Non-Technical Summary – Sub-Project 7 Section 4 Interface Roadway Project, Duqm

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ACRONYMS

AHT	Al Hajiry Trading LLC
ALARP	As Low As Reasonably Practicable
CY	Calendar Year
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPC	Engineering, Procurement and Construction
HSE	Health, Safety and Environment
IMS	Integrated Management System
MD	Ministerial Decisions
RD	Royal Decree
ROP	Royal Omani Police
SEZAD	Special Economic Zone Authority Duqm
SEZD	Special Economic Zone Duqm

1 INTRODUCTION

With a land area of 2,000 km2 and 70 km of coastline along the Arabian Sea, the Duqm Special Economic Zone (SEZD) is the largest in the Middle East and North Africa region and ranks among the largest in the world. The Duqm SEZ is a model of an integrated economic development composed of zones: a sea port, industrial area, new town, fishing harbour, tourist zone, a logistics centre and an education and training zone, all of which are supported by a multimodal transport system that connects it with nearby regions (e.g., the Arabian Gulf countries, Middle East, East Africa and Southeast Asia). The Port of Duqm is seen as a catalyst for the development of the Al Wusta region, in particularly, the Special Economic Zone at Duqm. The Port and the dry docks are being developed to increase cargo transhipments, ship repairs, manufacturing industry and tourism.

The Special Economic Zone is administered, regulated and developed by the Duqm Special Economic Zone Authority (SEZAD), a financially and administratively independent government entity. SEZAD was established as per the provision of the Royal Decree (RD) 119/2011 and is responsible for the management, regulation, and development of all economic activity in the SEZD.

1.1 PROJECT BACKGROUND –INTERFACE ROADWAY PROJECT (ROAD SECTION-4)

The proposed Interface Roadway Project is located within SEZD. Background of this project involves construction of the main viability (approx. 6215m) of the area located towards to the south side of the Duqm Refinery and the structures to protect the area from floods due to natural calamities such as storm water.

The total length of the proposed Interface Roadway project is approximately 6.2KM. Part of the road is a dual carriageway with total length of (2750m) and the rest is single carriageway with total length of (3488m). The construction of interface road has been completed in CY (Calendar Year) 2018 and handed over to SEZAD authority upon clearance & approval from Royal Omani Police which is currently in operation to the public. The project timeline of Interface Roadway Project shown below:

PROJECT	CONTRACT NO	CONTRACTOR	EXPECTED DATE OF COMPLETION
Interface Roadway Project	C73/2016	Al Hajiry Trading LLC	Completed

Photograph of Completed Interface Roadway Project

1.2 ENVIRONMENTAL AND SOCIAL CONTEXT

No Environmental Impact Assessment Study (EIA) has been conducted for the proposed project as EIA report for roads was not a requirement as part of the Omani legislation during the time of project development. However, EPC (Engineering Procurement and Construction) Contract has prepared HSE (Health, Safety and Environmental) Plan, Environmental Impact and Aspect Register during construction phase of the project and approved by TATWEER HSE Department. Al Hajiry Trading LLC has been awarded as EPC contractor for the construction of Interface Roadway Project. No stakeholder consultation was conducted as part of this project.

SEZAD Corporate Social Responsibility (CSR) section of the Partnership and Development Department (PDD), provides access for communities to provide any grievance (written and in person) through the Grievance Mechanism (GM) form. The GM form is available on SEZAD website at https://www.duqm.gov.om/sezad/csr/grievance-form.

The ways grievance can be registered are as follows-

1. **Via Phone** - The Partnership & Development Department (PDD) can be contacted between the hours of operation (8am – 3 pm) Sunday to Wednesday on 24507216.
2. **Via Official Letter** - The Official letter can be directed to the Manager of the Partnership and Development Department and can be dropped of either directly to any one of our offices in DUQM or Muscat
3. **Via Email** - An Email can be sent to the Partnership & Development Department to CSR@duqm.gov.om
4. **Website Portal** - All information regarding the process of the grievance system is available as well as a form that can be filled online and sent directly to the Partnership and Development Department though https://www.duqm.gov.om/sezad/csr/grievance-form

All Grievance issues are handled by the Partnership and Development Department (CSR Section). In the event the department is unable to assist or respond, it will be raised to the Deputy CEO of SEZAD where responses will be answered within a 7 days from the date of the letter/ grievance received, however can change depending on the complexity of the grievance.

