UNOFFICIAL TRANSLATION

Centre for Economic Development, Transport and the Environment

Southwest Finland

Statement Reg. no VARELY/2090/2021

27.1.2022

Critical Metals Ltd

REASONED CONCLUSION ON THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT REGARDING THE IMPLEMENTATION OF A VANADIUM RECOVERY PLANT BY CRITICAL METALS LTD

Content

REASONED CONCLUSION ON THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT REGARDING THE IMPLEMENTATION OF A VANADIUM RECOVERY PLANT BY CRITICAL METALS LTD 1

1. PROJECT INFORMATION AND THE EIA PROCEDURE 2
2. PUBLIC CONSULTATION AND SUMMARY OF THE PROVIDED STATEMENTS AND OPINIONS ON THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT 4
3. QUALITY AND SUFFICIENCY OF THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT 10
4. REASONED CONCLUSION OF THE COORDINATING AUTHORITY 10
5. NOTIFICATION ON THE REASONED CONCLUSION 19
6. FEE DETERMINATION AND APPEAL 20
7. APPLIED PROVISIONS OF LAW IN THE EIA PROCEDURE AND APPROVAL OF THE DOCUMENT 20

APPENDICES 21

DISTRIBUTION 21

Critical Metals Ltd has submitted the environmental impact assessment report (EIA report) regarding the planned vanadium recovery project in Pori to the Southwest Finland Centre for Economic Development, Transport and the Environment (ELY Centre) on September 27, 2021 pursuant to the Act on Environmental Impact Assessment Procedure (252/2017).

1. PROJECT INFORMATION AND THE EIA PROCEDURE

Name of the project

Critical Metals Ltd, Vanadium recovery plant, Pori

Project developer and coordinating authority

Project developer	Local representative of the project developer	EIA consultant
Critical Metals Ltd	LandPro Oy	Sweco Industry Oy

The Southwest Finland ELY centre acts as the coordinating authority in the EIA procedure pursuant to the EIA Act and prepares the reasoned conclusion on the EIA report.

Project description and implementation alternatives

The environmental impact assessment contains the operations of the vanadium recovery project of Critical Metals Ltd. The aim of the project is to produce high-purity vanadium pentoxide for the needs of the European industry. Vanadium will be recovered from slag, a by-product of the steel industry via a hydrometallurgical process. In addition, the project will also produce calcium carbonate rich stabilised slag material (SSM) and sodium sulphate. A significant volume of carbon dioxide is used in the vanadium recovery process and carbon dioxide is produced and recovered in industrial facilities.

The plant will use slag feedstock with a maximum throughput of 300,000 dry tonnes per year. A significant volume of carbon dioxide as well as sulphur acid, sodium hydroxide, sodium carbonate and ammonium sulphate are needed in the leaching process. The primary product from the process is a high-purity vanadium pentoxide chemical powder or flake. At maximum capacity, up to 9 000 tonnes of the primary product will be produced each year. In addition, two by-products will be produced including calcium carbonate CaCO3 rich stabilised slag material (SSM) at the rate of about 415,000 dry tonnes per year and sodium sulphate at about 30,000 dry tonnes per year.

Several potential locations in England, Sweden and Finland were considered for the plant. Tahkoluoto in Pori was selected as the most suitable location for the project, due to good logistical connections to international markets, existing infrastructure and proximity to markets. The plan is to locate the project at the Port of Pori in Tahkoluoto. In addition to port operations, there are plenty of other industrial activities in the Tahkoluoto area. The total size of the project area is approximately 23.65 hectares. Other location alternatives were not examined in this EIA procedure.

The alternatives assessed in the EIA procedure were:

Alt.1: Construction of the vanadium recovery plant in Tahkoluoto, Pori. The plant is expected to produce vanadium pentoxide chemical powders or flakes at the rate

of up to 9,000 tonnes per year. In addition, two by-products will be produced including calcium carbonate CaCO3 rich stabilised slag material (SSM) at the rate of 415,000 dry tonnes per year and sodium sulphate at 30,000 dry tonnes per year. As a raw material, the plant will use slag feedstock from steel industry with a maximum throughput of 300,000 dry tonnes per year.

Alt.1a: Slag feedstock from steel industry, which is used as raw material in the vanadium recovery plant, has not received the status of by-product for vanadium recovery.

Alt.1b: Calcium carbonate CaCO3 rich slag material (SSM) produced in the vanadium recovery plant has not yet received the by-product status, in which case it is transported to be stored in an existing area authorised for an equivalent type of activity.

Alt.0: The project will not be implemented, so-called zero alternative.

Construction of the vanadium recovery plant and designed structures, operation, received materials and their treatment, description of the project area as well as environmental impacts (traffic, noise, vibration, air quality, climate, surface water and ground water, soil and natural resources) have been presented in the EIA report. Furthermore, project risks and preparations for them as well as cumulative impacts with other projects, public consultation, current state of environment, impact assessment and used methods, comparison of alternatives, feasibility of the project as well as monitoring of operation and impacts have been presented.

Need and phases of the EIA procedure

The regulations governing the purpose, content and process of the EIA procedure have been written in the EIA Act (252/2017) and EIA Decree (277/2017). The environmental impact assessment procedure must be applied to the vanadium recovery plant pursuant to sections 11 b) and 4 a) of Appendix 1 of the EIA Act: *11 b) waste treatment facilities, in which other than hazardous waste is chemically treated, and which have a waste capacity of a minimum of 100 tonnes per day; and 4 a) facilities, in which other than crude iron metals are produced from ore, concentrates and secondary raw materials using metallurgical, chemical and electrolytic methods.*

The EIA procedure of the project was initiated on April 6, 2021, when the project developer submitted the EIA programme to the ELY Centre. The ELY Centre announced the EIA programme and requested statements and opinions on it. Due to meeting restrictions caused by the coronavirus pandemic, the EIA programme was presented in a public hearing through remote access on April 21, 2021. Summaries of the project, the EIA programme and the EIA procedure were inserted to the web page ymparisto.fi to support the material provided in public notice. The ELY Centre provided its statement on the EIA programme on June 10, 2021.

