

04 November 2021

Environment and Resources Authority (ERA)
Hexagon House
L-Għolja ta' Spencer
Marsa MRS 1441

Attn: Director Environment & Resources

EIA Coordinator's Statement regarding modifications to the Combined Cycle Gas Turbine and Liquefied Natural Gas Receiving, Storage, and Re-gasification Facilities at the Delimara Power Station as proposed by ElectroGas Malta Limited (EGM) following the submission in 2016 of the Addendum to the Environmental Impact Statement (EIS) regarding the aforementioned development

Background

This Statement is submitted by the undersigned, Paul Gauci, who was the Coordinator of the environmental impact assessment (EIA) process and author of the Coordinated Assessment Report of the Environmental Impact Statement (EIS) (prepared and submitted in 2013) and the Addendum to the EIS (prepared and submitted in 2016) regarding the *Combined Cycle Gas Turbine and Liquefied Natural Gas Receiving, Storage, and Re-gasification Facilities* at the Delimara Power Station – which plant and facilities are referred to as Delimara 4 (D4).

The above-mentioned EIS and the Addendum can be accessed in and retrieved from the Environment & Resources Authority (ERA) website through this link:

<https://era.org.mt/era-project/delimara-gas-and-power-ccgt-combined-cycle-gas-turbine-power-plant-and-lng-liquified-natural-gas-receiving-storage-and-regasification-facilities-at-delimara-marsaxlokk/>

The proposed modifications are described in the document prepared by EGM, entitled *IPPC Permit Renewal Variations* which is supported by diagrams of different parts of the development indicating the locations of the modifications in question. A copy of this document is included in Appendix One to this Statement.

Among other things, the EIS submitted information and assessments regarding the following environmental aspects:

- land and sea uses,
- landscape and visual amenity,
- geo-environment,
- hydrology,
- marine water bodies,
- terrestrial ecology
- avi-fauna and vertebrates,
- marine ecology,
- agriculture,
- cultural heritage (terrestrial and underwater),
- air quality
- noise,
- environmental risk, and
- effects on human populations.

Following an examination of the above-mentioned EGM proposals-document the Coordinator noted that the proposed modifications would not have impacts which significantly affect the findings and conclusions presented in the above-mentioned EIS and Addendum with respect to the following aspects:

- land and sea uses,

- landscape and visual amenity,
- geo-environment,
- terrestrial ecology
- avi-fauna and vertebrates,
- agriculture,
- cultural heritage (terrestrial and underwater), and
- air quality

mainly because the capacity, footprint, and appearance of the plant in question would remain unaltered.

On the other hand, the undersigned felt that consultations needed to be made with the original members of the EIA Team regarding the significance of the likely impacts of the said modifications with respect to the following aspects:

- marine water bodies,
- marine ecology,
- noise, and
- environmental risk.

The following Team Members were consulted:

- Professor Joseph A Borg (marine water quality and marine ecology)
- Christian Calleja (noise), and
- Roberto Vaccari (environmental risk).

It should be noted that upon the appointment of the original member of the EIA Team responsible for marine water bodies, Professional Victor Axiaq, as the Chair of the ERA, Professor Joseph A Borg took over the responsibility for marine bodies aspect.

In addition to the above-mentioned EGM document, the above-mentioned members of the EIA Team participated in meetings with EGM officials who answered questions regarding the said modifications. EGM also provided other documents which provide further information regarding the modifications under consideration.

This Statement refer to the documents and consultations with the members of the EIA Team referred to above in addition to the EIS and Addendum. The participating members of the EIA team referred to the same documents and to their specialist contributions to the EIS and Addendum. Their contributions to this Statement are presented in Appendices Two to Four to this document.

