КИЇВСЬКИЙ НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ БУДІВНИЦТВА І АРХІТЕКТУРИ
ФАКУЛЬТЕТ АВТОМАТИЗАЦІЇ І ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ
КАФЕДРА УПРАВЛІННЯ ПРОЕКТАМИ
2022 РІК

PROJECT MANAGEMENT OF ROADS INFRASTRUCTURE UTILITIES CONSTRUCTION

Diploma project of a 6th year student

Faculty of Automation and Information Technologies

Department of project management

Specialty 073 – Management

KHALAF MOSTAFA

INTRODUCTION

The goal of the work.

Justification of feasibility and development of the road infrastructure construction project

Object of study.

The process of managing the road infrastructure construction project

Subject of study.

Methods and principles of road infrastructure construction project management.

Scientific novelty in the development of a road infrastructure construction project for a foreign customer.

Practical significance.

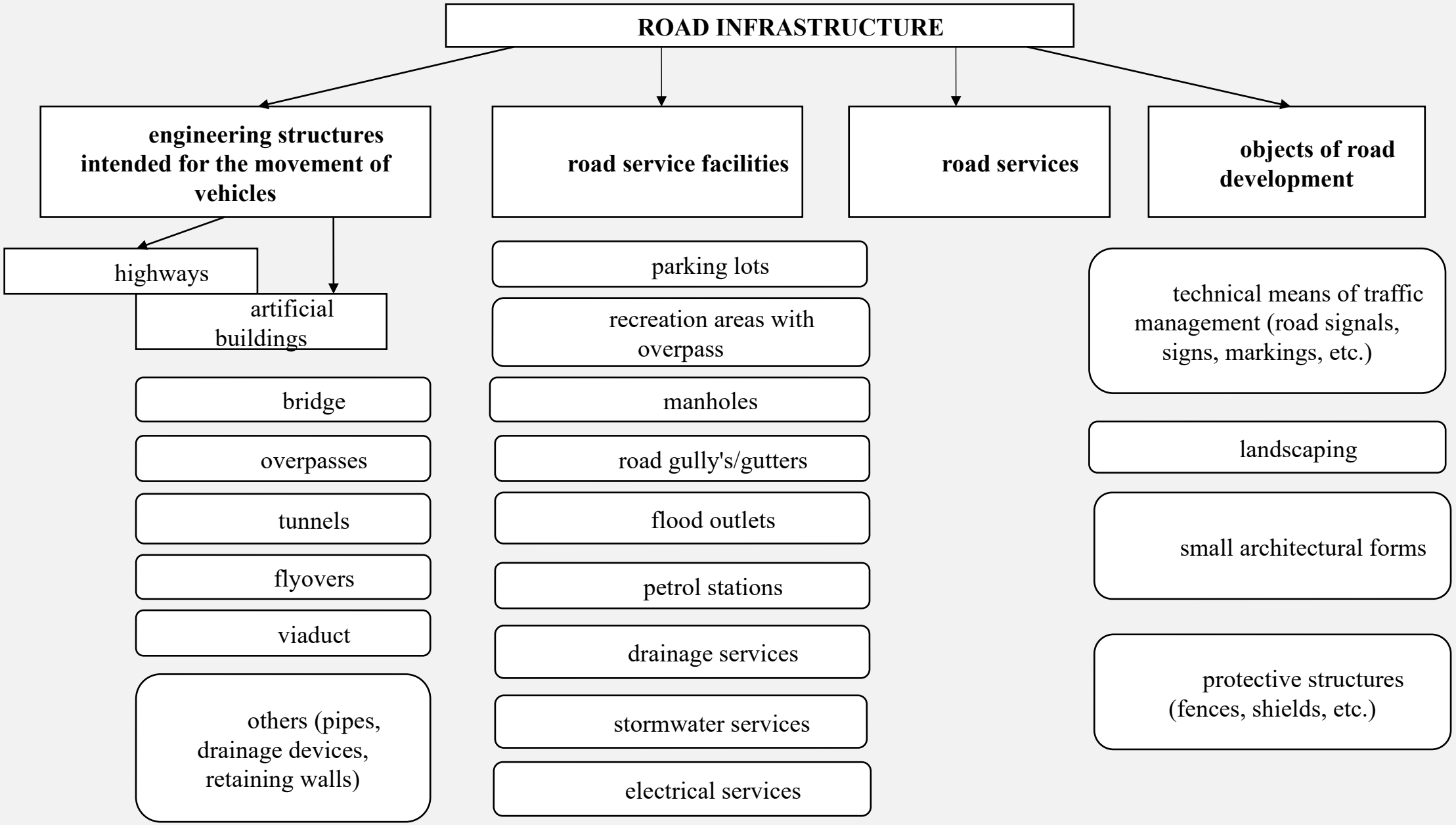
The result of writing the thesis is a developed project for the construction of road infrastructure facilities with features that must be taken into account when implementing a real project.

LIFE CYCLES OF INFRASTRUCTURE PROJECTS

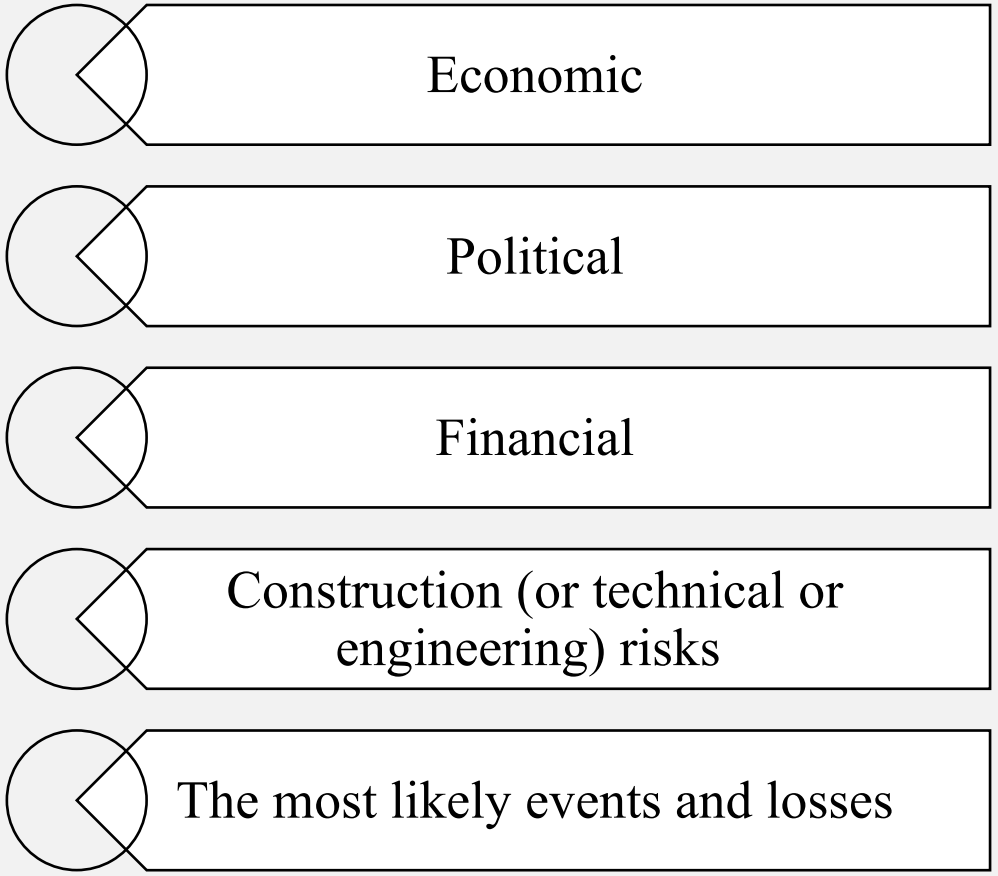
- Initiation
- Planning
- Implementation
- Completion

To successfully implement all these four stages, the project manager must simultaneously manage four main elements of the project

resources	•Workforce, masonry, equipment, materials as per project specs
time	•Project duration, tasks, deadlines and determination of the critical path
budget	•Expenses, profit, unforeseen costs
project boundaries	•Project scale, setting out survey, goals and their requirements


ROAD INFRASTRUCTURE
engineering structures intended for the movement of vehicles
road service facilities
road services
objects of road development
highways
artificial buildings
bridge
overpasses
tunnels
flyovers
viaduct
others (pipes, drainage devices, retaining walls)
parking lots
recreation areas with overpass
manholes
road gully's/gutters
flood outlets
petrol stations
drainage services
stormwater services
electrical services
technical means of traffic management (road signals, signs, markings, etc.)
landscaping
small architectural forms
protective structures (fences, shields, etc.)

RISKS


Economic
Political
Financial
Construction (or technical or engineering) risks
The most likely events and losses

RISK MANAGEMENT ROADMAP

Definition of Risk Event

The precise description of an event that may occur to the detriment of the project.

Project Risk

The cumulative effect of the chances of an uncertain occurrence which may adversely affect project objectives.