Integrating the EIA procedure with other legal procedures

The assessment procedure has not been integrated with other legal procedures.

The Tahkoluoto–Paakarit component master plan 2040 has been ongoing simultaneously with the assessment procedure. In the pending draft Tahkoluoto–Paakarit component master plan 2040 component master plan, the project area is designated as an industrial, storage and energy supply area, where a significant facility producing or storing hazardous chemicals can be located (T/kem). The draft component master plan has been announced in summer 2021.

The construction of the vanadium recovery plant is an independent project, which is not related to other projects, except for the cooperation with existing industrial facilities. Other known projects in the vicinity of the project area include:

- Tahkoluoto offshore wind farm extension project by Suomen Hyötytuuli Oy.
- Construction of a new oil quay in the Tahkoluoto chemical port, dredging and filling of the water area.

Required plans, permits and decisions for the implementation of the project

Potential permits and decisions required for the implementation of this project include:

- Environmental permit
- Building permit
- Chemical permit
- Other permits and obligations

2. PUBLIC CONSULTATION AND SUMMARY OF THE PROVIDED STATEMENTS AND OPINIONS ON THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Public notice and hearing of the environmental impact assessment report

The project developer has prepared the environmental impact assessment programme (EIA programme) and furthermore the environmental impact assessment report (EIA report) based on the statement on the EIA programme provided by the coordinating authority and has submitted the EIA report to the ELY Centre on September 27, 2021.

The pending EIA report was announced on the web pages of the ELY Centre and the City of Pori during the period September 28–November 29, 2021, which was reserved for providing statements and opinions. The EIA report was simultaneously on display at the Service Point Porina in the City of Pori. In addition, the EIA report was published on September 28, 2021, on the following website of the environmental administration: www.ymparisto.fi/criticalmetalsporiYVA. Public announcement on the display of the EIA report was published in the newspaper Satakunnan Kansa.

Statement on the EIA report was requested from the City of Pori and other relevant authorities. It was informed that the public hearing is organised through remote access on October 18, 2021. 37 participants signed up for the event.

The project developer established an extensive follow-up group to support the assessment work. The follow-up group assembled twice during the EIA procedure and the invited parties are listed in the EIA report.

As part of the social impact assessment, the project developer conducted a resident survey to nearby permanent and holiday residents. 160 persons replied to the survey.

Statement on the EIA report was requested from the following authorities, organisations with special tasks and companies:

- Regional State Administrative Agency for Southern Finland / Environmental Permits Area of Responsibility
- Finnish Transport and Communications Agency (Traficom)
- Regional State Administrative Agency for Southwestern Finland
- Southwest Finland Forest Centre, Pori
- Metsähallitus
- City of Pori (Economic Development and Growth Department)
- City of Pori (Environment and Health Surveillance Department)
- City of Pori (Building Supervision Department)
- City of Pori (Planning and Development Department)
- Pori Ornithological Association
- Port of Pori Oy
- Satakunta Rescue Department
- Satakunta Centre for Economic Development, Transport and the Environment / E-Area of Responsibility
- Finnish Association for Nature Conservation / Satakunta District
- Satakunta Museum
- Satakunta Regional Council
- Finnish Environment Institute
- Finnish Safety and Chemical Agency (TUKES)
- Finnish Transport Infrastructure Agency

Provided statements and opinions

A total of six statements and one opinion on the EIA report were submitted to the coordinating authority. A summary of the provided statements and the opinion on the EIA report is presented below.

The statement of the City Board of Pori is based on the statement of the Environment and Permit Services Committee. *It is stated that overall impacts have been assessed comprehensively and sufficiently to solve the locational requirements of the project. The main uncertainty is that the applicability of SSM to various processes has only been tested and actual alternative use for SSM has not been confirmed in the EIA report.*

The by-product status of SSM is very important for the operation of the plant and even necessary so that the environmental efficiency of the operation and goals for promoting circular economy would be fully implemented. The EIA report includes a reference to Oxelösund in Sweden, where hundreds of thousands of cubic metres of slag have been used for filling in the coastal area. It is of primary importance that the use of slag is not only based on its applicability, but also on the actual need for replacing non-renewable materials in various sites and instead of its inappropriate final disposal. The preconditions for using SSM in the circular economy of earth works should also have been evaluated in the EIA report taking the national waste plan into account.

It is mentioned in the air quality monitoring chapter of the EIA report that "the Government Decree on Airborne Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons (113/2017) defines target values for the calendar year calculated as annual averages for arsenic, cadmium and nickel. The target value was slightly exceeded for arsenic and nickel at the Kaleva measurement station in Harjavalta and for arsenic in Pirkkala in Harjavalta. The target values were not exceeded in Pori". It can be noted that PM10 concentrations are continuously measured at the Paananketokatu station, but PM10 particle samples are not collected for metal analyses.

The need for improving the traffic safety of pedestrian and bicycle traffic on the Reposaari main road is recorded in the EIA report, and this was also mentioned in the statement on the EIA programme provided by the City of Pori. Regarding infrastructure planning, the common opinion of the city planning and infrastructure departments is that the traffic safety of pedestrian and bicycle traffic along this road (regional road 269) will primarily be improved by constructing a separate pedestrian and bicycle way. There is a need for a pedestrian and bicycle way on the Reposaari main road or for some other measures which provide for significant improvement of traffic safety regardless of the project of Critical Metals, as it is described in the EIA report.

