



SERVICES DESIGN TECHNOLOGY International



Compounds Design



## SDT professional services

SDT offers a wide-ranging variety of professional services to infrastructure operators and owners. We understand the requirements and offer projects of all sizes and kinds ranging from feasibility studies to detailed design to supervision.

Our work covers all phases of service and includes:

- Strategic consulting
- Planning and environment
- Engineering design
- Project management
- Construction management

We are the leaders in the industry with respect to alliance and other relationship-based contracting approaches due to our capability of collaborating effectively.

SDT's specialist services include planning, environment, engineering, project and construction management, transport planning, and strategic consulting.

We collaborate with clients to design future cities. The infrastructure investment plans of cities and the way these future cities will develop with time are affected through the economic situation, growing population, and the issue of a carbon pressured economy.

SDT combines its different services to develop quality spaces. This is because social and cultural vivacity is formed through sustainable, liveable, and dynamic cities.

Our services are modified according to the clients' project and budget requirements. We make use of our skills on projects that are beneficial for local cities, and consequently the country.

SDT Infrastructure and Environmental Consultancy will ensure a professional and timely submission of engineering providing planning, design and project management services covering:

- Transport and Road design
- Power and Communications Networks
- Water Networks
- Environmental Assessment and management



## Compounds Design

At SDT our planning work draws on our understanding of the market forces and our grasp of the broader community and the public interest context for development projects.

Our work demonstrates a continuing commitment to the highest level of design standards and technical expertise. Working closely with each client, we determine the unique project needs and tailor our services to those needs.

Our goal is to achieve quality designs which integrate the expectations of the client, attributes of the natural and man-made setting, and the personal commitment of our staff to the design process.

Environmental opportunities and constraints, project scheduling, programming and costs are analyzed within the context of the client's goals. A conceptual design is then generated which is subsequently refined through an evaluation of critical design elements.

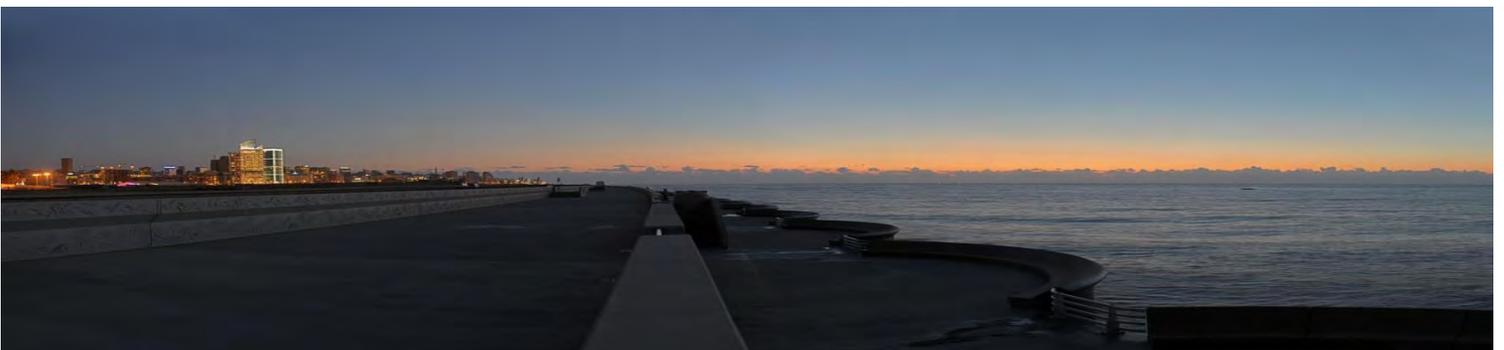
Our approach to successful planning is by utilizing the knowledge of our team and binding their intellectual and experiential capabilities in realizing the clients' vision. As such interaction, participatory approach, and exchange of information among different stakeholders are necessary conditions for successful plans.



