



CHAPTER TWO

(Data Collection & Cases Studies)



HISTORICAL INTRODUCTION

The human need for transportation has been at the dawn of history, and the first regular human flight between his dwelling (cave, large trees, tent ...) and the place where he brought food and drink was made, in different places where the beginnings of human gatherings and human settlements took place.

The rail transport sector is an important sector which plays a key role at the social, economic and urban level of each of the developed countries.

The first electric trains and trams appeared in Europe and the United States during the 1880s. In the 1990s, German engineer Rudolf Diesel invented the engine that he later named. Over time, diesel engines replaced steam engines in many ships and most trains. Of all the inventions of the 19th century, it was the engine that operated with oil that brought the most changes in the world of transportation.



KHARTOUM TRAM PROJECT



INTRODUCTION

The project aims to move to means of transport with large transport capacities, especially in high congestion areas, leading to efficient transport of passengers and unloading main road arteries of high congestion and achieves the project environmental benefits estimated.

Project Consultant:

German Schlosser Planck + ETC

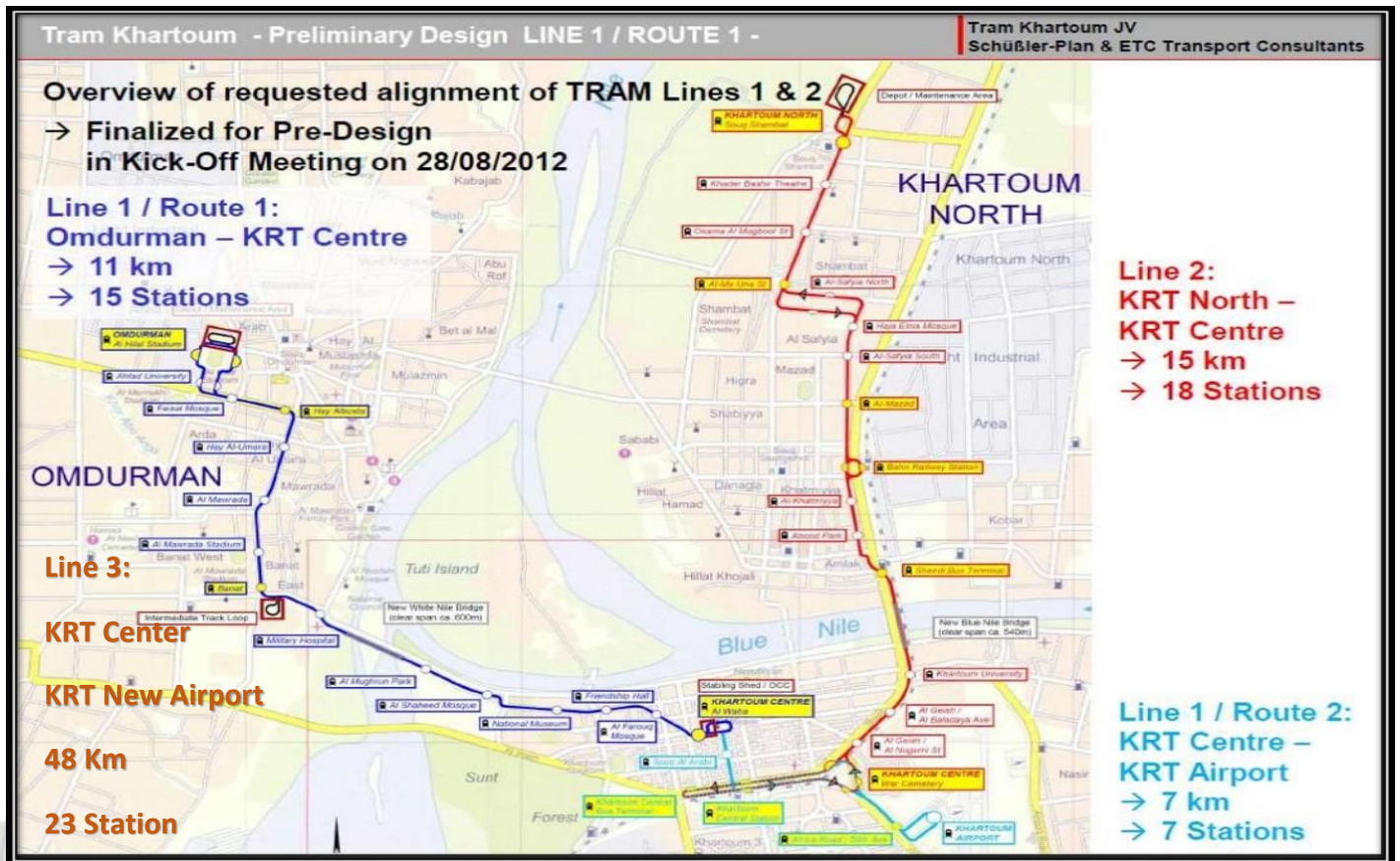
The cost of the first line is 224 million euros

