

EXECUTIVE SUMMARY

1.0 Introduction

- (E.1) **Victory Recovery Resources Sdn. Bhd.** as the Project Proponent operates an off site recovery facility on Lots PT 2211, 2212, 2213 and 2214, Jalan PK 11 and Lot PT 2224, Jalan PK 8, Krubong Industrial Park, Daerah Melaka Tengah, Melaka (hereafter known as the 'Recovery Facility'). The key and location plans of the Recovery Facility are shown in **Figure E.1** and **E.2** respectively.
- (E.2) **Victory Recovery Resources Sdn. Bhd.** is intending to expand the handling capacity of the Recovery Facility by increasing the capacity of the existing scheduled wastes approved by the DOE and also handling new scheduled wastes involving additional recovery process to recover material of value including the use of additional lot, Lot PT 2226, Jalan PK12, Krubong Industrial Park to cater for the new recovery process and storage (hereafter known as the 'Proposed Expansion').
- (E.3) The wastes to be collected and handled in the Proposed Expansion are categorized as scheduled wastes and thus and EIA (Environmental Impact Assessment) study is to be conducted at it is a prescribed activity under the First Schedule, Activity 14(a)(i), Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015.
- (E.4) For this purpose, **Victory Recovery Resources Sdn. Bhd.** has appointed YES Enviro Services Sdn. Bhd. to conduct the EIA study for the Proposed Expansion. Therefore, this EIA report is a documentation of the EIA study findings of the environmental impacts and pollution prevention and mitigation measures required in addressing issues relating to the Proposed Expansion to be implemented by **Victory Recovery Resources Sdn. Bhd.**. Any enquiries pertaining to the Recovery Facility and Proposed Expansion and this EIA report can be extended to the following:-

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2.0 Statement Of Needs

(E.5) The need for the Proposed Expansion which involves the recovery of material of value from scheduled wastes can be justified from the following perspective:-

- The need to embark on green growth; and
- The need to enhance 'waste as resources'.

3.0 Project Description

3.1 Existing Operations

3.1.1 Location And Scheduled Waste Load

(E.6) The existing Recovery Facility is located in a gazetted industrial estate on Lots PT 2211, 2212, 2213 and 2214, Jalan PK 11 and Lot PT 2224, Jalan PK8, Krubong Industrial Park, Daerah Melaka Tengah, Melaka. The Recovery Facility is approved to collect and handle the following wastes:-

- 300 tpm of scheduled wastes code SW104;
- 100 tpm of scheduled wastes code SW109;
- 650 tpm of scheduled wastes code SW110;
- 500 tpm of scheduled wastes code SW204;
- 50 tpm of scheduled wastes code SW325;
- 100 tpm of scheduled wastes code SW409;
- 100 tpm of scheduled wastes code SW410;
- 30 tpm of scheduled wastes code SW414;
- 1,000 tpm of scheduled wastes code SW422; and
- 100 tpm of scheduled wastes code SW423.

(E.7) The products recovered from the various recovery processes are mainly metals, plastic, paper and rubber gloves and rubber insulation.

3.1.2 Pollution Control

(E.8) To control pollution from the various recovery processes, the following are in place:-

- Air pollution control system comprising of a dust collection system and scrubbers are installed to treat the various air streams for the recovery processes. These air pollution control system are attached to the related chimneys of 11.88 m high or 17 m high;
- A wastewater processing equipment with a design capacity of 10 m³/day is already operational at site; and

- Residual wastes generated from the recovery process are inventoried, temporarily stored at site and disposed at the DOE's licensed facilities according to the Environmental Quality (Scheduled Wastes) Regulations 2009.

3.2 Intended Proposal

3.2.1 Location And Waste Load

(E.9) The Proposed Expansion involves the following:-

(a) Increase In Handling Capacity For Approved Waste Codes

- Increase in handling capacity for waste code SW104 from 300 tpm to 500 tpm;
- Increase in handling capacity for waste code SW110 from 650 tpm to 2,000 tpm;
- Increase in handling capacity for waste code SW204 from 500 tpm to 1,000 tpm;
- Increase in handling capacity for waste code SW325 from 50 tpm to 100 tpm;
- Increase in handling capacity for waste code SW409 from 100 tpm to 200 tpm; and
- Increase in handling capacity for waste code SW410 from 100 tpm to 200 tpm.