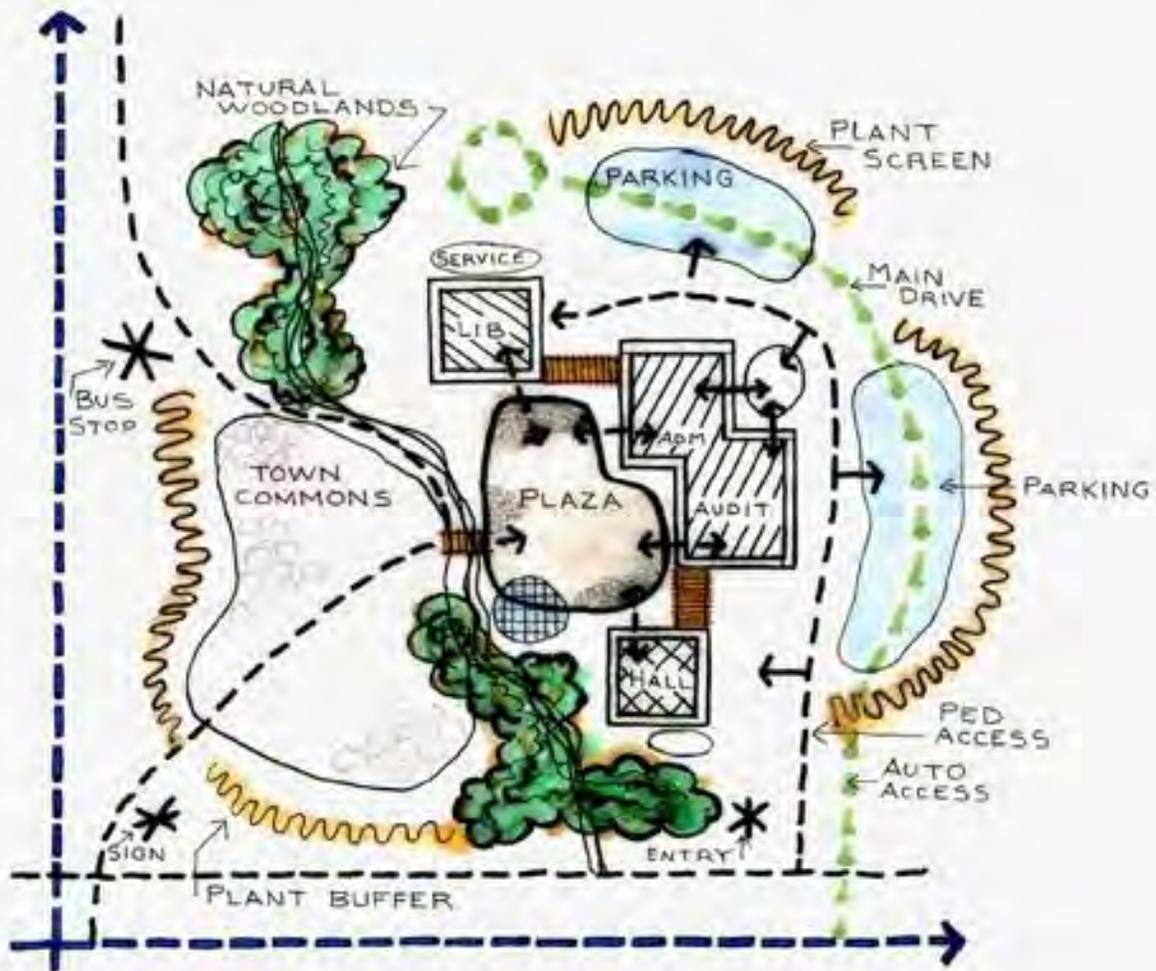
## Our Philosophy

We know from experience that “*companies don’t do things, people do*”. When SDT is commissioned to carry out a project, the company directors are personally involved in every step of the project from start to finish.

We not offer a standard product. We listen closely to the client and then tailor a unique scope of work and set of deliverables responding directly to the client’s requirements for that specific project.



# The Planning Process



- Establish goals and vision together with the client
- Develop basic land-use and circulation options and review with client
- Prepare Preliminary Master Plan and review with client
- Prepare Final Master Plan
- Prepare infrastructure engineering support documentation
- Prepare documentation to support the client's marketing effort

