Non-Technical Summary

(ESIA Study for Independent Water Transmission Pipeline Project from Jubail to Buraydah)

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Prepared for

By

1.0. Introduction

This Non-Technical Summary (NTS) presents a concise overview of the key findings and conclusions of the Environmental and Social Impact Assessment (ESIA) conducted for the Jubail–Buraidah Independent Water Transmission Pipeline Project (IWTP-3), hereinafter indicates as the "Project" located in the Kingdom of Saudi Arabia.

The NTS has been prepared in accordance with international best practices and in alignment with the disclosure requirements of the International Finance Corporation (IFC) Performance Standard 1 on Assessment and Management of Environmental and Social Risks and Impacts. Specifically, it supports the principles of transparency, accountability, and meaningful stakeholder engagement by ensuring that relevant project information is accessible to non-technical audiences, including local communities, civil society, and other interested stakeholders.

This document provides:

- A description of the proposed project and its objectives.
- An outline of the anticipated environmental and social benefits and risks.
- A summary of potential impacts during the construction and operational phases.
- An overview of mitigation and management measures to address these impacts.

By summarizing the most material aspects of the full ESIA report, this NTS ensures that stakeholders are informed about how environmental and social considerations have been integrated into project planning and decision-making. It also serves as a disclosure tool for lenders, regulators, and the general public.

1.1. Project Proponent

The Project proponent is a consortium comprising three distinguished companies: Aljomaih Energy and Water Company, Buhur for Investment Company, and NESMA. These entities have come together by establishing a Special Purpose Vehicle (SPV) under the name Stream Water Transmission Company to form a unified and strategic alliance for the successful execution of this Project.

This consortium was selected by the Saudi Water Partnership Company (SWPC) as the preferred bidder through a rigorous and competitive procurement process. The selection underscores the consortium's technical expertise, operational efficiency, and commitment to adhering to high environmental, social, and governance standards. The Project is to be constructed by the EPC contractor Mutlaq AL-Ghowairi Contracting Company.

1.2. Environmental Consultant

Fouad Al-Saleh and Khalid Al-Dhowalia Environmental and Engineering Consultancy Company (FKEC) is an independent national company specializing in environmental and infrastructure consultancy services.

Established in 1999 (1421 AH), the company has extensive experience in environmental engineering, project assessment, infrastructure development, and environmental protection. With a workforce exceeding 400 professionals including engineers, supervisors, surveyors, and technical staff. The company delivers integrated technical and economic solutions tailored to both public and private sector clients.

Their expertise spans a broad range of services, including:

- Environmental Studies (ESIA, EIA, Audit, EBSA etc)
- Engineering Services
- Design and supervision of water supply, wastewater, and desalination projects
- Air quality and noise monitoring, pollution assessments, and ecological studies
- Technical support for large-scale infrastructure and environmental development projects

1.3. Approach to the Environmental and Social Impact Assessment (ESIA)

The Environmental and Social Impact Assessment (ESIA) for the Jubail–Buraidah IWTP-3 project was undertaken in accordance with the regulatory requirements of the National Center for Environmental Compliance (NCEC) in the Kingdom of Saudi Arabia, as well as international best practices, particularly the IFC Performance Standards World bank ESF and Equator Principles.

A structured and systematic approach was adopted to evaluate the potential environmental and social risks and opportunities associated with the Project. This process involved a combination of desktop studies, field investigations, site visits, and baseline surveys to collect comprehensive data on the physical, biological, and socio-economic environment of the project corridor.

The ESIA team applied relevant national and international guidelines to:

- Identify potential impacts during construction, operation, and decommissioning phases
- Evaluate the significance of these impacts
- Propose practical mitigation and enhancement measures
- Develop an Environmental and Social Management Plan (ESMP) to guide implementation and monitoring.

1.4. Stakeholder Engagement and Availability of ESIA Documentation

The engagement process was designed to ensure that relevant parties were informed of the Project, given the opportunity to provide input, and assured that their concerns would be considered in project planning and execution.

As part of the ESIA process, consultations were carried out with relevant government agencies, regulatory authorities, and institutional stakeholders. Feedback was received and integrated into the assessment to ensure regulatory compliance.