1.3 REGULATORY CONTEXT AND STANDARDS

1.3.1 Omani Legislation and Guidance

During construction phase, the project was in compliance with applicable Omani environmental law and regulations. Omani environmental law has two main legal instruments, viz., Royal Decrees (RDs) and Ministerial Decisions (MDs). Typically, an RD provides a general framework relating to a particular area in need of statutory control, while MDs provide specific regulation using the framework provided in the RD.

2 PROJECT DESCRIPTION

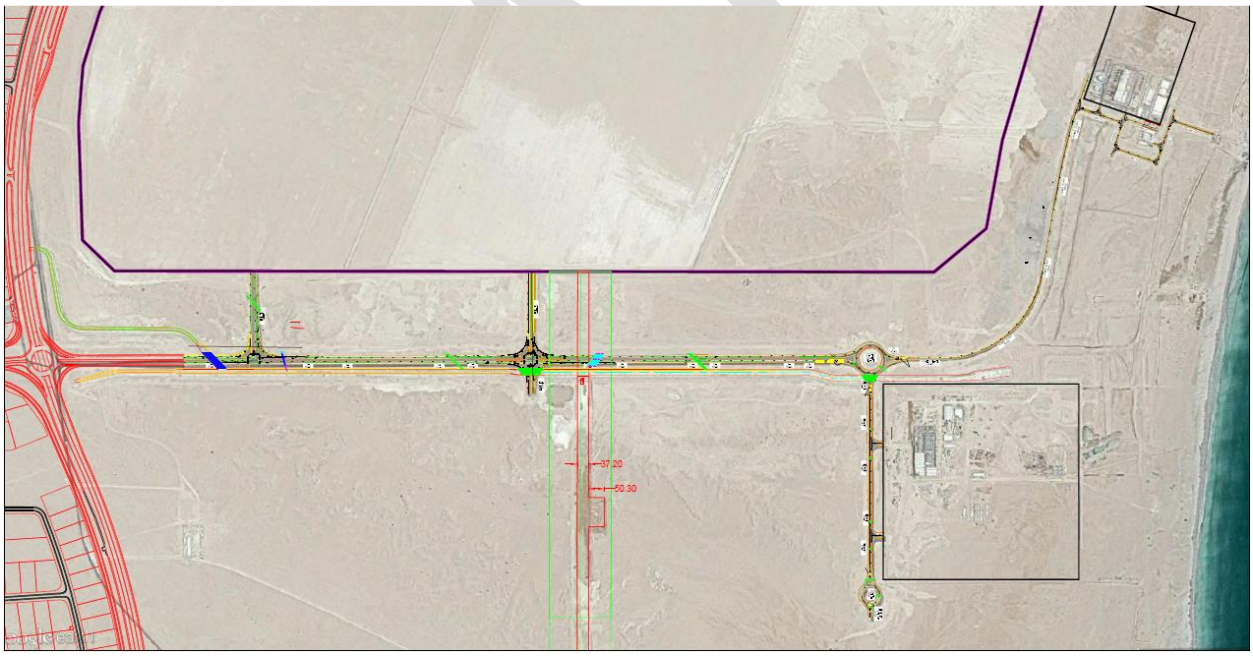
2.1 SUMMARY OF PROJECT

The total length of the Interface Roadway project is 6.2 KM. The road consists of two different segments.

- The first segment is classified as C7, dual carriageway, 2634m long road up to the edge of the boundary of the refinery and is functional to serve the movement to-from the refinery both during construction and operational time.
- The second segment can be classified as E1, 1252m long single carriageway road and goes from the edge of the boundary eastwards first and parallel to the coast after. Connection between the two is created through a roundabout designed to accommodate the operation of long truck with an internal radius equal to 41m. The two junctions are both designed with traffic light system, acceleration and deceleration lanes and slip roads to enhance the movement of long trucks and trailers. From the second segment, few short links have taken into the consideration and provided access to existing and future structures.