CONCEPT PLAN

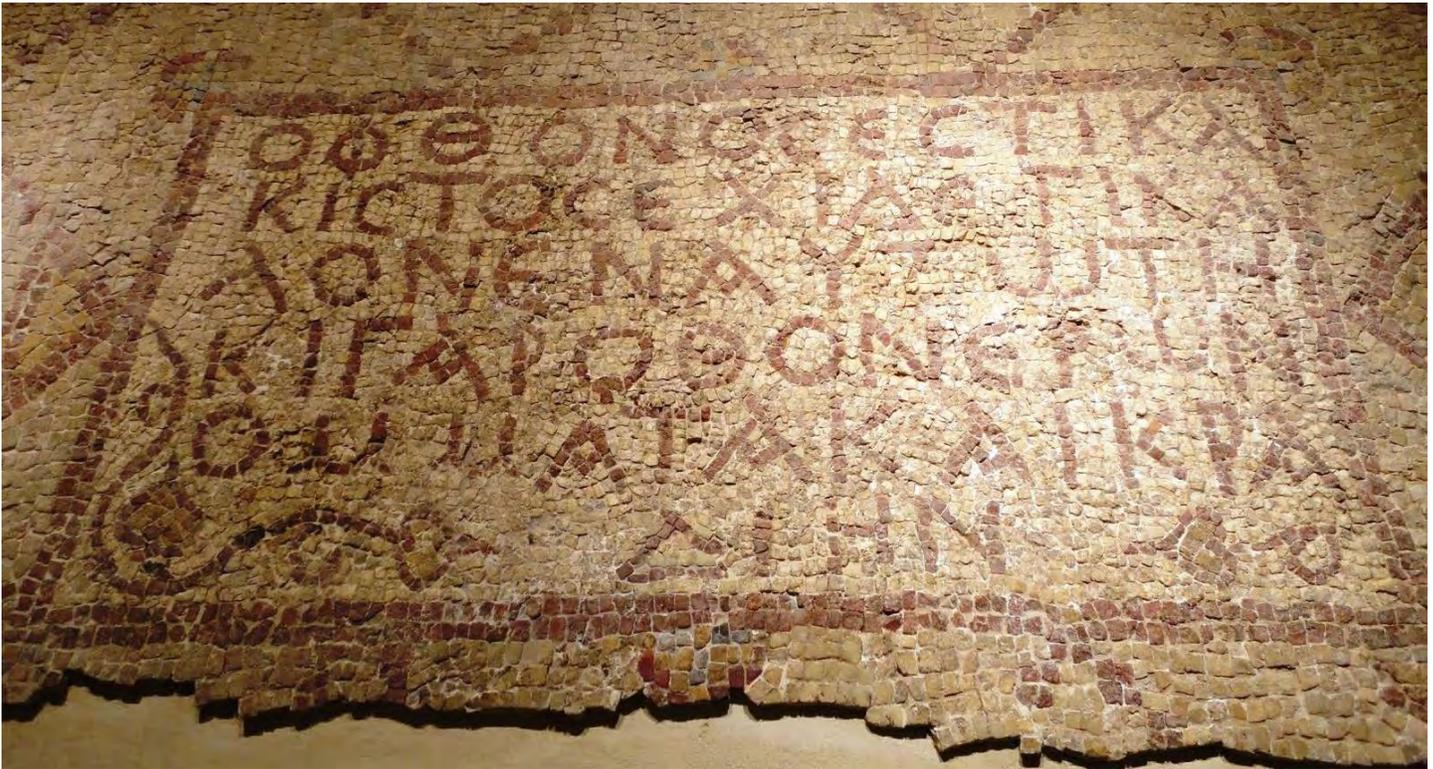


## Our Approach

Teamwork and collaboration are key elements of our approach. We influence our extensive resources to create multi-disciplinary teams that tackle the most complex challenges and deliver the highest quality client services.

This approach is derived from our understanding of urban environments as integrated networks, similar in many ways to natural ecosystems.





# Our Engineering Teams and services

## Civil Team

- Civil and road design
- Haul-road design
- Bulk earthworks
- Storage, dams and ponds
- Water management, supply and reticulation
- Sewerage, wastewater, drainage
- Workshops and site buildings
- Fuel facilities

## Structures Team

- Transport structures, tunnels, bridges
- Heavy industrial structures
- Liquid retaining structures
- Workshops and site buildings
- Accommodation camps and housing

## Mechanical Team

- Pipelines/Separators design
- Heating, ventilation and air-conditioning (HVAC)
- Fire suppression
- General mechanical design
- Fluid distribution

## Power Team

- Thermal generation
- Renewable generation
- Transmission and distribution design
- Load flow studies
- Substation design

## Electrical, instrumentation and controls Team

- High-voltage transmission and switchyards
- Low-voltage transmission and reticulation
- Design services, such as schematics, terminations and layouts
- Process and instrumentation design and selection
- Control system design, including PLC, telemetry and DCS
- Earthing and lightning protection
- Street Lighting

## Process design Team

- Water gathering system
- Water treatment and waste management facilities
- Gas and water pipelines



## Compound's Road Design

The Transportation design works includes engagements with leisure passenger transportation, mass transit, roadways, railways and subways, water, air, pipeline etc...

SDT Transportation design section provides engineering consultancy services in the field of highway and bridge design, subdivision development, drainage, in addition to transportation and infrastructure related services on airport and marina development projects.

We aim to provide safe and economical solutions that meet the needs of each project. Our services are for the entire life cycle of transport structures starting from planning and advisory services to operations and asset management.

SDT's transport structures capabilities include:

- Transport strategic advice & master planning
- Feasibility studies & concept design
- Options analysis & business case assessment
- Tender design and detailed design
- Bridge structures designs
- Cut-and-cover and other subsurface structures
- Retaining walls
- Noise barriers
- Pedestrian and cycleway structures
- Transport building structures, including bus stations, toll facilities, ventilation stations and tunnel control buildings
- Railway and busway stations
- Tunnel structures
- Road furniture & lighting
- Traffic Studies
- Traffic management Systems



## Road/Street Lighting

The Road/Street Lighting Design specialist team at SDT offers a full spectrum of lighting consulting services to transportation systems, roads and streets.

The Lighting Design Specialty team can provide:

- Roadway lighting design
- Tunnel lighting design
- Highway interchanges lighting design
- Daylight design and evaluation
- Computer analysis and modeling of natural and artificial lighting systems
- Lighting energy management
- Life cycle cost analysis
- LEED credit documentation

SDT brings design expertise to meet the client's objectives. The design must meet energy regulations and the client's budget. The design process features close collaboration among the architects, landscape architects, and other disciplines.