Given the geographical characteristics of the Project corridor which passes primarily through uninhabited desert terrain and the fact that no communities or residents are directly affected, no direct stakeholder meetings or focus group discussions were conducted with local communities. The routing of the pipeline avoids settlements, thereby minimizing social impact. Nevertheless, the project proponent and the Engineering, Procurement, and Construction (EPC) contractor are committed to maintaining a continuous stakeholder engagement process. Any concerns or grievances raised during construction or operation will be reviewed and addressed through a structured feedback and grievance mechanism.

To promote transparency and public access to information, this Non-Technical Summary will be made available at

- FKEC Head Office: Riba Strt, Qurtobah, Riyadh, Saudi Arabia
- FKEC official website
- Al Jomaih Office: Laysen Valley, Building 7, King Khalid Branch Rd, Umm Al hamam Al Gharbi, 12329, Riyadh

For further information. Stakeholders or interested parties may contact the designated representative:

Environmental Consultant, FKEC	For Consortium
Engr Ahmad Mouthanah ahmad.mouthanna@fkec.com.sa +966 560 660 185	Engr Sivaguru Rajendran srajendran@jenwa.com +966 55 488 1069

This open-access approach ensures that stakeholders remain informed and that the project maintains a transparent and inclusive environmental and social management process throughout its lifecycle.

2.0. Description of the project and the alternatives considered

2.1. Project Overview

The IWTP entails constructing a 587 km bi-directional water transmission pipeline capable of transporting 650,000 cubic meters of water daily under both normal and reverse-flow operations. The system integrates key components such as pumping stations, storage facilities, outlet connection points, and auxiliary systems to ensure seamless and reliable operation. The infrastructure will facilitate the transfer of water from the Jubail 4+6 Independent Water Plant (IWP) to Buraydah's Al Shamisiyah Highpoint Reservoir Station (HRS) while enabling reverse-flow operations when necessary.

The IWTP serves dual purposes:

- Normal Operation: Transferring water from the Jubail Water Special Facility (WSF) to the new storage tanks of the highpoint reservoir station (HRS) at Al Shamisiyah, close to Buraydah city and the Outlet Connection Points and Future Interconnection Points along the main pipeline.
- Reverse-Flow Operation: Supplying water from Al Shamisiyah HRS to the Jubail Main Header using the same pipeline infrastructure. During Reverse-Flow Operation, it shall also be possible to supply water to the Outlet Connection Points and Future Interconnection Points along the main pipeline.

2.2. Major Components of the IWTP

The IWTP comprises the following major components:

- Independent Water Transmission Pipeline (IWTP):
  - A bi-directional pipeline with a contracted capacity of 650,000 cubic meters per day, equipped with related pumping stations, safety equipment, and control systems to ensure efficient water transfer.
- Jubail Water Special Facility (WSF):
  - Includes pump station (PS 1) and three regulating tanks with a capacity of 170,000 m^3 each (total: 510,000 m^3).
  - Connecting pipelines and equipment to transfer water to the IWTP during normal operation and receive water from the IWTP during reverse-flow operations.
  - Central Admin Building

- Al Qulayyib Water Special Facility:
  - Features an office and administration complex for the DWTSO
  - Pump Station 2 (PS 2)
- Buraydah Water Special Facility:
  - Includes the Al Shamisiyah Highpoint Reservoir Station (HRS) with a total storage capacity of 1,020,000 m^3 (six tanks, each 170,000 m^3).
  - Connecting pipelines and equipment to manage water transfer to and from the IWTP and integrate with the future DWTSO system.
- Outlet Special Facility:
  - Connection pipelines and strategic reservoir stations to distribute water from the IWTP to the DWTSO system along the pipeline route.
  - Disposal of Off Spec water into a water disposal facility including any evaporation pond as may be applicable
- Electrical Special Facility:
  - Includes electrical infrastructure to support the facility's operation, such as:
    - Integration with the Jubail substation.
    - Construction of a new 380kV substation and overhead transmission lines at Al Qulayyib.