RISK MANAGEMENT

RISK IDENTIFICATION

- Engineering
- Supply Chain
- Quality
- Construction
- Pre-commissioning & Commissioning

RISK ASSESSMENT

RISK RANKING

High Impact / High Probability	High Impact / Low Probability	Medium Impact / Low Probability
High Impact / Medium Probability	Medium Impact / Medium Probability	Low Impact / Medium Probability
Medium Impact / High Probability	Low Impact / High Probability	Low Impact / Low Probability

RISK SCORING

Probability & Impact Scoring			
Probability	Impacts		
	LOW (L) 1	MEDIUM (M) 2	HIGH (H) 3
HIGH % (> 75%)	3	6	9
MEDIUM % (25% - 75%)	2	4	6
LOW % (< 25%)	1	2	3

Risk Ranking		
Item	Color	Scale
High		6 - 9
Medium		3 - 4
Low		1 - 2

Impact Scale & Type			
Impact Type	LOW (L) 1	MEDIUM (M) 2	HIGH (H) 3
Schedule (%)	< 3%	> 3 ~ < 10%	≥ 10%
Cost	< 0.5%	> 0.5 ~ 1%	≥ 1%
Quality / Performance	Meet Expected Level of Performance	Medium Impact on Performance	Significant Impact on Performance

RISK MITIGATION

Risk Management Approach

Project Risk Identification

Each risk event is identified, categorized and its effect is determined

Risk Assessment

- ✓ Probability Assessment
- ✓ Impact Assessment
- ✓ Risk Ranking

Risk Mitigation

- ✓ Identify Mitigation Measures & Strategy
- ✓ Prioritize Actions
- ✓ Assign Risk Manager
- ✓ Set up Plans
- ✓ Implement Mitigations
- ✓ Maintain / Update Register
- ✓ Conduct Post Mitigation reviews

Mitigation Strategy

- Accept
- Reduce
- Transfer
- Avoid / Eliminate

STRUCTURING OF PROJECT

The full name of the road infrastructure construction project is «CP-13F - FIXED & CALL-OFF CONTRACT FOR LUSAIL CITY WORKS».

Contractor: AL BALAGH TRADING & CONTRACTING.

Client: Lusail Real Estate Development Company (LREDC).

Project Duration: Fixed scope-270 Days; Call-Off scope-3 years.

Site Location: Lusail, city in the State of Qatar.