# Power and Communications Networks



This division in SDT provides power and communications services for safe and efficient operation. We seek to deliver holistic design solutions to support our clients throughout the entire project, minimising whole-of life costs and integration issues while maximising safety and reliability.

To ensure we provide complete solutions, in all our planning and design we consider technical, economic, financial, environmental, safety and statutory requirements.

Our services cover the full life cycle of infrastructure projects from planning and advisory services through to monitoring and asset management.

At SDT we have a specialised electrical team of dynamic engineers and drafters. Our electrical department is capable of the following:

- **Power networks engineering**

Our networks capability provides engineering design expertise, from feasibility and conceptual studies, through all phases of detailed design, project delivery and operation. We provide our clients with expertise in the following areas:

- Overhead, underground line design and modeling
- Substation design
- Protection scheme designs and studies
- Control, automation and telecommunication systems design
- Civil, structural and geotechnical design management and integration
- Networks planning, steady state and dynamic power systems studies
- Insulation coordination, lightning protection and earthing design
- Power quality, harmonics, and electric and magnetic fields analysis.



- **Communications**

At SDT we have a specialised communications team of dynamic engineers and draftsmen. Our electrical department is capable of the following:

- Fibre Optic networks
- Telephone networks

- **Complementary capabilities Sustainability and climate change**

SDT believes sustainability is central to its power networks service offering. We support the development of major energy network projects, by providing infrastructure solutions that prepare clients for the carbon economy and ensure resilience against the impacts of climate change.





## Water Networks

The engineering consultancy services offered by SDT- Water & Environment division include construction management, engineering design, operation and maintenance solutions, master planning, water, drainage, wastewater, solid waste and environmental influence evaluations.

Two important elements of community infrastructure are safe, reliable supply of water, and effective disposal of sewage. SDT is quite familiar with the technical challenges of the water industry in main urban cities of the region.

Our experience extends to:

- Water and wastewater management
- Water treatment plants
- Integrated water cycle management
- Environmental management.

At SDT we are capable of delivering the following:

- Evaluation of water consumption needs
- Inventory of existing and potential water resources
- Feasibility study
- Master Plan for water distribution, design of the water network (conduits and manholes)
- Detection of leaks in the existing networks
- Study of the rehabilitation of sources and wells
- Study and design of water reservoirs and pumping stations
- Technical specifications
- Supervision of works



# Sustainable Design

We have comprehensive design approach to environmental, socio-economic and cultural sustainability. We go beyond the tangible considerations of building performance and energy use, to maximize sustainable value and benefit to the communities and places we design for in real human terms.

We are leaders in sustainability by designing world-class environmental projects. Clients benefit from our specialist consultancy services across the whole project cycle. We advise on implementing sustainable design principles from briefing and master planning to concept design, tender phase to site supervision.





# Solar Renewable Energy Technologies

Solar Renewable Energy Technologies (RET) are an integral means for reduction of carbon footprint, reduce Green-house Gas emissions, and maximize energy savings.

Usually, RETs are active components of the development, and specifically target energy production for specific uses:

