



SAKARYA GAS FIELD DEVELOPMENT PROJECT - ESIA

CONTRACT NO: SC26-PRJ-PU-CNT-00179

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

Chapter 11 - Residual Impacts and Conclusions

COMPANY Doc. No. SC26-OTC-PRJ-EN-REP-000029



CONTRACTOR Doc. No. 21497091

Rev. N°	Date	Issue Type	Prepared by	Checked by	Approved by	COMPANY Acceptance Code
01	28/09/22	Issued for Approval	WSP Golder	Yazgi Akin	Project Management	
00	08/09/22	Issued for Review	WSP Golder	Yazgi Akin	Project Management	
					Classification:	Internal

REVISION TRACKING TABLE		
Rev. N°	Modification Description	Modified Page No.
00	Initial draft	N/A
01	Issued for approval	N/A

Information Classification

Code	Description of Information Classification
PUBLIC	Information and data that may be shared without restrictions because it is unlikely to result in any harm if disclosed to outside parties. Permission to actually release information to the public must be obtained separately through External Affairs
INTERNAL	Information and data that may be freely shared with staff in Engineer, Client and Partners, and contracted companies and individuals bounded by confidentiality agreements.
RESTRICTED	Only 5-10% of document content with such information classification can be released by Document Owner (or with his delegation) to identified recipients.
CONFIDENTIAL	Information that is extremely sensitive, of the highest value to the company and individuals and intended for use by named individual(s) only.

Table of Contents

11.0 RESIDUAL IMPACTS AND CONCLUSIONS	4
11.1 Offshore	4
11.2 Onshore	5
11.3 Social.....	5

11.0 RESIDUAL IMPACTS AND CONCLUSIONS

Several environmental and social surveys, modelling work and assessments have been conducted within the scope of the ESIA. These are:

- Onshore and offshore baseline surveys of environmental, biological and social components;
- eDNA analyses;
- Atmospheric emissions modelling;
- Noise modelling;
- Hydrogeological modelling; and
- Impact assessments of the offshore and onshore components.

The surveys, studies and the impact assessments have allowed TP-OTC to develop robust mitigation measures for residual impacts. As discussed in Chapter 5, the Residual Impact Value (RIV) results from the impact value and the effectiveness of the mitigation measure put in place to reduce the negative outcomes generated by the Project Actions/Impact Factors (or to maximize the positive ones). The RIVs contribute to the overall impact on each component. Overall impact is a synthesis of the residual impacts on a component from all the impact factors generated by the Project actions.

Relying on the assessment conducted in Chapter 7, the overall residual impact value on each component are summarized in the following sections.

11.1 Offshore

In the **marine environment**, the overall residual impact value is assessed as Low, with some factors even having a Negligible residual impact (*Seawater and Physical oceanography*).

Some components, such as *Sediments* and *Physical oceanography* are only impacted during the construction phase and not during the operation phase. For these components the residual impacts are therefore limited.

Other components are impacted during both phases (construction and operation). Some of these, such as *Benthic communities* and *Fishes*, are expected to also have a positive impact, meaning that the residual negative impact is partly offset by the positive one.

Finally, for some of the components impacted during both phases, a more significant cumulative impact is expected. The component *Plankton*, in particular, and consequently the *Pelagic habitats* in general, is expected to be potentially affected by four impact factors triggered by four different project actions during both construction and operation phases.

Considering that there are no major criticalities in the marine environment, it should however be pointed out the issue of wastewater discharge. This impact factor, which is potentially impacting mainly pelagic habitats and the set of organisms that inhabit such environments (namely *Fishes*, *Plankton* and *Marine mammals*) can become Low during construction phase if properly managed with the appropriate mitigation measures but could be of greater importance during the operation phase (potentially Medium). For this reasons, series of dedicated monitoring measures are proposed for the management of this impact factor (Chapter 7.3). Monitoring measures ensure that true effects of the project on the different components are assessed during the construction/operation phases, and also verify the effectiveness of the mitigation measures.