The food plant community (red fescue) of the endangered butterfly species, meadow dwarf, which was found in the project area in Tahkoluoto during a nature study, will be moved in a controlled way to another site in the port area based on separate plan during autumn 2021. Regarding biodiversity, significant living environments are situated along the Reposaari main road, such as heavily decayed coniferous forests and groves. The potential increasing need for a pedestrian and bicycle way due to the project may affect these living environments.

Tahkoluoto area has port, energy production and industrial operations. According to the regional plan (KHO 13.3.2013), the area is designated for energy supply (EV) and includes a safety zone (sv-1) supervised by Tukes , which is a consulting zone of hazardous targets. In the Reposaari-Tahkoluoto-Lampaluoto-Ämttöö component master plan (KV 24.3.1997), the area is designated as an industrial area (T). In the pending draft Tahkoluoto-Paakarit component master plan 2040 the area is designated as an industrial, warehousing and energy supply area, where a significant facility producing or storing hazardous chemicals can be located (T/kem). The forthcoming operations are located in a block area of industrial and warehouse buildings (T-9) designated in the Tahkoluoto detailed plan (KV 13.8.1986). Power plants, buildings and structures related to power generation, distribution and transfer, as well as buildings serving the storage of inflammable liquids up to 5 000 m3 can be built in the block area. The permitted construction volume (1 500 000 m^3) in the block area and activities significantly exceed the needs of the forthcoming operator. A detailed plan was prepared for the nearest residential areas (distance of about 1 km) in 1998, and afterwards new residential areas or other critical activities have not been located in the Tahkoluoto area. Distance to residential areas and other sensitive sites is long enough for the location of activities in the Tahkoluoto industrial block area in accordance with the SEVESO classification.

The City of Pori has persistently and purposely acquired properties and residences in the nearest detailed plan area on the bottom of the Katainniemi Bay. All land policy actions and land use planning intend to secure the preconditions for industrial operations in Tahkoluoto, and not designate new residential areas and other activities in the vicinity, where the expanding industrial operations in Tahkoluoto could cause a considerable risk. The volume of construction and quality of forthcoming operations are suitable for the block area of industrial and warehouse buildings designated in the detailed plan. Impacts from operation can be safely managed within the existing land use plans, and operations involving hazardous chemicals or other arguments will not require an alteration of the detailed plan.

Regarding required raw materials and services, and also through potential recycling of by-products, the operations of Critical Metals will develop significant forms of cooperation between the existing companies in the area. It will also increase the attractiveness of the area for new network partners and their involvement will promote economic activity more than expected. On the whole, it can be stated that the vanadium recovery plant designed by Critical Metals will have very positive impacts not only on the revival of industrial operations in Meri-Pori, but also more extensively on the vitality of the whole region.

The Finnish Safety and Chemical Agency (Tukes) considers in its statement that referring to the volumes presented in Table 2.2.4 in the EIA report*, the facility has been classified as a security clearance facility based on the volumes of primary product or vanadium pentoxide, which is hazardous to the environment (*toxic to aquatic life with long-lasting effects*, category 2, H411). The maximum storage volume is 4 500 tonnes, while the limit for a required safety clearance is 500 tonnes for a chemical in this particular hazard class. The need for a chemical permit has been stated in the EIA report and Tukes has already been contacted regarding the application of the chemical permit. The need to register the produced and used chemicals with Tukes according to the REACH regulation (2006/1907/EC) has also been stated in the EIA report.*

*Based on the EIA report, there is a valid detailed plan in the area for the project. Tukes has expressed its opinion in previous statement that the existing plan symbols T-9 "*Block area of Industrial and Warehouse Buildings*" and TV-1 "*Block area of Warehouse Buildings*" provide for the treatment and storage of hazardous chemicals in the area.*

The Satakunta Regional Council considers in its statement that *the environmental impact assessment report has been supplemented by a section regarding regional planning in Satakunta. Furthermore, impacts on community structure and land use have been sufficiently assessed in the EIA report. Other issues presented by the Satakunta Regional Council in its previous statement have also been sufficiently examined in the environmental impact assessment of the project. The illustration of landscape impacts still has minor shortcomings. Landscape impacts should have also been illustrated from direction of the sea and at human height. The presented illustration of landscape impacts can still be considered sufficient taking the location and characteristics of the project into account.*

It is stated in the text that there are some trails created by outdoor hiking in the coastal zone between Ketaranlahti and Siikaranta in Reposaari in north-eastern part of Tahkoluoto, and that the Siikaranta camping area can increase the pressure for recreational use in the area. The Satakunta Regional Council reminds that this particular area is designated as a recreational area with a plan symbol V I the Satakunta regional plan. This plan symbol designates significant areas with regard to outdoor activities, hiking and recreational use. The area has a building restriction pursuant to Section 33 of the Land Use and Building Act. According to the planning regulation, attention should be paid in planning on securing the recreational use and related development possibilities in the area. In addition, cumulative impacts regarding, for example, outlook and view with other activities located in Tahkoluoto and in the adjacent marine area (for example the Tahkoluoto wind farm area) should have been considered in the assessment regarding the recreational use of the area. According to the opinion of the Satakunta Regional Council, the overall impact assessment presented in the EIA report can be considered sufficient.

