase. This will eliminate the need for heavy vehicles to access the site via the D1914 road.

Table 26: Assessment of the impacts associated with heavy vehicles

	No Mitigation	Mitigation
Extent	Local and regional (4) (Rated as two due to potential severity of impact on local farmers)	Local and regional (4)
Severity	Minor-Medium (2) (If substantial livestock / game losses are incurred)	Minor (1)
Duration	Short-Medium (2) (Limited to the construction phase)	Short-Medium (2) (Likely to spill over into the operational phase)
Consequence	6	4
Probability	Medium (3)	Low-Medium (2)
Status	Negative	Negative
Confidence	Medium-High	Medium-High
Significance	Low (24%)	Low (14%)

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

The potential impacts associated with heavy vehicles and dust can be effectively mitigated. The detailed mitigation measures should be outlined in the Environmental Management Plan (EMP) for the construction and operation phases. The aspects that should be covered include:

- Ensuring that drivers adhere to speed limits;
- Implementing dust suppression measures for heavy vehicles such as wetting roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers; and

- Ensuring that all vehicles are road worthy, drivers are qualified and are made aware of the potential safety issues and enforcement of strict speed limits.

3.8 SOCIAL IMPACTS OF THE OPERATIONAL PHASE

The key social issues affecting the operational phase include:

Potential positive impacts

- Creation of employment and business opportunities. The operational phase will also create opportunities for skills development and training.

Potential negative impacts

- Influx of job seekers looking for work but who are unsuccessful;
- Impact on infrastructure and services;
- Impact on tourism; and
- Impact on traffic.

3.8.1 Creation of employment and business opportunities

The operational phase is expected to create approximately 600 permanent jobs for a period of 11 years. Of this total, approximately 433 jobs (72%) are expected to benefit Namibians. The life of mine is also expected to increase with further exploration. In addition, the project is likely to create opportunities for training and skills development for members from the local community.

The direct employment opportunities created by the proposed development therefore represent a significant positive socio-economic opportunity for the local economy. In addition, the total wage bill for the 11-year operational phase is in the region of N\$100 million. The operational capital over the 11-year life of mine is estimated to be in the region of N\$1 billion. The business opportunities associated with the operational phase are linked to the retail and service sector and include services such as cleaning, security, catering, etc.

Table 27: Impact assessment of employment and business creation opportunities

	No Mitigation	Mitigation
Extent	Local-Regional/Provincial (4)	Local-Regional/Provincial (4)
Severity	Medium (3)	Medium-High (4)
Duration	Medium-Term (3)	Medium-Long Term (4) (If properly managed business opportunities that develop due to the mine can surpass mine closure)
Consequence	10	12
Probability	High (5)	High (5)
Status	Positive	Positive
Confidence	High	High
Significance	High (50%)	High (60%)

The opportunity to create additional employment is regarded as a significant positive impact.

Assessment of No-Go option

There is no impact as it maintains the current status quo. However, the potential opportunity costs in terms of the employment and capital expenditure are high.

Recommended enhancement measures

The enhancement measures listed in Section 3.4.4, i.e. to enhance local employment and business opportunities, also apply to the operational phase. In addition, it is recommended that Valencia Uranium Limited investigate potential opportunities for establishing local initiatives linked to the proposed mine. These include:

- The establishment of an indigenous nursery using plants rescued from the mine site prior to mining. It is recommended that this nursery be established in Usakos. The nursery can be used to grow indigenous plants that can be used in the mine rehabilitation programme and also plants that can be sold to the public, landscaping companies and nurseries in other parts of Namibia; and
- Look at supporting local companies that can provide the mine with services, such as bakeries, laundries, clothing manufacturers (for mine uniforms), security companies, cleaning and maintenance companies, etc.

3.8.2 Influx of workers and job seekers

The project is likely to result in an influx of workers and job seekers to the area during both the construction and operational phases. The majority of workers are likely to be males and this can create a number of negative social impacts in the host community. These impacts include:

- Transmission of STDs, including HIV/AIDS;
- Increase in prostitution;
- Increase in alcohol and drug related incidents;
- Increase in crime;
- Pressure on local services, such as housing, clinics, schools, water supplies, etc.;
- Increase in local prices and the cost of living;
- Tension and conflict within the community and impact on family networks and relationships; and
- Competition for available jobs and resources.

