

ROYAL COMMISSION FOR JUBAIL AND YANBU

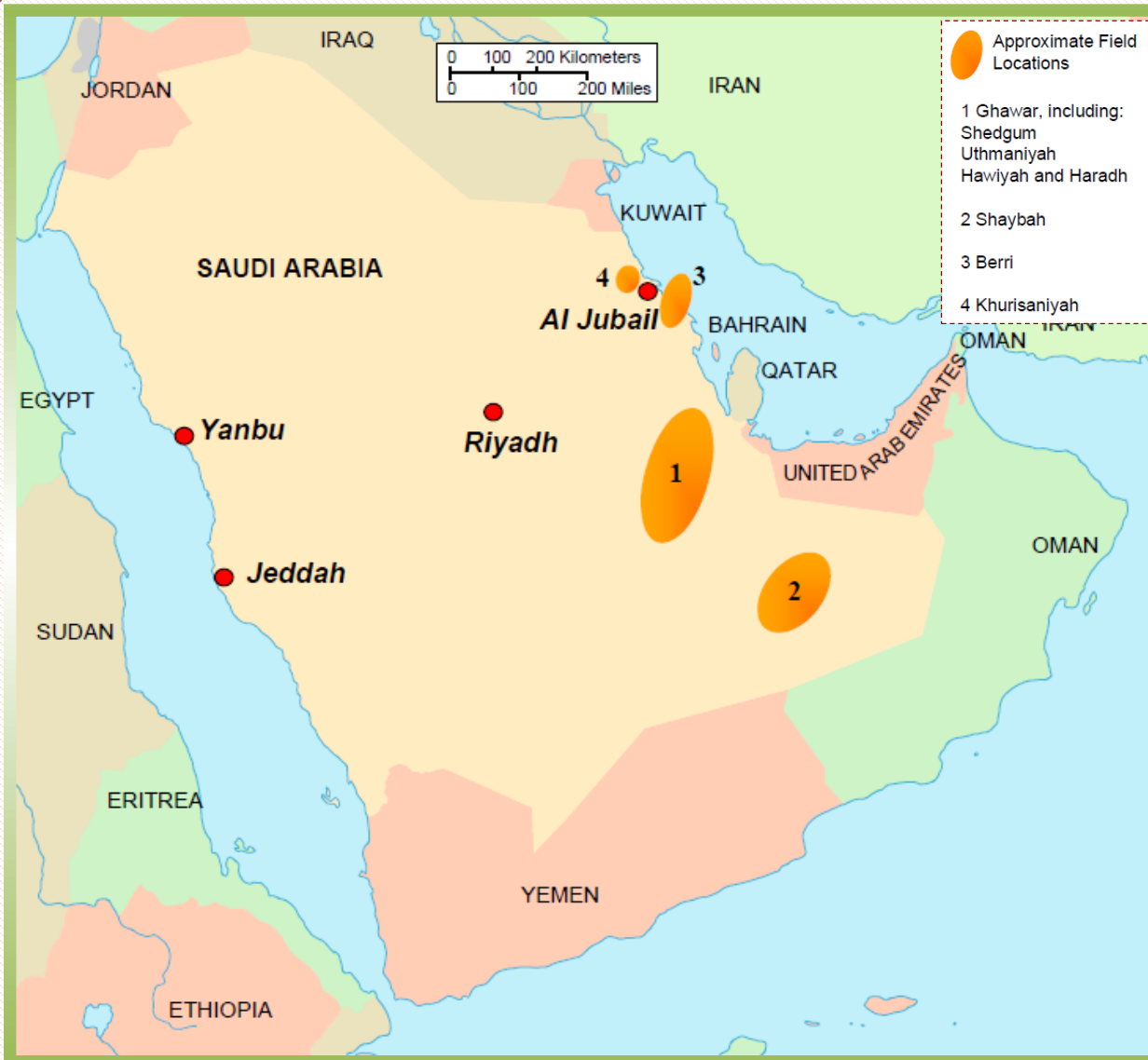


Sustainable Infrastructure through Integrated Master Planning

Jubail Industrial City – A Global Success Story

KINGDOM OF SAUDI ARABIA

The National Perspective For Jubail & Yanbu Development



Oil & Gas Fields in the Eastern Province of Saudi Arabia

KINGDOM'S INDUSTRIAL DEVELOPMENT GOAL (Development Plan (1975-1979))

Utilize associated gas from oil extraction, which otherwise would have been flared, as the strategic spring-board for national industrialization, economic diversification & Saudization.

THE STRATEGY

- Establish Royal Commission for Jubail & Yanbu (RCJY) by Royal Decree (1975) to build industrial cities in Jubail & Yanbu. Commercialize the associated gas from oil extraction.
- Apply leading environmental standards as the basis for industrial development and protection of eco-system.
- Create associated planned communities to the highest sustainable standards and quality of life.

The National Perspective For Jubai & Yanbu Development (Contd)

In line with the national development plan oil and gas was piped across the nation from the fields in the east to develop the petrochemical industrial park in in the west of the Kingdom. This was to serve exports to eastern markets from Jubail and the western markets from Yanbu. This also aided distributing national jobs growth regionally to ensure economic and social sustainability of the new industrial cities.



RCJY Mandate (Royal Decree No. M75 Dated 1975)

“To implement the ‘Basic Infrastructure Plan’ necessary to transform the two regions of Jubail and Yanbu into planned petrochemical industrial complexes and associated urban communities.” Ras Al-Khair Minerals and Metals City responsibility was added in 2009.

Mandate Implementation

RCJY created institutional capacity to design, built and operate any infrastructure and facility by partnering with worlds largest engineering and construction firms.

RCJY Vision

“The best choice for investors in petrochemical and energy-intensive industries and the leading contributor to the Kingdom’s growth.”

RCJY Mission

“Plan, promote, develop and manage petrochemicals and energy-intensive industrial cities through successful customer focus and partnership with investors, employees, communities and other stakeholders.”

The Roles & Responsibilities of RCJY



Jubail Industrial City Development through Integrated Master Planning

Jubail 1975 Master Plan was based on the principles of new-town planning, featuring an industrial area and community area separated by a buffer zone. A socio-economic strategy within strict RCJ Environmental Guidelines. Community development aligned with the development of the Industrial Area.

JIC Major Land Uses, Summary

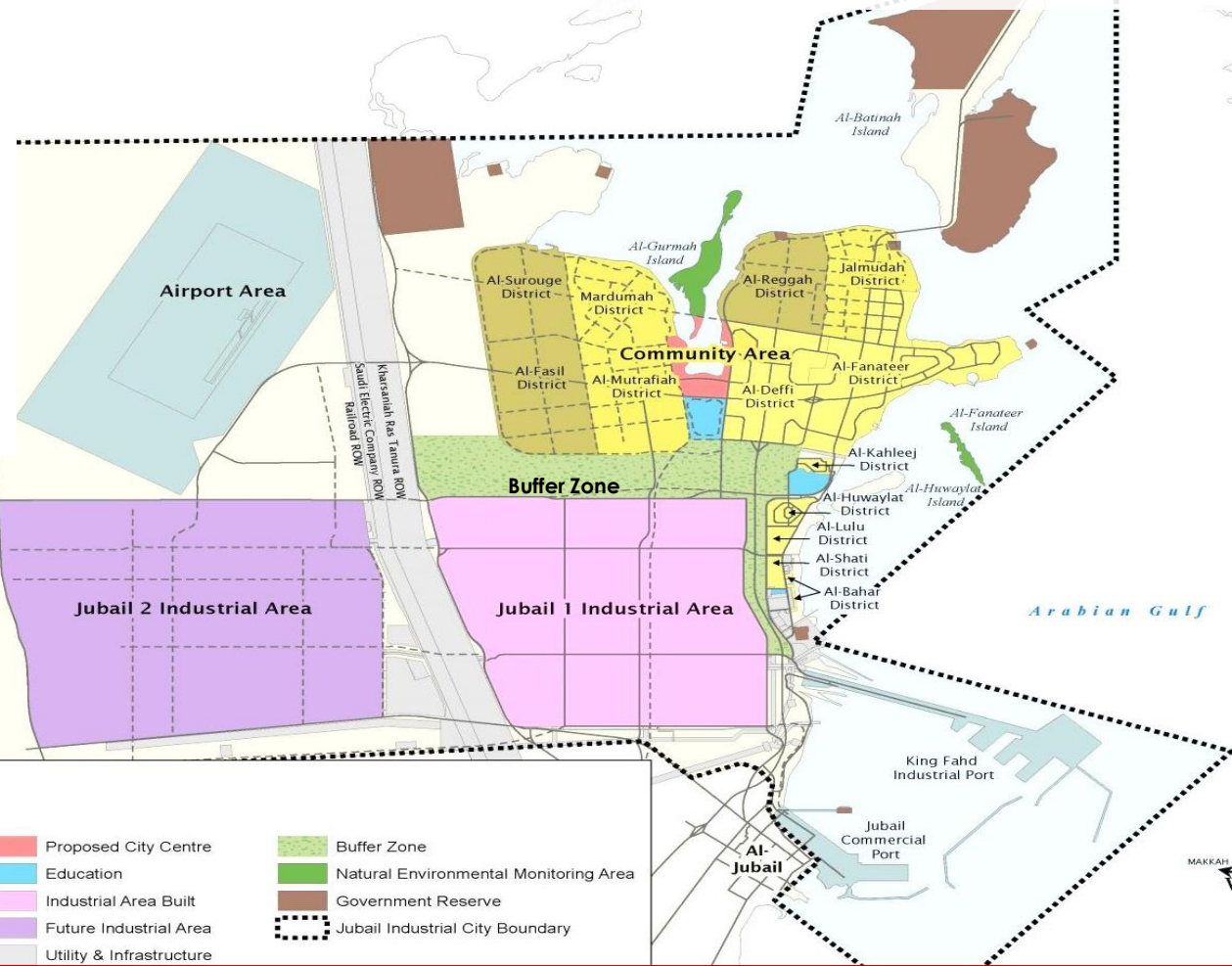
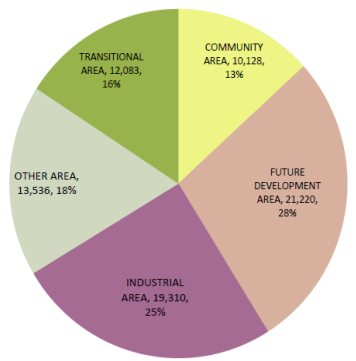


Figure 3-4
Current Planned Land Use

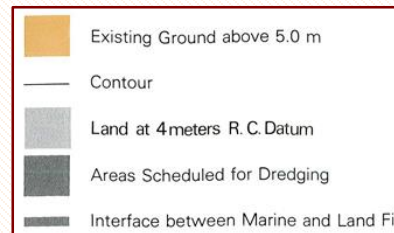
Legend

- Major Road
- - - Proposed Major Road
- Community Area Built
- Community Area with Approved Plans
- Proposed City Centre
- Education
- Industrial Area Built
- Future Industrial Area
- Utility & Infrastructure
- Buffer Zone
- Natural Environmental Monitoring Area
- Government Reserve
- Jubail Industrial City Boundary

Jubail site was graded to provide a platform for future sustainable urbanization to support a new sustainable eco-system. This involved a total of 270 million cubic meters of earth and employed 52,000 workers from 62 nationalities.