2.2 PROJECT COMPONENTS

The project components for the proposed Interface Roadway Project has been summarized in Table 1, while general layout for the proposed project is shown in Figure below.



Layout of the proposed Interface Roadway Project

Table 1: Project Components for the Proposed Interface Roadway Project

PROJECT COMPONENTS								
Sl. No	ITEM	CLASSIFICATION	DIMENSIONS					DESCRIPTION
			Nos.	LENGTH (M)	EACH LANE WIDTH(M)	HEIGHT (M)	DIAMETER (M)	
1	Main Road Dual Carriageway (2 x 2 Lanes)	Secondary Routes	1	3,275.00	7.5	-	-	Consists of Main Road with 2 locations of traffic lights, inluding link road entering Duqm refinery plot.
2	Service Road Single Carriageway	Distributor Routes	2	2,970.00	5	-	-	Service Roads serving the Sebacic plot and Power plant with internal roads to the government offices
3	Road T-Junctions	T-Junctions	8	-	-	-	-	T-Junctions design to access the Arterial Routes, With Traffic Signal, Smart Camera and Traffic Violation Camera
4	Road Crossing Junctions	Cross Road Junction	1	-	-	-	-	Crossing Junction design to access the investor and government offices.
5	Roundabouts		2	-	-	-	90 and 60	one roundabouts connected from dual carriageway to service roads and the other roundabouts serving to Port of Duqm area
6	Median	Main Road Separator	-	3,275.00	5	-	-	With decorative interlock pavement and with guardrail
7	Main Road Sidewalk	Pedestrian Access	-	0	0	-	-	Only on the roundabout
8	Service Road Sidewalk	Pedestrian Access	-	0	0	-	-	None
9	Floodway's	Water way	1	200	7	-	-	Floodwater passage
10	Channel	Rain Water Collector	2	3,755.37	9-18	-	-	Reinforced Concrete channel North and South
11	Ditch (Trapezoidal	Rain Water Collector	1	570.00	-	-	-	Along Sebacic Road

PROJECT COMPONENTS								
Sl. No	ITEM	CLASSIFICATION	DIMENSIONS					DESCRIPTION
			Nos.	LENGTH (M)	EACH LANE WIDTH(M)	HEIGHT (M)	DIAMETER (M)	
12	Box culvert	Rain Water Collector	8	Varies	Varies	-	-	Road Cross Drainage and Stakeholder ducts
13	Pipe culvert	Rain Water Collector	3	Varies	Varies	-	600mm	Road Cross Drainage
14	Street Lights / Poles	Single Arm	132	-	-	14		LED Lighting and Marine Coated Octagonal Poles
		Double Arms	64	-	-	14		
		Three Arms	12	-	-	14		
15	Directional Sign Boards	Various	14	-	-	-	-	Highway Standards Directional/Ingormatory Sign Boards

3 SUMMARY OF ENVIRONMENTAL IMPACTS & ASPECTS REGISTER

3.1 INTRODUCTION

Environmental Impact and Aspect Register was prepared for the construction phase of the project. The assessment of potential impacts was done using Impact Assessment Matrix method. The impacts are rated as 'low', 'medium' or 'high' depending on the severity of the impact and the likelihood of the impact. An impact assessment matrix as presented in ***Figure 1*** below has been used for combining the two assessment criteria, i.e., severity of impact and likelihood of aspect occurrence.