The project consists of the following lines:

- 1 / First Line First Track (Khartoum - Airport)
- 2 / First Line Second Track (Khartoum – Omdurman)
- 3 / The second line (Khartoum - Khartoum North)
- 4 / Third Line (Khartoum - New Airport)

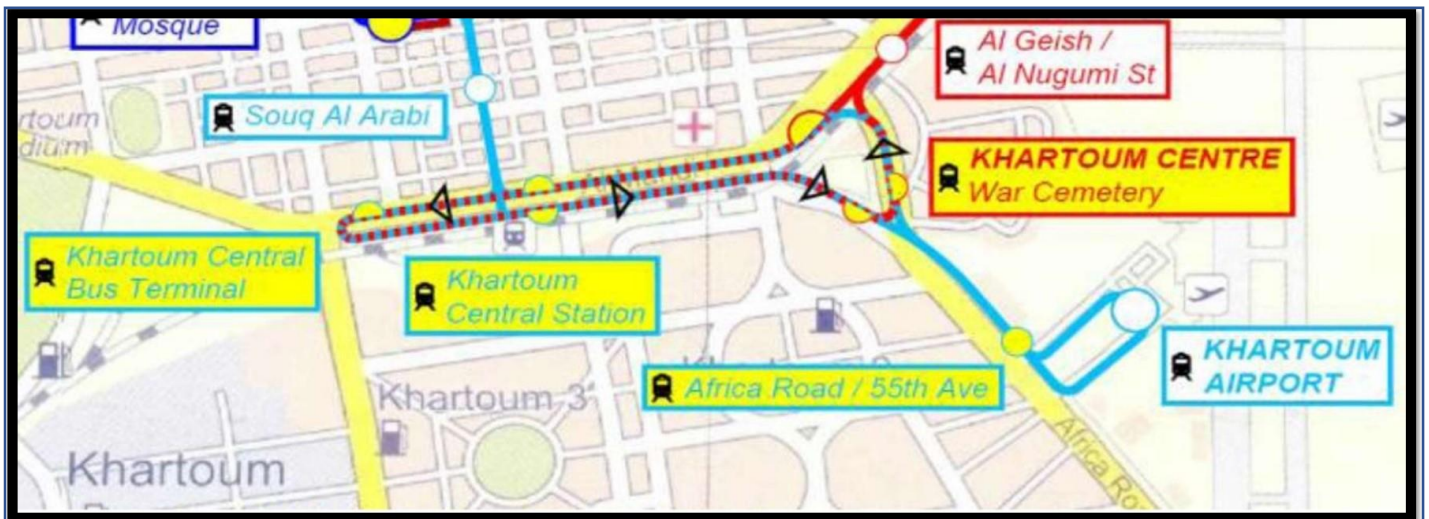


Map of the tram track



Line (Khartoum- Airport)