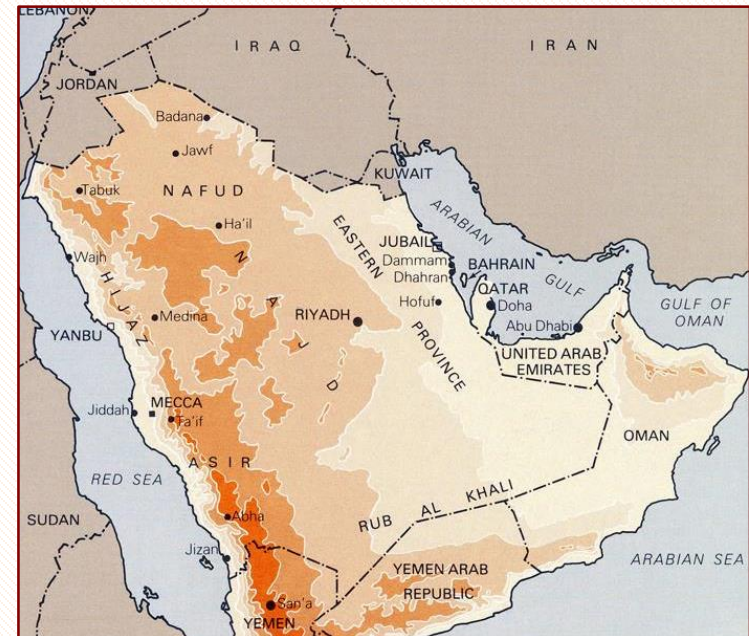


Rough Grading Plan



Land Features of Jubail Site 1975

- 60 % Sabkha: saline ground with a high water table.
- 20 % Dikaka: Sandy ground vegetated by spiky grass.
- 20 % Both stable and loose sand.



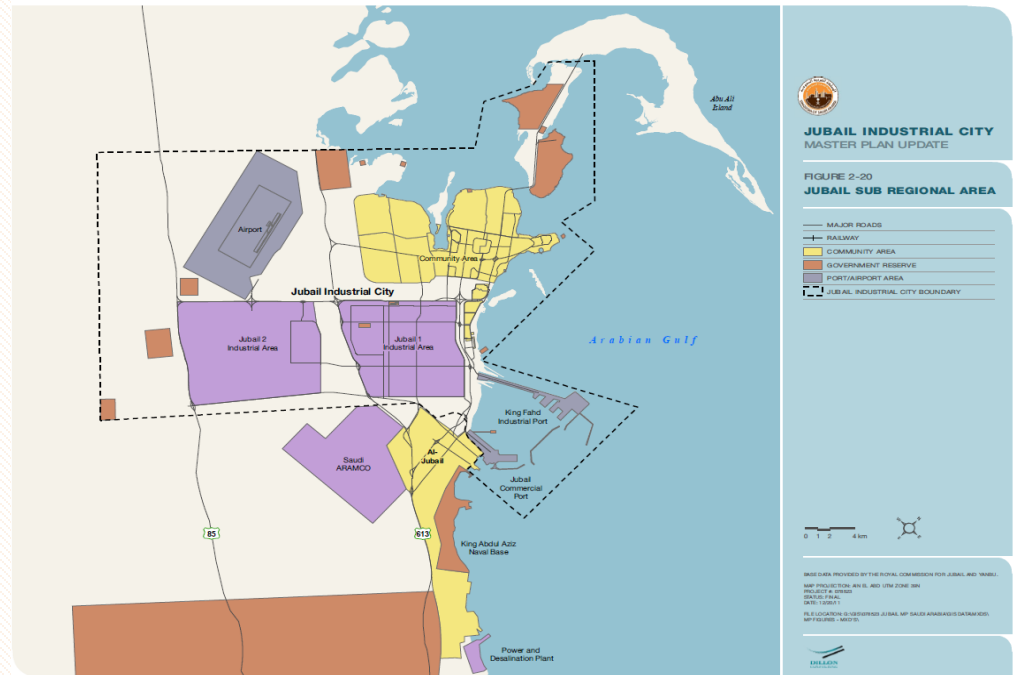
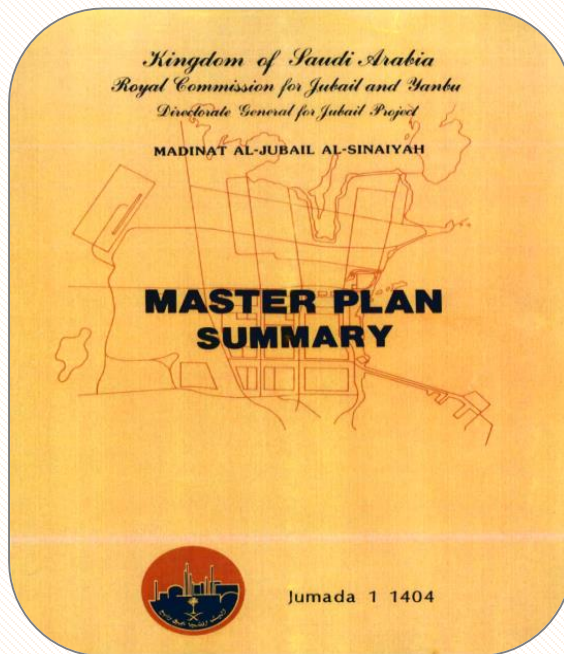
Industrial Area Development Aligned With Community & Infrastructure Development

INDUSTRY		INFRASTRUCTURE	
PLANT	CAPACITY	FACILITY	SIZE/CAPACITY
REFINERY I	250,000 BPSD	POWER, SINGLE-PURPOSE	1900 MW
REFINERY II	250,000 BPSD	DESALTED WATER/POWER	70 MGD/600 MW
LUBE OIL REFINERY	110,000 BPSD	SEAWATER COOLING	2100 MGD
PETROCHEMICAL I	500,000 TPY *	WASTE DISPOSAL	23 MGD WASTEWATER/ 1300 TPD SOLIDS
PETROCHEMICAL II	500,000 TPY *	ROADS	550 KM
PETROCHEMICAL III	500,000 TPY *	RAILROADS	5,000,000 TPY
PETROCHEMICAL IV	500,000 TPY *	AIRPORT	250,000 PASSENGERS/ YEAR PLUS CARGO
STEEL MILL	3,500,000 TPY	INDUSTRIAL PORT	10 BERTHS
ALUMINUM PLANT	210,000 TPY	COMMERCIAL PORT	20 BERTHS
		TELECOMMUNICATIONS	65,000 PHONES
		MANPOWER TRAINING CENTER	1500 TRAINEES/YEAR
		NEW COMMUNITY	170,000 POPULATION

* EQUIVALENT ETHYLENE

Since 1975, there have been four updates (1978, 1984, 1999 & 2010) to the original Master Plan. Environmental Regulations updated 1999 and 2010. New update 2015. From inception, RCJ Master Planning includes addressing three elements of sustainable infrastructure:

- (1) Sufficient financing for construction, operations and maintenance
- (2) Acceptable environmental impact
- (3) Acceptable economic impact.
- (4) Acceptable community impact.



Jubail Industrial City Development through Integrated Master Planning (Contd)



JUBAIL INDUSTRIAL CITY MASTER PLAN UPDATE

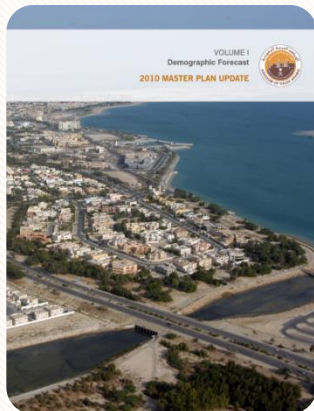
FIGURE 2-3
**CHANGES TO THE COASTLINE
 OF JUBAIL INDUSTRIAL CITY:
 1973 TO 2009**

0 1 2 4 km



BASE DATA PROVIDED BY THE ROYAL COMMISSION FOR JUBAIL AND YANBU.
 MAP PROJECTION: AIN EL ABD UTM ZONE 39N
 PROJECT #: 078523
 STATUS: FINAL
 DATE: 4/15/11
 FILE LOCATION: G:\GIS\078523 JUBAIL MP SAUDI ARABIA\GIS DATA\MXDS\
 MP FIGURES - MXD\5\