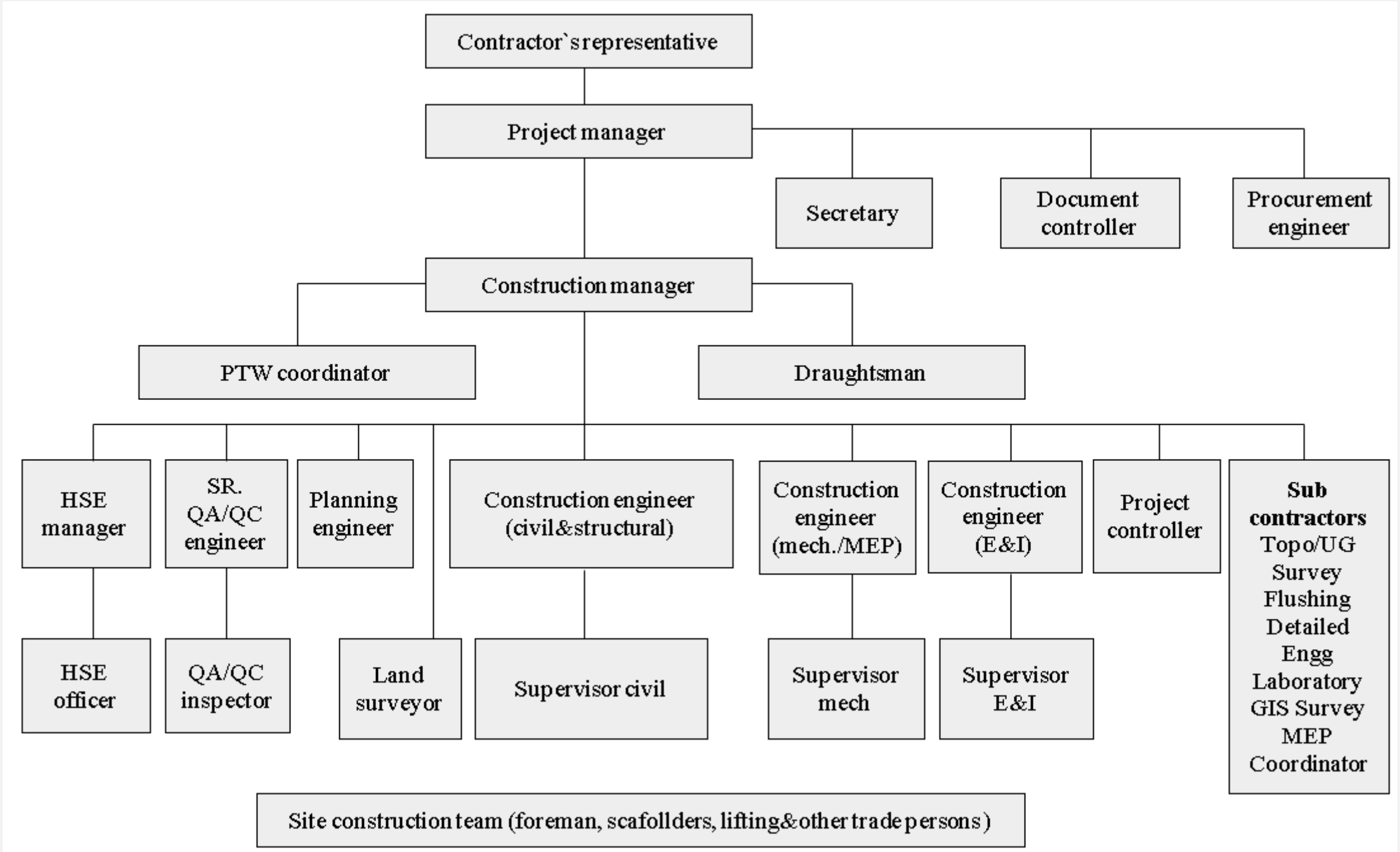
Contract start date: 08-December-2021

Contract finish date: 06-December-2024

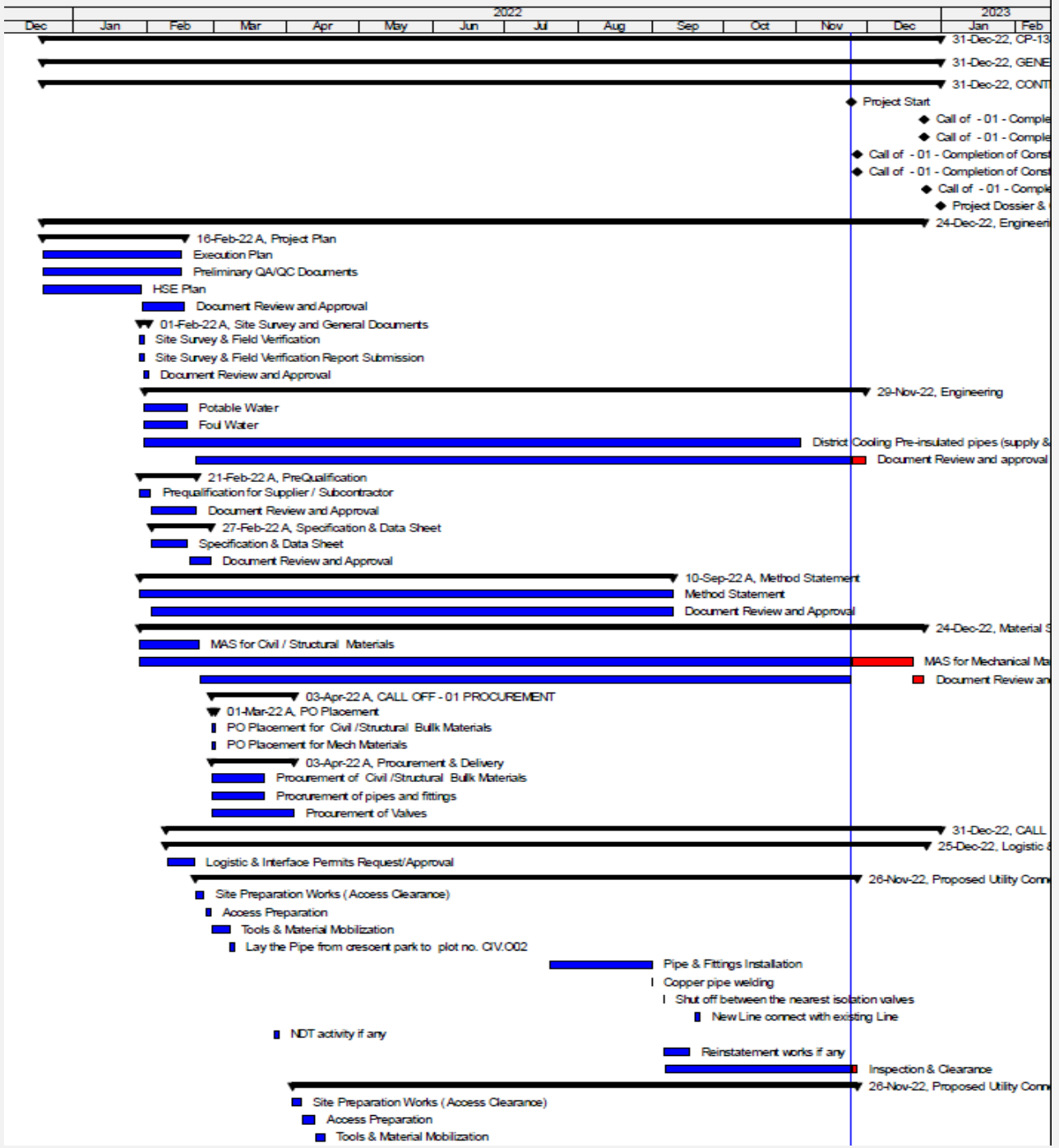
Original Contract value: 55700000,00

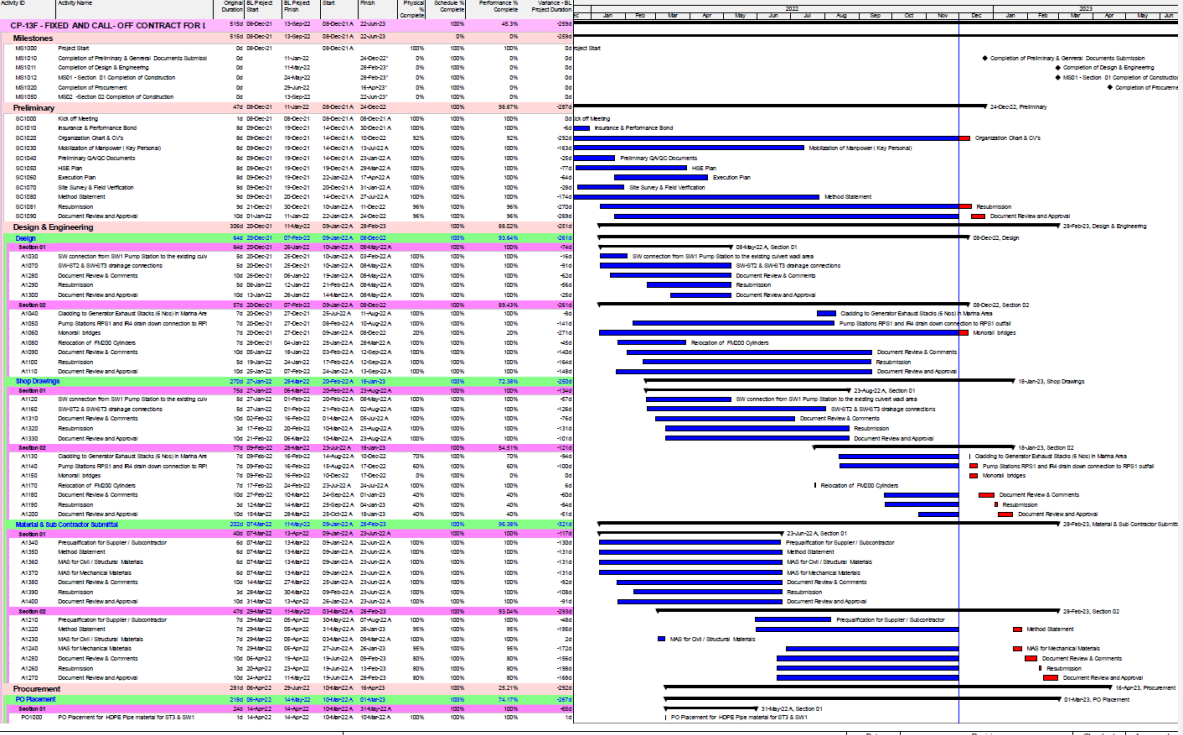
FIXED SCOPE OF WORK

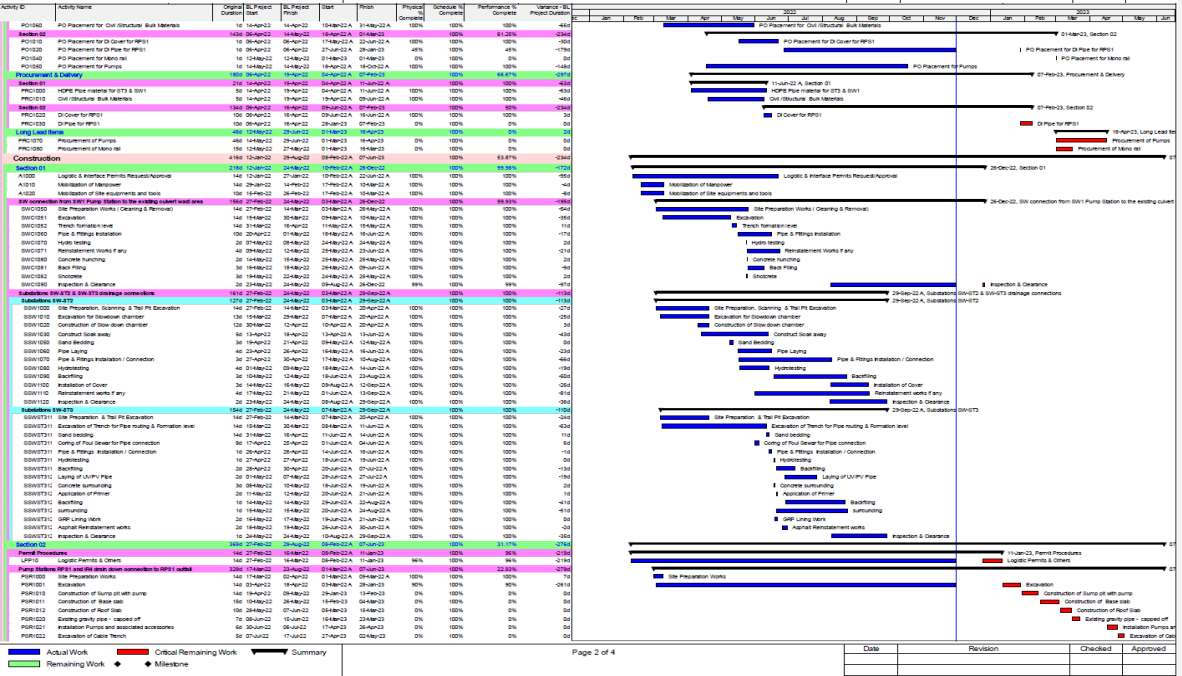
- SW connection from SW1 Pump Station to the existing culvert wadi area
- Pump Stations RPS1 and IR4 drain down connection to RPS1 outfall
- Substations SW-ST2 & SW-ST3 drainage connections
- Cladding to Generator Exhaust Stacks (6 Nos) in Marina Area
- Supply and installation of Monorail in bridges Voids at Bridges 3,5,7,8,9.
- Relocation of the FM200 Cylinders required in Telcom Exchange Building#1