The modifications in question

The above-mentioned EGM variations proposals document (Appendix One) lists the following aspects/components of the plant/facilities in question:

- B. Ship-to-Ship transfer - LNG offloading (page 2)
- C. Glycol expansion tank upgrade (page 2)
- D. Improved power supply feeder (page 2)
- E. Addition of FSU Boil Off Gas Attenuator (page 3)
- F. Improved bunding of make-up water glycol tank (page 3)
- G. Improved pressure control for LNG send out pumps through Kongsberg upgrade to K-chief system (page 3)
- H. Introduction of Oily Water Separator at Regasification Site (page 4)
- I. Oil Boom (page 4)
- J. D4 Portacabin Offices Sewage Collection (page 4)
- K. Installation of Chemical Stores used in plant operation/maintenance (at both generation and regasification sites) (page 5)
- L. Installation of office facilities (page 5)
- M. Installation of A/C units and updating of F gas register (page 9)
- N. Upgrade to reflect changes in fire suppression systems in line with regulations (page 9)
- O. New cooling water pump (page 9)
- P. Removal of AST/QAL 2 testing requirement for GT bypass stacks (page 9)
- Q. Cooling water mixing chamber (page 10)
- R. Inert Gas Generator (page 10)

EIA Consultants' assessments

The following sections discuss the EIA Consultants' contributions to this Statement.

- marine water bodies,
- marine ecology,
- noise, and
- environmental risk.

Marine water quality

The following are the modifications which were taken into consideration by Borg (Appendix Two) with respect to *marine water quality* considerations:

- ship-to-ship transfer - LNG offloading (proposed variation B),
- improved pressure control for LNG send out pumps through Kongsberg upgrade to K-chief system (proposed variation G),
- introduction of oily water separator at Regasification Site (proposed variation H),
- oil boom (proposed variation I),
- new cooling water pump (proposed variation O),
- cooling water mixing chamber (variation Q), and
- inert gas generator (proposed variation R).

Ship-to-ship transfer - LNG offloading

At times, it will be necessary to offload a volume of liquified natural gas (LNG) stored in the floating storage unit (FSU), onto an LNG carrier (the same carrier which replenishes the FSU). Depending on the state of the LNG cargo in the carrier, three different operations are foreseen; namely

- gassing up,
- cooling down, and
- offloading of small volumes of LNG.

Each of the offloading operations has been risk assessed through a hazard and operability study (HAZOP). The existing safety studies and other operational permits for the EGM plant/facilities did not consider any reverse flow to any visitor cargo; however, the FSU systems in place are designed for such processes, as it is a common operation.

The main source of potential impact of this operation on marine water quality would be the spillage of LNG to the marine environment during the operations phase. However, the solubility of methane (the main constituent of natural gas) and other LNG alkanes in seawater is very low as is indicated in the original EIS; where it was concluded that the level of significance of the impact of atmospheric fallout from gases produced by plant during the operations phase, including potential spillage of LNG, were expected to be low. Given that all procedures will be the same as any other ship-to-ship transfer operation, the proposed activity is deemed by Borg to not result in any changes to the impacts on marine water quality as already detailed for this aspect in the EIA and Addendum.

Improved pressure control for LNG send out pumps through Kongsberg upgrade to K-chief system

This variation is related to the previously discussed variation B, i.e., 'Ship-to-Ship transfer - LNG offloading' in the sense that the stated pumps will be located on the FSU and will serve to transfer LNG to the Regasification Site. The proposed variation will result in better pressure control of the LNG pumps, which should therefore result in reduced risk of LNG spillage resulting from some malfunction involving pressure control in the system that conveys the LNG to the Regasification Unit.

As for the previously discussed variation, the main source of potential impact of this component on marine water quality is spillage of LNG to the marine environment during the operations phase. As is noted above, in the original EIS it was concluded that the level of significance of the impact of atmospheric fallout from gases produced by plant during the operations phase, including potential spillage of LNG, were expected to be low.

As the proposed variation involves an improvement in pressure control, it should reduce further the risk of LNG spillage, and hence result in a lower level of potential adverse impact on marine water quality. Therefore, the proposed variation 'improved pressure control for LNG send out pumps through Kongsberg upgrade to K-chief system' is deemed by Borg to not result in any changes to the impacts on marine water quality as already detailed in the EIS and the Addendum.