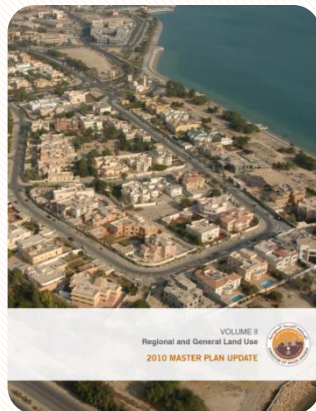
Vol. 1: Demographic Forecast



Vol. 7: Sea Port Area



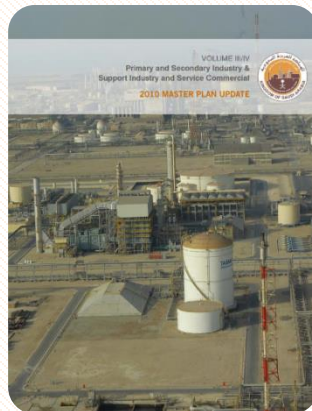
Vol. 2: Regional & General Land Use



Vol. 8: Environment



Vol. 3/4: Industry



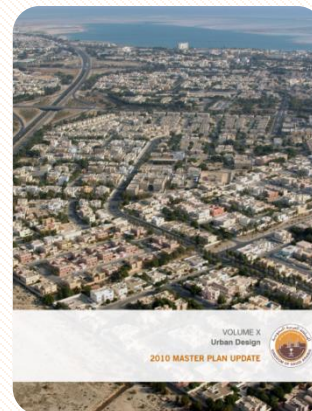
Vol. 9: Community



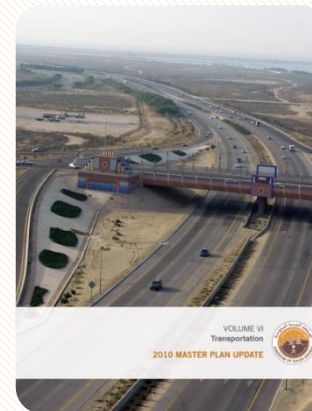
Vol. 5: Utilities & Infrastructure



Vol. 10: Urban Design



Vol. 6: Transportation



Vol. 11: Development Plan



ECONOMIC STRATEGY FOR SUSTAINABLE DEVELOPMENT

OBJECTIVES

1. Diversify economic base
2. Develop downstream petrochemical industries
3. Coordinate and collaborate with stakeholders

KEY MPU INITIATIVES

- Research Park
- Jubail University College
- J2 industrial area development
- Light & Support industry expansion area
- Logistics area
- Office development in City Centre
- Rail station & freight rail network
- Tourism and resort nodes

COMMUNITY STRATEGY FOR SUSTAINABLE DEVELOPMENT

OBJECTIVES

1. Broader range of housing choices
2. Greater range of recreational activities & shopping choices
3. Enhance the image of the city

KEY MPU INITIATIVES

- New Community Development
- City Centre
- Lifestyle community
- Urban centres (regional mall)
- Mixed use waterfront nodes
- Eastern corridor retrofit
- Stadium
- Gateways & green corridors
- Regional park
- Jubail University College

ENVIRONMENTAL STRATEGY FOR SUSTAINABLE DEVELOPMENT

OBJECTIVES

1. Protect & enhance ecological features & functions
2. Manage performance of industry
3. Energy Strategy & Recycling

KEY MPU INITIATIVES

- Nature reserves & conservation areas
- Naturalization projects
- Treated waste water strategy
- Maintenance of "0" discharge
- District cooling
- Green building and energy efficient designs
- Groundwater quality
- Renewable energy , waste to energy project, recycling

RCJ Utilities & Infrastructure Plan



JUBAIL INDUSTRIAL CITY MASTER PLAN UPDATE

FIGURE 4-16
UTILITIES AND
INFRASTRUCTURE PLAN

POTABLE WATER

- POTABLE WATER WELLS
- BULK POTABLE WATER STORAGE TANKS
- PRIMARY POTABLE WATER PUMPING FACILITIES
- SOURCE WATER PROTECTION AREA*

* ESTIMATED 50 DAY TRAVEL TIME TO GROUND WATER WELLS

STORMWATER

- PRIMARY DRAINAGE CHANNELS **
- STORMWATER HOLDING POND

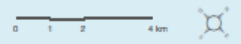
** STORMWATER BY THE COMMUNITY EAST OF MARDUMAH BAY IS NOT AVAILABLE

SEAWATER COOLING

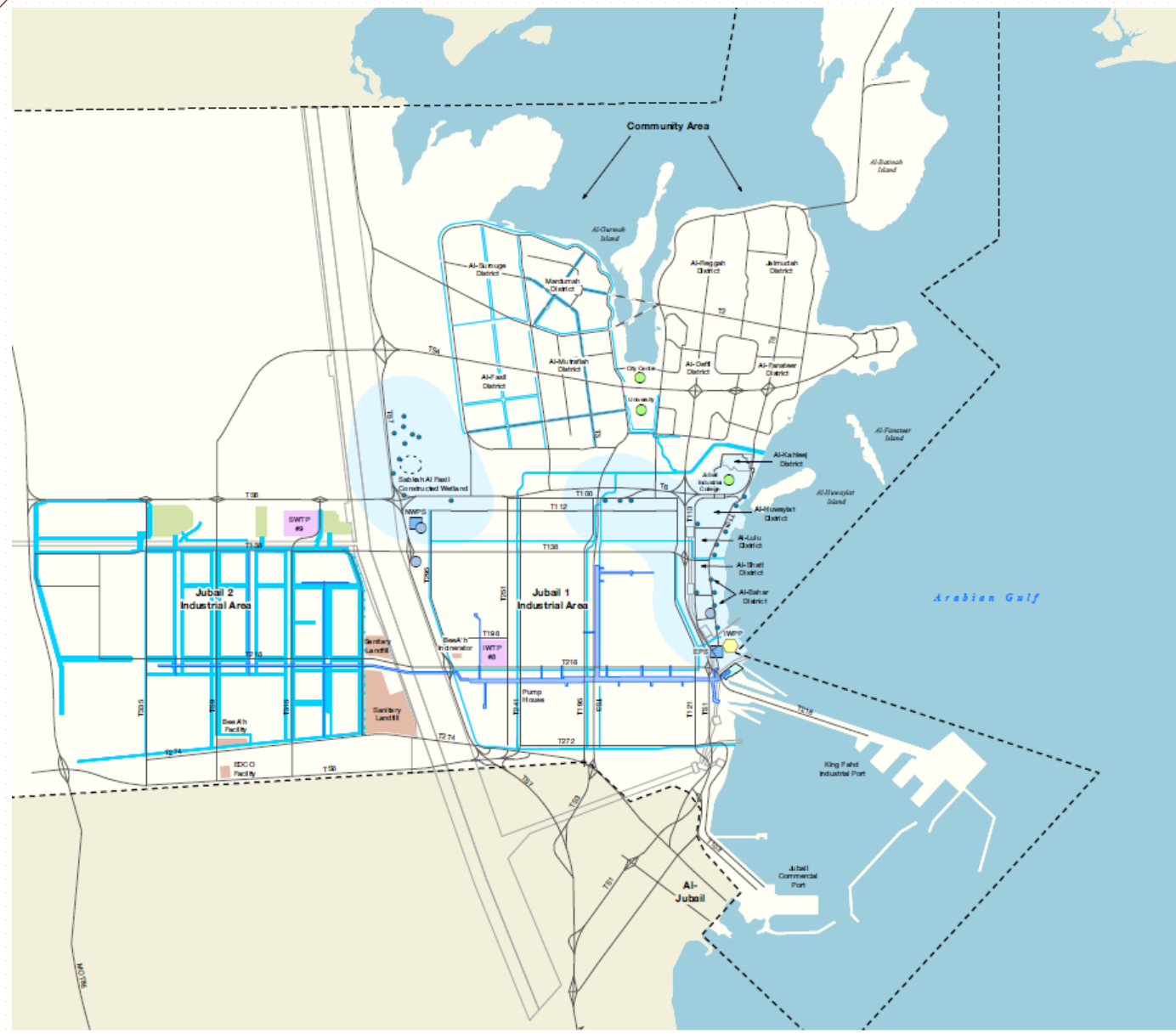
- SEAWATER COOLING SYSTEM
- SEAWATER COOLING INTAKE FACILITY

OTHER

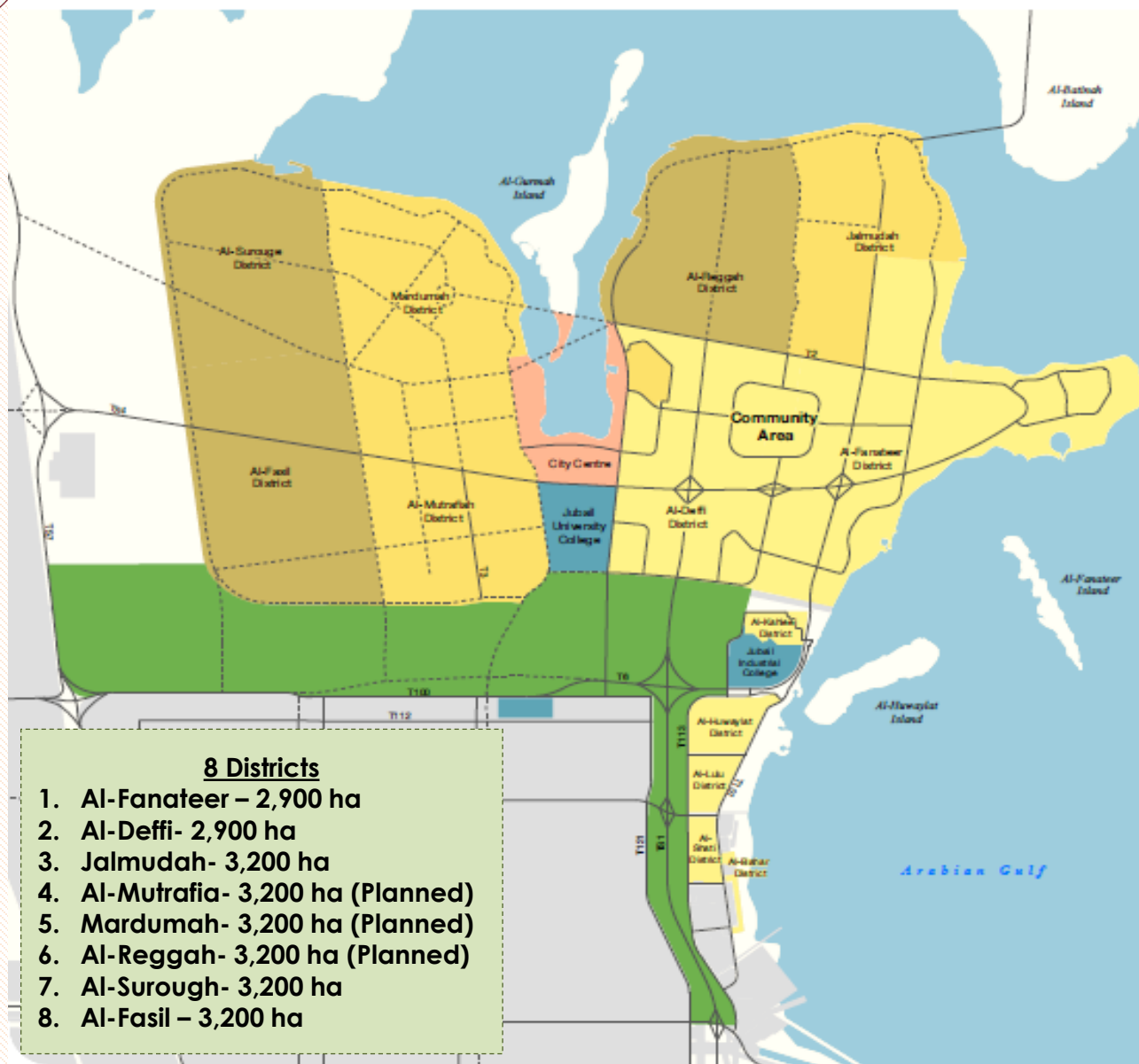
- MAJOR ROADS
- WASTEWATER TREATMENT PLANT
- SOLID AND HAZARDOUS WASTE MANAGEMENT
- SABKHA AL-FASIL CONSTRUCTED WETLAND
- DISTRICT COOLING
- IWPP FACILITY
- JUBAIL INDUSTRIAL CITY BOUNDARY