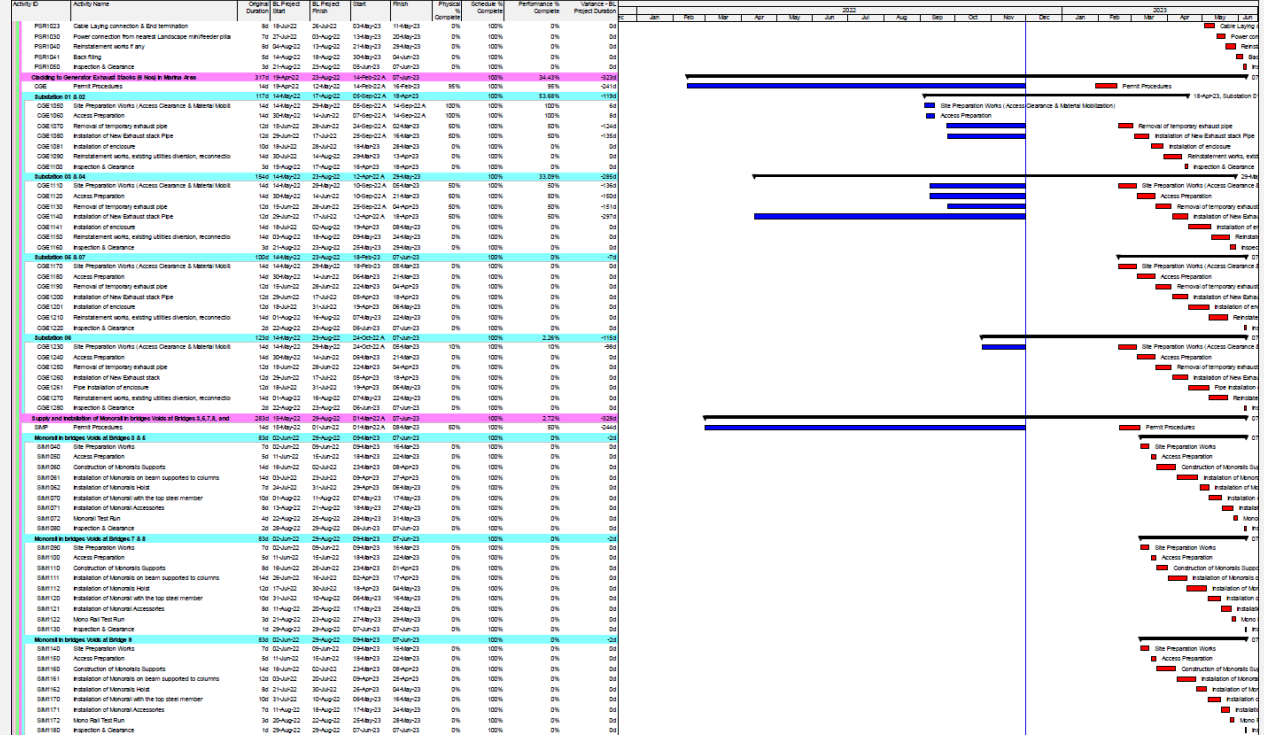

Contractor`s representative
Project manager
Secretary
Document controller
Procurement engineer
Construction manager
PTW coordinator
Draughtsman
HSE manager
SR. QA/QC engineer
Planning engineer
Construction engineer (civil&structural)
Construction engineer (mech./MEP)
Construction engineer (E&I)
Project controller
Sub contractors
Topo/UG Survey
Flushing
Detailed Engg
Laboratory
GIS Survey
MEP Coordinator
HSE officer
QA/QC inspector
Land surveyor
Supervisor civil
Supervisor mech
Supervisor E&I
Site construction team (foreman, scafollders, lifting&other trade persons)

The calendar plan consists of critical points and corresponds to the list of fixed works for this project. The estimated time of fixed works is 270 days and the call off duration is 3 years









Activity ID	Activity Name	Original Duration	BL Project Start	BL Project Finish	Start	Finish	Physical % Complete	Schedule % Complete	Performance % Complete	Variance - BL Project Duration
CP-13F - FIXED AND CALL- OFF CONTRACT FOR L		515d	08-Dec-21	13-Sep-22	08-Dec-21 A	22-Jun-23		100%	45.3%	-259d
Milestones		515d	08-Dec-21	13-Sep-22	08-Dec-21 A	22-Jun-23		0%	0%	-259d
MS1000	Project Start	0d	08-Dec-21		08-Dec-21 A		100%	100%	100%	0d
MS1010	Completion of Preliminary & General Documents Submissi	0d		11-Jan-22		24-Dec-22*	0%	100%	0%	0d
MS1011	Completion of Design & Engineering	0d		11-May-22		28-Feb-23*	0%	100%	0%	0d
MS1012	MS01 - Section 01 Completion of Construction	0d		24-May-22		28-Feb-23*	0%	100%	0%	0d
MS1020	Completion of Procurement	0d		29-Jun-22		16-Apr-23*	0%	100%	0%	0d
MS1050	MS02 -Section 02 Completion of Construction	0d		13-Sep-22		22-Jun-23*	0%	100%	0%	0d
Preliminary		47d	08-Dec-21	11-Jan-22	08-Dec-21 A	24-Dec-22		100%	98.67%	-287d
SC1000	Kick off Meeting	1d	08-Dec-21	08-Dec-21	08-Dec-21 A	08-Dec-21 A	100%	100%	100%	0d
SC1010	Insurance & Performance Bond	8d	09-Dec-21	19-Dec-21	14-Dec-21 A	30-Dec-21 A	100%	100%	100%	-6d
SC1020	Organization Chart & CV's	8d	09-Dec-21	19-Dec-21	14-Dec-21 A	10-Dec-22	92%	100%	92%	-292d
SC1030	Mobilization of Manpower (Key Personal)	8d	09-Dec-21	19-Dec-21	14-Dec-21 A	13-Jul-22 A	100%	100%	100%	-163d
SC1040	Preliminary QA/QC Documents	8d	09-Dec-21	19-Dec-21	14-Dec-21 A	23-Jan-22 A	100%	100%	100%	-25d
SC1050	HSE Plan	8d	09-Dec-21	19-Dec-21	19-Dec-21 A	29-Mar-22 A	100%	100%	100%	-77d
SC1060	Execution Plan	8d	09-Dec-21	19-Dec-21	22-Jan-22 A	17-Apr-22 A	100%	100%	100%	-64d
SC1070	Site Survey & Field Verification	8d	09-Dec-21	19-Dec-21	20-Dec-21 A	31-Jan-22 A	100%	100%	100%	-28d
SC1080	Method Statement	9d	09-Dec-21	20-Dec-21	14-Dec-21 A	27-Jul-22 A	100%	100%	100%	-174d
SC1081	Resubmission	9d	21-Dec-21	30-Dec-21	10-Jan-22 A	11-Dec-22	96%	100%	96%	-270d
SC1090	Document Review and Approval	10d	01-Jan-22	11-Jan-22	22-Jan-22 A	24-Dec-22	96%	100%	96%	-269d
Design & Engineering		306d	20-Dec-21	11-May-22	09-Jan-22 A	28-Feb-23		100%	88.02%	-251d
Design		64d	20-Dec-21	07-Feb-22	09-Jan-22 A	08-Dec-22		100%	93.64%	-261d
Section 01		64d	20-Dec-21	26-Jan-22	10-Jan-22 A	08-May-22 A		100%	100%	-74d
A1030	SW connection from SW1 Pump Station to the existing culv	5d	20-Dec-21	25-Dec-21	10-Jan-22 A	03-Feb-22 A	100%	100%	100%	-16d
A1070	SW-ST2 & SW-ST3 drainage connections	5d	20-Dec-21	25-Dec-21	10-Jan-22 A	08-May-22 A	100%	100%	100%	-91d
A1280	Document Review & Comments	10d	26-Dec-21	06-Jan-22	19-Jan-22 A	08-May-22 A	100%	100%	100%	-62d
A1290	Resubmission	5d	08-Jan-22	12-Jan-22	21-Feb-22 A	08-May-22 A	100%	100%	100%	-56d
A1300	Document Review and Approval	10d	13-Jan-22	26-Jan-22	14-Mar-22 A	08-May-22 A	100%	100%	100%	-25d
Section 02		57d	20-Dec-21	07-Feb-22	09-Jan-22 A	08-Dec-22		100%	89.43%	-261d
A1040	Cladding to Generator Exhaust Stacks (6 Nos) in Marina Are	7d	20-Dec-21	27-Dec-21	25-Jul-22 A	11-Aug-22 A	100%	100%	100%	-8d
A1050	Pump Stations RPS1 and IR4 drain down connection to RP!	7d	20-Dec-21	27-Dec-21	08-Feb-22 A	10-Aug-22 A	100%	100%	100%	-141d