(b) Collection And Handling Of New Waste Codes

- Collection and handling of waste code SW202 of 1,000 tpm;
- Collection and handling of waste code SW305 of 200 tpm;
- Collection and handling of waste code SW306 of 200 tpm;
- Collection and handling of waste code SW307 of 1,000 tpm;
- Collection and handling of waste code SW311 of 200 tpm;
- Collection and handling of waste code SW411 of 200 tpm;
- Collection and handling of waste code SW416 of 200 tpm; and
- Collection and handling of waste code SW417 of 200 tpm.

(E.10) A summary of the scheduled wastes to be used before and after expansion is shown in Table E.1. Besides the above due to the limitation in space additional lots on Lot PT 2226, Jalan PK 12, Krubong Industrial Park will be used as a prescribed premise. The location of this additional site is shown in earlier **Figure E.2**.

3.2.2 Recovery Process

(E.11) The recovery process for waste code SW104, SW110, SW204, SW325, SW409 and SW410 are similar to the present recovery processes already approved and adopted at site. The additional recovery processes for the new waste codes in brief the following:-

(a) Recovery Process For Waste Code SW202

(E.12) The recovery process involves:-

- Sorting;
- Electrolysis;

- Drying;
- Smelting and casting; and
- Product storage and distribution.

(b) Recovery Process For Waste Code SW305

(E.13) The recovery process involves:-

- Primary filtration;
- Heating;
- Secondary filtration; and
- Product storage and distribution.

(c) Recovery Process For Waste Code SW306

(E.14) The recovery process involves:-

- Primary filtration;
- Heating;
- Secondary filtration; and
- Product storage and distribution.

(d) Recovery Process For Waste Code SW307

(E.15) The recovery process involves:-

- Vacuum evaporation;
- Filtration; and
- Product storage and distribution.

(e) Recovery Process For Waste Code SW311

(E.16) The recovery process involves:-

- Carbonization;
- Smelting and casting; and
- Product storage and distribution.

(f) Recovery Process For Waste Code SW411

(E.17) The recovery process involves the following:-

- Carbonization;
- Smelting and casting; and
- Product storage and distribution.

(g) Recovery Process For Waste Code SW416

(E.18) The recovery process involves the following:-

- Carbonization;
- Smelting and casting; and
- Product storage and distribution.

(h) Recovery Process For Waste Code SW417

(E.19) The recovery process involves the following:-

- Carbonization;
- Smelting and casting; and
- Product storage and distribution.

3.2.3 Pollution Controls

(E.20) To cater for the Proposed Expansion, the following pollution controls shall be in place:-

(a) Air Pollution Control

(E.21) A dust collector and 2 scrubber are already operational at site. Thus the adequacy of the existing pollution control equipment to cater for the additional loading from the various sources will be ascertained. However the new equipment to be installed at site will be conveyed to the existing air pollution control system to be upgraded at site. A written notification under Regulation 5, Environmental Quality (Clean Air) Regulations 2014 is to be submitted to the DOE for this purpose.

(b) Water Pollution Control

(E.22) A wastewater processing equipment with a design capacity of 10 m³/day is already operational at site which will be upgraded to cater for the additional wastewater loading due to the Proposed Expansion.

(c) Residual Waste

(E.23) Various residual wastes will be generated from the Proposed Expansion. These residual wastes shall be kept as scheduled wastes for disposal at Kualiti Alam Sdn. Bhd. when the disposal accumulated quantities have reached 20 metric tons according to the Environmental Quality (Scheduled Wastes) Regulations 2009.

4.0 Project Options

(E.24) The option available are examined from three perspectives namely:-

- Site options;
- Technology options; and
- “Build” versus “No Build” options.

(E.25) The project site for the Recovery Facility and Proposed Expansion is located within an industrial park.

(E.26) A ‘No Build’ option will mean that the site will remain at its status quo and further economic activity will not be generated at site.

(E.27) The logical option therefore is to proceed with the 'Build' option, i.e. implementation of the Proposed Expansion to provide additional source of material recovered from wastes for downstream use.

5.0 Description Of Existing Environment

(E.28) The site of the Recovery Facility and Proposed Expansion is flat and ground elevation does not exceed more than 5 m above mean sea level. A factory building occupies the site.