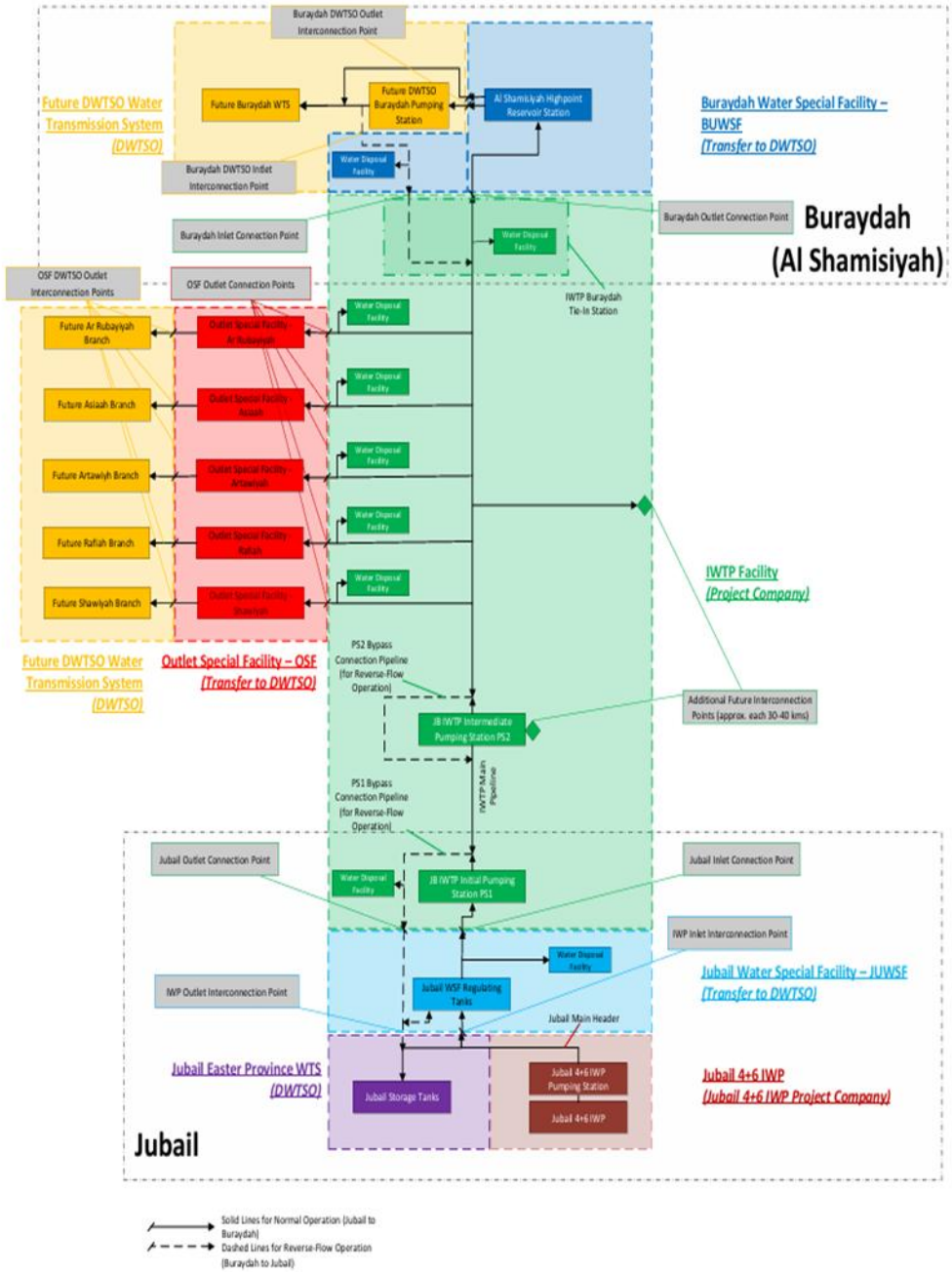

Figure 1: Project Schematic

2.3. Project Location

The areas allocated for the main components of the Project are in Jubail in Eastern Province and Buraydah in Qassim region, in the Kingdom of Saudi Arabia. While the Project area at Jubail is located close to the Arabian Gulf shoreline, Buraydah is located equidistant from the Red Sea to the west and the Arabian Gulf to the east.

The main components of the Project at Jubail are located within an existing complex owned by the Saudi Water Authority (SWA). In the same complex, the Jubail 4+6 IWP, the Jubail 3A IWP, the Jubail 3B IWP, the Jubail F+G tank farm, the Jubail Eastern Province pumping station as well as main components of the Jubail-Riyadh water transmission system are located including the Jubail tank farm and the Jubail-Riyadh WTS pumping station.

The intermediate pumping station for the Jubail-Buraydah IWTP is in an existing Saudi Water Authority (SWA) complex, south-west of Al Qulayyib. The main components at Buraydah are located, in south-east of the city Al Shamisiyah, approximately 30 kms east of Buraydah city center.

