

# RIYADH

## Oasis of Heritage and Vision



HIGH COMMISSION FOR THE  
DEVELOPMENT OF ARRIYADH



# Riyadh

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# Riyadh: Oasis of Heritage and Vision

Peter Harrigan

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*Edited by Kitty Carruthers*

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DEVELOPMENT OF ARRIYADH



بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِيْمِ

## Preface

Riyadh is strategically and centrally located in the Arabian Peninsula. It lies at the heart of ancient Yamamah and, through the ages, has been an attractive oasis situated on major migration, trade and pilgrimage routes. The region was an important base for the spread of Islam across the Peninsula and the Islamic world.

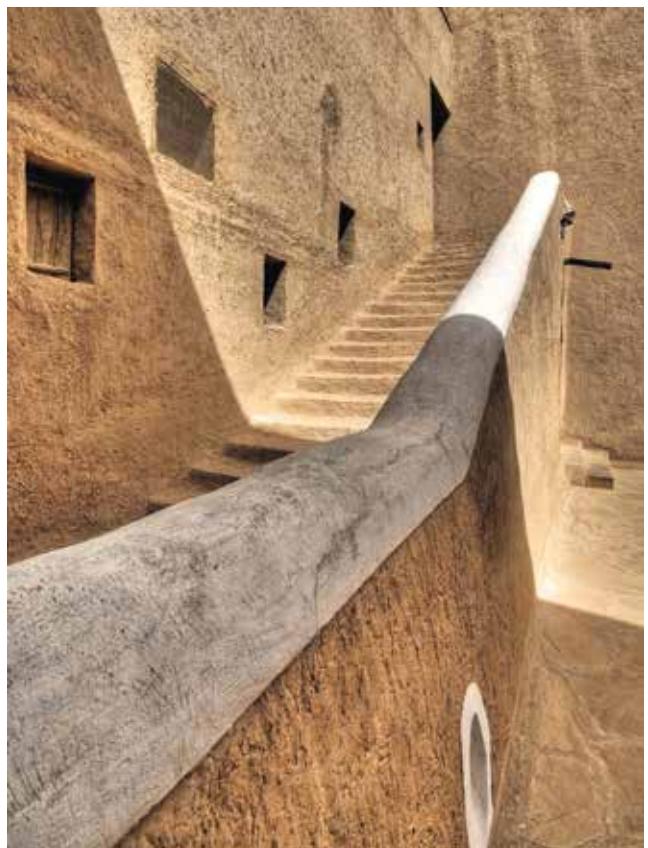
Its significance was consolidated by the historical pact forged between Imam Mohammed bin Saud and Sheikh Mohammed bin Abdulwahhab in 1744, which led to the founding of the First Saudi State, with Addiriyah as its capital. In 1824, Riyadh was chosen as the capital of the Second Saudi State by Imam Turki bin Abdullah and thus its trajectory of development began.

After a modest start, the real march of progress came after King Abdulaziz retook Riyadh on 15 January, 1902 (5 Shawwal 1319) and made it the centre for the unification of Saudi Arabia. Since that day, Riyadh has witnessed the continuous transformation from a small community to one of the great modern, cosmopolitan and metropolitan cities of the world.

The capital's extraordinary development and expansion were spearheaded over six decades by the Custodian of the Two Holy Mosques, King Salman bin Abdulaziz. Throughout that time, he dedicated his leadership and skills to implement effective and comprehensive urban plans for lasting infrastructure and continued cultural development.

Written by Peter Harrigan under the auspices of Arriyadh Development Authority, this book describes the many aspects of the city, its history, stages of development and its role at regional, national and global levels. The author also introduces some of the most significant recent achievements of the city and its landmark projects, many undertaken by Arriyadh Development Authority, which have been recognised with international prizes and awards. He also describes the quality of life in the city and many diverse opportunities that have helped make Riyadh a visionary cultural oasis, capital of the region's largest economy and a thriving centre of innovation for ambitious citizens seeking opportunity, security and a high standard of living.