Metsähallitus considers in its statement that *the operation of a closed-cycle facility located in Tahkoluoto will likely cause no significant harmful impacts on natural environment, the Bothnian Sea National Park and the nearby Natura 2000 areas in normal operation. In exceptional situations, Metsähallitus states, however, that impacts cannot unambiguously be considered as minor. The assessment of various impacts on the biodiversity of seabed is slightly inadequate (includes only issues related to fish stock and plankton) in the EIA report. Furthermore, it should be secured that animals, such as birds, cannot access the stormwater ponds. According to the opinion of Metsähallitus, regarding, for example, sulphate-rich water discharge from the existing or planned facilities to the sea, the potential long-term impacts of extra sulphate e.g. on dissolving of metals and eutrophication of brackish marine area and hence on the state of habitats, species and fish stock can be significant in exceptional situations.*

Metsähallitus states that disturbances and exceptional situations in the facility constitute the greatest threat to the Bothnian Sea National Park and nearby Natura 2000 areas. During these distubances toxic substances can flow to the sea According to the opinion of Metsähallitus, accurate management of these risks beforehand is very important in similar projects, which use toxic substances to water environment and organisms. Therefore, operational procedures and structures must support accurate management of various problems, such as overflows. Stormwaters from slag and SSM stockpiles cannot be regularly directed to the sea as an overflow from ponds even in exceptional situations. Metsähallitus considers that modern technology may already provide for continuous monitoring and fast alarms in exceptional situations, through which harmful impacts could be significantly and quickly reduced. It is important to develop a fast and reliable response through double monitoring to minimise emissions in exceptional situations. It is necessary to require a plan regarding the regulation and shutdown of production during disturbances and/or when environmental load exceeds the predefined level.

The Finnish Transport Infrastructure Agency considers that *traffic impacts caused by the project have mainly been sufficiently assessed and the assessment follows the description provided in the EIA programme. The growth of traffic volumes especially for heavy traffic will be quite significant on the Reposaari main*

road and the Pori archipelago road. The Finnish Transport Infrastructure Agency presumes that significant harmful impacts on traffic safety and the level of service of traffic will be prevented. The Finnish Transport Infrastructure Agency reminds that if there is a need for reinforcing road structures or upgrading junctions etc., the measures will be planned and implemented at the expense of the project developer. The Finnish Transport Infrastructure Agency points out that the focus in further planning should be on traffic safety and especially on safe transport of hazardous goods.

The Satakunta Museum considers in its statement *that the impacts of the project on cultural environment together with cumulative impacts with other projects have been sufficiently illustrated and assessed, and the assessment is reasonable. The EIA report provides a sufficient view of the scope of project construction, extent and height of disposed masses as well as their visibility in landscape. Based on the assessments, the Satakunta Museum considers that the impacts of the project on cultural environments and landscape will be minor, even though negative. The Museum also considers that the cumulative impacts (especially with the extension of the Tahkoluoto wind farm) are reasonable. The most significant cumulative impacts of projects are related to noise and lighting of the facilities.*

Puhtaan meren puolesta ry expresses its special concern about dust impacts of materials, stormwater quality and related environmental impacts, adequate capacity of stormwater ponds as well as transport and unloading of chemicals and raw materials. Puhtaan meren puolesta ry considers that *the storage of secondary products should be totally forbidden in Tahkoluoto and move to sites, where they can be recycled, or alternative use can be developed in an optimal way without polluting the environment.* The association emphasises that *no emissions to the water system or air will be generated in any phase of the project. Regarding the estimation of emission loads, the environmental loads of existing operators must be considered, and cumulative impacts and multiplier effects must be estimated taking also former impacts into account.*

3. QUALITY AND SUFFICIENCY OF THE ENVIRONMENTAL IMPACT ASESSMENT REPORT

The Southwest Finland ELY Centre as the coordinating authority in the EIA procedure has reviewed the sufficiency and quality of the EIA report and hereby states the following:

The environmental impact assessment report regarding the vanadium recovery plant of Critical Metals Ltd meets the content requirements provided in Section 19 of the EIA Act and Section 4 of the EIA Decree. The EIA report has been prepared based on the EIA programme, which was on display during April 12–May 12, 2021, and based on the related statement provided by the coordinating authority.

The project developer has had sufficient knowledge for performing assessments. Overall, the EIA report has been well prepared, and it does not have major shortcomings that would prevent the coordinating authority from preparing the reasoned conclusion on the significant impacts of the project. Based on the EIA report, it is possible to obtain an overall view of the project and related environmental impacts, identify and assess the significant project impacts as well as compare the environmental impacts of different alternatives and evaluate the feasibility of alternatives. The coordinating authority considers that a response has been provided for most of the items presented in the statement on the EIA programme.

Based on public hearing and own evaluation of the coordinating authority, it can be noted that the EIA report has some shortcomings and uncertainties especially regarding land use planning. They can, however, be corrected and considered in further planning as well as during the permit and approval procedures.

Regarding cumulative impacts, the current state of environment in the area and related impacts of main activities have been sufficiently described in the EIA report.

More detailed remarks of the coordinating authority regarding the sufficiency and quality of impact assessments and related conclusions have been presented in the following reasoned conclusion of the coordinating authority.

4. REASONED CONCLUSION OF THE COORDINATING AUTHORITY

The reasoned conclusion of the coordinating authority is included in the permit decisions of the project pursuant to Section 26 of the EIA Act. It must be presented in the permit decisions, how the EIA report and related reasoned conclusion have been considered.

The reasoned conclusion regarding the significant impacts of the project is based on the content requirements of the EIA report provided in the EIA Act and EIA Decree, information presented in the EIA report, provided statements on the EIA report and additional evaluations of the ELY centre. Based on these, as its reasoned conclusion on the significant impacts and feasibility of the vanadium recovery plant of Critical Metals Ltd, the ELY Centre presents the following:

Significant project impacts and related arguments as well as project feasibility

The coordinating authority considers that the most significant environmental impacts of the vanadium recovery project include impacts on community structure and land use, traffic, surface water, air quality (dust) and noise. The long duration and persistence of the project highlight the significance of impacts. Special attention must be paid to the mitigation, management and monitoring of these impacts in further planning and permit procedures.