Table 1: Project Location Coordinates

JUBAIL STATION		AL QULAYYIB STATION		BURAYDAH STATION	
Latitude	**Longitude**	**Latitude**	**Longitude**	**Latitude**	**Longitude**
26.902125°	49.761741°	26.714699°	48.190919°	26.292129°	44.283460°
26.903334°	49.762704°	26.708969°	48.181534°	26.284480°	44.286524°
26.900974°	49.766562°	26.704597°	48.190360°	26.283969°	44.287459°
26.898907°	49.764968°	26.709960°	48.199581°	26.285296°	44.292881°
26.898081°	49.764167°			26.286213°	44.293424°
26.901265°	49.763126°			26.294405°	44.290438°
26.899473°	49.761821°				

Figure 2: Map Showing Pipeline Route from Jubail to Buraydah

2.4. Project Benefit

The Jubail Buraidah Independent Water Transmission Pipeline Project (IWTP-3) is a vital national infrastructure investment that supports the Kingdom of Saudi Arabia's long-term vision for water security. The project is expected to deliver multiple economic and strategic benefits:

- **Improved Water Supply and Security:** The project will facilitate the reliable transmission of desalinated water from Jubail to the Qassim Region, significantly enhancing the availability of potable water in inland areas that are otherwise dependent on diminishing groundwater resources.
- **Support for National Development Goals:** IWTP-3 is aligned with Saudi Arabia's Vision 2030 objectives by reducing groundwater extraction.
- **Job Creation and Economic Activity:** During the construction and operational phases, the project is expected to generate employment opportunities and stimulate local economic activity through procurement, subcontracting, and service needs.
- **Institutional Strengthening and Capacity Building:** The project supports ongoing improvements in the Kingdom's water sector governance and management, reinforcing the roles of regulatory bodies and private sector partners in delivering critical infrastructure.

Overall, the IWTP-3 project represents a major step toward ensuring equitable water access and resilience in the face of growing water demand and climate variability.

2.5. Alternatives Considered

No Project Alternative: Under the no project scenario, the proposed IWTP-2 would not be implemented, avoiding immediate environmental and social impacts. However, this alternative is not viable as it contradicts national priorities under Vision 2030. It would intensify pressure on existing water infrastructure, exacerbate groundwater depletion in the Qassim region, and forgo economic opportunities such as job creation and private sector investment. Overall, it would hinder progress toward water security, sustainable development, and long-term regional growth.

Location Alternative: The selected location for the IWTP-3 project prioritizes technical feasibility, operational efficiency, and minimal environmental and social impact. Pumping Stations 1 and 2 will be situated within existing SWA complexes at Jubail and Al Qulayyib, leveraging existing infrastructure and direct seawater access essential for desalination.

The pipeline route was strategically designed to avoid residential areas and ecologically sensitive zones, with only minimal, temporary construction impacts expected near Al Artawiyah without requiring resettlement. It also crosses the King Abdulaziz Royal Reserve, where robust mitigation measures will be implemented. Additionally, available land in Buraydah for the high-level reservoir station eliminates the need for land acquisition, supporting efficient and low-impact project delivery.

Technical Alternative: The selection of technical alternatives for the Jubail-Buraydah Independent Water Transmission Pipeline (IWTP 3) Project was guided by international best practices, environmental and social considerations, operational efficiency, and long-term sustainability. The chosen technical approach ensures compliance with international environmental and safety standards, including the IFC Performance Standards, World Bank Environmental and Social Standards (ESS), and the Equator Principles.

The project will be executed using the best available technology, materials, and procedures to ensure reliability, efficiency, and environmental sustainability. The selected technical alternatives were carefully evaluated against criteria such as durability, cost-effectiveness, energy efficiency, ease of maintenance, and overall environmental impact.

Table 2: Project Technical Alternative

Component	Alternative Options Considered	Preferred Option	Justification
Pipeline Material	• Steel with internal coating (preferred) • Glass Reinforced Plastic (GRP) • High-Density Polyethylene (HDPE)	Steel with internal coating	• High durability and mechanical strength • Corrosion-resistant • Suitable for high-pressure transmission
Pipeline Installation	• Underground pipeline (preferred) • Overground pipeline	Underground	• Protects against weather conditions, vandalism, and land-use conflicts • Enhances security and operational lifespan
Energy Source	• Grid electricity (preferred) • Renewable energy (solar/wind) • Diesel generators	Grid electricity	• More reliable compared to renewable alternatives • Lower operational costs compared to diesel generators
Pumping Station Technology	• Variable speed pumps (preferred) • Fixed-speed pumps	Variable speed pumps	• Energy-efficient and adjusts to real-time demand • Reduces wear and tear on pump components
Leak Detection & Monitoring	• SCADA-based leak detection system (preferred) • Manual inspection & leak detection	SCADA-based leak detection	• Provides real-time monitoring and automated alerts • Reduces operational downtime and maintenance costs
Construction Method	• Open cut excavation (preferred for most areas) • Trenchless installation (preferred for sensitive areas)	Combination of open cut and trenchless installation	• Open cut is cost-effective and widely applicable • Trenchless minimizes surface disturbance in sensitive areas