Title:	Chapter 11 - Residual Impacts and Conclusions	Classification:	Internal
DocID:	SC26-OTC-PRJ-EN-REP-000029	Page:	4 of 6
Rev. :	01		

Finally, regarding the marine environment, it should be emphasized that no particular sensitivity of the benthic components emerged from the baseline, while the pelagic components were more sensitive both from the biodiversity and ecosystem services (mainly fishing) point of view. This further reinforces what was above expressed regarding the impacts on the pelagic habitat's components and the importance of the related mitigation and monitoring measures.

11.2 Onshore

In the **terrestrial environment** the overall residual impact is assessed to be low, although, negligible residual impacts have been assessed for some components, namely *Flora* and *Freshwater fauna* during Construction phase, and for *Legally Protected Areas and Internationally Protected Areas* during both Construction and Operation phases.

Despite the generally higher impacts on natural habitats during the Construction phase, the components linked to these habitats will be involved in effective mitigation measures, including a specific BAP for the dune area and transplantation programs for sensitive flora (Appendix M), these, together with the reduced footprint of the impacts, are expected to leave a negligible impact on *Flora* and terrestrial *Habitats*. A low residual impact is assessed on *Freshwater fauna* for the operation phase and for both phases on *Terrestrial fauna, Birds, and Habitats*.

It is important to notice that despite the criticality of *Flora*, due to the presence of an endangered species (*C. kilaea*), the selected mitigation measures are expected to leave a negligible residual impact on the component. However, the low residual impacts assessed for some components reinforce the need for implementation of mitigation and monitoring measures as per the instructions presented in Chapter 7.2.2.

In the **physical environment**, the overall residual impact is assessed to be low for *Noise and Vibration, Soil and Subsoil, Hydrology and Surface Water*, both for the construction and the operation phases. The overall residual impact for *Air Quality* was assessed as low to medium during construction and operation phases. Periodical monitoring, especially the first 4 months of the commissioning and operation phases, followed by quarterly monitoring during the first two years of operation are essential in establishing the baseline and observing the trends in emissions. The mitigation and monitoring measures for the operation phase should be evaluated annually. The overall residual impact for *Hydrogeology and Groundwater Quality* was assessed as medium during construction and low during Operation phase. In order to mitigate these residual impacts, detailed measures have been developed as presented in Chapter 7.2.1.2 for Air Quality and Chapter 7.2.1.5 for Hydrogeology and Groundwater Quality. An example is that the impact on water resources have been mitigated by providing an alternative source (since SK-3 is in a location affected by Project activities, SK-4 well was constructed by TP-OTC instead of SK-3 well as Sazköy Village's water resource). Dust and exhaust emission control measures during construction and design considerations, which were made based on the air quality dispersion model for the operation phase will aid in mitigating these residual impacts. Also, component specific mitigation measures and monitoring are further detailed in the Project's Pollution Prevention Plan and the Chapter 12 ESMP Framework.

11.3 Social

It is seen that the possible social impacts of the Project will be both positive and negative. It is seen that the impacts on *Population growth* and *Ecosystem services* were negative and high for the Construction phase before mitigation measures but decreased to low with the implementation of mitigation measures. Unlike other Project components, the *Economy and employment* are expected to have a positive impact on both the construction and operation periods. The high impact value for the *Local inflation* is reduced to medium residual

Title:	Chapter 11 - Residual Impacts and Conclusions	Classification:	Internal
DocID:	SC26-OTC-PRJ-EN-REP-000029	Page:	5 of 6
Rev. :	01		

impact value, however the overall residual impact value is low due to positive impacts of other two impact factors, *Demand for workforce* and *demand for goods*. The Operation phase residual impact of Economy and employment is significantly high positive.

The overall residual impact value for Land Use Patterns, Infrastructure and Services, Health and Facilities are assessed as low for both Construction and Operation phases. Marine archaeology is assessed as negligible. Overall residual impact value for Ecosystem Services (Fishery) is assessed as low for the Construction and Medium for the Operation phase. Overall residual impact value for Marine Traffic, Tourism is assessed as low for the Construction and Operation phases. In case of Visual Aesthetics, overall residual impact value for Construction was assessed as low and as medium for the Operation phase. In order to mitigate these overall residual impacts several mechanisms have been put in place, such as Stakeholder Engagement Plan, Grievance Mechanism, Livelihood Restoration Plan and specific management plans such as Contractor Management Plan, Community Health and Safety Plan, Offsite Accommodation Plan and others are prepared.