Riyadh is a vibrant, forward-looking, 21st-century capital with a youthful population which remains securely anchored to Islamic principles and the nation's heritage and traditions, while embracing the promise of Saudi Arabia's Vision 2030.



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Al Taj, a pure Saudi desert-bred stallion of the Kehilan Umm Arqub strain, at Riyadh's Masmak Fort. This prize Arabian horse has been bred by the King Abdulaziz Arabian Horse Centre (KAAHC) which is the official registrar and the Kingdom's guardian of Arabian horse heritage. Courtesy KAAHC. Photo by Gigi Grasso.

## Riyadh at the time of King Abdulaziz

Sources: Map sourced from Philby's plan of Riyadh drawn during his 1917 visit, published by The Royal Geographical Society. Added details for this version provided to Arriyadah Development Authority Heritage Department by Sheikh Abdulrahman Al-Ruwaisi, historian and resident of Riyadh during the time of King Abdulaziz. Arabic map first published by ADA in 2011

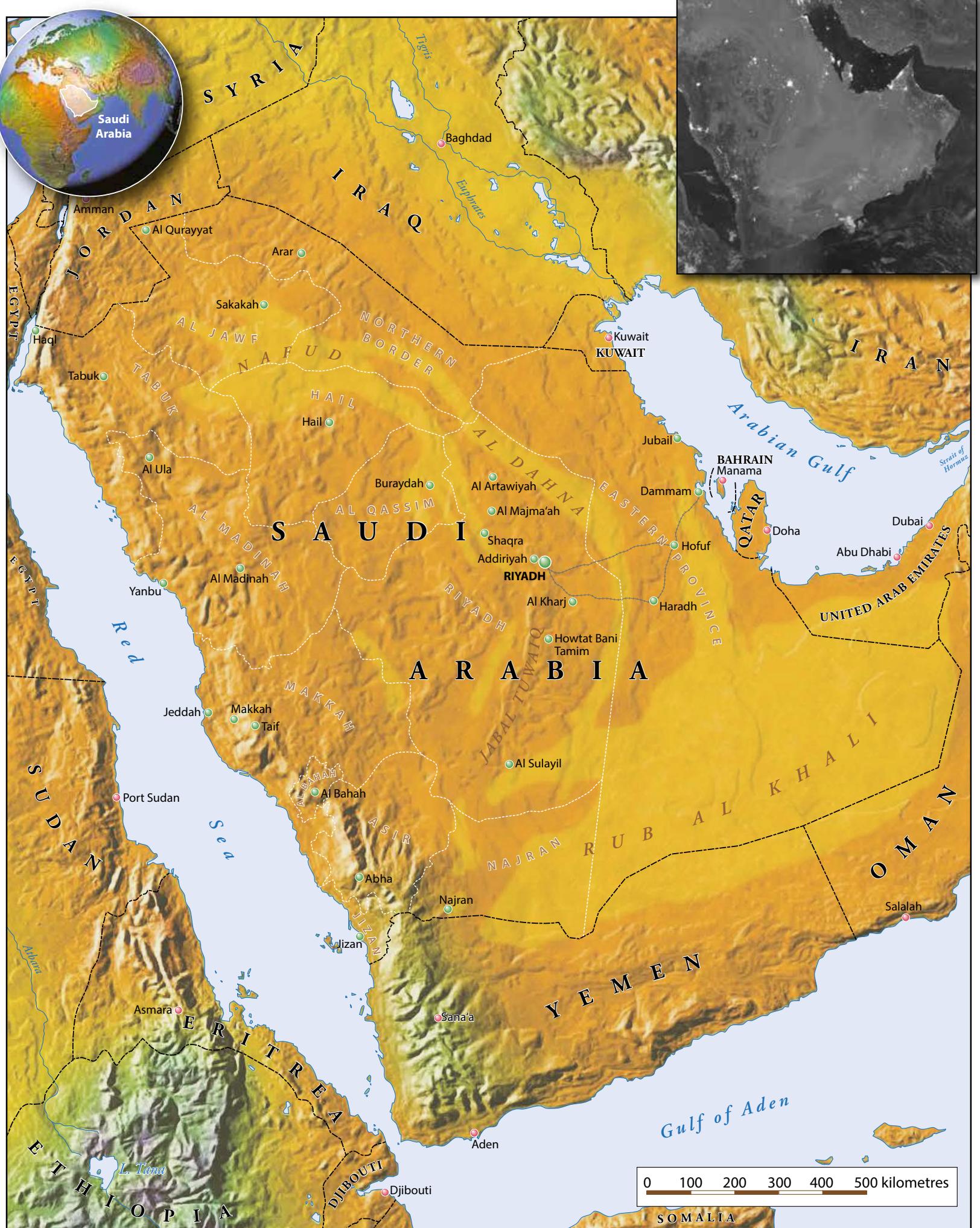


### Overleaf

The lights of Riyadh illuminate a city of around six million. The view looks west along Aruba Road near the Riyadh Air Base. The road development is one of many of Riyadh's ongoing ambitious urban projects in transport, communications and infrastructure embracing a capital covering more than 1,500 square kilometres.







# 1 Introduction

Towards sunset the sky over Riyadh changes from bleached pale hues into a golden light with tints of apricot, rose and red. The sun dips below the Tuwaiq Escarpment and from minarets the call for Maghreb prayer sweeps over the eastern industrial fringes into the city's suburbs, across the historic heart and towards Wadi Hanifah. Soon the muezzin's call echoes across the Saudi capital from more than 2,000 mosques. A century ago all the citizens in what was then a compact settlement encircled by mud walls heard the first call to prayer simultaneously from its dozen mosques. Such is the extent of the city today that during Ramadan the citizens on the city's eastern edge break their fast a few minutes before their neighbours over 40 kilometres away in the suburbs of the western margins of the capital.