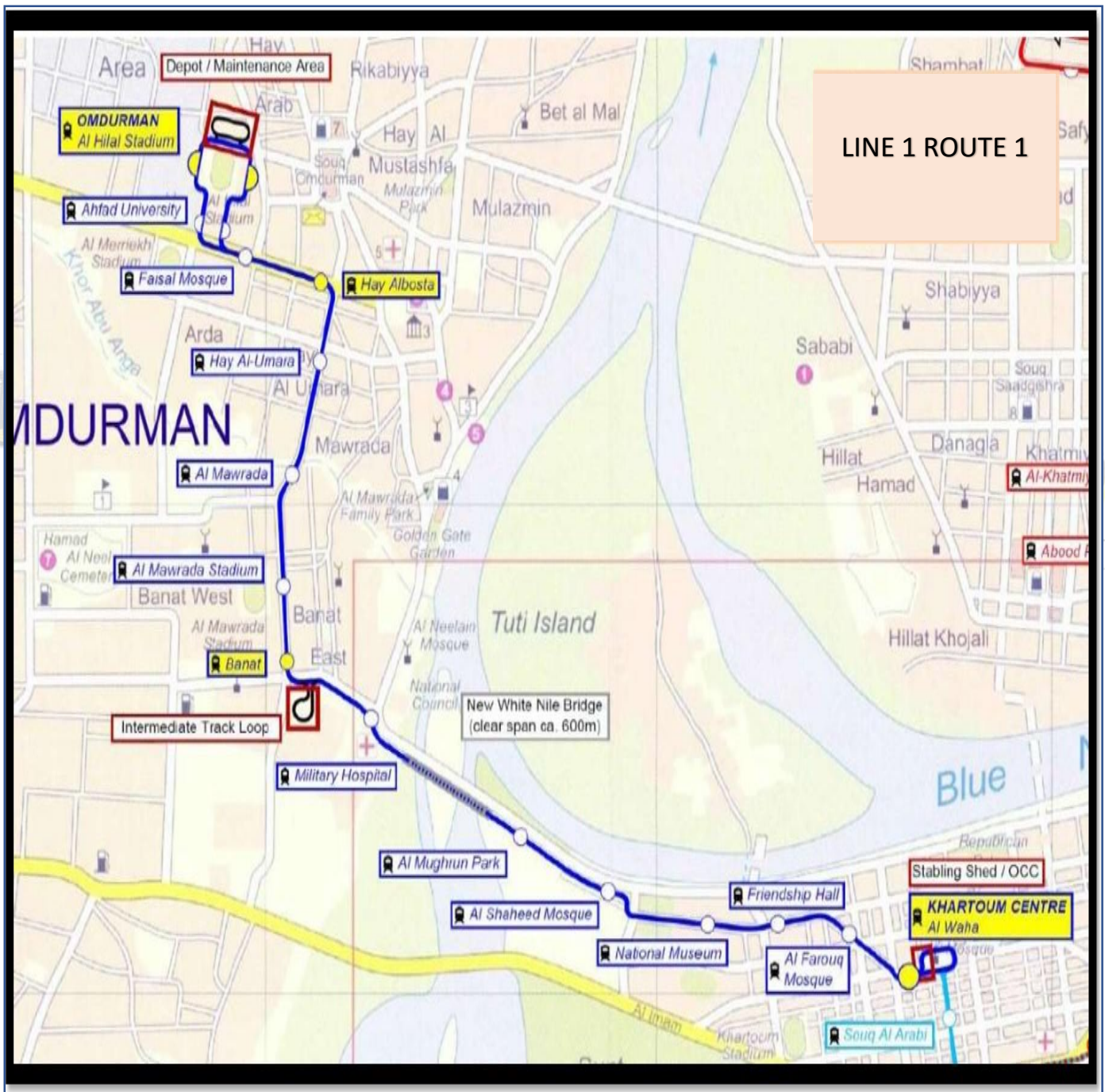
The track with a length of 4 km route starts from the main station in Khartoum to the current airport across Africa Street as a first stage and then runs south.



Line (Khartoum - Omdurman)

The track with a length of 11 km starts from the main tram station in Khartoum up to the Hilal Stadium Omdurman passing through Sangkat Street - the university - Nile Street - the medical weapon - Al Arbaeen Street - Al-Mauna Street until Al-Hilal Stadium.

For the purposes of this line a large iron bridge will be built next to the old White Nile.