Based on prepared assessments, it can, however, be evaluated that none of the implementation alternatives will probably cause such significant harmful environmental impacts, which would prevent further project planning and application of the required authority permits.

Community structure and land use

The coordinating authority reminds that the “Tahkoluoto-Paakarit” component master plan is a draft, not a plan proposal, as it is noted in several sections of the EIA report. There is no legally binding master plan in the area.

The location of the project in the map for the detailed plan should have been presented in figure 6.2-10 (extract from the detailed plan). Based on previously presented map, it seems like the project would also be partly located in the designated port area (LS-1) in the detailed plan. The port area and residential areas are completely missing from the legend of the extract from the detailed plan. The detailed plans in the area are quite old and do not include T/kem plan symbols. An alteration of the plan in forthcoming years is included in the land use planning programme of the City of Pori, which aims at considering the changing needs of the Tahkoluoto port and industrial activities. The valid detailed plan permits the construction of residential buildings not only in areas presented in figure 6.2-10, but based on plan provisions, also in project areas TV-1 and TT-1 (e.g. residences of emergency and maintenance personnel).

The following remarks from the Tukes statement regarding the EIA programme are not included in the quotation: Tukes considers it important that the suitability of the land use plan to operations is assessed as part of the EIA procedure, and Tukes recommends a plan symbol for industrial sites with major accident hazard (so-called Seveso sites), which considers the location of a facility handling and storing very hazardous chemicals in the area, for example T/kem.

The estimates in the EIA report regarding the distances to residential areas seem to be too long (page 173). In fact, residential areas seem to be located much closer, at a distance of about 700 metres.

The coordinating authority emphasises that the implementation possibilities of the project have not been sufficiently evaluated in land use planning so far (existing and future land use), and in this case the significance of assessments in the EIA procedure is highlighted. In the impact assessment (chapter 6.2.5. impacts), the impacts of the project should have been assessed with regard to the theme “healthy and safe living environment” included in the national land use objectives.

Traffic impacts

Traffic impacts have been assessed as an expert evaluation in the environmental impact assessment. The coordinating authority considers that its comments regarding traffic conditions presented in the statement on the EIA programme have been considered in the EIA report. The coordinating authority states that traffic impacts have been sufficiently assessed in the EIA report. The EIA report should, however, be revised regarding the fact that the Southwest Finland ELY Centre is responsible for road infrastructure management, not the Satakunta ELY Centre.

The environmental impacts of traffic are mainly caused by growing heavy traffic volumes in the vicinity of the project area, which will affect traffic safety, air quality and climate. Due to the implementation of the plant, traffic volumes will grow during construction and operation in the area. Temporary traffic impacts of the project during construction will be relatively significant. It is estimated that growing traffic volumes will have moderate and negative impacts in project alternatives Alt.1, Alt.1a and Alt.1b. In alternative Alt.1b a greater share of heavy traffic can be directed to the Pori archipelago road, but otherwise there is no difference between alternatives.

The coordinating authority states that estimated data on traffic impacts presented in the EIA report is correct. The assessment of alternatives includes all realistic transport route alternatives and related comparisons have been prepared objectively and conclusions based on comparisons are correct.

As traffic volumes grow, seamless traffic conditions can deteriorate, and accident risk can increase. Potential impacts on the level of service of traffic and traffic safety can require measures for improving traffic conditions and safety. The construction of a continuous pedestrian and bicycle way as well as road lighting on the Pori archipelago road would improve traffic conditions and traffic safety accordingly. In the pending Tahkoluoto-Paakarit draft component master plan a pedestrian and bicycle way is proposed from the Tahkoluoto junction to both Reposaari and Mäntyluoto direction.

Traffic impacts related to the operation of the plant can be reduced by e.g. optimization of transport logistics so that transport capacity is used as efficiently as possible and the number of loads is minimized. The coordinating authority considers that traffic impacts can efficiently be mitigated by the reduction of speed limits on the roads used for traffic operations in the area.

Impacts on surface water

It is estimated in the EIA report that the project will not have detectable impacts on sea water quality, water organisms or fish stock. Stormwaters generated during construction will probably include solid substance to some extent. Stormwater management will be designed so that contaminants in soil cannot enter the water system with stormwater.

Possibilities to reduce impacts on surface water during construction could have been described in more detail in the EIA report. According to the opinion of the coordinating authority, information regarding water discharge during project

construction must be specified during the permit procedure to prevent potential harmful impacts and secure adequate monitoring. Consequently, the permit application should include a more detailed plan of the water management system especially during construction.

In its statement on the EIA programme regarding surface waters, the coordinating authority has required that impacts on the objectives of water management and marine management as well as on the ecological and chemical state of the Reposaari-Outoori water body must also be assessed in the EIA report. These issues have now been presented quite comprehensively and the impacts of stormwaters on the ecological and chemical state have been assessed. Stormwater quality has also been described in more detail. Sea water flood risk has also been adequately considered in the EIA report. The coordinating authority considers that the estimated impacts presented in the EIA report on the objectives of water management and marine management as well as on the ecological and chemical state of surface waters (minor during operation, moderate and negative regarding stormwater discharge in exceptional situation) in the area are correct and, for the most part, adequately described.