3.0. Condition of the Existing Environment

The Jubail Buraydah Independent Water Transmission Pipeline (IWTP-3) traverses a largely undeveloped corridor extending from Jubail in the Eastern Province to Buraydah in the Qassim Region. The area spans arid desert environments characterized by extreme temperatures, minimal precipitation, and high evaporation rates. Both Jubail and Buraydah experience hot desert climates, with summer temperatures often exceeding 40°C in Jubail (peaking in July) and reaching up to 45°C in Buraydah (particularly in June). Winters are mild, and rainfall is limited, occurring mostly during the months of December and January.

Jubail serves as a major industrial and commercial center on the eastern coast of Saudi Arabia, while Buraydah is recognized for its agricultural significance and administrative role in the Al-Qassim Region. Human settlements along the pipeline route are sparse, with minimal population density outside urban

centers. This isolation, combined with the desert setting, limits direct social and environmental interaction along much of the alignment.

Baseline air quality monitoring was conducted at strategic locations including Jubail, Al Qulayyib, and Buraydah. Results showed that all gaseous pollutants were within national regulatory thresholds, and particulate matter levels also complied with environmental standards. These values form a benchmark for future comparison during construction and operational phases to ensure air quality is not adversely impacted. Noise levels recorded were generally acceptable and within limit, with minor exceedances observed at a few points during nighttime, which will be addressed through appropriate mitigation during project implementation. Soil investigations involved drilling boreholes up to 10 meters deep, along with the collection of surface samples for laboratory testing. Groundwater was only detected in a few boreholes, while most locations showed no presence of groundwater, which aligns with the dry desert conditions of the region.

Ecological assessments revealed that the project alignment mainly consists of arid and semi-arid land with low vegetation cover and plant species adapted to drought. No key or sensitive habitats were noted within the project alignment and its surroundings, except for the section crossing the King Abdulaziz Royal Reserve, which spans approximately 120 km from east to west within the project corridor. According to the Reserve's biodiversity information, the project alignment passes through a low-value ecological area of the King Abdulaziz Royal Reserve. Robust mitigation and habitat restoration measures will be implemented in this sensitive section. The project alignment does not pass through any Important Bird Area (IBA) designated by BirdLife International, but it is near two IBAs. Furthermore, all recorded faunal species were considered common and typical to such habitats, with no threatened or protected mammalian or reptilian species observed during the site survey.

4.0. Potential Impacts and Mitigation

The potential environmental and social impacts of the Jubail Buraydah Independent Water Transmission Pipeline (IWTP-3) have been carefully assessed and are expected to be minimal, especially with the implementation of standard mitigation measures. The pipeline will largely follow an underground route along existing roads and remote desert stretches, which significantly reduces the likelihood of adverse effects on nearby communities and ecosystems. The most notable settlement along the route is Al Artawiyah, which has a small population. However, the pipeline will pass underground in this area, eliminating the need for land acquisition, displacement, or resettlement. Temporary construction related impacts such as dust, noise, and traffic disruptions are expected but will be managed through measures like dust suppression and noise control.

From an environmental standpoint, impacts on air quality, noise, and soil during construction are anticipated to be temporary and localized. These will be mitigated through the use of well-maintained machinery, appropriate work scheduling, and erosion control measures. No significant impacts on groundwater are expected, given the limited presence of underground water along the route. The section crossing the King Abdulaziz Royal Reserve requires special attention due to its ecological sensitivity. Although this area is classified as low ecological value, mitigation strategies including habitat restoration, restricted access zones, and continuous monitoring will be implemented to ensure environmental compliance and preserve biodiversity. The integration of pumping stations within

existing facilities at Jubail (within the SWCC complex) and Al Qulayyib further reduces the need for additional land or infrastructure development, minimizing environmental disturbance. Similarly, the proposed site for the high reservoir station in Buraydah already has available land, eliminating the need for resettlement and simplifying project execution.