(E.29) The Krubong Industrial Park is drained by a network of drains which discharges into Sungai Jeram which joins Sungai Jenuang and Sungai Cheng of Sungai Melaka.

(E.30) The project site experiences a warm, humid, typically equatorial climate with seasonal variations where rainfall varies from 0 mm to 340.2 mm from January 2016 to June 2016. Fairly high rainfall occurs during the southwest monsoon from August to November and the driest months is in February while wetter months are in June 2016. Winds are predominant in the north easterly.

(E.31) Land use within a 3 Km radius surrounding the project area includes industrial, residential and agriculture use. The nearest residential area is located to the north of the project site at Taman Krubong Jaya located 500 m from the Recovery Facility. Besides this housing scheme, Kg. Padang Siapong, Kg. Ladang and Taman Krubong Jaya Fasa 2 are located within the 500 m radius.

(E.32) Water samples from Sungai Jeram are obtained to provide the baseline water quality of the river as Sungai Jeram is the final receiving water body for stormwaters and wastewaters discharged from the Krubong Industrial Park and from the project site. Pollutants in terms of physical, chemical and biological contents are found to be relatively low in the samples when compared to the National Water Quality Standards and comparable to Class II or Class III, National Water Quality Standards. Based on the DOE's WQI (Water Quality Index), Sungai Jeram can be classified as a slightly polluted or polluted river.

(E.33) Sampling of the ambient air quality is carried out at three locations. Two sampling locations are located at the nearest receptors to the project site and one station at the boundary of the project site. The ambient air quality data obtained indicated that levels for TSP (Total Suspended Particulates) ranging from 40 $\mu\text{g}/\text{Nm}^3$ to 60 $\mu\text{g}/\text{Nm}^3$ are below the ambient air quality guideline of 260 $\mu\text{g}/\text{Nm}^3$. $\text{PM}_{2.5}$ ranging from 16 $\mu\text{g}/\text{Nm}^3$ to 36 $\mu\text{g}/\text{Nm}^3$ are below the guideline of 75 $\mu\text{g}/\text{Nm}^3$. Values for NO_2 , SO_2 and O_3 are also low and detected to be below the ambient air quality guidelines.

- (E.34) Monitoring of the ambient noise levels for both daytime and nighttime at the boundary of the project site showed levels are generally below the 70 dB(A) Leq (daytime) levels and below the 60 dB(A) Leq (nighttime) for industrial use. The noise levels at the nearest receptors are also below the guidelines of 55 dB(A) Leq (daytime) but the nighttime noise levels are higher than the 45 dB(A) Leq for suburban residential use.

6.0 Environmental Statutes, Standards And Guidelines

- (E.35) The legislations and their related standards relevant to the Proposed Expansion are listed below:-

- Environmental Quality Act 1974;
- Environmental Quality (Scheduled Wastes) Regulations 2005;
- Environmental Quality (Industrial Effluent) Regulations 2009;
- Environmental Quality (Clean Air) Regulations 2014;
- Factories and Machinery Act 1967; and
- Occupational Safety and Health Act 1994 and its subsidiary legislations.

7.0 Environmental Impacts And Mitigation Measures

7.1 Project Activities

- (E.36) As various factory buildings are already available on the sites, the implementation of the Proposed Expansion involves 3 stages consisting of the pre-modification stage, modification stage and operation stage.

- (E.37) The pre-modification stage involves the conduct of various studies. It is the planning stage where result of the various studies will be used to design the Proposed Expansion, which includes assessing the adequacy of the equipment at site and sourcing the technical specification for the new equipment required to be installed at site and other requirements to cater for the Proposed Expansion. Impacts during the pre-modification stage is minor as this is the planning stage.

- (E.38) The modification stage involves modification of the interior factory building especially for the new lot of PT 2226, Jalan PK 12. However all these modification works requires the written permission under Section 19, Environmental Quality Act 1974 to be obtained prior to any installation works at site. Impacts related to these activities are easily mitigated as the modification stage is estimated to be between 4 to 6 months with a construction workforce of 6 to 10 people required for the period.

- (E.39) Once the license for operating the additional lot is obtained and the changes to the existing licensing conditions made, the Recovery Facility with the new expanded capacity will operate on a daily basis. The operations of the Recovery Facility however may result in various impacts to the environment and mitigation measures will have to be integrated in the design of the Proposed Expansion to address these issues.