BASIS DATA PROVIDED BY THE ROYAL COMMISSION FOR JUBAIL AND YANBU
MAP PROJECTION: UTM 34Q UTM ZONE 34Q
PROJ: UTM
SPHER: WGS_1984
DATUM: WGS84
UNIT: METERS
SCALE: 1:50000
FILE LOCATION: C:\WORK\PROJECTS\JUBAIL_MASTER_PLAN\FIGURES\DATA\UTILITIES\MPF_4-16-16.DWG
MPF 4-16-16 - 160225










RCJ Integrated Community Area Plan



JUBAIL INDUSTRIAL CITY MASTER PLAN UPDATE

FIGURE 3-5
COMMUNITY AREA

-  EXISTING MAJOR ROADS
-  PROPOSED MAJOR ROADS
-  COMMUNITY AREA BUILT
-  COMMUNITY AREA WITH APPROVED PLANS
-  COMMUNITY AREA WITHOUT APPROVED PLANS
-  FUTURE CITY CENTRE
-  POST SECONDARY INSTITUTION
-  BUFFER ZONE

0 0.5 1 2km



BASE DATA PROVIDED BY THE ROYAL COMMISSION FOR JUBAIL AND YANBU.
MSP PROJECTION AND LAND USE ZONING
PROJECT & DESIGN
JUBAIL PLAN
DATE: 1438 H
FILE LOCATION: I:\0507050 JUBAIL MSP\RCJ AREA\0507050 JUBAIL MSP RELEASE - M 1076

8 Districts

1. Al-Fanateer – 2,900 ha
2. Al-Deffi- 2,900 ha
3. Jalmudah- 3,200 ha
4. Al-Mutrafia- 3,200 ha (Planned)
5. Mardumah- 3,200 ha (Planned)
6. Al-Reggah- 3,200 ha (Planned)
7. Al-Surough- 3,200 ha
8. Al-Fasil – 3,200 ha

Key Features of District Plan

- Main Arteries**
- Secondary Arteries**
- Local Roads**
- Mosques**
- Schools**
- Civic Uses & Community Commercial**
- Parks**
- Neighbourhood Centres**
- Long-distance Walkways**
- Local Walkways**
- Mixed Use & Apartments**
- Low-rise Residential**



A Selection of Community Area Infrastructure

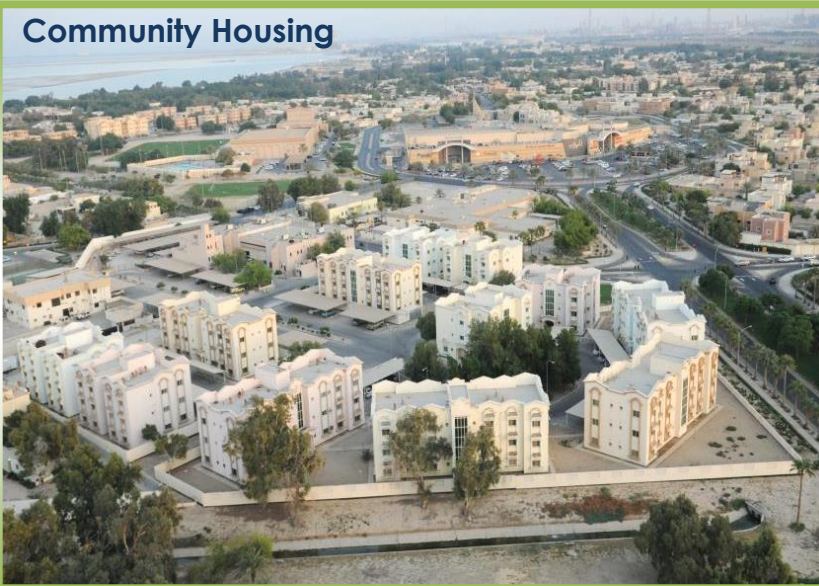
Community Housing on the Banks of the Arabian Gulf



RC in Jubail Hospital



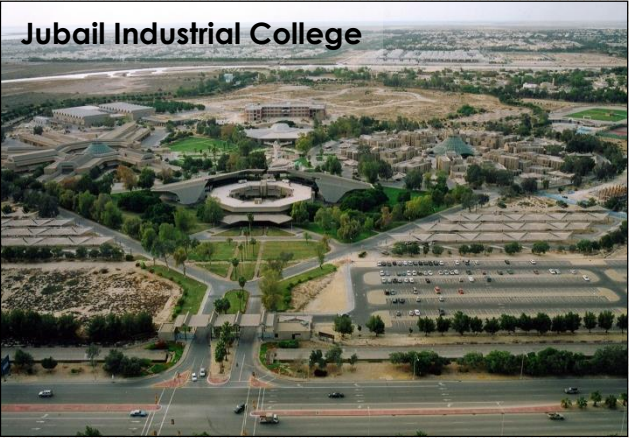
Community Housing



Fanateer Marina Area



Community Area: RCJ Post-Secondary Educational Institutions



Community Area: Planned District Al-Reggah

Selected Facts of Al-Reggah District Plan

Approximate Area: 874 hectares (ha) with (5)-Sectors (C1 thru C5)

Projected Population: Approximately 40,000 population

Projected Dwelling Unit Count: 4212 Villas; 507 Townhomes; 2454

Apartments; and 343 Dwelling Units in Expat Compound. Total: 7516 Dwelling Units

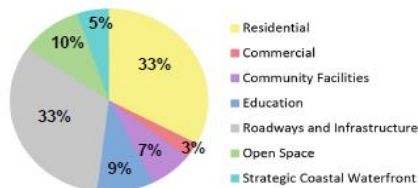


Figure 1.9- Overall Land Use Distribution Pie Chart

SECTOR	CENTER CODE	DAILY MOSQUE	KINDERGARTEN	RETAIL	KICKABOUT
C1	01	●	●	●	●
	02	●	●	●	●
	03	●	●	●	●
	04	●	●	●	●
C2	01	●	●	●	●
	02	●	●	●	●
	03	●	●	●	●
	04	●	●	●	●
C3	01	●	●	●	●
	02	●	●	●	●
	03	●	●	●	●
	04	●	●	●	●
C4	01	●	●	●	●
	02	●	●	●	●
	03	●	●	●	●
	04	●	●	●	●
C5	01	●	●	●	●
	02	●	●	●	●
	03	●	●	●	●