A summary of this impact can be found in the table 3 and 4 below:

Table 3: Potential Impacts and Mitigation (Construction)

Potential Impact	Impact Level Before Mitigation	Proposed Mitigation Measures	Impact Level After Mitigation
Air Quality	Moderate	• Regular maintenance (as per manufacturers recommendations) of vehicles, machinery, and equipment to minimize the generation of air pollutants. • Construction activities should be limited during extreme weather conditions, such as high winds and dust storms, to minimize dust generation and ensure worker safety. While the National Center for Environmental Compliance (NCEC) does not specify a regulatory wind speed limit for halting construction, the Beaufort Wind Scale provides a practical reference. According to the scale, wind speeds of 6 corresponding to 22-27 knots (11-14 m/s) and above (on a scale of 0 to 12) are considered strong. Therefore, construction activities involving significant dust generation will be restricted when wind speeds reach this threshold. • Tarpaulin coverings on trucks during the transport of crumbly building materials or excavated earth or backfill. • Utilize dust suppression techniques (e.g. spraying) on unpaved access roads to minimize dust generation. • Managing stockpiling requirements effectively, which includes locating stockpiles away from sensitive areas, implementing dust suppression measures such as covering materials to minimize wind erosion, and regularly inspecting and maintaining stockpile areas to prevent environmental contamination.	Low
GHG Emissions	Moderate	• Use fuel-efficient and well-maintained machinery and equipment. • Encourage the use of low-carbon fuel alternatives where feasible. • Optimize transportation logistics to minimize vehicle trips and idling time. • Promote carpooling and shared transport for workers to reduce vehicular emissions. • Regular maintenance of generators and equipment to ensure efficiency. • Explore renewable energy sources for temporary site operations where feasible.	Low
Noise emissions from construction activities	Moderate	• Locate stationary equipment (i.e. generators) as far as practicable from nearby receptors. • Create noise barriers like rubber matting to reduce vibration and noise, prefabricated modular Sound panels that can be quickly assembled and disassembled. These can be placed around noisy machinery and work zones to effectively block sound. • Plan and schedule noise-generating activities to avoid peak project coordination times and maintain operational efficiency. • Implement a Traffic Management Plan to minimize as far as practicable the induced traffic noise generated by the transit of heavy vehicles, through the reduction of vehicles' speed when crossing inhabited areas and the provision of employee awareness training, if needed. • Opt for low-noise machinery, such as electric-powered equipment and quieter models, where feasible. • Noise should be monitored during the construction phase (including in sensitive receptors such as King Abdul Aziz Royal Reserve); monitoring provides an extended profile of ambient noise at the project boundary and at receptors.	Low
Soil degradation, erosion and contamination during construction works	Moderate	• Ensure that only appropriate, non-contaminated fill materials are used for soil filling. The materials should be tested for suitability, such as ensuring proper grain size, moisture content, and lack of contaminants. Imported fill should meet NCEC standards for soil quality. • In occasion of soil filling, source soil exclusively from approved borrow points with valid permits. The contractor must obtain all necessary approvals from relevant authorities before soil extraction. • Conduct refueling and maintenance activities in designated areas equipped with spill containment systems such as drip trays or impermeable liners. • Construct temporary drainage channels or silt fences to direct surface runoff away from exposed soil and reduce erosion. • Cover exposed soil with erosion control blankets, geotextiles, or mulch to provide temporary protection until construction begins. • Clear vegetation and prepare the site in phases to minimize the area of exposed soil at any given time.	Low
Reduced landscape aesthetic from material laydown area and dust generation during construction	Moderate	• Installation of fencing and barriers during construction to minimize visual impacts to nearby receptors. • Ensure timely removal of unused materials and restore disturbed areas post-construction. • Implement landscaping or vegetation buffers where feasible. • Identify and retain key natural features, such as hills, watercourses, or vegetation, wherever possible to maintain the natural terrain. • Organized (neat and tidy) storage of all construction material and chemicals in laydown areas.	Low