The impact assessment included the impacts of stormwaters directed to the sea only during exceptional heavy rain, but in section “Treatment and storage” of chapter 6.5.4.1 “Slag” it has, however, been stated that *“overflow situations of ponds can occur, for example, with the commissioning of the plant, start-up of the plant after a maintenance break or with exceptionally high volumes of rain water and melt water, when the short-term demand for process water can be lower than the generated volume of stormwater. In short-term overflow situations, waters are directed in a controlled way along a drain to the water system, when most of the solid substance falls into the pond”.*

The coordinating authority considers that the greatest impacts on the water system will occur during exceptional situations and during start-up and maintenance break of the plant. Potential discharge from stockpiles to the water system will be prevented by compact and appropriate structures, through which stormwaters and rain waters from stockpiles can be collected. E.g. heavy rain occurring once in 50 years is considered in planning. The coordinating authority states that it is not clearly described in the EIA report, if the capacity of the balancing ponds takes into account increasing heavy rain and other potential exceptional situations due to climate change. According to the opinion of the coordinating authority, the impacts caused by climate change should be considered in pond structures and this issue must be double-checked during the permit procedure.

Monitoring of surface waters is not proposed in the EIA report at all. According to the opinion of the coordinating authority, information regarding stormwater discharge must be specified during the permit procedure for preventing potential harmful impacts and securing sufficient monitoring. Thus, a more detailed plan of the water management system must be included in the permit application.

Impacts on air quality and climate

It becomes evident in the EIA report that emission sources are at ground surface level in construction phase and impacts will not extend far from the emission

source. Therefore, the significance of impact is estimated as minor.

It is estimated that potential dusting is the most significant environmental impact related to the treatment and storage of slag. Dusting is managed by watering, if necessary. Emissions from the vanadium recovery process and combustion of natural gas will mainly be minor. Particle emissions to air can be reduced, for example, by scrubbers, if necessary. Potential dust emissions from stockpiles mostly remain close to the emission source and harmful impacts will be minor further away. The significance of air quality impacts from the operation of the plant and traffic is assessed as minor and negative, when necessary, mitigation measures regarding particle emissions to air from the process are considered. There is no significant difference between alternatives Alt.1, Alt.1a and Alt.1b.

The coordinating authority considers that air quality assessments have mostly been properly performed. Harmful dust impacts during construction and operation must be prevented with the methods and measures presented in the EIA report.

As the project is justified by positive climate impacts, the related assessment could have been more comprehensive, although it already now includes correct issues. The scope of the assessment could also have included the construction phase of the facility or at least the main materials used in the actual construction work. Life cycle impacts and related mitigation measures with assumptions should be examined in more detail and related information could be presented, for example, in separate tables. In this way, the coordinating authority can obtain a comprehensive view of the performed life cycle assessment.

The processes and raw materials, which generate the greatest share of the project emissions, must be prioritised in emission mitigation measures. Therefore, a special focus should be on efficient use of sodium hydroxide. It is estimated that significant volumes of fossil fuels, such as natural gas and diesel, are also consumed in operation. From the viewpoint of circular economy, the use of fossil fuels should be avoided, and, for example, waste-based biogas and electric machinery should be used instead of natural gas. This issue is also included in the discussion of mitigation measures in the EIA report, and it should also become a common practice.

Noise impacts

In addition to traffic, the most significant noise impacts in the construction phase are caused by e.g. piling works related to the foundation construction of the plant as well as other activities related to construction. Piling works also cause vibration. The most significant noise source during operation is the machinery working on slag stockpiles and around the process facility.

The coordinating authority considers that the noise impacts of the project have been sufficiently assessed e.g. by performing noise modelling. Based on noise modelling and related assessment, the significance of noise impacts from the project is assessed as minor and negative. Although the increase in noise level caused by construction and operation will not be significant, long-term and continuous operation round-the-clock will increase the significance of impact. In addition, the coordinating authority reminds that even though the construction

phase is only temporary, however, the related noise impacts can also have a significant effect on the daily life and comfort of nearby residents. Therefore, emission control during construction must also be thoroughly planned.

Noise and vibration impacts caused by the facility will be similar in all alternatives. It is presented in the EIA report, that noise propagating to the environment can be reduced by e.g. layout planning of the facility site and machinery as well as location of slag stockpiles. Noise from machinery can be reduced by operational planning and optimal use of machinery. Harmful noise impacts from traffic can be mitigated by noise protection measures, when needed.

Other impacts

The coordinating authority considers that significant project impacts do not include, for example, impacts on population, living conditions and comfort; habitats, organisms and biodiversity; landscape; ground, soil, bedrock and groundwater; natural resources and built or archaeological cultural heritage. The coordinating authority concurs with the related impact assessments presented in the EIA report (impacts will be minor or non-existent), when the nature of the project and environmental conditions of the project area are considered.

Impacts on population, living conditions and comfort

The coordinating authority considers that impacts on population, living conditions and comfort have been assessed properly, and agrees with the view of the project developer that impacts on health, living conditions and comfort will be minor. Residential areas and other sensitive sites are located so far away from the project area that impacts will not significantly increase in these areas due to the implementation of the project. However, impacts will be significant along traffic routes and in their vicinity. Regarding social impacts, there is no significant difference between alternatives Alt.1, Alt.1a and Alt.1b. The overall impacts of the project are estimated as moderate and positive.

Based on the EIA report, the results of the resident survey introduced the concerns of residents regarding impacts related to the implementation of the project. The main reason behind negative attitudes towards the location the plant in the Tahkoluoto area was the fear of various negative impacts especially related to natural environment, wastewater as well as to comfort and recreational opportunities of residents. Impacts related to accident situations were also mentioned. Potential impacts on the vitality, economy, business life and employment in the area were specifically considered as positive impacts.

The coordinating authority has no comments on the above-mentioned conclusions. Regarding the mitigation of impacts on human health, the coordinating authority considers it important that the project developer considers in further planning, how it can for its part promote traffic safety in the area and mitigate other harmful project impacts introduced by residents.