The influx of workers and job seekers will also result in additional spending in the local economy. The influx of workers will, therefore, also have a limited positive socio-economic benefit.

Table 28: Impact assessment of influx of job seekers

	No Mitigation	Mitigation
Extent	Local-Regional (4)	Local-Regional (4)
Severity	Medium (3)	Minor-Medium (2)
Duration	Medium-Term (3) (Likely to spill over from the construction phase)	Medium-Term (3) (Likely to spill over from the construction phase)
Consequence	10	9
Probability	Medium (3)	Low-Medium (2)
Status	Negative	Negative
Confidence	Medium-High	Medium-High
Significance	Low-Medium (30%)	Low (18%)

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

Every effort should be made to employ local residents during the operational phase of the project. The measures aimed at enhancing the opportunities for local residents are outlined above. If these measures are effectively implemented, the potential impacts associated with the influx of construction workers from outside the area can be mitigated to some extent. However, this will not stop the in-migration of job seekers to the area.

The influx of job seekers will also be linked to the other uranium projects that have been proposed for the area and not only for Valencia Mine. Ultimately, the responsibility for the job seekers who do move to the area (Swakopmund, Usakos, Karibib and Arandis) will rest with the local authorities. However, Valencia and the other mining companies can assist to address the issue by:

- Treating local employment as a priority; and
- Liasing with the local authorities and the Namibian Government to look at ways of managing the expectations of job seekers. This would include providing information on the number and types of jobs available and also providing information on issues such as availability of housing in the area and rental costs, etc. This type of information may make potential job seekers more cautious about moving to the area. The current expectation is that the boom in the uranium mining sector will create a large number of jobs. This expectation, while valid, needs to be managed.

3.8.3 Increased demand on infrastructure and services

As noted in the socio-economic context section, high levels of general economic growth coupled with a boom in uranium mining activity are already placing strain on infrastructure and certain municipal services, particularly in Swakopmund. Valencia and other uranium projects have the potential to further increase this strain resulting in negative impacts.

The potential of negative impacts occurring is lower with regard to the provision of direct services to the mine such as water and power. With regard to the provision of water, Valencia Uranium Limited has recently signed a memorandum of agreement with NamWater, which formalises their support of NamWater's seawater desalination project

and commits them to meeting their needs through the use of desalinated water. By doing this they will not place increased strain on existing water sources in the project area. Power for the project would be sourced directly from NamPower and negative impacts are highly unlikely. However, in both cases it is recommended that Valencia insist that an EIA be conducted for the provision of water and power to the mine.

Indirect needs for infrastructure and municipal services have a greater potential to result in negative impacts and would be one of the key cumulative impacts of the mine in addition to the other uranium mines proposed for the wider region. Potential strain on housing, water supply infrastructure and sewage capacity are of particular concern in Swakopmund, but could also lead to problems in other smaller towns such as Arandis and Usakos if not planned for and managed.

In this regard, Valencia and the proponents of the other uranium mines in the region need to take a pro-active role in informing the relevant authorities of their plans and needs and in finding mutually beneficial solutions. However, it is ultimately the various municipalities and other service providers' responsibility to ensure that the mine contributes to their financial sustainability and does not burden them with increased costs.

The increased demand on infrastructure and services, coupled with the influx of job seekers will also create speculative pressure on the local housing and property market. This is already evident in Usakos. An increase in property prices has both positive and negative effects. For investors who already own property, the impacts are positive. However, for first-time homeowners looking to access the market, the impacts are negative.

An assessment of the significance of impacts based on the findings above (both without and with mitigation measures) is presented in Table 29. Inadequate planning and management by service providers and municipalities could lead to medium negative impacts while adequate planning and management aided by mitigation could result in very low negative impacts. The no-go alternative would maintain the status quo and not provide the opportunity to raise added funds for service providers and municipalities, but would also not introduce the risk of not covering increased service costs. Note that confidence levels for this assessment are medium as predicting municipal performance with regard to finances involves high levels of uncertainty.