A1060	Monorail bridges	7d	20-Dec-21	27-Dec-21	09-Jan-22 A	08-Dec-22	20%	100%	20%	-271d
A1080	Relocation of FM200 Cylinders	7d	28-Dec-21	04-Jan-22	25-Jan-22 A	28-Mar-22 A	100%	100%	100%	-45d
A1090	Document Review & Comments	10d	05-Jan-22	18-Jan-22	03-Feb-22 A	12-Sep-22 A	100%	100%	100%	-140d
A1100	Resubmission	5d	19-Jan-22	24-Jan-22	17-Feb-22 A	12-Sep-22 A	100%	100%	100%	-164d
A1110	Document Review and Approval	10d	25-Jan-22	07-Feb-22	24-Jan-22 A	13-Sep-22 A	100%	100%	100%	-148d
Shop Drawings		270d	27-Jan-22	28-Mar-22	20-Feb-22 A	18-Jan-23		100%	72.38%	-250d
Section 01		75d	27-Jan-22	06-Mar-22	20-Feb-22 A	23-Aug-22 A		100%	100%	-134d
A1120	SW connection from SW1 Pump Station to the existing culv	5d	27-Jan-22	01-Feb-22	20-Feb-22 A	08-May-22 A	100%	100%	100%	-57d
A1160	SW-ST2 & SW-ST3 drainage connections	5d	27-Jan-22	01-Feb-22	21-Feb-22 A	02-Aug-22 A	100%	100%	100%	-126d
A1310	Document Review & Comments	10d	02-Feb-22	16-Feb-22	01-Mar-22 A	05-Jul-22 A	100%	100%	100%	-76d
A1320	Resubmission	3d	17-Feb-22	20-Feb-22	10-Mar-22 A	23-Aug-22 A	100%	100%	100%	-131d
A1330	Document Review and Approval	10d	21-Feb-22	06-Mar-22	10-Mar-22 A	23-Aug-22 A	100%	100%	100%	-101d
Section 02		77d	09-Feb-22	28-Mar-22	23-Jul-22 A	18-Jan-23		100%	54.51%	-121d
A1130	Cladding to Generator Exhaust Stacks (6 Nos) in Marina Are	7d	09-Feb-22	16-Feb-22	14-Aug-22 A	10-Dec-22	70%	100%	70%	-94d
A1140	Pump Stations RPS1 and IR4 drain down connection to RP!	7d	09-Feb-22	16-Feb-22	15-Aug-22 A	17-Dec-22	60%	100%	60%	-100d
A1150	Monorail bridges	7d	09-Feb-22	16-Feb-22	10-Dec-22	17-Dec-22	0%	100%	0%	0d
A1170	Relocation of FM200 Cylinders	7d	17-Feb-22	24-Feb-22	23-Jul-22 A	24-Jul-22 A	100%	100%	100%	6d
A1180	Document Review & Comments	10d	27-Feb-22	10-Mar-22	24-Sep-22 A	01-Jan-23	40%	100%	40%	-60d
A1190	Resubmission	3d	12-Mar-22	14-Mar-22	25-Sep-22 A	04-Jan-23	40%	100%	40%	-84d
A1200	Document Review and Approval	10d	15-Mar-22	28-Mar-22	25-Oct-22 A	18-Jan-23	40%	100%	40%	-51d
Material & Sub Contractor Submittal		202d	07-Mar-22	11-May-22	09-Jan-22 A	28-Feb-23		100%	96.38%	-321d
Section 01		40d	07-Mar-22	13-Apr-22	09-Jan-22 A	23-Jun-22 A		100%	100%	-117d
A1340	Prequalification for Supplier / Subcontractor	6d	07-Mar-22	13-Mar-22	09-Jan-22 A	22-Jun-22 A	100%	100%	100%	-130d
A1350	Method Statement	6d	07-Mar-22	13-Mar-22	09-Jan-22 A	23-Jun-22 A	100%	100%	100%	-131d
A1360	MAS for Civil / Structural Materials	6d	07-Mar-22	13-Mar-22	09-Jan-22 A	23-Jun-22 A	100%	100%	100%	-131d
A1370	MAS for Mechanical Materials	6d	07-Mar-22	13-Mar-22	09-Jan-22 A	23-Jun-22 A	100%	100%	100%	-131d
A1380	Document Review & Comments	10d	14-Mar-22	27-Mar-22	25-Jan-22 A	23-Jun-22 A	100%	100%	100%	-92d
A1390	Resubmission	3d	28-Mar-22	30-Mar-22	09-Feb-22 A	23-Jun-22 A	100%	100%	100%	-108d
A1400	Document Review and Approval	10d	31-Mar-22	13-Apr-22	26-Jan-22 A	23-Jun-22 A	100%	100%	100%	-91d
Section 02		47d	29-Mar-22	11-May-22	03-Mar-22 A	28-Feb-23		100%	93.04%	-293d
A1210	Prequalification for Supplier / Subcontractor	7d	29-Mar-22	05-Apr-22	30-May-22 A	07-Aug-22 A	100%	100%	100%	-48d
A1220	Method Statement	7d	29-Mar-22	05-Apr-22	31-May-22 A	26-Jan-23	95%	100%	95%	-195d
A1230	MAS for Civil / Structural Materials	7d	29-Mar-22	05-Apr-22	03-Mar-22 A	09-Mar-22 A	100%	100%	100%	2d
A1240	MAS for Mechanical Materials	7d	29-Mar-22	05-Apr-22	27-Jun-22 A	26-Jan-23	95%	100%	95%	-172d
A1250	Document Review & Comments	10d	06-Apr-22	19-Apr-22	19-Jun-22 A	09-Feb-23	80%	100%	80%	-156d
A1260	Resubmission	3d	20-Apr-22	23-Apr-22	19-Jun-22 A	13-Feb-23	80%	100%	80%	-198d
A1270	Document Review and Approval	10d	24-Apr-22	11-May-22	19-Jun-22 A	28-Feb-23	80%	100%	80%	-168d
Procurement		281d	06-Apr-22	29-Jun-22	10-Mar-22 A	16-Apr-23		100%	25.21%	-292d
PO Placement		218d	06-Apr-22	14-May-22	10-Mar-22 A	01-Mar-23		100%	74.17%	-267d
Section 01		24d	14-Apr-22	14-Apr-22	10-Mar-22 A	31-May-22 A		100%	100%	-65d
PO1000	PO Placement for HDPE Pipe material for ST3 & SW1	1d	14-Apr-22	14-Apr-22	10-Mar-22 A	10-Mar-22 A	100%	100%	100%	1d