Table 1.1 - Neighborhood Centers by Sectors

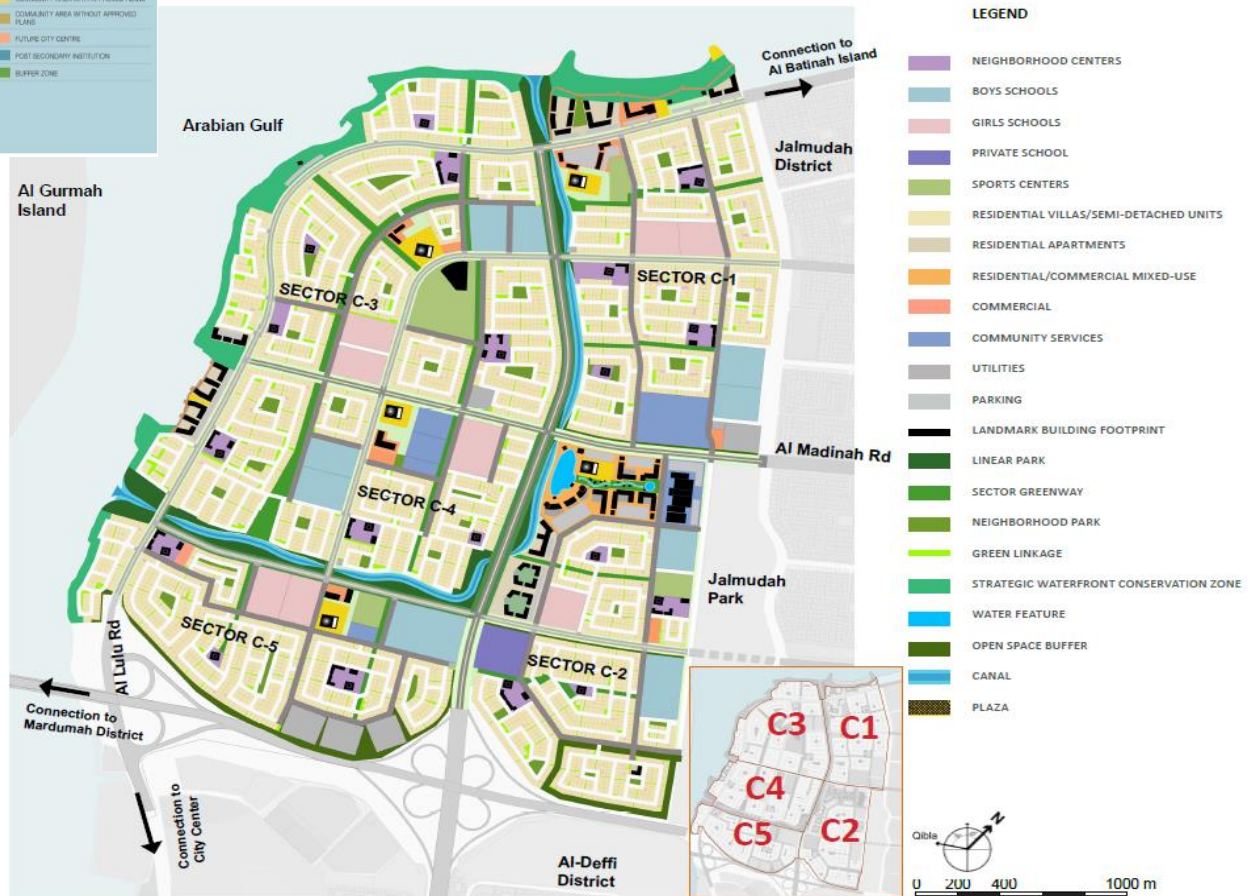
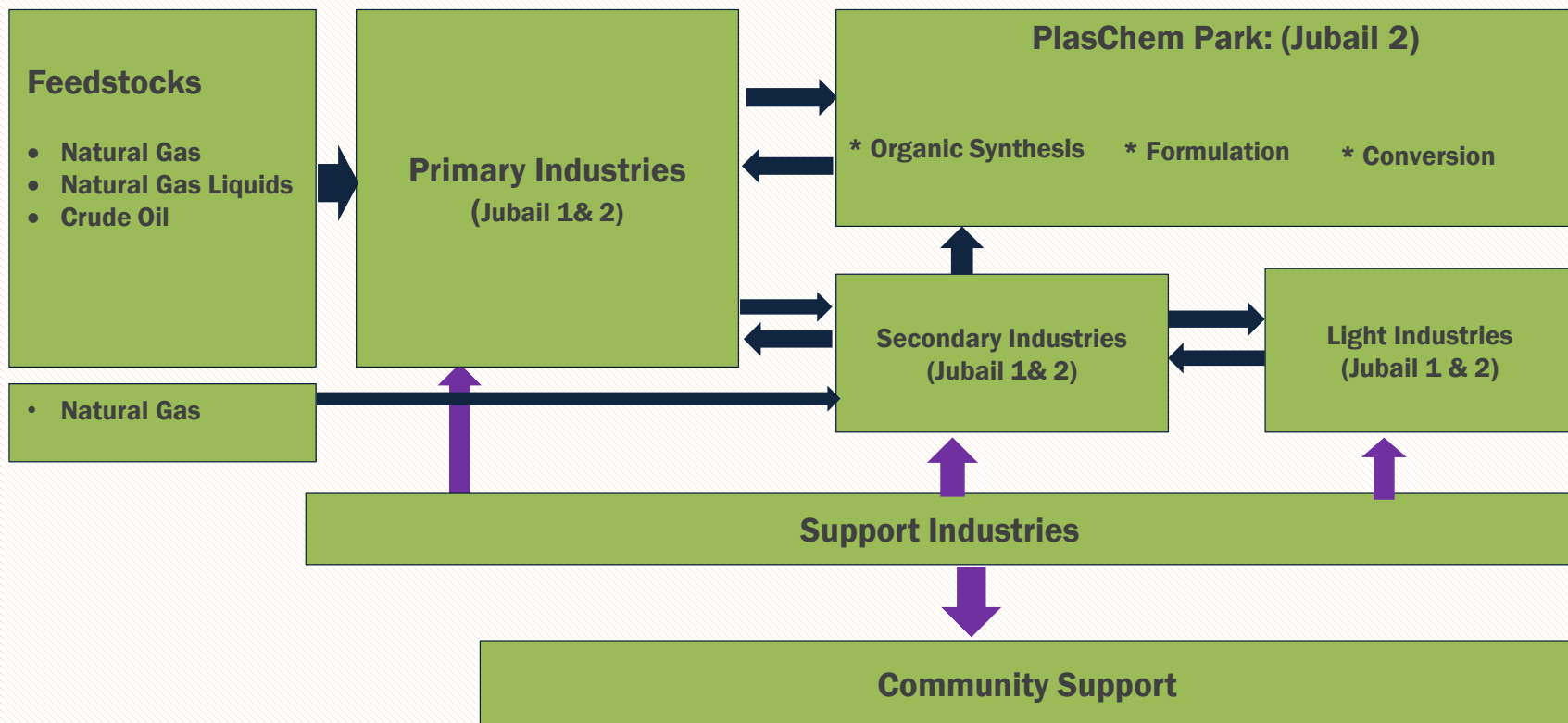


Figure 1.10- Overall Land Use Distribution Plan

Co-location Creating the Downstream Value Chain & Clustering



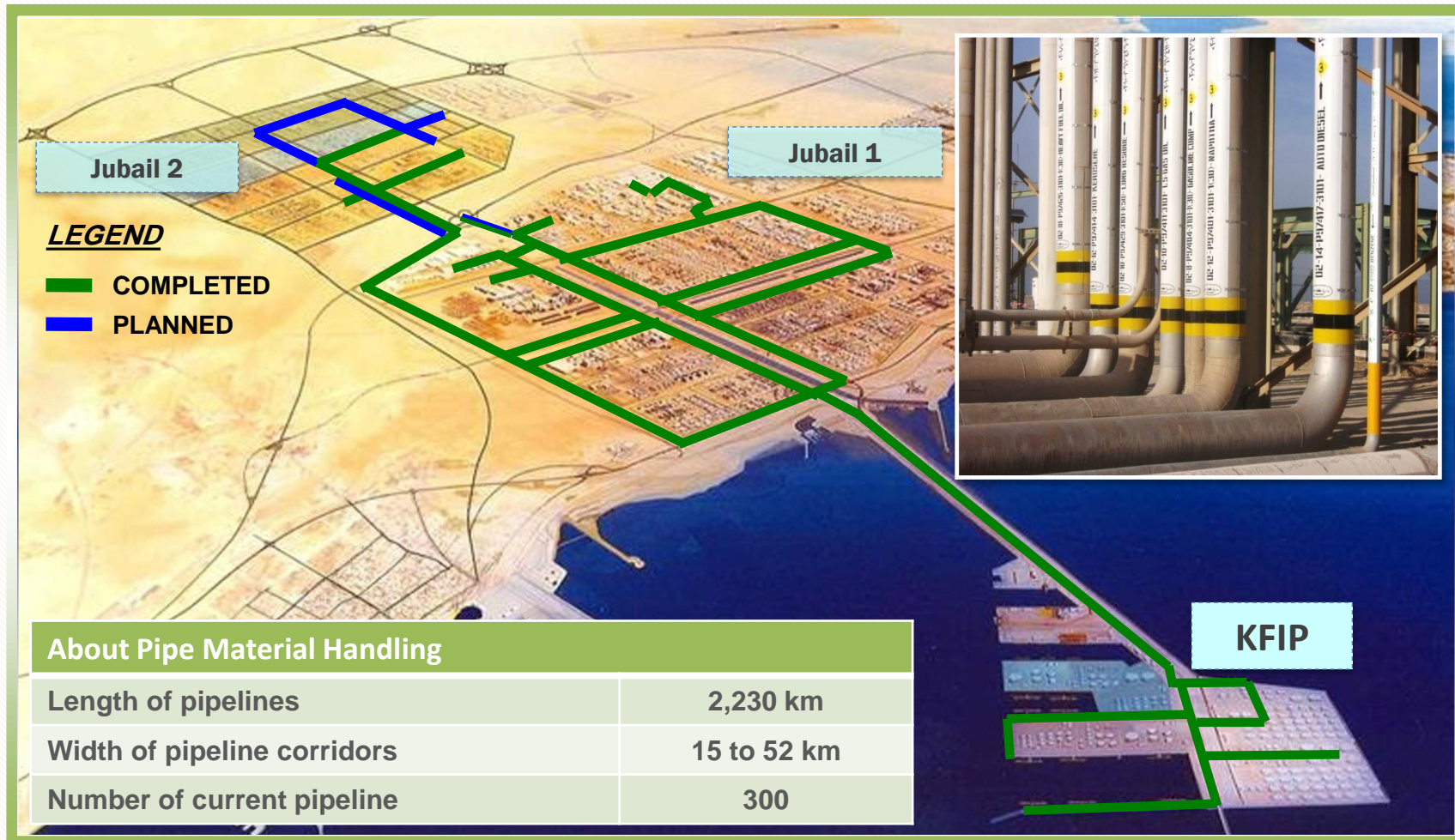
RCJ Industrial Area Infrastructure: Selected Features