According to the opinion of the coordinating authority, information about the procedure has been provided through different channels. The resident survey, which was delivered to residents in the nearby area, has for its part promoted the

knowledge of residents about the project. The coordinating authority states that the responses to the resident survey presented in the EIA report are clear and easily understandable.

Based on the EIA report, it is estimated that none of the project alternatives will have significant health impacts. The coordinating authority has no comments about this conclusion considering that emissions to water and air from the operation can be prevented by methods provided in nature protection legislation (permit provisions and supervision). According to the opinion of the coordinating authority, potential risks regarding health impacts during operation also include traffic accidents in addition to other accidents and disturbances. The likelihood of traffic accidents is not, however, estimated to increase significantly.

Impacts on habitats, organisms and biodiversity

The overall impacts of the project on natural habitats, organisms and biodiversity are assessed as minor and negative in the EIA report. The coordinating authority considers that project impacts on nature have been sufficiently evaluated. It is estimated that the project will not have notable direct or indirect impacts on the natural values of the Gummandoora Archipelago Natura area, on the nearest nature conservation areas, on the valuable bird areas, on the bird population in the area or on other valuable natural sites in the Tahkoluoto area and the surrounding area. The coordinating authority shares the opinion of Metsähallitus regarding the fact that impacts cannot unambiguously considered to be minor in exceptional situations. The aim in further project planning would be to minimise environmental impacts in exceptional situations. The facility and related operations must be designed so that stormwaters will not be regularly directed from water collection ponds to sea in exceptional situations and during start-up of the facility.

Impacts on landscape

The visual impacts of SSM on landscape can be slightly greater in alternative Alt.1b than in alternatives Alt.1 and Alt.1a. The significance of impact is assessed as minor and negative.

The surroundings of the project area have already today been modified by human actions. Illustrations of landscape and cultural environment (chapter 6.11) are not very comprehensive in the EIA report and changes in landscape are difficult to perceive. The use of distance zones would be more illustrative than scale lines. The discussion regarding the prevention and mitigation of harmful impacts is quite short. It would have been useful to also illustrate these issues.
Regarding the national landscape areas, it should be noted that they are affected by the recent Government decision YM/2021/70 on November 18, 2021 (VAMA 2021), which will bring changes to the areas presented in the EIA report.

Impacts on landscape can be mitigated by preserving the tree stand and planting more trees in the area between the plant area and shoreline. Lighting of the plant area can be designed so that light is not directed straight to the residential and recreation areas.

Considering the above-mentioned issues, according to the opinion of the

coordinating authority, the implementation of the project is not considered to have significant harmful impacts.

Impacts on ground, soil, bedrock and groundwater

The coordinating authority concurs with the estimates presented in the EIA report that the impacts of construction and operation on ground, soil, bedrock and groundwater will be minor in normal operation. The structures of SSM storage areas will be designed and implemented so that stormwaters and seepage waters from stockpiles will not enter the soil. Other yard areas will be paved.

Risks from the operation are mostly related to accidents and exceptional situations when contaminants contained in slag can enter the soil and groundwater over time. The risk of the break-down of foundation structures is low. According to the opinion of the coordinating authority, the possibility of a break-down of structures must, however, be considered in technical solutions of structures in storage areas. Structures must be designed so that the break-down of waterproofing and other structures can quickly be detected.

The EIA report provides an adequate overview of the likely impacts on groundwater and the significance of impact. It is presented in the EIA report that the quality of groundwater is regularly monitored by taking samples from a few monitoring standpipes located on site. Heavy metals will be analysed from the samples. According to the opinion of the coordinating authority, monitoring of the ground water level must be required in the environmental permit.

Impacts on natural resources

Waste generated during construction is intended to be recycled as efficiently as possible. There is no difference between alternatives Alt.1, Alt.1a and Alt.1b.

In alternative Alt.1a, slag from steel industry, which is treated in the facility, is classified as “waste”, but there is no difference either in storage and treatment or environmental impacts compared to alternative Alt.1, in which slag is classified as “by-product”. There is no difference in storage of SSM in alternatives, in which SSM is classified either as by-product (Alt.1a) or waste (Alt.1b). Process waste will not be generated, and environmental impacts related to waste treatment will not be caused in alternative Alt.1a. In alternative Alt.1b, the capacity needed for waste disposal activities will likely increase in the Pori area. Regarding the treatment of slag and SSM, the difference between alternatives Alt.1a and Alt.1b is the need for a landfill area and impacts related to disposal activities (Alt.1b). Also, the alternative use of SSM has so far not been confirmed (Alt.1b). There is a difference between transport routes and transport distances to customers or landfill areas. In alternative Alt.1a the overall impacts are assessed as minor and negative and in alternative Alt.1b as moderate and negative.

From the viewpoint of circular economy, it is essential to recycle the products and materials as much as possible, minimise the amount of waste, promote carbon sequestration in products and decrease greenhouse gas emissions during the life cycle. Resource efficiency is important in circular economy. The aim in operation is to minimise the consumption of natural resources and energy.

As the production of critical materials, such as vanadium, is necessary for developing low-carbon societies, the production of these materials should be implemented from the viewpoint of circular economy. From the viewpoint of Critical Metals, this would mean the recovery of as many metals as possible, which has not, however, been examined in the project. This would also mean recycling of slag as a by-product so that the carbon captured in it in the process will be stored. Final disposal of material without recycling it should not be performed.

Impacts on cultural heritage

There have been no indications during the EIA procedure that the project could have significant harmful impacts on built or archaeological cultural heritage. The nearest nationally significant landscape areas as well as nationally and regionally significant built cultural environments are located far from the project area. It is assessed that impacts caused by the project will have no significance regarding the preservation of values in these areas.