🟦 Actual Work 🟥 Critical Remaining Work Summary
🟩 Remaining Work ◆ ◆ Milestone

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Date	Revision	Checked	Approved

Activity ID	Activity Name	Original Duration	BL Project Start	BL Project Finish	Start	Finish	Physical % Complete	Schedule % Complete	Performance % Complete	Variance - BL Project Duration
PO1060	PO Placement for Civil /Structural Bulk Materials	1d	14-Apr-22	14-Apr-22	10-Mar-22 A	31-May-22 A	100%	100%	100%	-65d
Section 02		143d	06-Apr-22	14-May-22	18-Apr-22 A	01-Mar-23		100%	61.25%	-234d
PO1010	PO Placement for DI Cover for RPS1	1d	06-Apr-22	06-Apr-22	17-May-22 A	22-Jun-22 A	100%	100%	100%	-30d
PO1020	PO Placement for DI Pipe for RPS1	1d	06-Apr-22	06-Apr-22	27-Jun-22 A	28-Jan-23	45%	100%	45%	-179d
PO1040	PO Placement for Mono rail	1d	12-May-22	12-May-22	01-Mar-23	01-Mar-23	0%	100%	0%	0d
PO1050	PO Placement for Pumps	1d	14-May-22	14-May-22	18-Apr-22 A	18-Oct-22 A	100%	100%	100%	-148d
Procurement & Delivery		180d	06-Apr-22	19-Apr-22	04-Apr-22 A	07-Feb-23		100%	66.67%	-297d
Section 01		21d	14-Apr-22	19-Apr-22	04-Apr-22 A	11-Jun-22 A		100%	100%	-63d
PRC1000	HDPE Pipe material for ST3 & SW1	5d	14-Apr-22	19-Apr-22	04-Apr-22 A	11-Jun-22 A	100%	100%	100%	-63d
PRC1010	Civil /Structural Bulk Materials	5d	14-Apr-22	19-Apr-22	19-Apr-22 A	09-Jun-22 A	100%	100%	100%	-46d
Section 02		134d	06-Apr-22	16-Apr-22	09-Jun-22 A	07-Feb-23		100%	50%	-234d
PRC1020	DI Cover for RPS1	10d	06-Apr-22	16-Apr-22	09-Jun-22 A	16-Jun-22 A	100%	100%	100%	3d
PRC1030	DI Pipe for RPS1	10d	06-Apr-22	16-Apr-22	28-Jan-23	07-Feb-23	0%	100%	0%	0d
Long Lead Items		46d	12-May-22	29-Jun-22	01-Mar-23	16-Apr-23		100%	0%	2d
PRC1070	Procurement of Pumps	46d	14-May-22	29-Jun-22	01-Mar-23	16-Apr-23	0%	100%	0%	0d
PRC1080	Procurement of Mono rail	15d	12-May-22	27-May-22	01-Mar-23	16-Mar-23	0%	100%	0%	0d
Construction		416d	12-Jan-22	29-Aug-22	08-Feb-22 A	07-Jun-23		100%	53.87%	-234d
Section 01		218d	12-Jan-22	24-May-22	10-Feb-22 A	26-Dec-22		100%	99.98%	-172d
A1000	Logistic & Interface Permits Request/Approval	14d	12-Jan-22	27-Jan-22	10-Feb-22 A	22-Jun-22 A	100%	100%	100%	-95d
A1010	Mobilization of Manpower	14d	29-Jan-22	14-Feb-22	17-Feb-22 A	10-Mar-22 A	100%	100%	100%	-4d
A1020	Mobilization of Site equipments and tools	10d	15-Feb-22	26-Feb-22	17-Feb-22 A	10-Mar-22 A	100%	100%	100%	-8d
SW connection from SW1 Pump Station to the existing culvert wadi area		156d	27-Feb-22	24-May-22	03-Mar-22 A	26-Dec-22		100%	99.93%	-195d
SWC1050	Site Preparation Works (Cleaning & Removal)	14d	27-Feb-22	14-Mar-22	03-Mar-22 A	26-May-22 A	100%	100%	100%	-54d
SWC1051	Excavation	14d	15-Mar-22	30-Mar-22	09-Mar-22 A	10-May-22 A	100%	100%	100%	-35d
SWC1052	Trench formation level	14d	31-Mar-22	16-Apr-22	11-May-22 A	15-May-22 A	100%	100%	100%	11d
SWC1060	Pipe & Fittings Installation	10d	20-Apr-22	01-May-22	16-May-22 A	16-Jun-22 A	100%	100%	100%	-17d
SWC1070	Hydro testing	2d	07-May-22	08-May-22	24-May-22 A	24-May-22 A	100%	100%	100%	2d
SWC1071	Reinstatement Works if any	4d	09-May-22	12-May-22	25-May-22 A	23-Jun-22 A	100%	100%	100%	-21d
SWC1080	Concrete hunching	2d	14-May-22	15-May-22	25-May-22 A	25-May-22 A	100%	100%	100%	2d
SWC1081	Back Filling	3d	16-May-22	18-May-22	26-May-22 A	09-Jun-22 A	100%	100%	100%	-9d
SWC1082	Shotcrete	3d	19-May-22	22-May-22	24-May-22 A	25-May-22 A	100%	100%	100%	2d
SWC1090	Inspection & Clearance	2d	23-May-22	24-May-22	09-Aug-22 A	26-Dec-22	99%	100%	99%	-97d
Substations SW-ST2 & SW-ST3 drainage connections		161d	27-Feb-22	24-May-22	03-Mar-22 A	29-Sep-22 A		100%	100%	-113d
Substations SW-ST2		127d	27-Feb-22	24-May-22	03-Mar-22 A	29-Sep-22 A		100%	100%	-113d
SSW1000	Site Preparation, Scanning & Trail Pit Excavation	14d	27-Feb-22	14-Mar-22	03-Mar-22 A	20-Apr-22 A	100%	100%	100%	-27d
SSW1010	Excavation for Slowdown chamber	13d	15-Mar-22	29-Mar-22	07-Mar-22 A	20-Apr-22 A	100%	100%	100%	-25d
SSW1020	Construction of Slow down chamber	12d	30-Mar-22	12-Apr-22	10-Apr-22 A	20-Apr-22 A	100%	100%	100%	3d
SSW1030	Construct Soak away	5d	13-Apr-22	18-Apr-22	13-Apr-22 A	13-Jun-22 A	100%	100%	100%	-43d
SSW1050	Sand Bedding	3d	19-Apr-22	21-Apr-22	09-May-22 A	12-May-22 A	100%	100%	100%	0d
SSW1060	Pipe Laying	4d	23-Apr-22	26-Apr-22	16-May-22 A	16-Jun-22 A	100%	100%	100%	-23d
SSW1070	Pipe & Fittings Installation / Connection	3d	27-Apr-22	30-Apr-22	17-May-22 A	10-Aug-22 A	100%	100%	100%	-66d
SSW1080	Hydrotesting	4d	01-May-22	09-May-22	18-May-22 A	14-Jun-22 A	100%	100%	100%	-19d
SSW1090	Backfilling	3d	10-May-22	12-May-22	18-Jun-22 A	23-Aug-22 A	100%	100%	100%	-60d
SSW1100	Installation of Cover	3d	14-May-22	16-May-22	09-Aug-22 A	12-Sep-22 A	100%	100%	100%	-26d
SSW1110	Reinstatement works if any	4d	17-May-22	21-May-22	01-Jun-22 A	13-Sep-22 A	100%	100%	100%	-81d
SSW1120	Inspection & Clearance	2d	23-May-22	24-May-22	08-Aug-22 A	29-Sep-22 A	100%	100%	100%	-36d
Substations SW-ST3		154d	27-Feb-22	24-May-22	07-Mar-22 A	29-Sep-22 A		100%	100%	-110d
SSWST311	Site Preparation & Trail Pit Excavation	14d	27-Feb-22	14-Mar-22	07-Mar-22 A	20-Apr-22 A	100%	100%	100%	-24d
SSWST311	Excavation of Trench for Pipe routing & Formation level	14d	15-Mar-22	30-Mar-22	08-Mar-22 A	11-Jun-22 A	100%	100%	100%	-63d
SSWST311	Sand bedding	14d	31-Mar-22	16-Apr-22	11-Jun-22 A	14-Jun-22 A	100%	100%	100%	11d
SSWST311	Coring of Foul Sewar for Pipe connection	8d	17-Apr-22	25-Apr-22	01-Jun-22 A	04-Jun-22 A	100%	100%	100%	6d
SSWST311	Pipe & Fittings Installation / Connection	1d	26-Apr-22	26-Apr-22	14-Jun-22 A	16-Jun-22 A	100%	100%	100%	-1d
SSWST311	Hydrotesting	1d	27-Apr-22	27-Apr-22	18-Jun-22 A	19-Jun-22 A	100%	100%	100%	0d
SSWST311	Backfilling	2d	28-Apr-22	30-Apr-22	20-Jun-22 A	07-Jul-22 A	100%	100%	100%	-13d
SSWST31:	Laying of UV/PV Pipe	2d	01-May-22	07-May-22	28-Jun-22 A	27-Jul-22 A	100%	100%	100%	-19d
SSWST31:	Concrete surrounding	3d	08-May-22	10-May-22	18-Jun-22 A	19-Jun-22 A	100%	100%	100%	2d
SSWST31:	Application of Primer	2d	11-May-22	12-May-22	20-Jun-22 A	21-Jun-22 A	100%	100%	100%	1d
SSWST31:	Backfilling	1d	14-May-22	14-May-22	29-Jun-22 A	22-Aug-22 A	100%	100%	100%	-41d
SSWST31:	surrounding	1d	15-May-22	15-May-22	20-Jun-22 A	24-Aug-22 A	100%	100%	100%	-51d
SSWST31:	GRP Lining Work	2d	16-May-22	17-May-22	19-Jun-22 A	21-Jun-22 A	100%	100%	100%	0d
SSWST31:	Asphalt Reinstatement works	2d	18-May-22	19-May-22	26-Jun-22 A	30-Jun-22 A	100%	100%	100%	-2d
SSWST31:	Inspection & Clearance	1d	24-May-22	24-May-22	10-Aug-22 A	29-Sep-22 A	100%	100%	100%	-35d
Section 02		369d	27-Feb-22	29-Aug-22	08-Feb-22 A	07-Jun-23		100%	31.17%	-276d
Permit Procedures		14d	27-Feb-22	16-Mar-22	08-Feb-22 A	11-Jan-23		100%	96%	-219d
LPP10	Logistic Permits & Others	14d	27-Feb-22	16-Mar-22	08-Feb-22 A	11-Jan-23	96%	100%	96%	-219d
Pump Stations RPS1 and IR4 drain down connection to RPS1 outfall		329d	17-Mar-22	23-Aug-22	01-Mar-22 A	07-Jun-23		100%	22.93%	-279d
PSR1000	Site Preparation Works	14d	17-Mar-22	02-Apr-22	01-Mar-22 A	09-Mar-22 A	100%	100%	100%	7d
PSR1001	Excavation	14d	03-Apr-22	18-Apr-22	03-Mar-22 A	28-Jan-23	90%	100%	90%	-261d
PSR1010	Construction of Sump pit with pump	14d	19-Apr-22	09-May-22	29-Jan-23	13-Feb-23	0%	100%	0%	0d
PSR1011	Construction of Base slab	15d	10-May-22	26-May-22	15-Feb-23	04-Mar-23	0%	100%	0%	0d
PSR1012	Construction of Roof Slab	10d	28-May-22	07-Jun-22	05-Mar-23	15-Mar-23	0%	100%	0%	0d
PSR1020	Existing gravity pipe - capped off	7d	08-Jun-22	15-Jun-22	16-Mar-23	23-Mar-23	0%	100%	0%	0d
PSR1021	Installation Pumps and associated accessories	6d	30-Jun-22	06-Jul-22	17-Apr-23	26-Apr-23	0%	100%	0%	0d
PSR1022	Excavation of Cable Trench	5d	07-Jul-22	17-Jul-22	27-Apr-23	02-May-23	0%	100%	0%	0d