SEVERITY OF THE CONSEQUENCE		INCREASING LIKELIHOOD				
ENVIRONMENT		Remote (1)	Minor (2)	Moderate (3)	High (4)	Severe (5)
		Once in Ten year	Once per year or more often	Once per month of more often	Once per week or more often	Failure has the possibility of occurring once per day or more often
None (0)	No discernible effect	0	0	0	0	0
Remote (1)	Risk of remote Environmental impact i.e remote risk to business objectives & environment, No risk to health and safety	1	2	3	4	5
Minor (2)	Risk of minor Environmental impact i.e unlikely potential of release to environment, minor risk to health and safety & risk to business objective	2	4	6	8	10
Moderate (3)	Risk of moderate Environmental impact i.e unlikely to lead to a violation, health and safety risk is low	3	6	9	12	15
High (4)	Risk of high degree of environmental impact i.e could lead to violation, likelihood of health and safety is low	4	8	12	16	20
Severe (5)	Risk of sever Environmental Impact i.e non compliance with government regulation, health and safety risks	5	10	15	20	25

Figure 1: Impact Assessment Matrix

3.2 IMPACT ASSESSMENT

The Table 1 below summarise potential environmental impacts and aspects during construction phase of the Project.

3.3 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

No EMP has been prepared as part of the proposed roadway project. However, control measures for the significant impacts identified from the Environmental Impact and Aspect Register was implemented during the construction phase of the project to ensure that negative impacts are reduced to ALARP, and meet relevant Omani national laws and regulations.

Table 2: Potential Environmental Impacts & Aspects during Construction Phase

Sl. No	Environmental Aspect	Environmental Impact	Likely hood	Consequences	Environmental impact level	Existing Controls	Residual Environmental Impact	Acceptance	Authority
Activity: Vehicle and Equipment Movement									
1	Fire/explosion due to accident or collision	Air pollution & harmful impact over flora and fauna	2	2	4	Follow safe journey management system, Competent Operator/Driver. Periodical medical checkup for heavy drivers and operators. Avoid night driving as possible	Low	Acceptable	AHT IMS Procedure AHC-03-01, MD 79-94 Oman Noise Pollution Control in Public Environment Royal Decree 114 of 2001 environment MD 17-93 Management of Solid Non-Hazardous Waste MD 18-93 management of Hazardous Waste MD 286-2008 Occupational safety
2	Dust	Air Pollution	1	5	5	Watering the excavating area	Low	Acceptable	
3	Sound	Sound pollution	2	4	8	Proper maintenance of vehicle, Watering the excavation area, Sound monitoring	Low	Acceptable	
4	Emission of Carbon monoxide from the equipment	Air Pollution	3	5	15	Proper maintenance, pollution control, periodic services.	Low	Acceptable	
5	Oil Spillage/leakage	Soil contamination and harmful effect on flora and Fauna	3	2	6	Proper inspection of vehicle	Low	Acceptable	
6	Excess use of petrol and diesel due to idling of vehicle	Natural resource depletion	1	4	4	Awareness among the driver IVMS system Proper monitoring	Low	Acceptable	
Activity: Excavation									
1	Removal of vegetation	De Forestation	3	2	6	No plants and trees shall be remove without prior approval of authority, Re locate the existing plants in proper place where ever possible	Low	Acceptable	AHT IMS Procedure AHC-03-01, MD 79-94 Oman Noise Pollution Control in Public Environment Royal Decree 114 of 2001 environment
2	Dust	Air Pollution	4	1	4	Watering the excavating area	Low	Acceptable	
3	Sound	Sound Pollution	4	1	4	Proper maintenance of vehicle, Watering the excavation area, Sound monitoring	Low	Acceptable	