Table 29: Impact assessment of increased demands on infrastructure and services

	No Mitigation	Mitigation
Extent	Regional (3)	Regional (3)
Severity	Medium (3)	Minor (1)
Duration	Medium-Term (3) (Likely to spill over from the construction phase)	Medium-Term (3) (Likely to spill over from the construction phase)
Consequence	9	7
Probability	Medium-High (4)	Medium-High (4)
Status	Negative	Negative
Confidence	Medium-High	Medium-High
Significance	Medium (36%)	Low-Medium (28%)

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

Valencia Uranium Limited should ensure its continued participation in the socio-economic initiative and other working groups set up by the Swakopmund office of the Chamber of Mines and maintain a regular dialogue with the Erongo Regional Council and municipal officials in Swakopmund, Walvis Bay, Arandis and Usakos around their plans. The key to managing this issue is to address issues of uncertainty in an open and transparent manner. The mitigation measures aimed at limiting the influx of job seekers to the area would also need to be implemented in order to ensure that the impacts on sustainable service provision remain as low as possible.

Municipalities and other service providers should continue to take responsibility for ensuring that the proposed expansion contributes to the financial sustainability of their towns and does not burden them with increased costs.

If construction workers are not located onsite, then Usakos would appear to offer the best chance to minimise potential strains on municipal services and spread the burden associated with the provision of infrastructure and services to uranium projects in the region.

3.8.4 Impact on tourism

As was outlined in the economic context section, tourism plays an important role in the economy of the region and has the potential to play an increasingly prominent role as a driver of economic development. It is thus important to consider the potential impacts of the proposed development on this sector. The appeal of the area relies heavily on the intangible sense of place and remoteness. Unlike more tangible 'activity focused' destinations, this makes the area potentially more fragile and less resilient to socio-economic and environmental changes.

In order to assess tourism impacts, information on current tourism use and potential future use focusing on the area surrounding the site was gathered. In order to verify and augment tourism issues raised during scoping, discussions were also held with tourism authorities and tourism stakeholders in order to get their views on potential impacts.

These discussions confirmed that increased heavy vehicle traffic is the key concern for tourism, followed by visual impacts and air quality impacts. The perception of some members of the public of the potential risk posed by radiation and radionuclides in the dust was also raised as a concern. Sources of positive impacts would stem from increased potential for business-related visitors during both the construction and operational phases. Pertinent information from other specialist studies was examined and discussions were held with the specialists where necessary to assess impacts. Where possible, a distinction has been made between impacts on tourism in the vicinity of the site (i.e. primarily on neighbouring properties and within close proximity to the site) and on tourism in the region as a whole recognising that impacts at these scales overlap substantially.

The assessment of the potential impact on tourism was also informed by the findings of the specialist air quality, noise and visual assessment studies. The potential negative impacts on air quality do have the potential to impact on tourism in the immediate vicinity of the site. However, the overall impacts are likely to be low. In terms of noise impacts some of the adjacent farmers have indicated that they were considering the development of tourist lodges on their property.

The findings of the noise study note that due to the remote nature of the site and the corresponding low baseline sound levels, the introduction of mining activity will result in a significant increase the ambient sound levels of the area (Digby, Wells and Associates, January 2008). However, although the ambient sound levels will increase, the overall impact significance is considered low, predominantly due to the absence of any permanent receptors in the vicinity. In terms of the noise impact, two farmhouses are located approximately 3.5km to the southeast and 4km north east of the site respectively. Although temporarily occupied, these will be the most affected receptor points in the vicinity. However, the findings of the noise study indicate that the predicted sound levels from typical construction and process plant machinery is predicted to be below the World Bank Guideline value of 55dB(A) at these distances according to the Concawe method described in SANS 1037:2004 (Digby, Wells and Associates, January 2008).

During construction phase, the predominant source of noise will be from trucks, diesel powered plant, drilling, grinding and concrete batching. Blasting will also take place during construction. However, the impacts from noise will be limited, predominantly due to the absence of many receptors within the vicinity of the site. As indicated above, there are only two temporarily inhabited farmhouses in the area. Consequently, the severity is considered moderate with low significance (Digby, Wells and Associates, January 2008).

During operational phase the predominant continuous noise source will be from haul trucks and components of the process plant such as crushers and mills. Blasting will also have a substantial noise effect, particularly when shallow, before containment by the pit, but will be of a short duration and therefore more limited impact. Vibrations from blasting may also affect nearby homestead residents but there should be very little chance of structural damage being caused (Digby, Wells and Associates, January 2008).

As with construction, the impacts from noise will be limited, predominantly due to the absence of any receptors within the vicinity of the site. Consequently, the severity is

considered moderate with medium significance (Digby, Wells and Associates, January 2008).