Seawater Cooling: 11 km in length. Capacity Of 28 Million Cubic Meters / Day

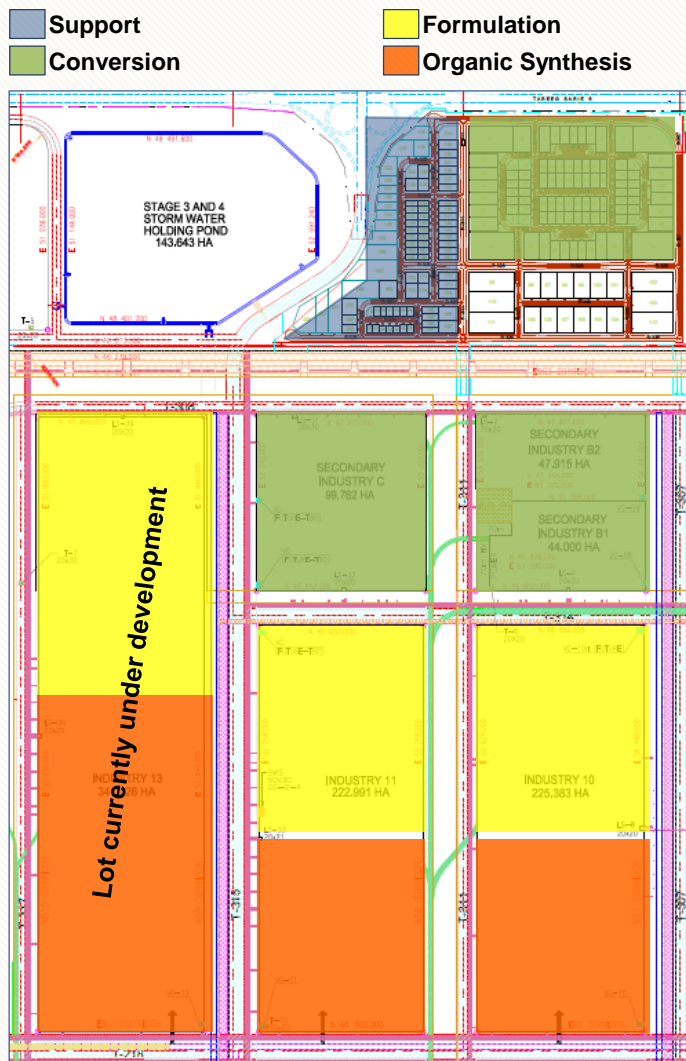
The length of the road network 1218 km

RCJ Industrial Area Infrastructure: Materials Handling Pipelines



RCJ Industrial Area Infrastructure: PlasChem Park

PlasChem Park: Land Allocation & Opportunities

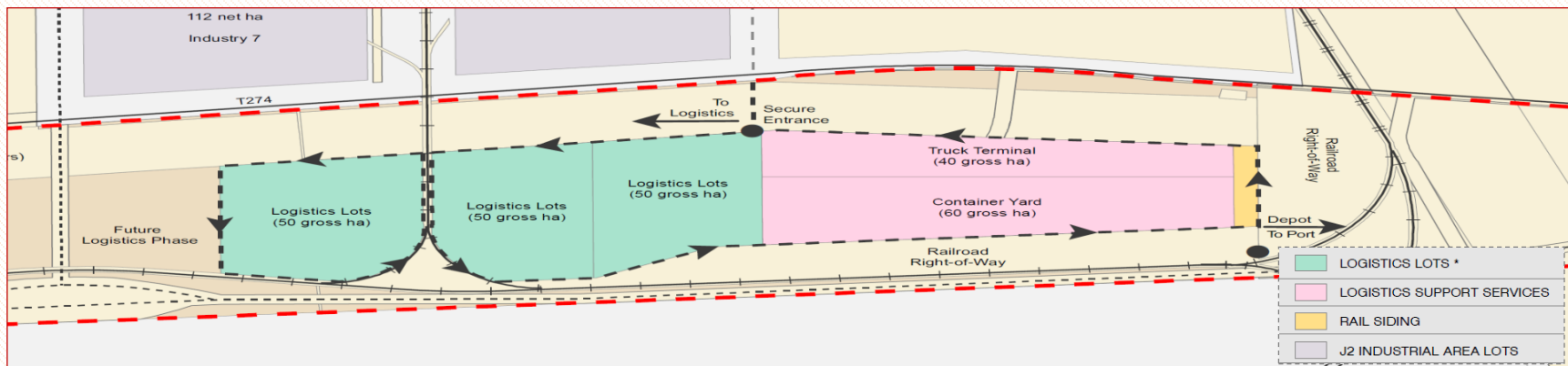
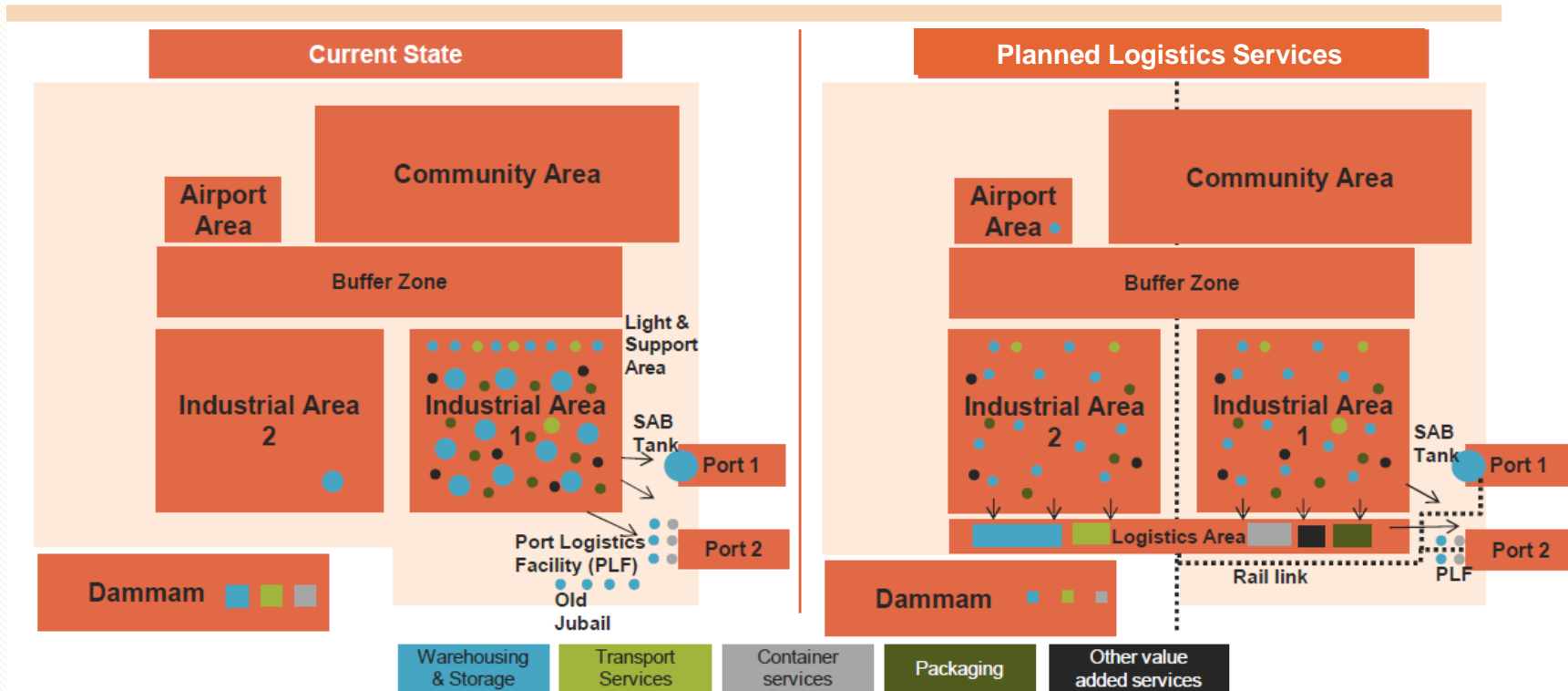


Opportunity family	Yanbu	Jubail	Yanbu & Jubail
Conversion	<ul style="list-style-type: none"> Non-woven fabrics Geomembranes Preforms and Bottles Medical and Pharma bottles and packaging Recreational equipment Glass Fiber Automotive parts Tire manufacturing 	<ul style="list-style-type: none"> Pipes, Conduits and fittings Thermoplastic engineering compounds Heavy duty sacks PU products 	<ul style="list-style-type: none"> Lane dividers Industrial drums and large containers Flexible Foam Razors Cable and wire compounds Home/Office furniture Films Electrical fittings Toys
Formulation	<ul style="list-style-type: none"> Synthetic rubber 	<ul style="list-style-type: none"> Personal care products Industrial adhesives 	<ul style="list-style-type: none"> Industrial coatings & architect coatings Inks
Organic Synthesis	<ul style="list-style-type: none"> Acrylamide/ Polyacrylamide PTA/PET Maleic Anhydride Hindered phenols 	<ul style="list-style-type: none"> Linear Alphaolefins Cellulose acetate Concrete additives Alcohol Ethoxylates Ethoxylated amines EA based agrochemicals MPG 	<ul style="list-style-type: none"> Silicone Acrylic acid MFS MEG

Services:

- Basic Utilities
- Security & Surveillance
- HSE & Emergency Services
- Infrastructure
- Investment facilitation & Incentives
- Park Interface team

RCJ Industrial Area Infrastructure: Logistics Services



New Project: Proposed National Railway Projects with links to RCJ



Figure 4-35
Conceptual Alignment of
Proposed National Railway Projects

- Legend**
- ★ Jubail Industrial City
 - Existing Major Rail Stations
 - Proposed Major Rail Station
 - Existing Railway
 - The Land Bridge Project
 - The North-South Lines Project
 - Haramain High Speed Rail Project
 - Future Projects
 - Provinces

Environmental Control Program

Environmental Regulations

Permitting & Compliance

Environmental Awareness

Environmental Surveillance

Emergency Response

Meteorology & Air Quality Monitoring

Natural Environmental

Water Quality Monitoring

Waste Management

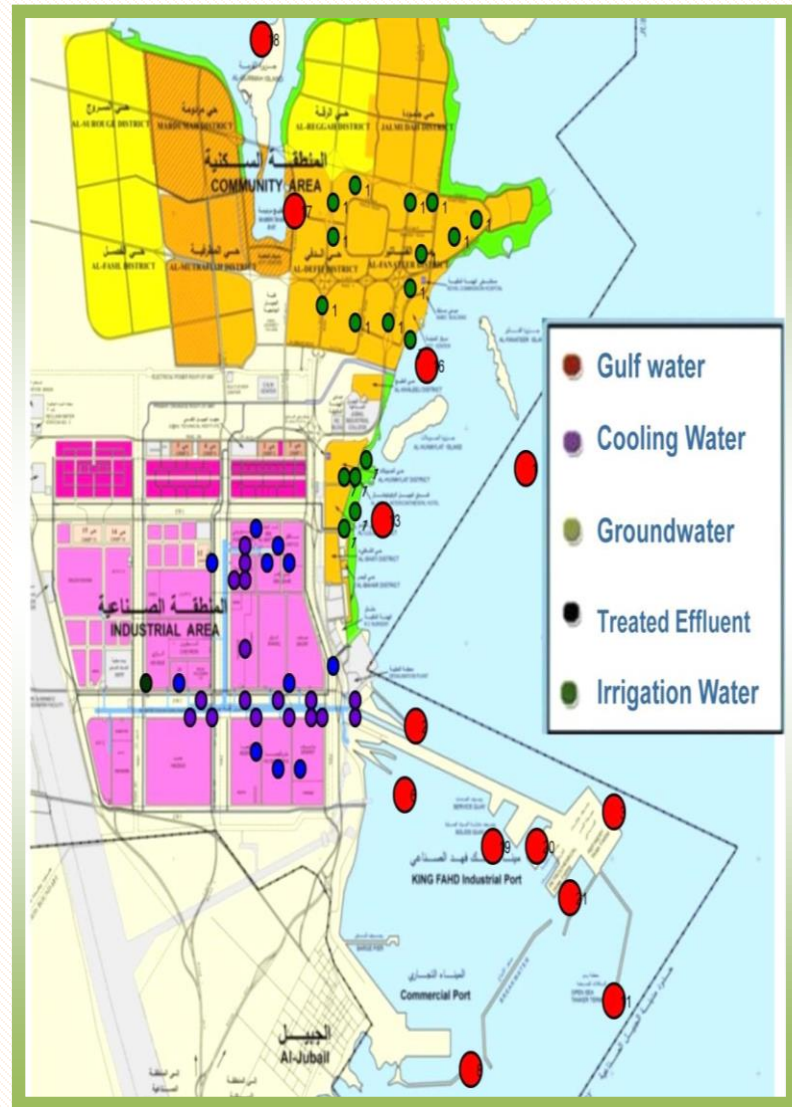


- **United Nations Sasakawa Award for Environment Protection**
- **Regional Organization for the Protection of the Marine Environment (ROPME) Award**
- **Arab Cities Award for Environmental Monitoring Program**
- **Arab Administrative Development Organization – Best Environmental Practice**

RCJ Environment Program: Air & Water Quality Monitoring Stations



Jubail AQ/Met Monitoring Stations.