As dusk falls, the western sky gradually shifts through the blue spectrum from turquoise to indigo and finally, as darkness falls, turns a deep ultramarine as a sea of lights on streets, highways, buildings and neon signs punctuate the urban landscape. The illumination is clearly visible from space as the brightest of all patches on the Arabian Peninsula. Extending over an area of more than 1,500 square kilometres, Riyadh is the second largest city in the Middle East after Greater Cairo. The night-time lights and extent of this vast desert city also reveal a population approaching six million, by far the largest on the Arabian Peninsula and one of the great cities of the Arab world.

Riyadh in its modern form is almost entirely a metropolis of the 20th and 21st centuries; dynamic yet robust; resilient, complex and infinitely fascinating. It is the capital of a Kingdom which has by far the largest economy in the Middle East and North Africa (MENA) region and a gross domestic product making up 50 percent of that of all six Gulf Cooperation Council (GCC) states. The bold, visionary and transformational urban development that is taking place in Riyadh and the wholehearted adoption of modern technology by the capital's youthful population are testimony that the city embraces the future. But along with its economic pre-eminence and political influence, this is still a city deeply conscious of its past and many of the major projects bear witness to this and point to a rich, eventful and intriguing history.

Arabia has a strategic location on the world map in that it links the continents of Africa, Europe and Asia. Located at the near centre of the 2.6 million-square-kilometre landmass of the Arabian Peninsula, 80 percent of which is taken up by the Kingdom of Saudi Arabia, the city of Riyadh forms a nexus between the coasts of four seas and the neighbouring northern landmass. From prehistory, this

has held significance as scholars today reveal that Arabia, including its interior, was likely the first bridge in the migratory routes of early humans. Later, as trade and then pilgrimage routes developed the area around Riyadh became a crossroads of the many thriving trans-Arabian routes connecting Africa, Eurasia and India.