In terms of cumulative impacts, there are no existing sources of noise pollution in the vicinity, with the closest industrial activity at Rössing Uranium Mine, approximately 25km away. There is also no planned mining nearby. The cumulative impact is therefore considered negligible. Blasting from the various mines is, however, audible over a large distance and the addition of further blasting activities in the area may result in increased noise and vibration disturbance to receptors (Digby, Wells and Associates, January 2008).

Although the overall significance of the impacts associated with noise are considered to be low, contractors and Valencia employees should adhere to all recommendations in the mine Environmental Management Plan (EMP) and ensure that the impacts from noise is mitigated as far as possible. The noise study also notes that a noise monitoring programme and grievance procedure should be implemented before construction begins and should be continued throughout construction, operation and closure. Once decommissioning activities have ceased and all machinery and vehicles have left the site, noise monitoring will not be necessary (Digby, Wells and Associates, January 2008).

Based on the findings of the noise study the impact on the adjacent farmsteads and farms is likely to be moderate-low.

The findings of the visual impact assessment indicate that the proposed project will have a negative impact on the visual nature of the landscape. This is primarily due to the fact that the proposed project will have high visibility and exposure due to the nature of the topography. The Visual Absorption Capacity is low due to the vegetation and topography's inability to conceal the activity (Digby, Wells and Associates, January 2008).

The extent of the visual disturbance will be will be localised to the mining area and immediately surrounding farms which are not permanently occupied, as well as stretches the B2 highway. The proposed project area can be seen in places from the B2 highway which is approximately 20km away in a straight line, in general the site is hidden behind the hills but there are a few places where the site is visible from the highway (Digby, Wells and Associates, January 2008). However, the report notes that even though the site is visible from the B2 highway the distance makes the site less prominent. This is the primary tourist route in the area linking the hinterland with the coast and impacts on the tourist experience on this route are likely to be minor. The other key route is the D1914 between Usakos and Swakopmund. However the site is effectively screened from the D1914 by the Chousberge and as such there will be no visual impact. This route has been also ruled out as a potential access route for the mine. As such, there will be no mine-related traffic impacts on this route during the operational phase.

In addition, information provided by representatives from the Hospitality Association of Namibia indicated that the area of the proposed mine is not near an established tourist route and the impacts on the current tourism operations were likely to be low (W. Schenck, pers comm., 2007).

In terms of local tourism impacts the mine site is not visible from the Khan River course, which would be a likely site of any tourist lodge developments (Digby, Wells and Associates, January 2008). The visual impact assessment report also lists a number of mitigation measures aimed at reducing the visual impacts; these include:

- Using downward facing lighting in order to reduce light pollution;
- Painting the mine infrastructure a natural colour for the purpose of concealing the mine as far as possible;
- Full rehabilitation of the area post-decommissioning.
- The waste rock dumps, low grade stockpile and the tailings dump have been designed and positioned to limit their visibility (they have been hidden behind adjacent ridges as best as possible). Their total height has been reduced within economic constraints.
- Elevations of the mine infrastructure have been constrained to be less than that of the surrounding ridges in order to further reduce visibility.
- The tailings dump will be clad with rock.
- The dumps are the most visible part of the mine infrastructure. They have been designed fairly flat to blend in with the surrounding topography.

Experience with similar large construction projects indicates that a number of technical, management and sales staff periodically visit the project site to conduct business. These staff will require accommodation during their visits thereby creating opportunities for accommodation and other tourist facilities such as restaurants. While it is not possible to accurately estimate the number of business visitors that would need to visit the area, and the durations of their stay, the benefits are likely to be significant. The proposed mine therefore has the potential to create a market for the tourist facilities being proposed by some of the adjacent farmers. In this regard it would be more convenient for mine-related visitors who need to spend more than one day at the mine to stay in the immediate vicinity as opposed to travelling back to Usakos or Swakopmund.

Based on a consolidated consideration of the tourism potential, the un-mitigated impacts on tourism during operations have been given a low to medium significance rating (see Table 30). Some disturbance and nuisance would be experienced during construction and decommissioning. This would include the potential for increased dust and noise as well as increased risk of the emergence of 'social ills' associated with a large workforce. Impacts should, however, be minimal provided the construction phase is well managed and the mitigation measures suggested in the EIA are implemented. Any risks of negative impacts during construction would also be countered by tourism opportunities associated with increased business tourism. The overall negative impacts during construction are thus expected to be very low. .