- Gulf water
- Cooling Water
- Groundwater
- Treated Effluent
- Irrigation Water

RCJ Environment Program: Permit & Compliance

- Applications Submitted by Industries
- Review of Environmental Permit
- Issuance of Environmental Permits
- A Land Lease Agreement is not signed unless an Industry has Environmental Permit.
- Ensure Compliance with Regulations and Permit Conditions.
- Industry has to Report its Compliance with the Regulations to RC periodically.
- Permits are Renewed every 5 Years.



WASTE TRANSPORTATION REGISTRATION CERTIFICATE / **شهادة تسجيل نقل النفايات**

Registration No: WT-0000 / رقم التسجيل: WT-0000

Issue Date: / تاريخ الإصدار:
Expiry Date: Issue Date + 5 Years / ملاحقة لمدة 5 سنوات

The Royal Commission for Jubail and Yanbu Issues this Waste Transportation Registration Certificate to: / منح الهيئة العامة للبحر الأحمر رخصة تسجيل نقل النفايات لهذا:

The above company is permitted to transport hazardous / non-hazardous industrial waste within Jubail Industrial City in accordance with the Royal Commission Environmental Regulations. / الشركة المشار إليها أُممًا، مسموح لها بنقل النفايات الصناعية الخطرة، وغير الخطرة داخل مدينة الجبيل الصناعية وفقاً للوائح البيئية العامة للهيئة العامة للبحر الأحمر.

Royal Commission representative: / ممثل الهيئة العامة للبحر الأحمر:

Name: / الاسم:
Title: / الوظيفة:
Signature: / التوقيع:

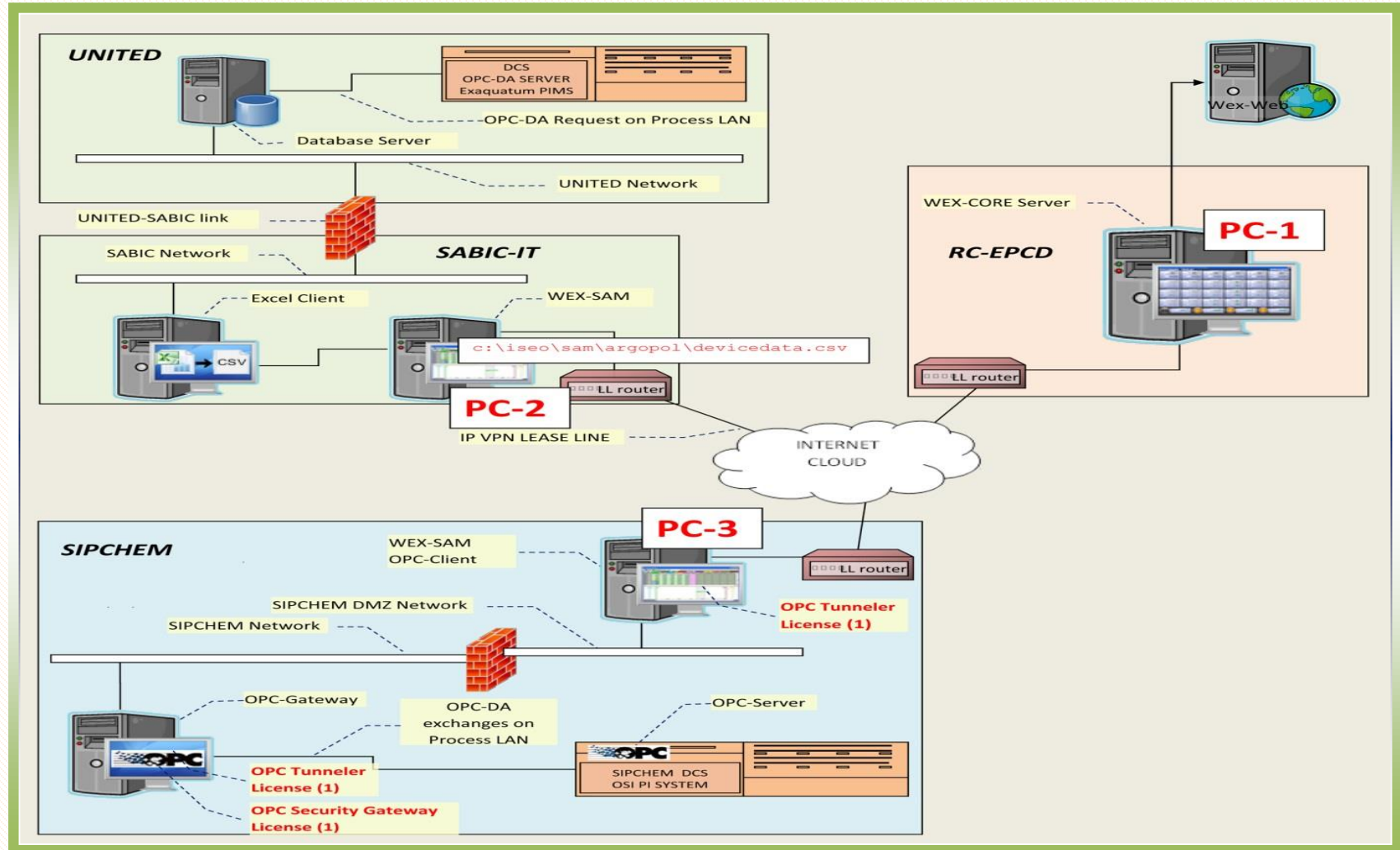
I certify that above company will follow the Royal Commission Environmental Regulations when transporting waste in Jubail Industrial City. / أتعهد الشركة المشار إليها أعلاه بتطبيق لوائح الهيئة العامة للبحر الأحمر البيئية عند نقل النفايات في مدينة الجبيل الصناعية.

Company representative: / ممثل الشركة الموزع:

Name: / الاسم:
Title: / الوظيفة:
Signature: / التوقيع:

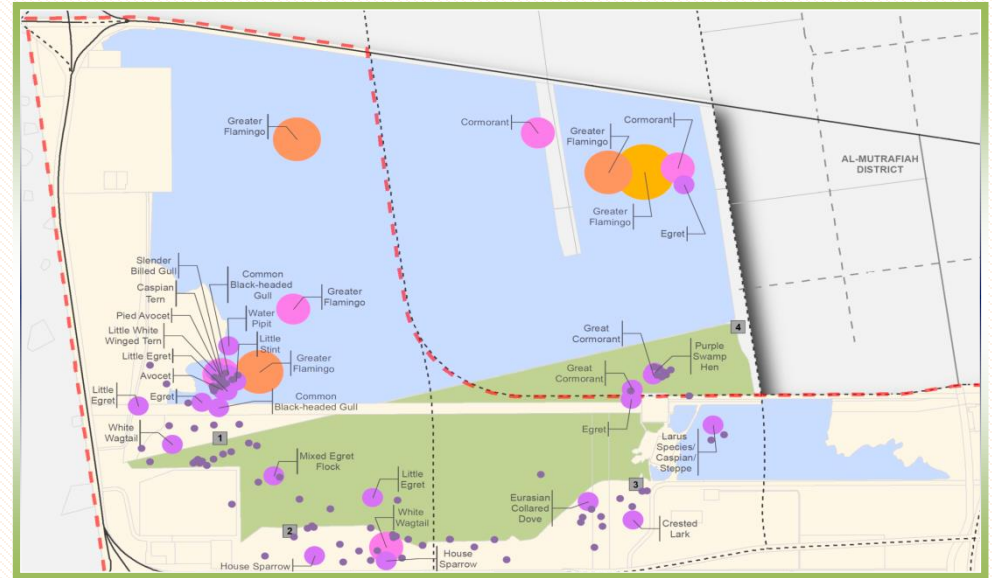
RCJ Environment Program: Continuous Emission Monitoring System (CEMS) of Industries

Each CEMS will have specific analyzers for respective pollutants installed in the stack of process equipment in industries. Project piloted and included in RCJ Environmental Regulation Update 2015, to be implemented.

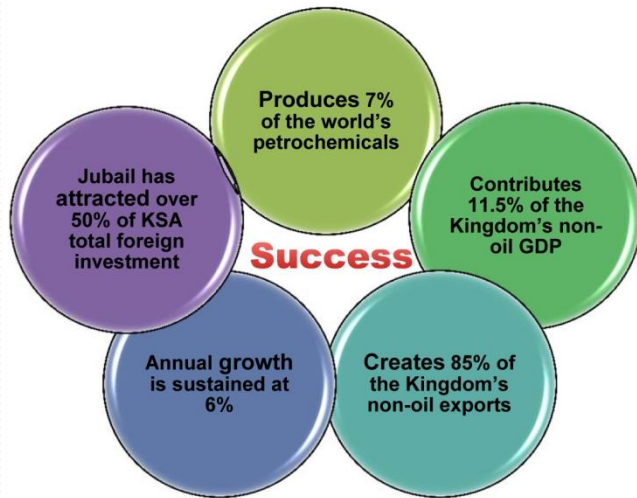


- **There are 3 Biological Reserve Areas in Jubail**
- **Sabkhat Al-Fasl (1,200 hectares 20,000 birds in Winter)**
- **Mangrove Planting is taking place at different areas around the city**
- **Monitoring and protection of the areas**