Today, Riyadh's strategic central location places it within two hours flying time of the Arabian Peninsula's population of nearly 75 million. Extend the radius, and within six hours flight time is a potential market of more than half the world's population. Along with Saudi Arabia's own fast-growing population, this constitutes a powerful driving force in the economic growth, diversification and development of the Saudi capital, as the city and its surroundings become a magnet for local, national, regional and global investment on a hitherto unprecedented scale.

The capital lies towards the eastern side of the Arabian Peninsula's sloping plateau known as Nejd. These uplands of Arabia range between the mountainous barrier of the Sarat Mountains of the Hejaz and Asir in the west and the sedimentary lowlands that slope gently and uniformly down towards the shallow waters of the Arabian Gulf and the sand and gravel basins of the Rub Al Khali (Empty Quarter).

Over the centuries, topography, geology, hydrology and location – as well as changing climate and the vicissitudes of pestilence and conflict – have all brought their influence to bear on the fortunes and challenges of Riyadh and surrounding towns and villages. Some of these once held sway over or surpassed it in importance and size but since 1932 all have come within the orbit of the regional and national capital. Today, covering 400,000 square kilometres, Riyadh Region, the second largest of Saudi Arabia's 13 provinces, comprises about 17 percent of the Kingdom's area and shares boundaries with the Eastern Region; Najran, Asir, Makkah and Al Qassim provinces.

Geographers and chroniclers have long argued over the exact extent of Central Arabia's heartland territory known as Nejd but it is generally agreed that it is divided into two parts. To the west and extending into the igneous formation of the Arabian Shield is Upper Nejd (Aliyat Nejd) and eastwards of the striking barrier of the escarpment of Jabal Tuwaiq is Lower Nejd (Safilat Nejd).

East of the great watershed of the lofty Sarat mountain range, the tilting plateau reaches its highest point at around 1,000 metres. From here, the open desert slopes gradually eastwards, interrupted

## Map inset photograph

The view from 800 kilometres in space on a full-moon, cloud-free night shows the illumination of Riyadh clearly visible as the brightest of all patches on the Arabian Peninsula.



The 800-kilometre long Tuwaiq Escarpment is one of the great natural linear topographic features of Arabia and is visible from space. Ancient settlements lie on either side of the 600-metre high cliffs with evidence of early human activity stretching back to prehistory. The central stretch of the escarpment is 50 kilometres to the west of the capital.

by series of bold western-facing escarpments. The most significant and dramatic of these is the Tuwaiq Escarpment, easily recognisable from space and one of the great natural linear topographic features of Arabia. The 13th-century Arab geographer Yakut Al Hamawi (1179–1229) refers to the 800-kilometre-long escarpment as Al Arid. Later, the escarpment's middle stretch, which includes that immediately to the west of Riyadh, was referred to by this name. Like a backbone, the limestone escarpment developed in the Jurassic rocks of Central Arabia rises to the north of Zilfi, and arcs southwards to disappear into the great, fixed sand dunes of Al Mundafan in the Rub Al Khali near the notable archaeological site of ancient Qaryat Al Faw.

The 19th-century traveller William Gifford Palgrave was among the first Westerners to record and comment on this remarkable topographic feature as he headed towards Riyadh in 1862 along the escarpment from Zilfi, tracking mainly along its summit but occasionally wandering along the base of the towering cliffs. From here, he wrote evocatively of the scene and his recognition of the significance of the ancient land of Nejd that he was exploring: "Due

east in the distance, a long line marks out the furthest heights of Tuwaiq, and shuts out from view the low ground of Al Ahsa and the shores of the Gulf. In all the countries which I have visited, and they are many, seldom has it been mine to survey a landscape equal to this in beauty and in historical meaning, rich and full alike to eye and mind."

Embedded in the Tuwaiq mountain limestone are scattered coral heads. Some of these, immediately west of Riyadh, form reefs 15 metres high and 50 metres in diameter and they bear witness to a 500-million-year history of subduction and marine inundation when the region was once submerged by a shallow sea called Tethys. It is during these periods that sedimentation created the strata that would form the prolific oilfields of Saudi Arabia.