In addition to the potential site-related impacts associated with the mine, the Hospitality Association of Namibia also indicated that an increase in uranium mining in the area may have potential implications for tourism to the area in general. This concern is linked to the position of certain people with regard to nuclear energy and the potential cumulative health risks posed by uranium mining. In order to address this issue, the Hospitality Association of Namibia proposed that the mining sector cooperate with the tourism sector and produce an information pamphlet that provides visitors with factual and objective information on uranium mining in Namibia and the potential benefits and risks involved.

Table 30: Assessment of the impacts on tourism

	No Mitigation	Mitigation
Extent	Regional (3)	Regional (3)
Severity	Low (2)	Minor (1)
Duration	Medium-Term (3) (Likely to spill over from the construction phase)	Medium-Term (3) (Likely to spill over from the construction phase)
Consequence	8	7
Probability	Medium (3)	Medium (3)
Status	Negative Positive (linked to mine related visitors)	Negative Positive (linked to the mine related visitors)
Confidence	Medium	Medium
Significance	Medium (24%)	Low-Medium (21%)

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

Impacts on tourism are primarily dependent on how Valencia’s operations are designed, constructed and operated to minimise negative biophysical and social impacts and enhance positive ones. The measures recommended in other specialist studies to minimise negative impacts (primarily traffic, visual and air quality) and enhance positive impacts would thus also reduce impacts on tourism and should be implemented. The decision by Valencia Uranium Limited to drop the proposed access route via the Namib Naukluft Park area also significantly reduces the potential negative impact on tourism.

In order to enhance the potential impact on the local tourism sector the mine should:

- Develop a database of local lodges in the area, including facilities in Usakos and Karibib that can be used to accommodate staff members and visitors during both the construction and operational phases of the project;
- Valencia Uranium Limited should liaise with the Hospitality Association of Namibia, the Chamber of Mines, and other mining companies to produce an information pamphlet that provides visitors with factual and objective information on uranium mining in Namibia and the potential benefits and risks involved.

3.8.5 Impact on traffic

Discussions with a number of stakeholders including the Town Planner and Engineer of Swakopmund indicated that traffic along the B2 Road, specifically the section between Arandis and Swakopmund, was an issue. The traffic issues are linked to the poor state of the road and the increasing volume of traffic on the road. The busses that transport Rössing Uranium employees from Swakopmund to the mine on a daily basis exacerbate the problems.

The key concern is that the increase in traffic associated with the establishment of the Valencia Mine will exacerbate the current traffic problems. Valencia Uranium Limited is

aware of the potential issues associated with increased traffic generated by the mine, specifically buses for transporting employees to and from the mine on a daily basis. However, the impacts associated with Valencia are likely to be mitigated by the fact that a number of employees will locate themselves in Arandis and Usakos. This is more likely for the semi- and unskilled employees who may find it difficult to find affordable accommodation in Swakopmund. In this regard Valencia Uranium Limited has indicated that they will not be providing company accommodation for its employees.

Table 31 provides an assessment of the impact on traffic associated with the proposed Valencia Mine.

Table 31: Assessment of the impacts on traffic

	No Mitigation	Mitigation
Extent	Regional (3)	Regional (3)
Severity	Low (2)	Minor (1)
Duration	Medium-Term (3)	Medium-Term (3)
Consequence	8	7
Probability	Medium (3)	Medium (3)
Status	Negative	Negative
Confidence	Medium	Medium
Significance	Medium (24%)	Low-Medium (21%)

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

The potential impact on traffic associated with mine vehicles is recognised by Valencia Uranium Limited and the other uranium mining companies operating in the area. However, the impacts associated with Valencia are likely to be mitigated by the fact that a number of employees will locate themselves in Arandis and Usakos. This will more likely be the case for the semi- and unskilled employees who may find affordable accommodation hard to come by in Swakopmund.

In addition, the traffic impacts on the section between Swakopmund and Arandis can be mitigated by:

- Widening sections of the road to create a shoulder for cars to move over and allow other vehicles to pass safely;
- Establishing passing lanes at strategic sections (inclines, etc.).

However, the implementation of these measures would be the responsibility of the National Roads Authority and not the mining sector.