7.2 Impacts And Mitigation Measures

(E.40) The impacts of the above activities are outlined in individual impact Assessment Sheets which appears as **Annex A of Chapter 7** while the pollution prevention and mitigation measures are outlined also in the individual impact assessment sheets. Technical References and illustration of the pollution prevention and mitigation measures are outlined in **Annex B of Chapter 7**.

(E.41) At the end of the assessment a matrix table is provided to summarize the significance of the impacts due to the activities at the various stages of project implementation. The impacts associated with the operations of the Proposed Expansion are as follows:-

(a) Air Pollution

(E.42) The Proposed Expansion will generate additional air emissions and flue gas. Thus to control the air pollution, the existing air pollution control system consisting of the dust collectors and scrubbers to individual stacks will be reused at site once the adequacy assessment has been made. However an additional air pollution control system will be installed to cater for the new equipment installed at site.

(b) Water Pollution

(E.43) A wastewaters processing equipment is already operational at site with a design capacity of 10 m³/day. To cater for the Proposed Expansion, the wastewater processing equipment will be upgraded to cater for the Proposed Expansion. A written notification shall be submitted to the DOE for this purpose.

(c) Residual Wastes

(E.44) Residual wastes will also be generated from the various recovery process which will be stored for disposal at Kualiti Alam Sdn. Bhd. once the quantities have reached 20 metric ton.

(d) Operational Hazards

(E.45) To assess the hazards of the Proposed Expansion a risk assessment is conducted for the Proposed Expansion. The qualitative risk assessment showed that the risk rating is within medium risks (level 4) and thus below the threshold level of 8 as outlined under the EIA Guideline for Risk Assessment and therefore further assessment is not required.

(E.46) A HRA (Health Risk Assessment) is also conducted for all material used in the Proposed Expansion. The HRA conducted showed that the chemicals used in the process can be categorized as 2 or 4 which means that all measures outlined in the MSDS are to be followed closely.

- (E.47) Nevertheless, an environmental management system and a safety management system shall be in place for the Proposed Expansion to manage aspects pertaining to be environment and health. For this purpose also to cater for the respond to abnormal situations, the existing ERP (Emergency Response Plan) already in place has to be updated for the Recovery Facility to cater for accidents involving various emergency conditions. The ERP shall be reviewed on a continuous basis to cater for changes to the recovery process or plant layout.

- (E.48) A summary of the impacts, magnitude, pollution prevention and mitigation measures is provided in **Table E.2**.

8.0 Residual Impacts

- (E.49) Issues that have long term residual impacts to the environment are related to the emissions of the treated air from the air pollution control system, treated wastewater discharged and the generation of residues from the various recovery process. These issues however are manageable. Nonetheless routine maintenance of all equipment and pollution controls.

9.0 Environmental Management Plan And Environmental Monitoring

- (E.50) An EMP (Environmental Management Plan) for the Proposed Expansion is to be formulated. The EMP is drawn up to assist the management of all potential issues identified in **Chapter 7** of the EIA report, and to ensure proper implementation of the Proposed Expansion.

- (E.51) The EMP will serve to formalize and document the potential issues and actions that are required to be undertaken to mitigate any adverse impacts that may arise.

- (E.52) An environmental monitoring program, which forms an essential component in the overall EMP is outlined in **Chapter 9** of this report.

- (E.53) Audits and event contingency plans are also outlined in the report to ensure the EMP is comprehensive in ensuring all aspects of the environment are considered.