Potential Impact	Impact Level Before Mitigation	Proposed Mitigation Measures	Impact Level After Mitigation
Discharge Of Hydrotesting Water and wastewater	Moderate	• Hydrotesting water should be tested before discharge in accordance with NCEC standards. If the water poses no threat, it can be discharged into lowlands, existing water bodies, or wadis after obtaining necessary approvals from NCEC. If contamination is detected, an NCEC-approved contractor should handle the wastewater treatment and disposal. • Discharge points should be strategically selected to avoid flooding or disturbance of natural water flow. The possibility of reusing hydrotest water for other project activities should be explored to minimize unnecessary discharge. • In terms of threshold volume of discharge, discharge volumes will be managed based on site conditions, hydrological capacity, and environmental sensitivity. If a discharge scenario exceeds typical project requirements or presents potential risks, the EPC contractor will be required to conduct a specific study to assess the environmental implications and seek NCEC consent/approval accordingly • A staggered discharge approach should be recommended, with weekly and monthly discharge schedules to prevent excessive water accumulation and environmental impact. Additionally, discharge will be diverted to multiple locations to minimize localized impact. • Discharge should be directed away from sensitive habitats, agricultural lands, and protected areas. Continuous monitoring of soil and vegetation health near discharge areas should be conducted to ensure no long-term degradation.	Low
Terrestrial Ecology/ Critical Habitats (King Abdul Aziz Royal Reserve)	Moderate	• Limit vegetation clearing to areas where construction is necessary. Preserve natural habitats, especially those that host endangered or sensitive plant and animal species. If possible, avoid working in areas with known biodiversity hotspots • Night work will be minimized as much as possible and will only be conducted if necessary or unavoidable to reduce disturbance to nocturnal species. • All workers will receive environmental awareness training to ensure they understand the ecological sensitivity of the area and adhere to best environmental practices during construction. • Prohibit unnecessary human access to ecologically sensitive areas near the pipeline route. • Implement a construction footprint that limits land disturbance to the minimum area necessary. Restrict clearing activities to specific zones to preserve surrounding vegetation and habitats. • Temporary barricading along trenches should be installed to prevent animals from falling in and to minimize the risk of injury or harm to wildlife. This will also help prevent disturbance to natural movements of animals in the area. • EPC to adhere with specific work conditions that comes with the permit for the reserve area • Prior to the commencement of activities, the contractor shall develop a comprehensive Spill Prevention and Response Plan, which will be implemented on site. All necessary measures will be taken to prevent spills, including the use of secondary containment such as bund walls and drip trays for power sources and fuel storage. Personnel involved in refueling operations will receive appropriate training in spill prevention and response. A designated spill response team will be available on site at all times. • All excavated material should be tested to ensure their suitability for use in backfilling and will be used for trench backfilling, in case of using borrow pits for approved backfill materials, all borrow pits used for backfilling will be sourced from locations approved under environmental permitting regulations.	Low
Workers' Rights	Moderate	The following mitigation or preventive measures should be implemented: • As part of the contractor and supplier selection process, EPC should take into consideration the suppliers' performance regarding worker health and safety. In line with the World Bank Environmental, Health and Safety, the Project should provide regular medical checkups and centralized medical assistance for all workers (contractors and subcontractors). • Workers and sub-contractors should be provided with the means to ensure compliance such as information, instruction and training, work equipment and personal protective equipment (PPE). Training includes identification of potential hazards to workers, particularly those that may be life-threatening, as well as training in preventative and protective measures, including modification, substitution, or elimination of hazardous conditions or substances. • A Workers Management Plan and Worker Grievance Mechanism (WGM) should be developed and should be accessible to all workers, whether permanent or temporary, directly or indirectly employed.	Low
Workplace accidents including injuries from falls, equipment malfunctions, or collisions between workers and vehicles	Moderate	• Maintain fully stocked first aid kits on-site and establish emergency response procedures, including evacuation plans, for all types of accidents. • Ensure that all operators are properly trained and certified to use specific machinery and equipment. • Conduct regular maintenance and inspection of all machinery, tools, and vehicles to ensure they are in safe working condition. • Demarcate hazardous zones (e.g., excavation areas, machinery zones) with barriers or fencing to prevent unauthorized access.	Low

Potential Impact	Impact Level Before Mitigation	Proposed Mitigation Measures	Impact Level After Mitigation
can lead to physical injuries, temporary stoppage of work		• Install clear safety signs and warnings (e.g., "Caution: Heavy Equipment in Operation", "Authorized Personnel Only") at key locations around the site. • Provide all workers with a thorough induction and training on site safety, including hazard identification, safe work practices, emergency procedures, and proper use of PPE.	
Encountering Archaeological or Cultural Artifacts	Moderate	• A Chance Find Procedure (CFP): Work stops immediately if artifacts are found and the relevant authorities should be informed (Saudi Heritage Commission). • Strict site security measures should be implemented and workers should be trained on heritage preservation laws; artifact collection should be prohibited.	Low