3.9 SOCIAL IMPACTS OF THE DECOMMISSIONING PHASE

As indicated above, the decommissioning phase for the mine is expected to last only six months and employ approximately 130 workers, with roughly 100 of these coming from

Namibia (See Table 19). Total salaries paid during this phase would be approximately N\$3 million.

The major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities.

The impacts for the households who are directly affected by the retrenchment and loss of income associated with decommissioning include the inability to pay bills (such as household bonds, lights, water and property rates, buy food, pay school fees, etc. Despite every effort to manage the decommissioning process, some employees who lose their jobs may feel that they let their families down. The resultant loss of self-esteem can cause depression and maybe even suicide. Retrenchments therefore have a significant impact on the directly affected households.

The impact on communities in which the people live can also be severely impacted upon by loss of jobs associated with decommissioning. The impacts include increase in crime, alcohol and drug abuse, decreased economic activity, etc. The experience in Arandis highlights these impacts.

Likewise, local authorities can also be severely affected by the loss of jobs associated with decommissioning. The impacts are linked to the inability of residents to pay bills, increased crime, alcohol and drug abuse, etc. All of these issues impact on the ability of the local authorities to provide a living environment that is conducive to the community's well-being.

In the absence of an effective plan to manage the social and economic impacts associated with mine closure and decommissioning the impacts will be significant.

Table 32: Assessment of the impacts of decommissioning

	No Mitigation	Mitigation
Extent	Regional (3)	Regional (3)
Severity	High (5)	Medium (3)
Duration	Medium-Long Term (4)	Medium-Long (4)
Consequence	12	10
Probability	Certain (5)	Medium (3)
Status	Negative	Negative
Confidence	High	High
Significance	High (60%)	Medium (30%)

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

In order to mitigate the negative impacts associated with job losses that may arise from decommissioning the following mitigation measures are recommended.

- Valencia Uranium Limited should implement a skills training programme to equip employees with non-mine related skills they can use when the mine closes. The skills development programme should be designed to take into account current education and skills levels of employees. The skills training programme should be implemented from the outset of the operational phase and should be funded by Valencia Uranium Limited;
- Valencia Uranium Limited should provide employees with a basic financial management course to enable them to make informed decisions with regard to investing their earnings. Valencia Uranium Limited should also appoint financial advisors to provide employees with advice regarding investments, pensions schemes, etc.; and
- The Chamber of Mines of Namibia, in consultation with the mining sector, should investigate the establishment of a fund that can be used to assist mine workers who are affected by decommissioning and retrenchment. The fund should be funded by annual contributions from the mining companies in Namibia.

SECTION 4: KEY FINDINGS AND RECOMMENDATIONS

4.1 INTRODUCTION

Section 4 lists the key findings of the study and recommendations. These findings are based on:

- A review of the issues identified during the Scoping Process as reflected in the Final Scoping Report (Enviro Dynamics and ERM, 2007);
- A review of key planning and policy documents pertaining to the area;
- Semi-structured interviews with interested and affected parties;
- A review of social and economic issues associated with similar developments;
- A review of selected specialist studies undertaken as part of the EIA;
- A review of relevant literature on social and economic impacts; and
- The experience of the authors with similar projects elsewhere in southern Africa.

4.2 KEY FINDINGS

The key findings of the study are summarised under:

- Fit with policy and planning;
- Construction phase impacts;
- Operational phase impacts;
- Decommissioning phase impacts; and
- No-development option.

4.2.1 Fit with policy and planning

Strategic long-term socio-economic development planning in Namibia is informed by Vision 2030, adopted in 2004. When considered as a whole, the relevant socio-economic planning documents recognise the importance of integrated and diversified economic development that makes optimal use of the area's comparative advantages including its human capital. Emphasis is also placed on the optimal management of economic benefits from development through, for example, training, education and awareness creation. The development of infrastructure, creation of employment opportunities and development of human capital are identified as key challenges. These objectives are supported by the proposed Valencia Mine.

Support for the development of uranium projects in Namibia is also forthcoming from the Ministry of Mines and Energy. Therefore, provided that the proposed mine does not result in unacceptable environmental and socio-economic impacts, it stands to reason that the Valencia Mine would maintain its in-principle fit with wider socio-economic planning requirements for Namibia.