East of the formidable cliffs of Tuwaiq, near Riyadh and parallel to the top of the escarpment edge along the Nejd Plateau, are dozens of towns threaded like a string of pearls along the sides of valleys and water courses incised into the limestone landscape. The most significant of these is Wadi Hanifah, which runs southeast for

around 120 kilometres before losing itself in the sands on the fringes of the Rub Al Khali. This great wadi system has a catchment area of more than 4,500 square kilometres and covers much of Lower Nejd in an historic area known as Al Yamamah. Over the centuries Wadi Hanifah and its tributaries have led to the growth of and sustained surrounding communities including Riyadh.

Many Western narratives on the history of Riyadh refer to its remoteness, inaccessibility and obscurity, pointing out that the precise location of the settlement was unknown until the 20th century. Historic maps of Arabia – whether drawn up by Ottoman or European cartographers – bear this out. However, this is an oversimplified, stereotyped and Eurocentric view. This area of Nejd which includes Wadi Hanifah and its tributaries was familiar to the peoples of Al Jazeera – the ‘Island of the Arabs’ or Arabian Peninsula – and those of the wider Middle East. Also, the ‘outside world’ was for many centuries known to and visited by the people of Nejd. Rather than being isolated and surrounded by a curtain of ignorance, the area was for millennia a strategically located centre of human migration, trade, and pilgrimage routes.

Today, international archaeological surveys under the Saudi Commission for Tourism and National Heritage are casting back deep into prehistory and providing exciting evidence of a past Green Arabia as well as discoveries that point to the significance of the earliest human migrations. They also reveal the presence of ancient communities along the Tuwaiq Escarpment within major

riverine systems such as Wadi Hanifah and around as thousands of paleo lakes previously scattered across much of Arabia.

Riyadh lies on the edge of the tropics just 100 kilometres north of the Tropic of Cancer, the northernmost latitude where the sun’s rays appear directly overhead at noon, June 21 (the summer solstice). At an elevation of around 600 metres, it lies 350 kilometres from the Arabian Gulf, 800 kilometres from the Red Sea coast over the Sarat mountain range and 1,000 kilometres from the Arabian Sea across the Rub Al Khali and Yemen Highlands. These factors give the city a continental, verging on high-desert, climate characterised by extremely high seasonal and diurnal temperature ranges.

Summer daytime highs in July and August can reach 50°C with winter lows, usually in January, sometimes dropping just below freezing point. This makes for very significant annual extremes typical of a continental tropical desert climate, somewhat ameliorated in summer by elevation. Average temperatures for the summer months of July and August are 43°C, dropping to 28°C at night, and for the usually coldest winter month of January 21°C and 9°C. During summer months, high ambient temperatures, lack of cloud cover, negligible rainfall and surface water, and the effect of elevation, mean Riyadh experiences very low humidity, averaging just 19 percent.

These ranges of absolute temperature, at both extremes, can have significant impact on crops, livestock and people. As well as



Near Riyadh there are abundant marine fossils, evidence of previous periods of subduction and marine inundation when the region was submerged by a shallow sea. It is during these past geological eras that sedimentation created the strata that now bear the prolific oil reserves of Saudi Arabia.



When Abdullah Philby took this photograph on 19 April, 1918 from Jabal Abu Makhruq, this conical hill was in open desert north of the old city. Pierced by a hole it is known as the Camel's Eye and is today set in a public park surrounded in the entirely built-up district of Malaz.

damage from extreme temperatures and drought, other climatic phenomena, such as hail storms and flooding, occasionally visit the city and can ravage crops and livestock and cause widespread structural damage.