Other remarks

The ARVI-tool and assessment criteria developed in the IMPERIA project have been used in the EIA report. The coordinating authority states that this is an established method in the EIA procedures. The use of this method promotes the comparability of project assessments as well as improves the assessment of impact significance, comparison of alternatives and transparency of arguments.

Risks and exceptional situations

Identified issues in the construction phase, such as underground cable lines and potential harmful substances in water pumped out of the area will be taken into account in construction plans. Based on the EIA report, there is no difference between alternatives Alt.1, Alt.1a and Alt.1b regarding accidents and disturbances and preparations for them.

Risks related to the storage of slag and SSM will be very unlikely or have minor impacts. Preparations will be made for the fire risk related to organic solvents in the design of the plant. The likelihood of a significant chemical leak is very low, and impacts would probably be limited to the plant area. In fire situation flue gases could cause temporary harmful impacts also outside of the industrial area.

The coordinating authority considers that potential risks of operation have been sufficiently assessed in the EIA report. During the permit procedure, provisions must be made in water management for increasing rainfall and sudden heavy rain by securing that pond capacity meets the accumulated water volumes from the plant area also during start-up and maintenance of the facility. The coordinating authority reminds that based on general monitoring experiences, disturbances of facilities can also be long-lasting. Therefore, concrete operational procedures for actions during disturbances must be developed in further planning and in the permit procedure.

Monitoring

A general proposal for monitoring has been presented in the EIA report, which includes monitoring of operations, emissions and impacts. A detailed proposal for a monitoring programme must be presented in the permit application. According to the opinion of the coordinating authority, special attention must be paid to the monitoring of surface waters and noise during construction and monitoring of stormwater quality and noise during operation.

Summary

The EIA report provides a comprehensive overview of the project and related significant environmental impacts as well as the feasibility of alternatives. According to the opinion of the coordinating authority, the most significant impacts of the project include impacts on community structure and land use, traffic, surface waters as well as air quality (dust) and noise impacts.

It was assessed in the EIA report that all project alternatives are feasible. The coordinating authority concurs with this opinion but reminds that based on impact assessments and comparisons of alternatives presented in the EIA report, impacts on traffic and air quality and hence on human health, living conditions and comfort will be greater in alternative Alt.1b than in other alternatives. Regarding the ranking of the presented implementation alternatives based on environmental impacts, the coordinating authority states that alternative Alt.1a can be considered as the best alternative for project implementation, in which overall impacts are estimated to be most negligible.

Several mitigation measures for impacts have been presented in the EIA report. To secure their implementation, it is necessary to include provisions in the potential environmental permit decision especially regarding stormwater management and monitoring as well as mitigation measures for harmful dust impacts. Other mitigation measures for harmful impacts must also be considered, when needed.

5. NOTIFICATION ON THE REASONED CONCLUSION

The coordinating authority delivers the reasoned conclusion as well as the received statements and opinions to the project developer. In addition, the reasoned conclusion is delivered for information to the Environmental Permits Area of Responsibility of the Regional State Administrative Agency for Southern Finland (environmental permit authority), the building inspection authority of the City of Pori (permit authority according to the Land Use and Building Act), the City of Pori, the Regional Council and other relevant authorities as well as to the providers of statements and opinions.

The reasoned conclusion of the coordinating authority is on display starting from January 28, 2022 on the following web page of the environmental administration: www.ymparisto.fi/criticalmetalsporiYVA.

Provision of the reasoned conclusion is announced on the following website of the Southwest Finland ELY Centre: www.ely-keskus.fi/varsinais-suomi > Ajankohtaista > Kuulutukset ja ilmoitukset. Information on the provision of the

reasoned conclusion is also published on the website of the City of Pori.

More information can be obtained from Senior Inspector Elinor Slotte (firstname.lastname@ely-keskus.fi, tel. 0295 023021).

6. FEE DETERMINATION AND APPEAL

The processing fee is 11 000 euros.

Fee determination

The fee is determined according to the Act and on Criteria for Charges Payable to the State (150/1992) and the Government Decree (1259/2021). Based on the fee chart attached to the Decree, the fee for a reasoned conclusion provided by the coordinating authority regarding the significant project impacts of an ordinary project is 11 000 euros (14-23 person days). The invoice will be sent separately to the project developer from the Finnish Government Shared Service Centre for Finance and HR.

Appealing the fee

Appeal for the rectification of this financial decision can be lodged with the Southwest Finland Centre for Economic Development, Transport and the Environment. Appeal instructions are appended to this document.

7. APPLIED PROVISIONS OF LAW IN THE EIA PROCEDURE AND APPROVAL OF THE DOCUMENT

- Act on Environmental Impact Assessment Procedure (252/2017)
- Government Decree on Environmental Impact Assessment Procedure (277/2017)
- Act on Criteria for Charges Payable to the State (150/1992)
- Government Decree (1259/2021) on the fees payable in 2022 to the Centres for Economic Development, Transport and the Environment, Employment and Economic Development Centres and Development and Administration Centres.

This matter has been presented by Senior Inspector Elinor Slotte and decided by the Head of Unit Anu Lillunen. The document has been electronically approved, which is marked on the last page of the document

APPENDICES

1. Provided statements and opinions
2. Appealing the fee

DISTRIBUTION

Critical Metals Ltd
LandPro Oy
Sweco Industry Oy

For information

Regional State Administrative Agency for Southern Finland / Environmental Permits Area of Responsibility
Metsähallitus
City of Pori, City Board
City of Pori, Environment and Permit Services Committee
Satakunta Museum
Regional Council of Satakunta
Finnish Safety and Chemicals Agency (Tukes)
Finnish Transport Infrastructure Agency
Puhtaan meren puolesta ry