Line (Khartoum - Bahri)

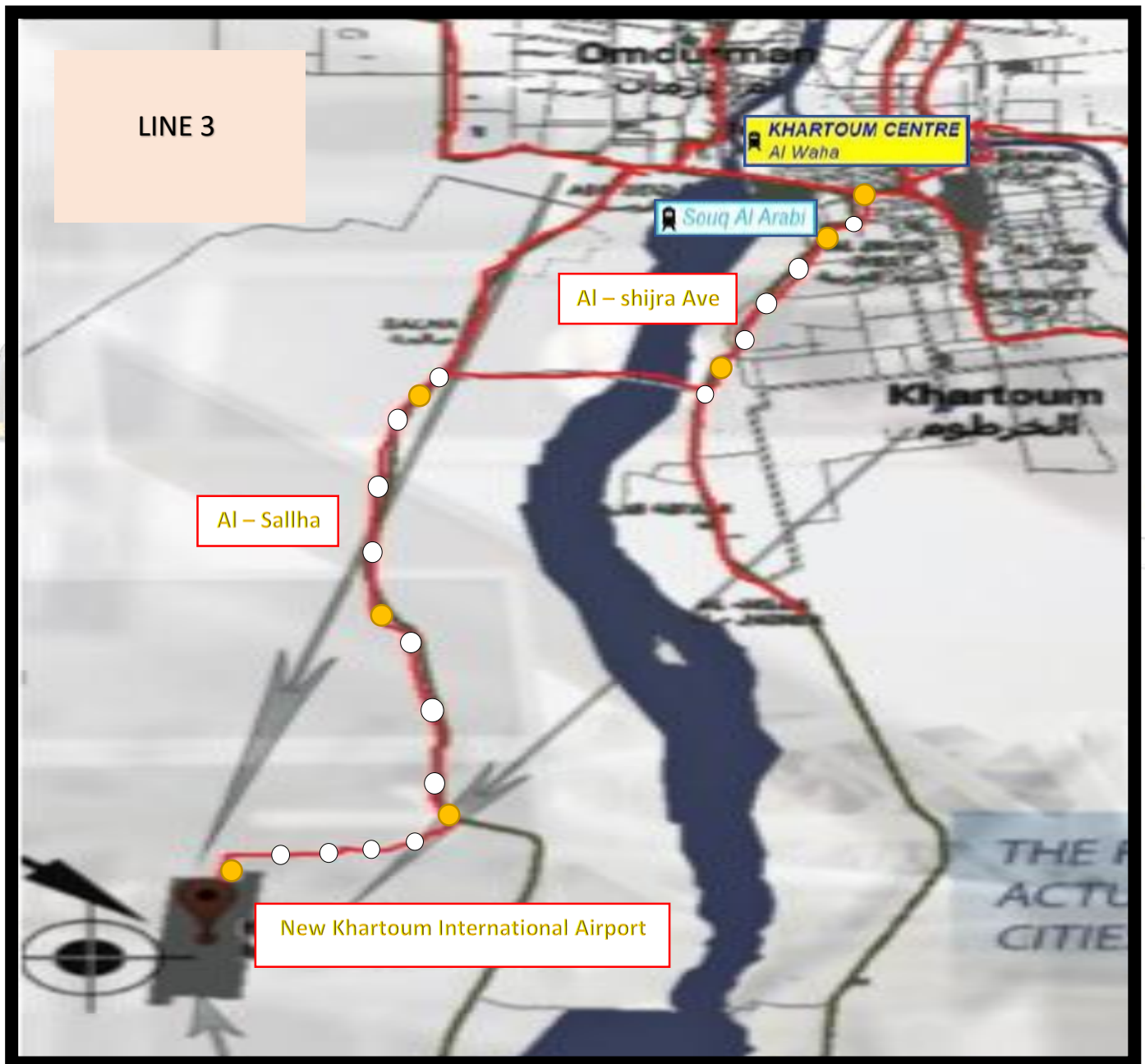
The track with a length of 15 km route starts from the main station in Khartoum to the central market area in Shambat, passing through the rescue road, the net area and then the aid road to the central market in Bahri. For this line, a new iron bridge will be built next to the old Blue Nile.



Line (Khartoum-New Airport)

The track with a length of 48 km starts from the main tram station in Khartoum up to the New Khartoum Omdurman passing through New Hella - Rumaila - Lamab - Al-Shajara neighborhood - passing through Al-Azouzab - Wad Ajeeb and then Al-Damasin Bridge and then Al-Sala Street area, up to the new Airport Road.