Sl. No	Environmental Aspect	Environmental Impact	Likely hood	Consequences	Environmental impact level	Existing Controls	Residual Environmental Impact	Acceptance	Authority
4	Emission of Carbon Monoxide from the equipment	Air Pollution	4	2	8	Proper maintenance, pollution control, periodic services.	Low	Acceptable	MD 17-93 Management of Solid Non-Hazardous Waste MD 18-93 management of Hazardous Waste MD 286-2008 Occupational safety
5	Oil Spillage/leakage	Soil Contamination and harmful effect on flora and fauna	2	2	4	Proper inspection of vehicle	Low	Acceptable	
6	Removal of soil	Natural resource depletion	3	1	3	Re use the excavated soil for back filling landscaping etc	Low	Acceptable	
Activity: Handling and Storing of Chemicals									
1	Improper storage of flammable chemical	Air Pollution. Harmful effect to flora and fauna.	4	2	8	Availability of MSDS and adhere the safety requirements. Acceptable Keep all flammable materials away from the ignition source.	Low	Acceptable	AHT IMS Procedure AHC-03-01, MD 79-94 Oman Noise Pollution Control in Public Environment Royal Decree 114 of 2001 environment MD 17-93 Management of Solid Non-Hazardous Waste MD 18-93 management of Hazardous Waste MD 286-2008 Occupational safety
2	Spillage of chemicals Coolants, Solvents, Lubes, Paints, Thinner etc	Soil contamination and harmful effect on flora and Fauna. Atmospheric contamination due to the harmful vapor	2	2	4	Proper storage and disposal methods to be used Availability of Material Safety Data Sheet Good housekeeping	Low	Acceptable	
3	Excess use of petrol and diesel due to idling of vehicle	Natural resource depletion	3	1	3	Awareness among the driver IVMS system Proper monitoring	Low	Acceptable	
Activity: Fuel Storage and Filling									
1	Fire / explosion due to improper storage of fuel and ignition sources.	Air Pollution. Harmful effect to flora and fauna.	4	2	8	Proper storage of fuel. All ignition sources should be away from the storage area	Low	Acceptable	AHT IMS Procedure AHC-03-01, MD 79-94 Oman Noise Pollution

Sl. No	Environmental Aspect	Environmental Impact	Likely hood	Consequences	Environmental impact level	Existing Controls	Residual Environmental Impact	Acceptance	Authority
						No naked flame shall be permitted in the storage area Use proper containers for fuel storage remove all combustible materials from the surroundings of the storage area. Ensure proper hose keeping. Provide mandatory signage's of flammable material storage			Control in Public Environment Royal Decree 114 of 2001 environment MD 17-93 Management of Solid Non-Hazardous Waste MD 18-93 management of Hazardous Waste MD 286-2008 Occupational safety
2	Spillage of fuel.	Soil contamination Air pollution due to the harmful vapors Natural resources depletion Harmful effect on Fauna and flora	2	3	6	Proper storage and disposal methods to be used to avoid spillage. Provide spill tray to avoid soil contamination. Follow legal requirement for fuel storage and disposal. Bund wall protection for storage area. Provide spill kit as possible. Competent/authorized person for fuel handling. Availability of Material Safety Data Sheet Good housekeeping	Low	Acceptable	
Activity: Waste Storage and Handling									
1	Fire / explosion due to improper storage of hazardous and flammable waste.	Air Pollution. Soil contamination. Water contamination due to rain and storage near water storage.	4	2	8	Proper storage and segregation of waste. Proper storage area Hazardous and flammable waste shall be stored separately and away from all ignition source. Competent and authorized person for handling of waste.	Low	Acceptable	AHT IMS Procedure AHC-03-01, MD 79-94 Oman Noise Pollution Control in Public Environment Royal Decree 114 of 2001 environment

Sl. No	Environmental Aspect	Environmental Impact	Likely hood	Consequences	Environmental impact level	Existing Controls	Residual Environmental Impact	Acceptance	Authority
		Harmful effect to flora and fauna.				of fuel. Proper disposal and records of accumulated waste.			MD 17-93 Management of Solid Non-Hazardous Waste MD 18-93 management of Hazardous Waste MD 286-2008 Occupational safety
2	Domestic and Food waste	Contamination of soil Contamination of water Contamination of Air Harmful effect on flora and fauna	2	5	10	Proper collection and disposal method. kitchen waste stored in proper designated area to avoid contamination of atmosphere. Kitchen waste storage area shall BE maintained properly, maintain the temperature and proper cleaning schedule. Closed dustbins shall be provided for food waste. Regular disposal and shall me monitored. Follow company Waste management and disposal procedure AHC-03-19	Low	Acceptable	
3	Chemical/Hazardous Waste	Air Pollution. Soil contamination. Water contamination. Harmful effect to flora and fauna.	4	2	8	Proper storage and segregation of waste. Proper storage area Hazardous and flammable waste shall be stored separately. Chemical/Hazardous waste shall be stored under shade Competent and authorized person for handling of waste. of fuel. Proper disposal and records of accumulated waste.	Low	Acceptable	
4	Construction Waste	Air Pollution. Soil contamination.	2	3	6	Proper Storage area. Concrete base for avoid soil contamination.	Low	Acceptable	