4.2.2 Construction phase impacts

The construction phase is expected to last approximately 15-18 months and employ around 800 people. Initial indications are that the majority of construction workers will be housed on the site in a specially established construction camp. The option of housing construction workers and contractors in the nearby towns of Usakos, Karibib and Arandis is also being considered. However, a final decision has not been taken at this stage of the project. In this regard, the Town Council of Usakos has indicated that they would like to accommodate workers associated with the Valencia project in the town (Usakos Town Council, pers. com., 2007). However, the findings of the study indicate the potential negative impacts associated with the construction workers outweigh the benefits.

Of the total number of construction phase jobs, approximately 480 (60%) will be unskilled, 240 (30%) semi-skilled and 80 (10%) skilled jobs. The majority of the job opportunities during the construction phase are therefore unskilled jobs. The total wage bill during the construction phase would be in the region of N\$75.6 million. Based on skills levels, N\$28.8 million would be earned by unskilled workers, N\$28.8 million by semi-skilled workers and N\$18 million by skilled workers. The bulk of the wages (76%) will therefore be earned by semi- and unskilled workers. The total capital expenditure during the construction phase will be in the region of N\$ 1.26 billion. This will be spent over a two-year period.

Based on the findings of the economic assessment, the benefits associated with the construction phase of the proposed Valencia Mine (with mitigation) would be of a very high (positive) significance due to the size of the expenditure injection and the number of potential employment and income generation opportunities involved.

The no-go option would maintain the status quo and result in no impacts. However, the opportunity costs associated with the lost employment and capital expenditure would be significant.

The findings of the social assessment indicate that key social issues affecting the operational phase include:

Potential positive impacts

- Creation of employment and business opportunities, together with training and skills development.

With the implementation of the recommended enhancement measures the benefits will be of a high (positive) significance.

Potential negative impacts

- Influx of construction workers employed on the project;
- Influx of job seekers looking for work but who are unsuccessful;
- Increased risk of stock theft, poaching and damage to farm infrastructure;
- Increased risk of veld fires; and
- Impact of heavy vehicles, specifically noise and dust.

The significance of the potential negative impacts with mitigation was assessed to be of Low-Medium significance. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented.

In terms of housing the construction workers, based on the findings of other studies, it is recommended that the construction workers be housed onsite. In this regard the potential negative impacts associated with housing the construction workers in towns such as Usakos and/or Arandis outweigh the potential benefits to the local economies of these towns. The potential benefits associated with housing construction workers in Usakos and/or Arandis are also likely to accrue to individuals who are not negatively impacted upon by the construction workers. The issue of impact equity is therefore skewed in favour of those who benefit at the cost of more vulnerable members of the community, specifically young women.

Valencia Uranium Limited has indicated that although a final decision has yet to be taken, it is likely that the majority of the construction workers will be housed on the site. This will enable Valencia Uranium Limited and the appointed contractors to exercise greater control over the construction workers and, in so doing, also increase its ability to monitor, manage and mitigate the potential impacts on family structures and social networks. The initial estimate of the total number of construction workers to be housed in the construction camp is 800.

4.2.3 Operational phase impacts

The operational phase is expected to create approximately 600 permanent jobs for a period of 11 years. Of this total, approximately 433 jobs (72%) are expected to be taken up by Namibians. The total wage bill for the 11-year operational phase is in the region of N\$100 million and the operational budget is estimated to be in the region of N\$1 billion. The life of mine is also expected to increase with further exploration.

Based on the findings of the economic assessment the benefits associated with the operational phase of the proposed Valencia Mine (with mitigation) would be very highly significant (positive) due to the size of the expenditure and the number of potential employment and income generation opportunities involved.

The no-go option would maintain the status quo and result in no impacts. However, the opportunity costs associated with the lost employment and capital expenditure would be significant.

The findings of the social assessment indicate that key social issues affecting the operational phase include:

Potential positive impacts

- Creation of employment and business opportunities, together with training and skills development.

With the implementation of the recommended enhancement measures the benefits will be of a high (positive) significance.

Potential negative impacts

- Influx of job seekers looking for work but who are unsuccessful;
- Impact on infrastructure and services;
- Impact on tourism;
- Impact on traffic.

The significance of the potential negative impacts with mitigation was assessed to be of low-medium significance. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented.