BIRD HABITAT



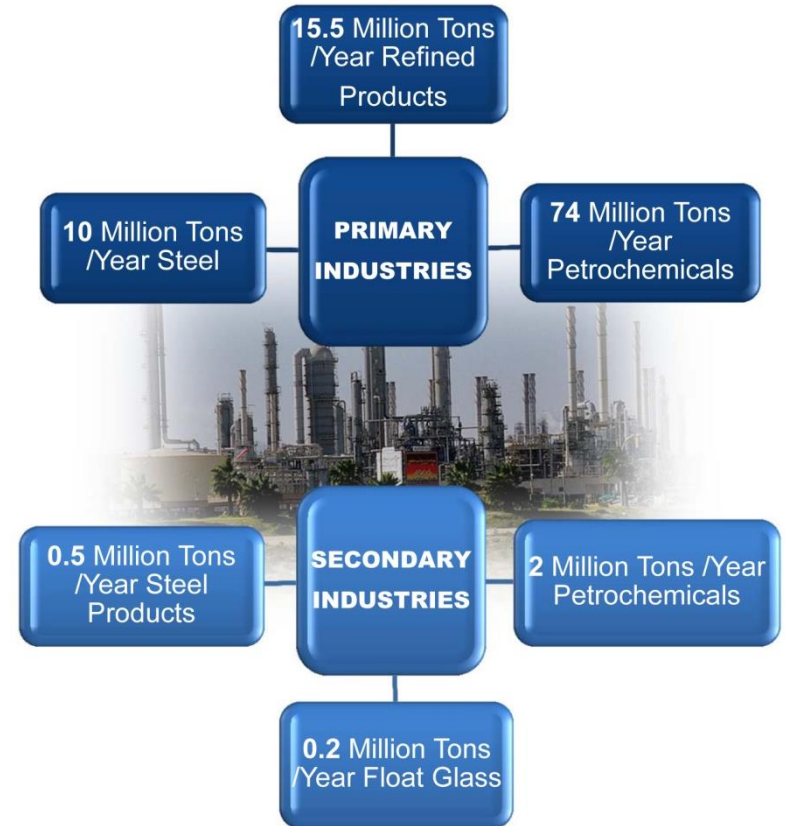
Jubail Industrial City: Investments and Industries



Jubail Total Investment

INDUSTRIAL	➡	\$ 118 Billion
<ul style="list-style-type: none"> • 34 Primary Industries. • 52 Secondary Industries. • 366 Light and Support Industries 		
RESIDENTIAL & COMMERCIAL	➡	\$ 8.4 Billion
INFRASTRUCTURE	➡	\$ 22.8 Billion
<ul style="list-style-type: none"> • Land Development • Roads • Utilities • The Industrial Port • Services 		
		\$ 149.2 Billion

Products & Capacity





RCJY Partnerships with Some of the World's Leading Companies



RC Jubail Petrochemical & Refined Products

Products	Production Capacity (KTPY)	Products	Production Capacity (KTPY)	Products	Production Capacity (KTPY)
Acetic Acid	410	Ethoxylates	40		
Acetic Anhydride	50	Ethylene Amines	28	Methyl Formamide	60
Acetone	135	Ethylene Dichloride	840	Mono Ethanol Amines	20
Ammonia	3,093	Ethylene Glycol	4,188	Motor Gasoline	1,104
Benzene	1,494	Ethanol	300	MTBE	2,678
Bisphenol-A	270	Gaseous Nitrogen	1,994	Naphtha	2,700
BTX Product	35	Gaseous Oxygen	3,628	Phenol	245
Butadiene	130	Granular Urea	3,420	Phosphate Fertilizers	500
Butanediol	75	Kerosene	3,955	Polycarbonate	260
Butene -2 product	55	Linear Alpha Olefin	150	Polyethylene	6,910
Chlorine Chloride	20	Liquid Argon	9	Polypropylene	3,510
CO	340	Liquid Fertilizer	10	Polystyrene	372
Compound Fertilizer	500	Liquid Nitrogen	278	Propylene	5,285
Crude Hydrogen	10	Liquid Oxygen	166	PVC	404
Cumene	325	LPG	235	Pygas	58
Cyclohexane	440	Liquid Sulphur	710	Petroleum Coke	2,058
Di Methyl Formamide	50	Low Sulfur Diesel	9050	Styrene	1,877
DOP	50	Low Sulphur A1-Jet	1971	VCM	410
Methanol	5,998	RBOB (wo Ethanol)	1,950	Vinyl Acetate Monomer	330
Ethylene	11,079	Regular Gasoline	1,710		
2-EH	150	Methyl Amine	90		

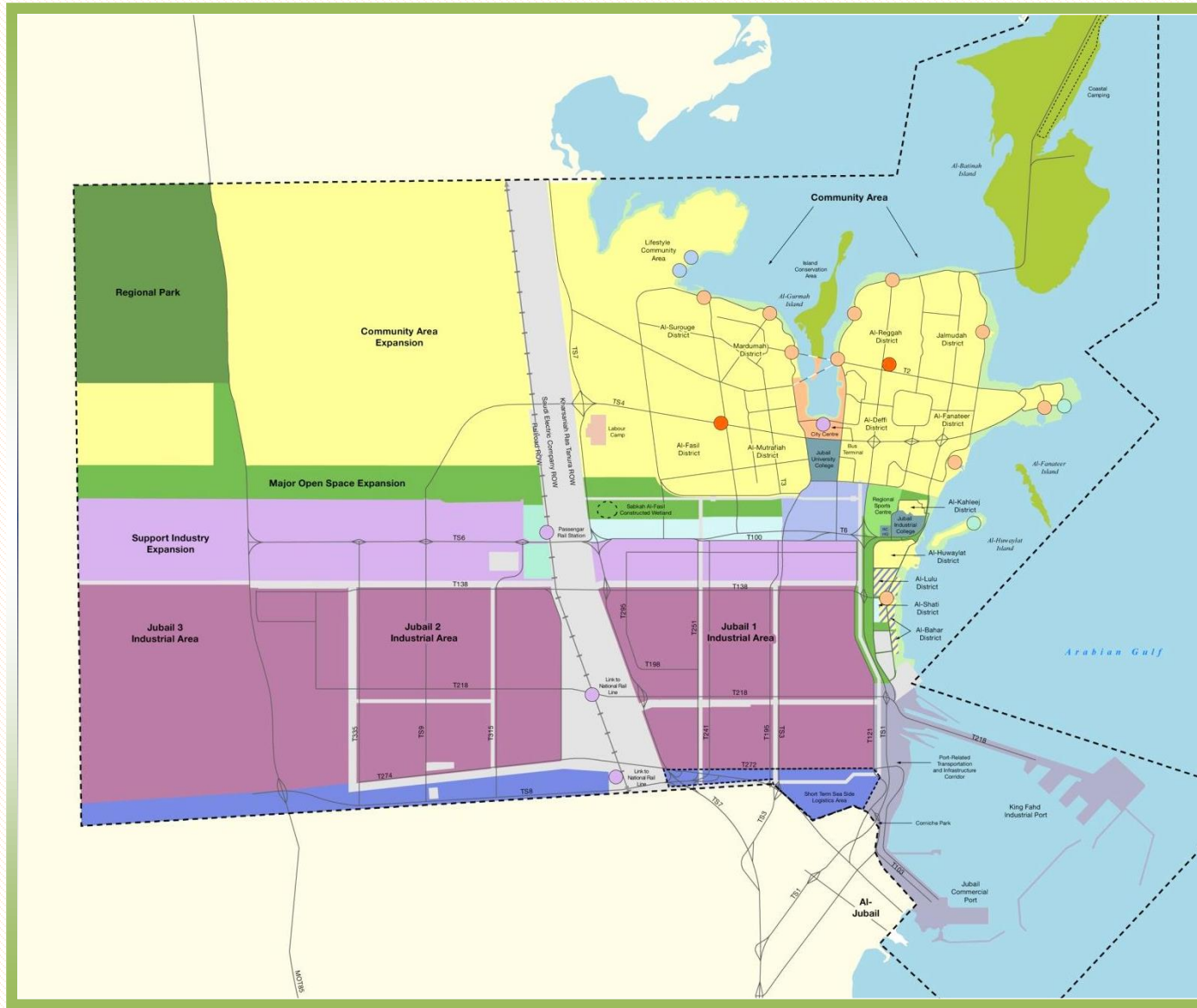
Current Production = 85,515 Million TPA

RC Jubail Petrochemical & Refined Products

Products	Production Capacity (KTPY)	Products	Production Capacity (KTPY)
ABS	140	LLDPE	750
Amines	210	HDPE	825
Butyl Glycol Ethers	200	Nylon 6,6	50
Benzene	341	PBR / SBR	110
Butanol iso	213	Poly Propylene	400
Carbon Black	50	Propylene Glycol	70
C8+ C12+	80	PMDI	400
CER	45	Polyols	400
Ethylene Oxide	352	SCU	408
Ethylene Vinyl Acetate	200	TDA	20
Epoxy Resins	190	TDI	400
EPDM / TPE	100		
Ethoxylates	113		
Halo Butyl Rubber	110		
1-Hexene	100		
Iso Butylene	102		
LDPE	1865		

Future Production – 2017 = + 9 Million TPA

Jubail Industrial City – Long Term Plan (Beyond 2030)



JUBAIL INDUSTRIAL CITY MASTER PLAN UPDATE

FIGURE 6-1
**LONG TERM PLAN
(BEYOND 2030)**

- MIXED USE DEVELOPMENT NODE
- URBAN CENTRE
- RAIL STATION
- TOURISM DEVELOPMENT NODE
- LIFESTYLE COMMUNITY AREA
- MAJOR ROADS
- PASSENGER RAILWAY
- CITY CENTRE
- RESIDENTIAL DISTRICT
- DEFERRED RESIDENTIAL (EASTERN CORRIDOR)
- LABOUR CAMP
- HIGHWAY COMMERCIAL
- MAJOR INSTITUTION
- RESEARCH AND DEVELOPMENT PARK
- LOGISTICS SERVICES AREA
- GATEWAY INDUSTRIAL
- PRIMARY AND SECONDARY INDUSTRIAL AREA
- SUPPORT INDUSTRY AREA
- UTILITIES AND MAJOR INFRASTRUCTURE
- PORT AREA
- REGIONAL PARK
- MAJOR OPEN SPACE SYSTEM
- REGIONAL SPORTS CENTRE
- CONSERVATION AREA
- WATERFRONT RECREATION AND OPEN SPACE SYSTEM
- - - JUBAIL INDUSTRIAL CITY BOUNDARY

ROYAL COMMISSION FOR JUBAIL AND YANBU



THANK YOU.

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