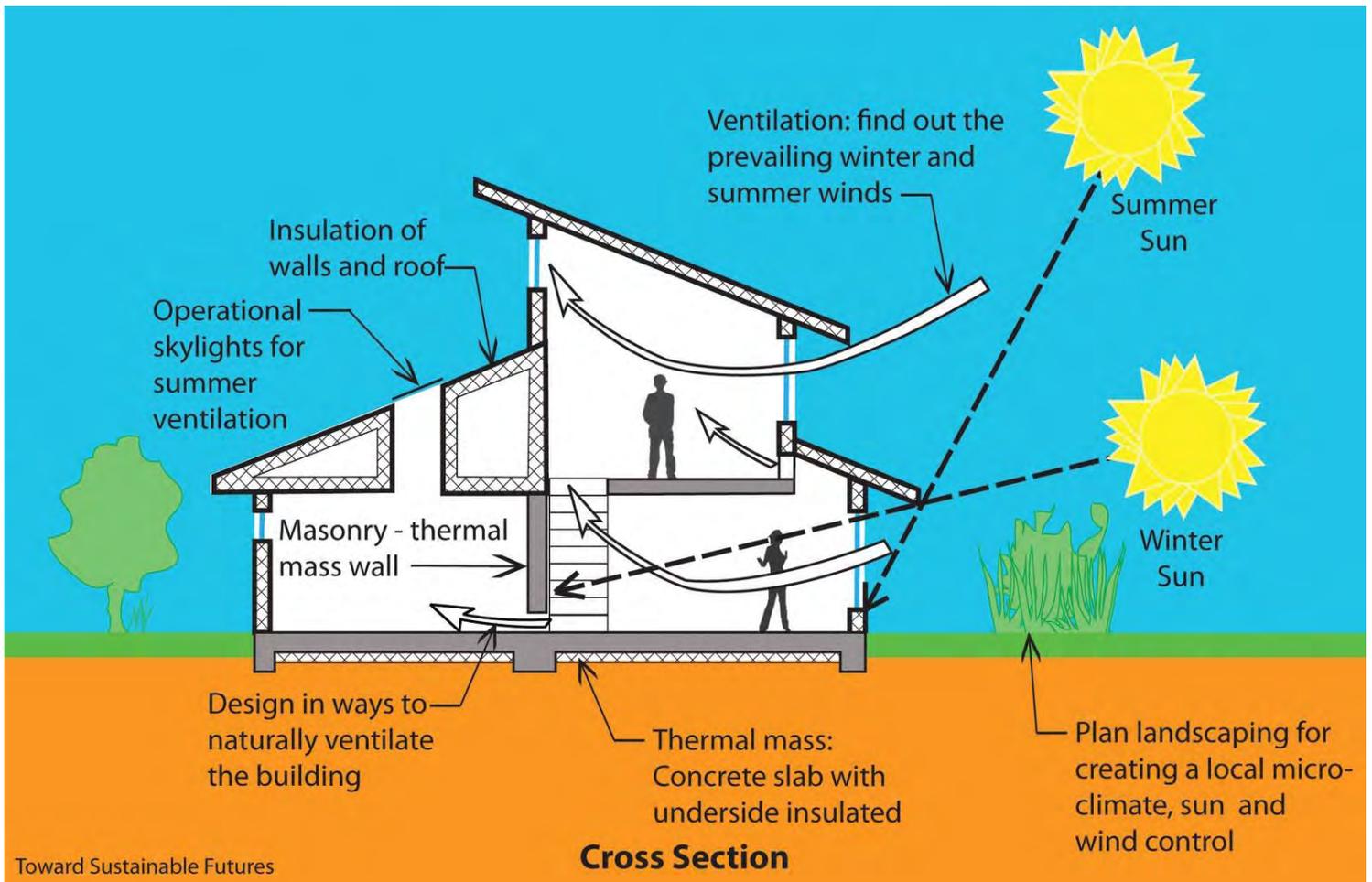
- Photovoltaic Systems
- Wind Systems
- Solar Water Heating Systems
- Geothermal Heat Pump Systems
- Hydro-electric Power Systems

RETs also work in parallel with standard systems, and/or each other, to optimize the efficiency of each system and provide the maximum energy output (eg. combined photovoltaic-wind systems, and combined solar-geothermal heating systems, etc...

Other modern technologies are integrated along-side the RETs in green developments, that play a role from the energy and water consumption side of the equation:

- CFL and LED Lighting Fixtures
- CO2 Sensors for Parking Ventilation
- Occupancy Sensors for Lighting and HVAC
- Energy Star Certified Equipment
- Low-Flow and ULTRA-Low-Flow Water Fixtures

Where RETs produce energy from renewable and clean sources, the above technologies consume less energy and water than the base-line standards, and therefore significantly improve the building/development 's energy and water performance.



# Passive Green Design

Passive green design approaches integrate various approaches for the development during the earliest stages of the project, from site selection to basic building architectural design.

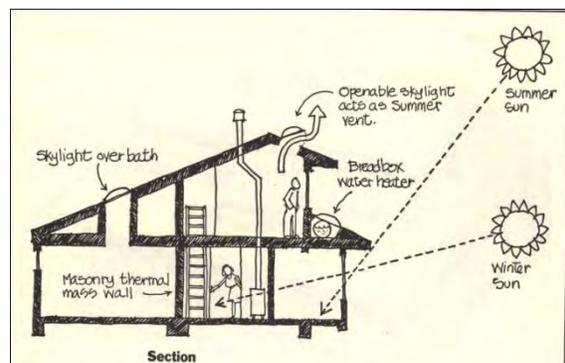
From the site connectivity to basic urban services (transportation, hospitals, schools, commercial areas, etc...), from the building orientation and relationship with the solar plane (that impacts daylighting and thermal loads) to the building material, all play an important role in the sustainability of the development.

Even the slightest details, from Low-VOC finishing material, rapidly renewable material, solar reflection indices, to Low-E glazing and building envelope insulation and U-Value, the passive elements of the design are considered in both ways:

- Cost and Feasibility
- Energy and Water Efficiency

SDT Environmental Department provides consultation, documentation, feasibility studies, technical analysis, and value engineering services to assist the developer in reaching most feasible, efficient, and practical performance of the development.

A whole-building design approach also considers the passive elements from the earliest concept stages of the project, and integrates all the desirable active components to meet the client's objectives from the development and the sustainability targets.





## Green Infrastructure

We focus on preserving today's natural resources and guarding them for future generations.