Sl. No	Environmental Aspect	Environmental Impact	Likely hood	Consequences	Environmental impact level	Existing Controls	Residual Environmental Impact	Acceptance	Authority
		Harmful effect to flora and fauna.				Recycle and reuse for reduce waste. Follow Legal and AHT waste management procedure requirement. Provide net			
Activity: Civil Works – Area Preparation for Construction Activity									
1	Excess Noise	Atmospheric pollution,	4	2	8	Proper maintenance of equipment and reduce the noise level below 85 DB as possible	Low	Acceptable	AHT IMS Procedure AHC-03-01, MD 79-94 Oman Noise Pollution Control in Public Environment Royal Decree 114 of 2001 environment MD 17-93 Management of Solid Non-Hazardous Waste MD 18-93 management of Hazardous Waste MD 286-2008 Occupational safety
2	Dust	Air pollution	2	2	4	Watering the area for dust control	Low	Acceptable	
3	Removal of vegetation	Natural resource depletion	3	2	6	Avoid deforestation as possible. Shift/re locate the existing plants to another location as possible. Planting of new plants and trees along with construction activities. Gardening	Low	Acceptable	
4	Oil spillage from equipment	Soil contamination	2	2	4	Proper inspection and maintenance of vehicle and equipment. Use dip trey as required	Low	Acceptable	
5	Oil spillage from equipment	Soil contamination	2	2	4	Proper inspection and maintenance of vehicle and equipment. Use dip trey as required	Low	Acceptable	
6	Carbon monoxide emission	Air pollution	3	3	9	Proper maintenance of the equipment. Proper inspection of the equipment	Low	Acceptable	
Activity: Welfare Area and Camp									

Sl. No	Environmental Aspect	Environmental Impact	Likely hood	Consequences	Environmental impact level	Existing Controls	Residual Environmental Impact	Acceptance	Authority
1	Excess use of electricity	Natural resource depletion	2	3	6	Switch off the light and electric equipment's when not in use. Sufficient windows for natural light. Ensure door closers for AC cabin Awareness training to office staff	Low	Acceptable	AHT IMS Procedure AHC-03-01, MD 79-94 Oman Noise Pollution Control in Public Environment Royal Decree 114 of 2001 environment MD 17-93 Management of Solid Non-Hazardous Waste MD 18-93 management of Hazardous Waste MD 286-2008 Occupational safety
2	Spillage from toilets	Contamination of soil Atmospheric contamination	1	3	3	Use good plumbing material Proper maintenance. Proper sewage disposal	Low	Acceptable	
3	Excess use of Water	Natural resource depletion	1	4	4	General awareness to staff. Re-cycle and re-use the water as possible. Use good plumbing material to avoid unnecessary wastage of water due to leak and damage	Low	Acceptable	

4 FINDINGS AND CONCLUSIONS

From the proposed Interface Roadway Project, No Environmental Impact Assessment (EIA) or Environmental Management Plan (EMP) study has been conducted. Currently the construction of interface roadway road is completed in CY 2018 and has handed over to SEZAD authority upon clearance & approval from Royal Omani Police (ROP) which is currently in operation to the public.

Other documents such as HSE Plan, Environmental Impacts and Aspects Register has been prepared by EPC Constrictor during construction phase of the project and approved by Tatweer HSE Department.

Control measures for the significant impacts identified from the Environmental Impact and Aspect Register was implemented during the construction phase of the project to ensure that negative impacts are reduced to ALARP (As Low As Reasonably Practicable), and meet the relevant Omani national laws and regulations. No Environmental incidents were reported nor recorded during the time of construction.