10.0 Study Findings

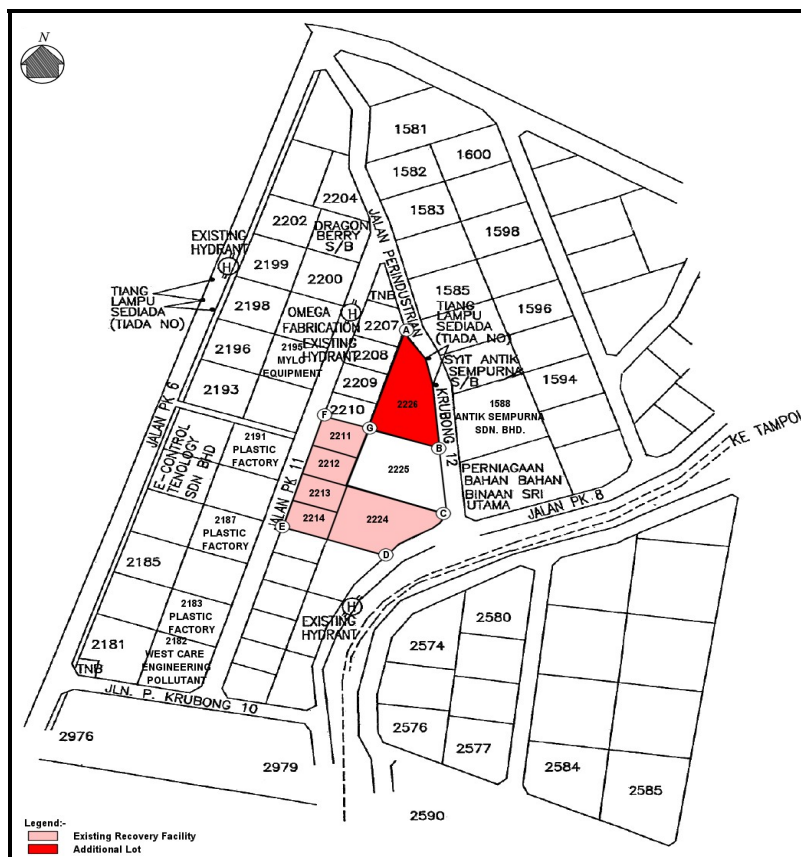
- (E.54) Based on the EIA study conducted for the Proposed Expansion involving the increase in handling capacity of scheduled wastes to be recovered at the existing Recovery Facility on Lots PT 2211, 2212, 2213 and 2214, Jalan PK 11 and Lot PT 2224, Jalan PK 8 and Lot PT 2226, Jalan PK 12, Krubong Industrial Park, Daerah Melaka Tengah, Melaka shows that the impacts to an acceptable level. Therefore, with these mitigating measures coupled with strict monitoring and controls, impacts to the environment can be reduced significantly to an acceptable level.

- (E.55) Thus it is recommended that due consideration be given to the Proposed Expansion so as to assist in meeting the increasing demands for metals and other material for downstream activity.



Not To Scale

Figure E.1 Key Plan



Not To Scale

Figure E.2 Location Plan

Table E.1
Type And Quantity Of Scheduled Wastes To Be Used Before And After Expansion

No.	Waste Code	Type Of Wastes	Quantity (tpm)	
			Before	After
1.	SW104	• Solder dross/zinc dross/aluminium dross	300	500
2.	SW109	• Used fluorescent tubes/bulbs	100	100
3.	SW110	• Electronic wastes	650	2,000
4.	SW202	• Waste catalysts	None	1,000
5.	SW204	• Sludge containing metals	500	1,000
6.	SW305	• Spent lubricating oil	None	200
7.	SW306	• Spent hydraulic oil	None	200
8.	SW307	• Spent mineral oil-water emulsion	None	1,000
9.	SW311	• Waste of oil or oily sludge	None	200
10.	SW325	• Spent resin waste	50	100
11.	SW409	• Contaminated containers	100	200
12.	SW410	• Contaminated rags or filters	100	200
13.	SW411	• Spent activated carbon	None	200
14.	SW414	• Spent aqueous alkaline solution containing cyanide	30	30
15.	SW416	• Sludges of inks, paints, pigments, lacquer, dye or varnish	None	200
16.	SW417	• Wastes of inks, paints, pigments, lacquer, dye or varnish	None	200
17.	SW422	• Contaminated metal chips and articles	1,000	1,000
18.	SW423	• Spent photographic wastes or discarded chemicals	100	100
		Total	2,930	8,430

Note:

Additional Waste Quantity = 5,500 tpm

Table E.2
Summary Of Activities, Impacts And Pollution Prevention And Mitigating Measures