Our design and engineering specialists help to develop scalable solutions that meet both client needs and local or regional green infrastructure requirements.

SDT has extensive experience in the development of natural stormwater management solutions, providing regulatory compliance support, modeling impacted areas, creating Leadership in Energy and Environmental Design (LEED), Building Research Establishment Environmental Assessment Methodology (BREEAM) and Qatar Sustainability Assessment System (QSAS) certified designs and evaluating cost-benefit returns on various green vs. conventional options.





# Our Outreach

Our work is always grounded in intensive research and project analysis combined with extensive outreach to clients and the surrounding community.

Our design and public facilitation skills are powerful tools that are sensitive to political and market realities and help achieve consensus among community stakeholders.





## Project and construction management services

### Project controls

- Financial control
- System management and integration
- Cost estimating
- Scheduling

### Project and construction management

- Project management
- Construction management
- Program management





**SERVICES DESIGN TECHNOLOGY International**

## About SDT

SDT international was established in 1991 as an engineering consultancy company that provides comprehensive range of services in the Structural, Mechanical, Electrical, Infrastructure design, and Environmental studies.

For the past 22 years, we have been a pioneering force in the planning, design and implementation of development projects in the Middle East, UK and Australia.

With six offices in six countries, we employ high caliber specialized engineers capable to apply innovative approaches to design and deliver practical and cost effective solutions.

**UK . Lebanon . KSA . Qatar . Dubai . Australia**

[www.sdtconsultant.com](http://www.sdtconsultant.com)



## Appendix A – Our Previous Projects



Date: 2010

Location: Jabal Ali, UAE

Green Design, Master Planning, Infrastructure, Utility, Buildings Design and Solar System Design

JABAL ALI SUSTAINABLE CITY

## The Project

Jabal Ali Sustainable City will feature a green belt with 20,000 trees and a 5,000ft<sup>2</sup>-long water canal. At least 20% of the construction area will be built with eco-friendly materials while landscaping will cover around 60% of the project.

Solar farms will be spread over 600,000ft<sup>2</sup> while 100% of the sewage water will be recycled.

Jabal Ali City has redefined the standards and norms of high quality development. It embraces not only architecture and design but also a complete urban plan that provide its clients and visitors and the public at large, with an array of amenities and facilities.

## Our Role

We proposed the Green design of the project incorporated Green Roofs, with indigenous plantation that minimize irrigation requirements, and rigorous water and energy efficiency and conservation measures.

Furthermore, the project site infrastructure and common areas incorporated passive and cost-efficient green measures, providing passive shading from the buildings and trees, solar systems, as well as natural air circulation taking into consideration the prevailing wind directions.

Our team at SDT was also heavily involved in the infrastructure design along with the internal Utilities within the city.

## Services

- Infrastructure Design
- Utility Design within Compound
- Sustainable Design Study
- Building Sustainable Technologies
- Green Energy development
- Daylight & Shading studies
- Solar System Design