Table 4: Potential Impacts and Mitigation (Operation)

Potential Impact	Impact Level Before Mitigation	Proposed Mitigation Measures	Impact Level After Mitigation
Reduced ambient air quality caused by normal operations	Moderate	• Same applicable general mitigation measures proposed for construction and commissioning phase. • Implementation of a grievance mechanism in the event of complaints related to Air quality. • Ensure design specifications for combustion sources are in compliance with local legislations and international standards • Ensure feasible cost-effective options for reducing air emissions (e.g. wet suppression, exhaust filters etc.) are implemented.	Low
Noise emissions from operation activity at the pumping stations and reservoir station	Moderate	• Selection of equipment according to the best technologies available in terms of noise reduction. • An appropriate Vehicles and Equipment Maintenance Programme should be developed and implemented throughout the operation phase. • Noise should be monitored during the operation phase (including in sensitive receptors such as king Abdul Aziz Royal Reserve); monitoring should provide an extended profile of ambient noise at the project boundary and at receptors.	Low
Soil contamination during operation and maintenance phase	Moderate	• Same applicable general mitigation measures proposed for the commissioning and construction phase. • Regular maintenance of operational equipment and Equipment Maintenance Programme. • Providing secondary containment for operational equipment (i.e. pumps, compressors, emergency generators etc.) and for diesel storage, chemical storage and hazardous waste storage. • Appropriate waste and wastewater management to avoid spillage and minimize soil pollution. • Development of an Emergency Response Plan which should be actioned in the event of leaks and spills.	Low
Disruption to terrestrial ecology and habitat from waste, noise and air emissions during operation.	Moderate	Same applicable general mitigation measures proposed for commissioning and construction phase.	Low
Long-term direct and indirect employment opportunities	Moderate	• Ensure that the recruitment process is fair and transparent, public and open to all regardless of ethnicity, religion or gender. • To facilitate access to employment opportunities for local candidates with appropriate skill sets, a database of people looking for work should be maintained and should identify the candidates' place of origin. • Implement the Community Grievance Management Procedure described in the Stakeholder Engagement Plan to ensure that stakeholders who have concerns or complaints about the Project or wish to report their potential expectations or concerns related to local economy and employment can communicate directly with the Project.	Low
Workers' Rights	Moderate	The following mitigation or preventive measures should be implemented: • As part of the contractor and supplier selection process, EPC should take into consideration the suppliers' performance regarding worker health and safety. In line with the World Bank Environmental, Health and Safety, the Project should provide regular medical checkups and centralized medical assistance for all workers (contractors and subcontractors). • Workers and sub-contractors should be provided with the means to ensure compliance such as information, instruction and training, work equipment and personal protective equipment (PPE). Training includes identification of potential hazards to workers, particularly those that may be life-threatening, as well as training in preventative and protective measures, including modification, substitution, or elimination of hazardous conditions or substances. A Workers Management Plan and Worker Grievance Mechanism (WGM) should be developed and should be accessible to all workers, whether permanent or temporary, directly or indirectly employed.	Low

5.0. Conclusion

The Jubail Buraydah Independent Water Transmission Pipeline Project (IWTP-3) represents a strategic infrastructure development aimed at enhancing the efficiency, reliability, and resilience of water distribution between the Eastern Province and the Qassim Region. Through the Environmental and Social Impact Assessment (ESIA), the project's potential impacts have been systematically assessed across all phases including construction and operation phases. The findings confirm that the project traverses primarily arid, sparsely populated areas, with limited ecological sensitivity except for a section of the King Abdulaziz Royal Reserve. In this area, mitigation and habitat restoration measures shall be implemented to minimize environmental disturbance.

While the project is expected to generate some negative environmental and social impacts, such as noise, dust, habitat disruption, during construction, these impacts are generally temporary and manageable. Detailed mitigation measures have been developed to address these risks effectively and ensure regulatory compliance.

On the positive side, the project will deliver substantial benefits, including improved water security, employment opportunities during construction and operation, and the stimulation of local economic activities. With full implementation of the proposed mitigation measures and active monitoring throughout the project lifecycle, IWTP-3 positive outcome will outweigh the short-term negative impact.