Introduction of Oily Water Separator at Regasification Site

This variation involves the installation of an above-ground oil water separator in the regasification area, the purpose of which is to receive wastewater generated from the operational activities of air compressors. The effluent is monitored and if compliant it is discharged into the marine environment.

Recently carried out monitoring of discharges to sea from D4, including in the vicinity of the discharge point in question, carried out in April 2021, indicated no alteration of water quality in the vicinity of the plant and FSU, including during the FSU's pre-tank and post-tank inerting phases.

The main source of potential impacts on marine water quality resulting for the proposed activity would arise from discharges to sea during the operations phase. Specifically, the possible introduction of toxic substances and contaminants potentially present in the wastewater may have acute or chronic effects on marine biota (as was discussed in the original EIS).

The installation of an oil-water separator should be expected to result in reduced levels of potential contaminants/toxic substances that may be present in the discharged effluent, such that potential adverse impacts on the marine environment, and hence on marine water quality, would be further reduced when compared to the absence of separators. In the original EIS, the overall level of the impact of wastewater streams discharged from the plant was deemed to range from moderate (the worst-case scenario) to low.

Since the proposed variation is expected to lead to an improvement in quality discharged water, the proposed variation 'Introduction of Oily Water Separator at Regasification Site' is deemed by Borg to not result in any changes to the impacts on marine water quality as already detailed for this aspect in the original EIS and Addendum.

Oil Boom

EGM have installed a 300-meter oil boom on the quay adjacent to the D4 portacabin offices. The oil boom allows for quick and efficient deployment in case of an oil spill within the adjacent sea area. Since the oil boom is located on land and will only be deployed at sea in the eventuality of an oil spill, in which case the latter is deemed to potentially have a much higher level of impact on marine water quality than deployment of the boom and would need specific assessment when and if a spill occurs, the 'oil boom' is deemed by Borg to not result in any changes to the impacts on marine water quality as per original EIA and Addendum.

New cooling water pump

EGM have installed a new main cooling sea water pump that is identical to the one already in use and which is covered by the existing IPPC permit. The new pump was installed following the freeing up of physical space in the area as a result of the decommissioning of the Delimara 1 (D1) plant and is aimed at increasing reliability of the steam turbine through redundancy to improve security of supply.

Only one of the pumps would be operational at any given time; hence installation of the second pump provides backup and ensures continuity of operations, should there be issues with either of the two pumps. The installation of the second pump would not result in any changes to the volume and physico-chemical characteristics of the thermal effluent.

In the original EIS, it was stated that the considerable reduction in the discharge rate of the cooling waters at il-Hofra ż-Żghira that was to result from the change of the plant to using LNG as a fuel could be viewed as a beneficial moderate impact on water quality at this locality. As a worst-case scenario, the impact was deemed to be neutral. Given that 'new cooling water pump' will not result in changes to the physico-chemical characteristics and volume of discharges to the marine environment, this variation is deemed by Borg to not result in any changes to the impacts on marine water quality as already detailed for this aspect in the original EIS and the Addendum.

Cooling water mixing chamber

EGM have also installed a cooling water mixing chamber to allow connection of the D4 seawater piping to the main outfall using the D1 seawater pipes. In the meantime, the D1 plant has, as noted above, been fully decommissioned, such that the mixing chamber is now for the sole use of D4. Overall, such a modification will not result in any changes to the volume and physico-chemical characteristics of the thermal effluent released to the marine environment.

In the original EIS, it was concluded that the considerable reduction in the discharge rate of the cooling waters at il-Hofra ż-Żghira that was to result from the change of the plant to using LNG as fuel may be viewed as a positive moderate impact on water quality at this locality. As a worst-case scenario, the impact was deemed to be neutral. Since the variation 'cooling water mixing chamber' will not result in changes to the physico-chemical characteristics

and volume of discharges to the marine environment, it is deemed by Borg to not result in any changes to the impacts on marine water quality as already detailed for this aspect in the EIA and Addendum.