For the purposes of this line a large iron bridge will be built next to the Al-Damasin Bridge.



Trams Line Design

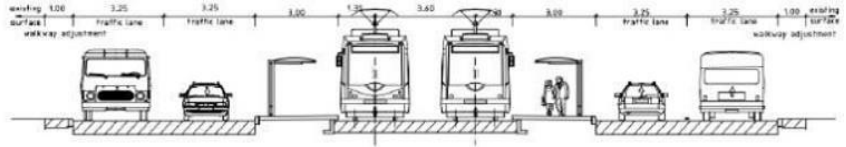
Tram Khartoum - Preliminary Design LINE 1 / ROUTE 1 -

Tram Khartoum JV
Schüßler-Plan & ETC Transport Consultants

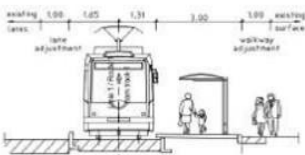
Course of Line 1 / Route 1

→ Omdurman Side

Cross section of separate double-track bed *in central position*



Cross section of separate single-track bed *beside road bed*

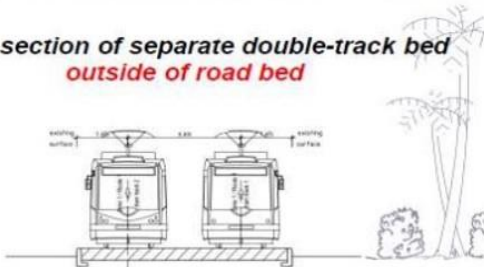


Course of Line 1 / Route 1

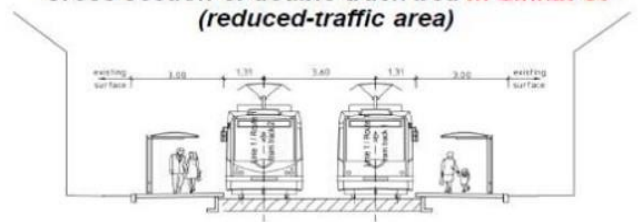
→ Khartoum Side



Cross section of separate double-track bed *outside of road bed*



Cross section of double-track bed *in Sinkat St (reduced-traffic area)*



Trams Line

ROUTE # Track number	DISCRIPTION	LENGTH KM	HEADWAY PICK HR MIN	CAPACITY BASS	FLEET Number of vehicles
LRT11	Omdurman (Al Hillel Stadium) - Khartoum (Grand Mosque)	11	10	250	8
LRT12	Khartoum - Airport	7	10	250	6
LRT21	Bahri (Central Market) - Railway Station (Kirker)	15	7	250	15
LRT31	Libya Market - Al Hillel Stadium	9	7	250	9
LRT32	Libya Market - Railway Station (Kirker)	21.5	9	500	34
LRT33	Souk Libya - Bahri (Railway Station)	17	7	250	17
LRT41	Haj Yousif - Bahri (Central Station)	15	7	250	15
LRT42	Haj Yousif - Railway Station (Kirker)	18	7	250	19
LRT43	Haj Yousif - Omdurman (Al Hillel Stadium)	23	13	250	13
LRT61	Al Shenqeeti - Omdurman (Al Hillel Stadium)	17	8	250	15
LRT62	Shunqeeti - Khartoum (Great Mosque)	28	10	500	32
LRT71	Khor Omar - Khartoum (Great Mosque)	25.5	8	500	46
LRT81	Khartoum (Great Mosque) - Ad Hussein	17	8	500	30
LRT82	Khartoum (Great Mosque) - Al Mamoura	14.5	8	250	13
LRT22	Al Halfaya Bridge - Railway Station (Kirker)	21	9	500	19
LRT72	- Khartoum (Great Mosque) Althora middle.	20.5	8	250	18
LRT13	Khartoum - The new airport	48	10	500	6
LRT14	Omdurman (Al Hillel Stadium) - The new airport	46	10	500	6

Trams Capacity

6 and 8 – axle multi articulated



	Long	Short
Width	2.40 m	2.40 m
Length	40.00 m	30.80 m
Capacity	Total places	
Single direction car	245	187
Bi direction car	243	184

Tram bridges in the Nile

