

GENERAL NOTES

- ALL DIMENSIONS ARE IN METERS AND ALL CO-ORDINATES ARE IN METRES.
- GEODETTIC PARAMETERS**

KTM Datum	KUDAMS KTM (GRS 1980)
KTM Spheroid	GRS80
GRS80 Semimajor Axis	6378137.000
GRS80 Inverse Flattening 1/f	298.257222101000
Datum shift parameters WGS84 to KUDAMS KTM	
Delta X = +20.600m	Rotation X = 0.00 sec.
Delta Y = -11.300m	Rotation Y = 0.00 sec.
Delta Z = -2.400m	Rotation Z = 0.00 sec.
Scale Factor = 0.00 ppm	
- Kuwait Transverse Mercator Projection (KTM)**

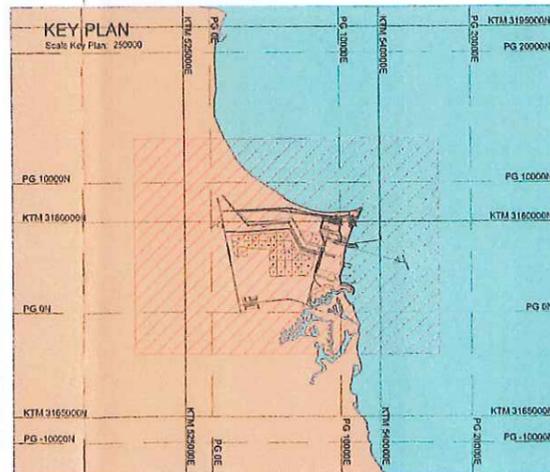
Latitude of Origin	00°00'00.000000"N
Longitude of Origin	048°00'00.000000"E
Scale Factor	1.0000
False Easting	500000.00m
False Northing	00.00M
- Relation between Plant Grid (PG) and KTM**
 Survey common point:
 PG E 9000.00m = KTM 636000.00m
 PG N 6000.00m = KTM 3178000.00m
 KUDAM Survey Point (NGN-95):
 PG E 616.758m = KTM 627816.641m
 PG N 5691.085m = KTM 3176691.080m
 Rotation KTM to Plant Grid = 0.00°
 Scale = 1.000014
 From KTM coordinate values to PG coordinate values
 Easting PG = [E KTM x 0.999986] - 526992.496 m.
 Northing PG = [N KTM x 0.999986] - 3172955.494 m.
 From PG coordinate values to KTM coordinate values
 Easting KTM = [E PG x 1.000014] + 526999.874 m.
 Northing KTM = [N PG x 1.000014] + 3172999.916 m.
- HEIGHT DATUM**
 Plant Grid Datum 100.00m = Kuwait Land Datum (KLD) 0.0m = Chart Datum (CD) - 0.72m

NOTES

- Only First Order Monuments shall be used for vertical and horizontal control of permanent improvements.
- Secondary Order Monuments shall be used only as interim bench marks for construction.
- Revision of survey Control Network Monuments reference:
 Document: 31.3688-VODMC-REP-001 rev B
 Transmittal VODMC-AMEC-TR-0145
- Independent Third Party Topographic Surveyor measured discrepancies in X, Y and Z, see reference report KNPC No. P4048-NRP-9519-10R-01

LEGEND

- FIRST ORDER MONUMENT (name: NGN-95)
- SECOND ORDER MONUMENT (name: 21)



REVISED COORDINATES SURVEY CONTROL NETWORK IN KTM & PLANT GRID & UTM Z39

NAME	KTM COORDINATES			PLANT GRID LOCAL COORDINATES			UTM ZONE 39 COORDINATES			QUALITY	NOTES
	EASTING	NORTHING	HEIGHT	EASTING	NORTHING	HEIGHT	EASTING	NORTHING	Chart Datum		
NGN-95	527616.641	3178691.080	-	616.758	5691.084	-	234601.617	3180417.318	-	First Order	MUNICIPALITY BENCH MARK; NOT USED BY VAN OORD TO ESTABLISH NETWORK; SEE NOTE D.
W-351	529402.852	3172715.727	18.541	2402.943	-284.185	118.541	236237.710	3174396.193	17.821	First Order	MINISTRY OF DEFENCE BENCH MARK; USED BY VAN OORD TO ESTABLISH CONTROL NETWORK
W-344	535620.827	3180198.224	9.422	8620.831	7198.208	109.422	242644.681	3181723.010	8.702	First Order	MINISTRY OF DEFENCE BENCH MARK; USED BY VAN OORD TO ESTABLISH CONTROL NETWORK
P126	534989.437	3175874.877	3.980	7989.451	2874.921	103.980	241904.381	3177415.179	3.260	Second Order	
14	533523.312	3178810.579	3.772	6523.346	5810.582	103.772	240512.018	3180388.071	3.052	Second Order	
15	534031.198	3177888.393	3.809	7031.225	4888.408	103.809	240996.732	3179453.004	3.089	Second Order	
20	537383.207	3178388.666	4.716	10383.187	5388.675	104.716	244361.623	3179868.919	3.996	Second Order	
21	535942.449	3178806.286	3.720	8942.449	5806.289	103.720	242931.269	3180322.853	3.000	Second Order	
22	534356.599	3178641.371	3.344	7356.621	5641.376	103.344	241341.125	3180197.861	2.624	Second Order	
23	533754.626	3179693.493	3.521	6754.657	6693.483	103.521	240765.594	3181265.247	2.801	Second Order	
A	529452.177	3178512.265	13.397	2452.268	5512.272	113.397	236432.900	3180192.251	12.677	Second Order	
B	531744.501	3178609.466	7.369	4744.560	5609.471	107.369	238727.951	3180231.734	6.649	Second Order	
C	533107.482	3178615.739	4.735	6107.522	5615.744	104.735	240091.239	3180203.683	4.015	Second Order	
D	533673.654	3177636.333	4.090	6673.686	4636.352	104.090	240632.807	3179209.921	3.370	Second Order	
VO-TG-01	538042.346	3175324.573	5.611	11042.317	2324.624	105.611	244943.689	3176788.019	4.891	Second Order	

Rev No.	Date	Description	Prep	Checked	Rev	Company
2	03-04-2019	ISSUED FOR USE				
1	07-03-2015	ISSUED FOR USE				
0	05/09/2014	ISSUED FOR USE				
B	23/08/2014	ISSUED FOR APPROVAL				
A	03/07/2012	ISSUED FOR APPROVAL				

Project Name	KNPC Al-Zour Refinery Project (ZOR)	Drawing Title	REVISED SURVEY CONTROL NETWORK AFTER VERIFICATION
Company	AMEC	KNPC Drawing No.	P4048NRP-97-19-1-R008
Contractor	Van Oord	VO Drawing No.	313688-DDD-1014
VO File name	313688-A1-PG-10165	Scale	1:40000
		Drawing Date	04/04/2019