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Activity ID	Activity Name	Original Duration	BL Project Start	BL Project Finish	Start	Finish	Physical % Complete	Schedule % Complete	Performance % Complete	Variance - BL Project Duration
PSR1023	Cable Laying connection & End termination	8d	18-Jul-22	26-Jul-22	03-May-23	11-May-23	0%	100%	0%	0d
PSR1030	Power connection from nearest Landscape mini/feeder pillai	7d	27-Jul-22	03-Aug-22	13-May-23	20-May-23	0%	100%	0%	0d
PSR1040	Reinstatement works if any	8d	04-Aug-22	13-Aug-22	21-May-23	29-May-23	0%	100%	0%	0d
PSR1041	Back filling	5d	14-Aug-22	18-Aug-22	30-May-23	04-Jun-23	0%	100%	0%	0d
PSR1050	Inspection & Clearance	3d	21-Aug-22	23-Aug-22	05-Jun-23	07-Jun-23	0%	100%	0%	0d
Cladding to Generator Exhaust Stacks (6 Nos) in Marina Area		317d	19-Apr-22	23-Aug-22	14-Feb-22 A	07-Jun-23		100%	34.43%	-323d
CGE	Permit Procedures	14d	19-Apr-22	12-May-22	14-Feb-22 A	16-Feb-23	95%	100%	95%	-241d
Substation 01 & 02		117d	14-May-22	17-Aug-22	05-Sep-22 A	18-Apr-23		100%	53.68%	-119d
CGE1050	Site Preparation Works (Access Clearance & Material Mobili	14d	14-May-22	29-May-22	05-Sep-22 A	14-Sep-22 A	100%	100%	100%	6d
CGE1060	Access Preparation	14d	30-May-22	14-Jun-22	07-Sep-22 A	14-Sep-22 A	100%	100%	100%	8d
CGE1070	Removal of temporary exhaust pipe	12d	15-Jun-22	28-Jun-22	24-Sep-22 A	02-Mar-23	50%	100%	50%	-124d
CGE1080	Installation of New Exhaust stack Pipe	12d	29-Jun-22	17-Jul-22	25-Sep-22 A	16-Mar-23	50%	100%	50%	-135d
CGE1081	Installation of enclosure	10d	18-Jul-22	28-Jul-22	18-Mar-23	28-Mar-23	0%	100%	0%	0d
CGE1090	Reinstatement works, existing utilities diversion, reconnectio	14d	30-Jul-22	14-Aug-22	29-Mar-23	13-Apr-23	0%	100%	0%	0d
CGE1100	Inspection & Clearance	3d	15-Aug-22	17-Aug-22	16-Apr-23	18-Apr-23	0%	100%	0%	0d
Substation 03 & 04		154d	14-May-22	23-Aug-22	12-Apr-22 A	29-May-23		100%	33.09%	-285d
CGE1110	Site Preparation Works (Access Clearance & Material Mobili	14d	14-May-22	29-May-22	10-Sep-22 A	05-Mar-23	50%	100%	50%	-136d
CGE1120	Access Preparation	14d	30-May-22	14-Jun-22	10-Sep-22 A	21-Mar-23	50%	100%	50%	-150d
CGE1130	Removal of temporary exhaust pipe	12d	15-Jun-22	28-Jun-22	25-Sep-22 A	04-Apr-23	50%	100%	50%	-151d
CGE1140	Installation of New Exhaust stack Pipe	12d	29-Jun-22	17-Jul-22	12-Apr-22 A	18-Apr-23	50%	100%	50%	-297d
CGE1141	Installation of enclosure	14d	18-Jul-22	02-Aug-22	19-Apr-23	08-May-23	0%	100%	0%	0d
CGE1150	Reinstatement works, existing utilities diversion, reconnectio	14d	03-Aug-22	18-Aug-22	09-May-23	24-May-23	0%	100%	0%	0d
CGE1160	Inspection & Clearance	3d	21-Aug-22	23-Aug-22	25-May-23	29-May-23	0%	100%	0%	0d
Substation 06 & 07		100d	14-May-22	23-Aug-22	18-Feb-23	07-Jun-23		100%	0%	-7d
CGE1170	Site Preparation Works (Access Clearance & Material Mobili	14d	14-May-22	29-May-22	18-Feb-23	05-Mar-23	0%	100%	0%	0d
CGE1180	Access Preparation	14d	30-May-22	14-Jun-22	06-Mar-23	21-Mar-23	0%	100%	0%	0d
CGE1190	Removal of temporary exhaust pipe	12d	15-Jun-22	28-Jun-22	22-Mar-23	04-Apr-23	0%	100%	0%	0d
CGE1200	Installation of New Exhaust stack Pipe	12d	29-Jun-22	17-Jul-22	05-Apr-23	18-Apr-23	0%	100%	0%	0d
CGE1201	Installation of enclosure	12d	18-Jul-22	31-Jul-22	19-Apr-23	06-May-23	0%	100%	0%	0d
CGE1210	Reinstatement works, existing utilities diversion, reconnectio	14d	01-Aug-22	16-Aug-22	07-May-23	22-May-23	0%	100%	0%	0d
CGE1220	Inspection & Clearance	2d	22-Aug-22	23-Aug-22	06-Jun-23	07-Jun-23	0%	100%	0%	0d
Substation 08		123d	14-May-22	23-Aug-22	24-Oct-22 A	07-Jun-23		100%	2.26%	-115d
CGE1230	Site Preparation Works (Access Clearance & Material Mobili	14d	14-May-22	29-May-22	24-Oct-22 A	05-Mar-23	10%	100%	10%	-98d
CGE1240	Access Preparation	14d	30-May-22	14-Jun-22	06-Mar-23	21-Mar-23	0%	100%	0%	0d
CGE1250	Removal of temporary exhaust pipe	12d	15-Jun-22	28-Jun-22	22-Mar-23	04-Apr-23	0%	100%	0%	0d
CGE1260	Installation of New Exhaust stack	12d	29-Jun-22	17-Jul-22	05-Apr-23	18-Apr-23	0%	100%	0%	0d
CGE1261	Pipe Installation of enclosure	12d	18-Jul-22	31-Jul-22	19-Apr-23	06-May-23	0%	100%	0%	0d
CGE1270	Reinstatement works, existing utilities diversion, reconnectio	14d	01-Aug-22	16-Aug-22	07-May-23	22-May-23	0%	100%	0%	0d
CGE1280	Inspection & Clearance	2d	22-Aug-22	23-Aug-22	06-Jun-23	07-Jun-23	0%	100%	0%	0d
Supply and Installation of Monorail in bridges Voids at Bridges 3,6,7,8, and		283d	15-May-22	29-Aug-22	01-Mar-22 A	07-Jun-23		100%	2.72%	-328d
SIMP	Permit Procedures	14d	15-May-22	01-Jun-22	01-Mar-22 A	08-Mar-23	50%	100%	50%	-244d
Monorail in bridges Voids at Bridges 3 & 6		83d	02-Jun-22	29-Aug-22	09-Mar-23	07-Jun-23		100%	0%	-2d
SIM1040	Site Preparation Works	7d	02-Jun-22	09-Jun-22	09-Mar-23	16-Mar-23	0%	100%	0%	0d
SIM1050	Access Preparation	5d	11-Jun-22	15-Jun-22	18-Mar-23	22-Mar-23	0%	100%	0%	0d
SIM1060	Construction of Monorails Supports	14d	16-Jun-22	02-Jul-22	23-Mar-23	08-Apr-23	0%	100%	0%	0d
SIM1061	Installation of Monorails on beam supported to columns	14d	03-Jul-22	23-Jul-22	09-Apr-23	27-Apr-23	0%	100%	0%	0d
SIM1062	Installation of Monorails Hoist	7d	24-Jul-22	31-Jul-22	29-Apr-23	06-May-23	0%	100%	0%	0d
SIM1070	Installation of Monorail with the top steel member	10d	01-Aug-22	11-Aug-22	07-May-23	17-May-23	0%	100%	0%	0d
SIM1071	Installation of Monorail Accessories	8d	13-Aug-22	21-Aug-22	18-May-23	27-May-23	0%	100%	0%	0d
SIM1072	Monorail Test Run	4d	22-Aug-22	25-Aug-22	28-May-23	31-May-23	0%	100%	0%	0d
SIM1080	Inspection & Clearance	2d	28-Aug-22	29-Aug-22	06-Jun-23	07-Jun-23	0%	100%	0%	0d
Monorail in bridges Voids at Bridges 7 & 8		83d	02-Jun-22	29-Aug-22	09-Mar-23	07-Jun-23		100%	0%	-2d
SIM1090	Site Preparation Works	7d	02-Jun-22	09-Jun-22	09-Mar-23	16-Mar-23	0%	100%	0%	0d
SIM1100	Access Preparation	5d	11-Jun-22	15-Jun-22	18-Mar-23	22-Mar-23	0%	100%	0%	0d
SIM1110	Construction of Monorails Supports	8d	16-Jun-22	25-Jun-22	23-Mar-23	01-Apr-23	0%	100%	0%	0d
SIM1111	Installation of Monorails on beam supported to columns	14d	26-Jun-22	16-Jul-22	02-Apr-23	17-Apr-23	0%	100%	0%	0d
SIM1112	Installation of Monorails Hoist	12d	17-Jul-22	30-Jul-22	18-Apr-23	04-May-23	0%	100%	0%	0d
SIM1120	Installation of Monorail with the top steel member	10d	31-Jul-22	10-Aug-22	06-May-23	16-May-23	0%	100%	0%	0d
SIM1121	Installation of Monorail Accessories	8d	11-Aug-22	20-Aug-22	17-May-23	25-May-23	0%	100%	0%	0d
SIM1122	Mono Rail Test Run	3d	21-Aug-22	23-Aug-22	27-May-23	29-May-23	0%	100%	0%	0d
SIM1130	Inspection & Clearance	1d	29-Aug-22	29-Aug-22	07-Jun-23	07-Jun-23	0%	100%	0%	0d
Monorail in bridges Voids at Bridge 9		83d	02-Jun-22	29-Aug-22	09-Mar-23	07-Jun-23		100%	0%	-2d
SIM1140	Site Preparation Works	7d	02-Jun-22	09-Jun-22	09-Mar-23	16-Mar-23	0%	100%	0%	0d
SIM1150	Access Preparation	5d	11-Jun-22	15-Jun-22	18-Mar-23	22-Mar-23	0%	100%	0%	0d
SIM1160	Construction of Monorails Supports	14d	16-Jun-22	02-Jul-22	23-Mar-23	08-Apr-23	0%	100%	0%	0d
SIM1161	Installation of Monorails on beam supported to columns	12d	03-Jul-22	20-Jul-22	09-Apr-23	25-Apr-23	0%	100%	0%	0d
SIM1162	Installation of Monorails Hoist	8d	21-Jul-22	30-Jul-22	26-Apr-23	04-May-23	0%	100%	0%	0d
SIM1170	Installation of Monorail with the top steel member	10d	31-Jul-22	10-Aug-22	06-May-23	16-May-23	0%	100%	0%	0d
SIM1171	Installation of Monorail Accessories	7d	11-Aug-22	18-Aug-22	17-May-23	24-May-23	0%	100%	0%	0d
SIM1172	Mono Rail Test Run	3d	20-Aug-22	22-Aug-22	25-May-23	28-May-23	0%	100%	0%	0d
SIM1180	Inspection & Clearance	1d	29-Aug-22	29-Aug-22	07-Jun-23	07-Jun-23	0%	100%	0%	0d
Relocation of the FM200 Cylinders required in Telcom Exchange Building#		237d	29-Mar-22	28-Aug-22	01-Mar-22 A	29-Jan-23		100%	90.68%	-167d
RFMLP	Permit Procedures	14d	29-Mar-22	17-Apr-22	01-Mar-22 A	06-Aug-22 A	100%	100%	100%	-92d
RFMLP10	Mobilization of Manpower	7d	18-Apr-22	25-Apr-22	07-Aug-22 A	06-Sep-22 A	100%	100%	100%	-19d