Inert Gas Generator

During the FSU Class Certification and Environmental Management System auditing processes, it was noted that the inert gas generator (IGG) system is not clearly referenced in the issued IPPC permit. EGM submits that the IGG on board the FSU is a Sasakura Moss engine which operates at a 50% load at a rated thermal input of 7.2 MWth to generate inert gas through combustion of good quality fuel oil, to generate dry air having limited oxygen content after treatment through cleaning and cooling apparatus.

Two main outputs resulting from this process are the air output into the tanks, that are eventually released to the air after use and the sea water outlet from the scrubbing system. Monitoring studies of discharges to sea from D4 carried out as recently as April 2021, indicated no alteration of water quality in the vicinity of the plant and FSU, including during the FSU's pre-tank and post-tank inerting phases.

It should be noted that the proposed clarification does not entail any operational change to the IGG; hence the present variation 'inert gas generator' is deemed to not result in any changes to the impacts on marine water quality as already detailed for this aspect in the EIS and the Addendum.

Marine ecology

The marine ecology statement submitted to the undersigned by Borg (Appendix Three) refers to the same variations which are taken into consideration in the same EIA Consultant's *marine water bodies* submission which is discussed above (on page 3 et seq). The conclusions reached by Borg with respect to the likely impacts of the proposed variations on marine ecology would not be different to the ones identified and assessed in the original EIS and in the Addendum.

Noise

The Calleja submission indicates that the only variant which has noise implications is M, i.e., 'Installation of A/C units and updating of F gas register'. In this case, noise generation is expected to be of low significance. The impacts of the other variants are either covered in the EIS or have no noise implications. Reference is made to Appendix Four.

Environmental risk

The opinion submitted by Vaccari (in Appendix Five) refers to the following proposed modifications:

- ship-to-ship transfer - LNG offloading (proposed variation B),
- glycol expansion tank upgrade (proposed variation C)
- addition of FSU boil off gas attemperator (proposed variation E)
- improved pressure control for LNG send out pumps through Kongsberg upgrade to K-chief system (proposed variation G),
- installation of chemical stores used in plant operation/maintenance (at both generation and regasification sites) (proposed variation K)

Ship-to-Ship transfer - LNG offloading

SGS foresee no impact on the overall risk, provided that the number of cargo calls remains below or equal to the number of calls considered in the cited QRA (a maximum of 9 operation per year with as duration of 48 hours each, delivering a total of 432 hours per year or 5% of the time).

Glycol expansion tank upgrade

Glycol doesn't fall under the Control of Major Accident Hazards (COMAH) Regulations [SL424.19], having no direct impact on safety.

Addition of FSU boil off gas attemperator

As the attemperator is a standard piece of equipment already in place at other sites, the presence of this element is already considered within the calculation of the cited risk assessment prepared by Vaccari.

Improved pressure control for LNG send out pumps through Kongsberg upgrade to K-chief system

This control is already considered within the calculation of the risk assessment prepared by Vaccari.

Installation of Chemical Stores used in plant operation/maintenance (at both generation and regasification sites)

Small quantities of chemicals for operation and maintenance purposes, whenever not included in the Seveso III Directive lists of hazardous substances or products, or included but in quantities not relevant in comparison with the threshold value, are admissible and considered as not able to generate a major accident

Vaccari concludes that:

In view of the above, the proposed changes to the project, provided that the information submitted by ElectroGas Ltd. is correct and all-inclusive and all variations are introduced in compliance with their Management of Change Procedure, are compatible with the findings and conclusions of the Preliminary QRA. Therefore, based on my best judgment, a review of the Preliminary QRA document is not required for the approval of these changes from a safety and risk perspective

Conclusion

The considerations discussed in the previous sections indicate that the findings and assessments presented in the original EIA and in the Addendum are still valid sources of environmental information regarding the EGM plant/facilities at the Delimara Power Station and variations B to R presented in the document *IPPC Permit Renewal Variations* (Appendix One).



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