4.2.4 Decommissioning phase

The major social impacts associated with the decommissioning phase are linked to the loss of jobs and associated income. This has implications for the households who are directly affected, the communities within which they live, and the relevant local authorities. The potential impacts without mitigation are rated as high (negative). With mitigation, the impacts are assessed to be medium (negative).

4.2.5 No-development option

For all of the issues identified there would be no impact as it maintains the current status quo. However, the potential opportunity costs in terms of the employment and capital expenditure are regarded as high (negative).

4.3 RECOMMENDATIONS

Based on the findings of the economic assessment, when considering the costs and benefits of the proposed mine, it is likely that the proposed mine will achieve a net benefit provided the financial projections of the proponent prove reasonably accurate, and provided that adequate mitigation and enhancement measures are instituted.

Based on the findings of the social assessment the mine will create significant employment and business opportunities for the Erongo Region. In order to enhance the local employment and business opportunities the mitigation measures listed in the report should be implemented.

The mitigation measures listed in the report to address the potential negative impacts during the construction phase, specifically the presence of construction workers and influx of job seekers, should also be implemented.

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APPENDIX A

Appendix 1: Method for rating the significance of impacts (Source: Digby Wells & Associates)

PARAMETER WEIGHTING

Significance = Consequence X Probability

Consequence = Severity + Spatial Scale + Duration

Probability - with reference to history, industry knowledge and a good dose of common sense

PARAMETER VALUES

Severity

	Severity - Environmental	Severity - Social/Archaeological/Heritage
5	Very significant impact/total destruction of a highly valued species, habitat or ecosystem	Irreparable damage to/destruction of highly valued items of great archaeological/heritage significance or complete
4	Serious impairment of ecosystem function. Substantial reduction of diversity.	Serious social issues/Permanent damage to items of archaeological/heritage significance
3	Moderate alteration of ecosystem functioning. Reduction in diversity.	Moderately important social issues and/or significant damage to items of archaeological/heritage significance
2	Moderate effects not affecting ecosystem functioning	Impacts on the local population, repairable over time. Temporary impairment of sites or items of
1	Minor/insignificant effects on the biophysical environment	insignificant social issues / low-level repairable damage to commonplace structures.

PARAMETER VALUES

Spatial Scale

5	National/International
4	Provincial/Regional
3	Regional (substantially beyond site boundary)
2	Local (beyond site boundary and affects neighbours)
1	Site (does not extend beyond site boundary)

PARAMETER VALUES

Duration

5	Permanent/Irreversible (more than 50 years)
4	Long Term (26 to 50 years or beyond closure)
3	Medium Term (6-25 years)
2	Medium-Short Term (1-5 years)
1	Short term (Less than a year)

PARAMETER VALUES

Probability

5	Certain/ Normally happens in cases of this nature (80-100% chance of happening)
4	Will more than likely happen (60-79% chance)
3	Could happen and has happened here or elsewhere (40-59% chance)
2	Has not happened yet, but could (20-39% chance)
1	Conceivable, but only in a set of very specific and extreme circumstances (0-19% chance)

APPENDIX B

List of organisations and people interviewed during site visit undertaken from 5-9 November 2007

4 November 2007

- Ms Christinia Asino and Mr N Ephraim, Town Planning Department, Walvis Bay Municipality.
- Mr Günter Hülsmann (Manager Planning) and Mr Frikkie Holtzhausen (General Manger, Engineering Services) Swakopmund Municipality.
- Mr Rainer Schneeweiss, Rössing Uranium, Sustainable Development Manager.
- Dr Wotan Swiegler, Chamber of Mines of Namibia, 5 November 2007.

5 November 2007

- Rosina Hoabes, Deputy Director, Rural Services Erongo Regional Council and Mr. Deodat van Wyk.
- Mr Colin Namene, Arandis Town Council, Technical Director.
- Joseph Jantze, CEO, and other members from the Usakos Municipality.

6 November 2007

- Mr Johann Botha, NamWater.
- Ms Gitta Paetzold (CEO) and Mr W. Schenck (Technical Advisor), Hospitality Association of Namibia (HAN).

7 November 2007

- Ms Daleen Brand and other representatives from the Department of Housing and Rural Development.
- Dr Lima Maartens (Environmental Manager) and Mr Peter Milutinovic (General Manager, Forsys Metals Corp), Valencia Uranium (Pty) Ltd.