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Activity ID	Activity Name	Original Duration	BL Project Start	BL Project Finish	Start	Finish	Physical % Complete	Schedule % Complete	Performance % Complete	Variance - BL Project Duration
RFMLP20	Mobilization of Site equipments and tools	10d	26-Apr-22	11-May-22	08-Aug-22 A	06-Sep-22 A	100%	100%	100%	-15d
Basement 01		55d	12-May-22	11-Aug-22	15-Aug-22 A	28-Jan-23		100%	86.15%	-67d
RFM1000	Site Preparation works(Scaffolding & Others)	10d	12-May-22	23-May-22	15-Aug-22 A	14-Sep-22 A	100%	100%	100%	-16d
RFM1010	Isolation of Cylinders	7d	24-May-22	31-May-22	07-Nov-22 A	07-Nov-22 A	100%	100%	100%	7d
RFM1020	Removal of Cylinders	8d	01-Jun-22	09-Jun-22	07-Nov-22 A	07-Nov-22 A	100%	100%	100%	8d
RFM1030	Site Preparation(Cylinders Installation work)	10d	11-Jun-22	21-Jun-22	08-Nov-22 A	08-Nov-22 A	100%	100%	100%	10d
RFM1040	Relocation of Cylinders	7d	22-Jun-22	29-Jun-22	09-Nov-22 A	09-Nov-22 A	100%	100%	100%	7d
RFM1050	Pipe Rerouting & Fittings Installation	10d	30-Jun-22	16-Jul-22	10-Nov-22 A	13-Nov-22 A	100%	100%	100%	8d
RFM1060	E&I Relocation	8d	17-Jul-22	25-Jul-22	14-Nov-22 A	15-Nov-22 A	100%	100%	100%	7d
RFM1070	Pipe Testing & commissioning	7d	26-Jul-22	02-Aug-22	16-Nov-22 A	19-Nov-22 A	100%	100%	100%	5d
RFM1080	Reinstatement works if any	8d	03-Aug-22	11-Aug-22	28-Nov-22 A	28-Jan-23	10%	100%	10%	-44d
Basement 02		47d	24-May-22	16-Aug-22	15-Aug-22 A	28-Jan-23		100%	89.25%	-73d
RFM1250	Site Preparation works(Scaffolding & Others)	7d	24-May-22	31-May-22	15-Aug-22 A	14-Sep-22 A	100%	100%	100%	-19d
RFM1260	Isolation of Cylinders	5d	01-Jun-22	06-Jun-22	29-Oct-22 A	29-Oct-22 A	100%	100%	100%	5d
RFM1270	Removal of Cylinders	8d	07-Jun-22	15-Jun-22	30-Oct-22 A	30-Oct-22 A	100%	100%	100%	8d
RFM1280	Site Preparation(Cylinders Installation work)	10d	16-Jun-22	27-Jun-22	31-Oct-22 A	31-Oct-22 A	100%	100%	100%	10d
RFM1290	Relocation of Cylinders	7d	28-Jun-22	05-Jul-22	31-Oct-22 A	31-Oct-22 A	100%	100%	100%	7d
RFM1300	Pipe Rerouting & Fittings Installation	10d	06-Jul-22	21-Jul-22	01-Nov-22 A	02-Nov-22 A	100%	100%	100%	9d
RFM1310	E&I Relocation	7d	23-Jul-22	30-Jul-22	14-Nov-22 A	15-Nov-22 A	100%	100%	100%	6d
RFM1320	Pipe Testing & commissioning	7d	31-Jul-22	07-Aug-22	14-Nov-22 A	19-Nov-22 A	100%	100%	100%	3d
RFM1330	Reinstatement works if any	8d	08-Aug-22	16-Aug-22	28-Nov-22 A	28-Jan-23	10%	100%	10%	-44d
Basement 03		55d	01-Jun-22	28-Aug-22	15-Aug-22 A	29-Jan-23		100%	91.25%	-71d
RFM1350	Site Preparation works(Scaffolding & Others)	5d	01-Jun-22	06-Jun-22	15-Aug-22 A	14-Sep-22 A	100%	100%	100%	-21d
RFM1360	Isolation of Cylinders	5d	07-Jun-22	12-Jun-22	29-Oct-22 A	29-Oct-22 A	100%	100%	100%	5d
RFM1370	Removal of Cylinders	5d	13-Jun-22	18-Jun-22	30-Oct-22 A	30-Oct-22 A	100%	100%	100%	5d
RFM1380	Site Preparation(Cylinders Installation work)	10d	19-Jun-22	29-Jun-22	31-Oct-22 A	31-Oct-22 A	100%	100%	100%	10d
RFM1390	Relocation of Cylinders	10d	30-Jun-22	16-Jul-22	31-Oct-22 A	31-Oct-22 A	100%	100%	100%	10d
RFM1400	Pipe Rerouting & Fittings Installation	10d	17-Jul-22	27-Jul-22	01-Nov-22 A	09-Nov-22 A	100%	100%	100%	3d
RFM1410	E&I Relocation	8d	17-Jul-22	25-Jul-22	14-Nov-22 A	15-Nov-22 A	100%	100%	100%	7d
RFM1420	Pipe Testing & commissioning	8d	26-Jul-22	03-Aug-22	16-Nov-22 A	19-Nov-22 A	100%	100%	100%	6d
RFM1430	Reinstatement works if any	9d	04-Aug-22	14-Aug-22	28-Nov-22 A	29-Jan-23	10%	100%	10%	-44d
RFM1440	Basement 01, 02 & 03 - System testing & commissioning	10d	17-Aug-22	28-Aug-22	17-Nov-22 A	19-Nov-22 A	100%	100%	100%	9d
Project Dossier & Close out		13d	30-Aug-22	13-Sep-22	08-Jun-23	22-Jun-23		100%	0%	0d
Project Dossier		11d	30-Aug-22	11-Sep-22	08-Jun-23	20-Jun-23		100%	0%	0d
PD1000	As Built & Red line markup drawing Preparation & submissi	7d	30-Aug-22	06-Sep-22	08-Jun-23	15-Jun-23	0%	100%	0%	0d
PD1010	Project Dossier Preparation & submission	4d	07-Sep-22	11-Sep-22	17-Jun-23	20-Jun-23	0%	100%	0%	0d
Demobilization & Closeout		2d	12-Sep-22	13-Sep-22	21-Jun-23	22-Jun-23		100%	0%	0d
DMC1010	Demobilization of Manpower	1d	12-Sep-22	12-Sep-22	21-Jun-23	21-Jun-23	0%	100%	0%	0d
DMC1020	Project Completion	1d	13-Sep-22	13-Sep-22	22-Jun-23	22-Jun-23	0%	100%	0%	0d

THANK YOU FOR YOUR ATTENTION!