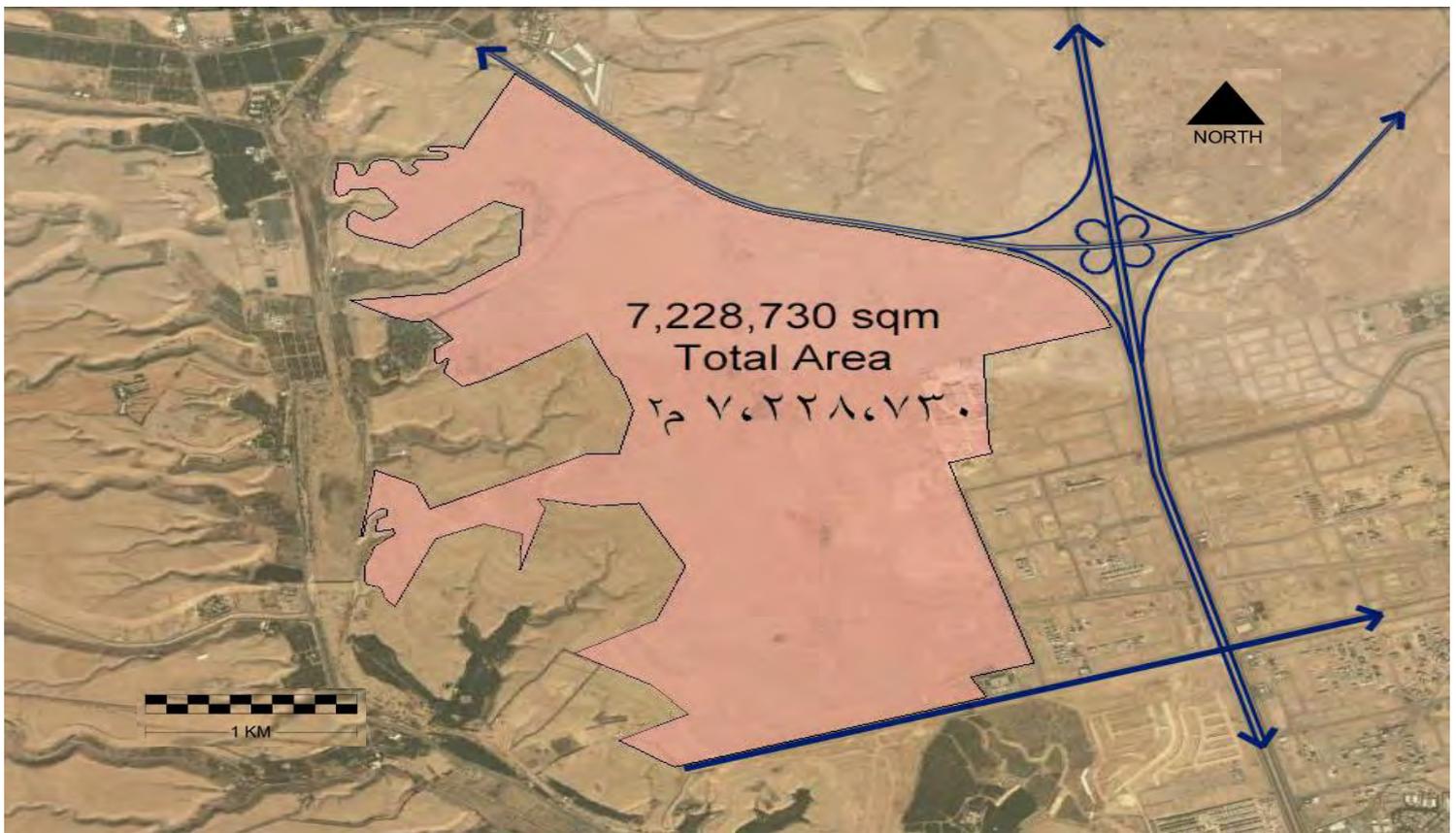
## The Results

This Project was completed to be an environmental friendly construction. Our design solutions to the city were seriously approached to the ideal solutions and most cost effective.

Our Design was recognised as an international design.



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## EL THOULAYMA DISTRICT MASTER PLAN

## LAND AREA

RIYADH, SAUDI ARABIA

### The Project

The site, identified in the 2003 AdDirayah Master Plan as El Thoulayma District, is located approximately 20 Km northwest of the center of Riyadh.

The 7.2 million square meter Site is approximately 4km long and 1.5km wide. It is bounded on the north and east by limited access expressways and on the west by Wadi Hanifa. On the southern boundary is a major road separating the site from the rest of AdDirayah. With the exception of some urban development in the south east corner of the site, El Thoulayma District can be considered in relative isolation from the surrounding properties.

The purpose of this initial phase, Site Analysis, is to uncover, understand and document everything we can find out about this property. This includes its physical characteristics as well as any legal and zoning restrictions.

### The Results

A master plan solution for the proposed project, which helped in the initial feasibility studies of the development. Our study has helped our client with decision making for future investment purposes.

### Our Role

Preparation of this Master Plan is divided into 4 main phases:

- Site Analysis
- Land Use Study
- Preliminary Master Plan
- Final Master Plan



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## Infrastructure, Roads and Underground Utilities Design

KARBALA COMPOUND  
IRAQ

### The Project

Karbala Compound will offer a variety of residential apartments with reworked designs and dimensions to fulfil your living desires. Ranging from Apartment Studios to One, Two and Three bedroom Apartments, all with distinct designs and models are built with the highest construction methods and materials. Fully isolated walls and floors for heat and sound, double-glazed windows, connection to the LPG natural gas network, Internet, TV communications and a premium grade of two elevators is provided in each building.

### Our Services

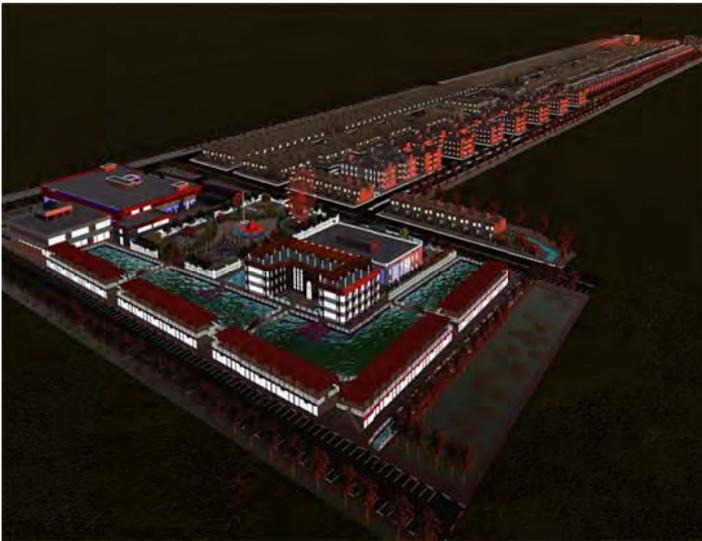
- Infrastructure Design
- Roads Design
- Construction Cost estimate
- Underground Utilities Design
- Sustainable Design Study

### The Result

We were able to complete the project successfully and on time as assigned by the project managers. Every step of our design was thought of by our professional engineers for better sustainable solutions.