Project Activity	Aspect Of Impacts	Impacts On Environment	Pollution Prevention And Mitigating Measures	Residual Impacts
A. Pre-Modification Stage				
EIA studies and site investigation	Safety	Unsafe work produces can be a hazard to workers	1. Avoid working during heavy rainfall. 2. Ensure all workers are equipment with the necessary protective measures.	None
B. Modification Stage				
Mobilization and modification works	Noise	Minimal as the equipment for used are not nearby machinery.	1. Provide personal protective equipment to workers	None
	Safety aspect	Workers safety relating to construction site.	2. Ensure vehicles and machine are maintained routinely. 3. Safety sign to be installed to indicate project under construction. 4. All safety equipment under Factory and Machine Act to follow close.	
	Noise	Noise level from construction equipment range from 65 to 80 dB (A) measure from source.	5. All equipment not in use to shutdown reduce noise provide temporary. 6. Engineering controls to be integrated in all machine used at site. 7. Monitor noise levels at site.	
C. Plant Operation				
Collection and transport	Spillage during collection and transport.	Scheduled waste will contaminate land and affect the health of workers	1. Transportation and handling of scheduled waste should be monitored closely. 2. Scheduled waste should be stored in appropriate containers to prevent leakage. 3. Implement proper storage and handling procedures. 4. Use of impermeable surfaces at storage areas. 5. Implement worker training programs on safety and environment awareness. 6. Ensure availability of proper and well-maintained safety equipment. 7. Designate non-smoking areas.	None if all mitigation measures are incorporated in design and the management of the chemical
Plant Process (a) Waste receiving	Spillage during operation	Improper work procedures will result in spills while handling the wastes	1. Provide personal protective equipment to workers for use during operation. 2. Provide separate storage areas for different scheduled wastes.	None if all mitigation measures are incorporated in design and management of issues resulting from recovery process.
(b) Recovery process	Air pollution Water pollution Residual wastes Noise	Workers health may be affected due to air pollution issue. Deteriorating air quality due to emissions from process. Residual wastes generated if not managed properly. Deteriorating water quality due to wastewaters generated from process. Improper management of residual wastes may contaminate land. Workers hearing will be affected.	3. Air stream or flue gas from recovery process to be channeled to air pollution control system. 4. Wastewater from the recovery process to be collected and processed in the wastewater processing equipment to evaporate and sludge produced to be dried into carbon char for KA disposal. 5. Spent liquor from wet scrubber in small quantities to be collected and conveyance to wastewater processing equipment. 6. All requirements outlined in Environmental Quality (Scheduled Wastes) Regulations 2005 to be followed accordingly.	
(c) General operations	Generation of solid waste from domestic sources	Degradation to general aesthetic appeal Accumulation of solid waste especially perishables will attract vermin and vectors	1. Good house-keeping procedures. 2. Disposal of solid waste at designated dump sites in the industrial park	None if recommended mitigation measures are adhered to closely

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Table E.2 (Cont)

Project Activity	Aspect Of Impacts	Impacts On Environment	Pollution Prevention And Mitigating Measures	Residual Impacts
	Employment of personnel (administrative, technician, operators)	Positive beneficial effect to the state economy Positive impact on the environment through recycling of waste with negligible pollution emission	1. Training and capacity building of workers in the field of recovery	A positive benefit and advantageous residual effect is expected upon commencement of plant operation
D. Decommissioning				
Process shutdown and equipment dismantling	Equipment and structure dismantling	Generation of dust and solid waste during dismantling works	1. Salvage or recycle some of the plant equipment and construction materials.	None to be expected if the wastes generated are disposed of appropriately
	Residues of scheduled waste plant operation	Presence of toxic or scheduled waste poses health and environmental risks	2. Proper disposal of solid waste at dumpsites or landfills approved by the local authority.	
	Spillages and leaks during plant operation can cause land contamination	General aesthetic appeal to the site Seepage of residual waste into the ground will pollute soil and groundwater	3. Sending of residual scheduled waste to KA for ultimate disposal. 1. Proper design of scheduled waste storage system. 2. Safe and proper handling of toxic waste. 3. Good manufacturing practices during plant operation. 4. Proper cleanup of any spillage or leakage of toxic waste.	None if good house-keeping and operating practices are carried out throughout the plant life
	Plant closure	Termination of jobs	1. Employment of former plant employees in decommissioning activities. 2. Make arrangements for staff employment at other facilities.	The labor force is quite small (about 30) so job relocations will not have major impact on the socio-economic structure

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