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## Master Planning, Demand Loads, Infrastructure and Utilities Design

Andulus City

DUBAI, UAE

### The Project

Our client has assembled a large piece of property, (approximately 2 million sqm) and engaged SDT to define the best use for the property and prepare an entire design package to be submitted to the local authorities and the client for their review and approval.

The complex also contains parks and playgrounds and elementary school children and a middle school and nursery and kindergarten, a health clinic and a mall within the city and a mosque, and parking stalls in public parks.

### Our Role

Working together with a real estate marketing consultant, we prepared the development plan.

As part of the process, we prepared the initial traffic study, determined project demand for water and electricity and prepared an order-of-magnitude cost estimate for the infrastructure required to prepare the building sites for development.

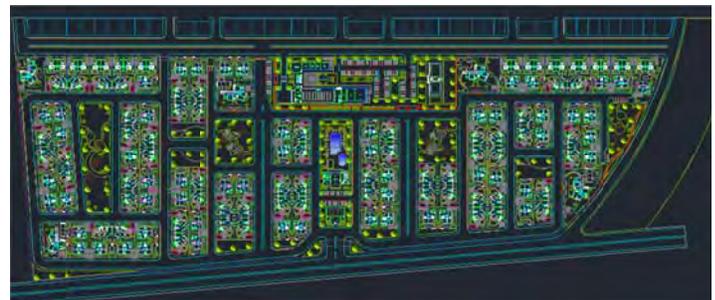
### Our Services

- Initial Traffic Study
- Infrastructure design
- Water and Electricity demand
- Underground design works
- Cost Estimate

### The Results

A master plan and our professional engineering solutions for the proposed project, which helped in the initial feasibility studies of the development.

Our study has helped our client with decision making for future investment purposes.



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## Infrastructure Design and Green Sustainability Study

Hydra Compound Village

ABU DHABI

### The Project

Hydra Village is Lease Hold Development developed by Hydra Properties and located on highway 11, the main highway connecting Abu Dhabi and Dubai and a short drive from Abu Dhabi International Airport.

Hydra is a self-sustained city perfectly located at the entrance of Abu Dhabi. It comprises of various 2 and 3 bedroom townhouses and villas. The environment is surrounded by green areas with parks and open spaces.

### Our Role

SDT was hired as a Design Consultant for the road designs and underground infrastructure of the compound, we were also involved with the sustainability design studies of this project.

Our experience specialists went to the next level with their design due to the client's additional requirements for traffic and roads services, including the sewage, water and electricity services.

### The Results

We were assigned the design phase of the project which we completed successfully, on time and within the allocated budget.



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## Sustainability Program Management

Barwa Residential Development

DOHA, QATAR

### The Project

The Barwa City Project is a residential housing project with a planned ultimate population of about 40,000 in a self-contained development. Barwa City consists of 128 residential buildings varying from G+1 to G+6 floors approx. 6,000 apartments, 2 amenities areas providing recreation facilities, nurseries and convenience shopping for residents.

### Our Role

We were hired as Sustainability Program Manager to help Barwa implement Phase I and prepare the tender documents for an international competition for the planning of phase II. Working together with the client, we created a vision and program guidelines for the competition. Part of our responsibility was to re-plan the amenities and municipal support areas within the project.

### Our Services

- Master Plan
- Program Guidance
- Budget Strategy
- Development Strategy
- Sustainability Planning

### Results

The Project is under construction.



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## Master Planning and Green Design Guidelines

AI Ahsa Compound  
AL HOFUF, KSA

### The Project

The AI Ahsa Compound Project ( 32kmq) includes 10 new hotels, 12000 apartments, 2 golf course, 8000 villas, 4 marines and commercial sites.

### Our Role

This project called for the development of over 2.5 million square meters of stabilized sand dunes within the AI Ahsa Compound located in the AI Ahsa oasis.

Working closely with the developer, we developed a vision and group of compatible uses that fit both the developers' requirements and fulfilled the requirements of the Ministry of Agriculture.

A separate marketing package was prepared for each parcel including its proposed use, a building program for its development, design guidelines, a construction cost estimate and a feasibility study for each parcel.

### Our Services

- Master Plan
- Program Guidance
- Construction Cost estimate
- Feasibility study
- Green Design guidelines

### The Result

We assisted our client in verifying their master plan with our feasibility studies to meet the requirements of the Ministry of Agriculture.



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