Until the foundation of the modern Kingdom of Saudi Arabia in 1932 and the subsequent discovery of oil, life in central Arabia was harsh, simple and always precarious. The marginal nature of the desert environment, characterised by climatic extremes and recurrent droughts, were a driving force for various migratory waves to and from Nejd. The great drought and famine between 1722 and 1726 ravaged the region. Ground-water supplies were exhausted and settlements abandoned while whole communities migrated north and east to Basra and elsewhere in Mesopotamia, Kuwait, Al Ahsa, and Al Zubair.

The name given to the city, Riyadh, is derived from the plural of the Arabic *rawdat*, meaning gardens or meadows. It was so named because of the natural fertility provided by its location on silted land at the confluence of Wadi Hanifah and a tributary, Wadi Al Batha, along which it was founded.

Before the introduction of boreholes and mechanised irrigation, the viability of oasis agricultural subsistence, availability of food surpluses and welfare of livestock resources depended upon rainfall and the presence of ground-water. Average annual rainfall for Riyadh is around 137 millimetres. This is nearly half the minimum considered necessary for agriculture dependent predominantly upon rainfall and thus ground-water reserves were essential to sustain settled communities. In and around the wadi systems on areas of extensive silt deposits and in low-lying depressions

Wadi Hanifah with its numerous tributaries has a catchment area of more than 4,500 square kilometres.

It extends over a historic area known as Al Arid cutting into the plateau east of the Tuwaiq Escarpment. Large stretches of the watercourse have been successfully rehabilitated by Arriyadh Development Authority.





(themselves known as rawdat and which often abut sand dune systems), natural conditions enabled grazing and cultivation. In relatively wet years annual rainfall totals can reach 250 millimetres, but in years of drought as little as 16 millimetres can fall. Often a deluge of rain can be as detrimental to agriculture as a drought. In some years a single tempest can deposit almost half an average year's rainfall, causing floods, damaging crops, drowning livestock and destroying property in savage flash floods and raging wadi torrents.

Geology has also favoured the development of Riyadh and other settlements in the Wadi Hanifah drainage system. Here, the more geologically recent and soft porous sedimentary strata of Lower Nejd east of the great Tuwaiq Escarpment gave rise to conditions that favoured desert oasis communities capable of thriving on relatively fertile soils and shallow ground-water supplies. Over time, the softer sedimentary strata of the upstanding plateau tilting towards the Gulf littoral became eroded, with run-off torrents giving rise to a complex dendritic array of deeply eroded wadis. The run-off carried eroded sediments and organic material, leaving silt and fertile deposits along wadi beds, flood plains, depressions and areas impounded by sand and rock barriers. The strata also trapped fossil water, the discovery of which by the middle of the 20th century would initially enable Riyadh to sustain the rapid expansion of its urban extent and population.

Wadi Hanifah is by far the largest wadi system in the northern and central parts of the Tuwaiq. It was formerly called Wadi Al Arid, the name previously given to the Tuwaiq Escarpment, and it passes through the ancient region of Al Yamamah. Along the central part of its course it first flows eastwards from the arcing crest of the Tuwaiq Escarpment and then turns abruptly south with 300 tributaries joining along its course. In ancient times, around the

oasis of Al Kharj it formed a confluence with a palaeo river, Wadi Al Sabha, which flowed into the Arabian Gulf and along whose course developed early trade routes. It was around Wadi Hanifah and its tributaries that some of the earliest settlements in the region emerged. Among them were names that were to resonate across the region and wider world: places that include Al Uyaynah, Addiriyah, Al Kharj; and Hajr, a name that was later replaced with the toponym 'Riyadh'.

Wadi Hanifah's towns were to influence the course of Islamic history. In the earliest period of the religion's spread, the conquest of Al Yamamah initially met with stubborn resistance from the Bani Hanifah but subsequently paved the way for Muslim expansion into other regions of the Arabian Peninsula. By the mid-12th Hijri century the area gave rise to the Islamic Reform Movement of Mohammad bin Abdulwahhab and in 1744 led to the formation of the First Saudi State in its capital of Addiriyah.

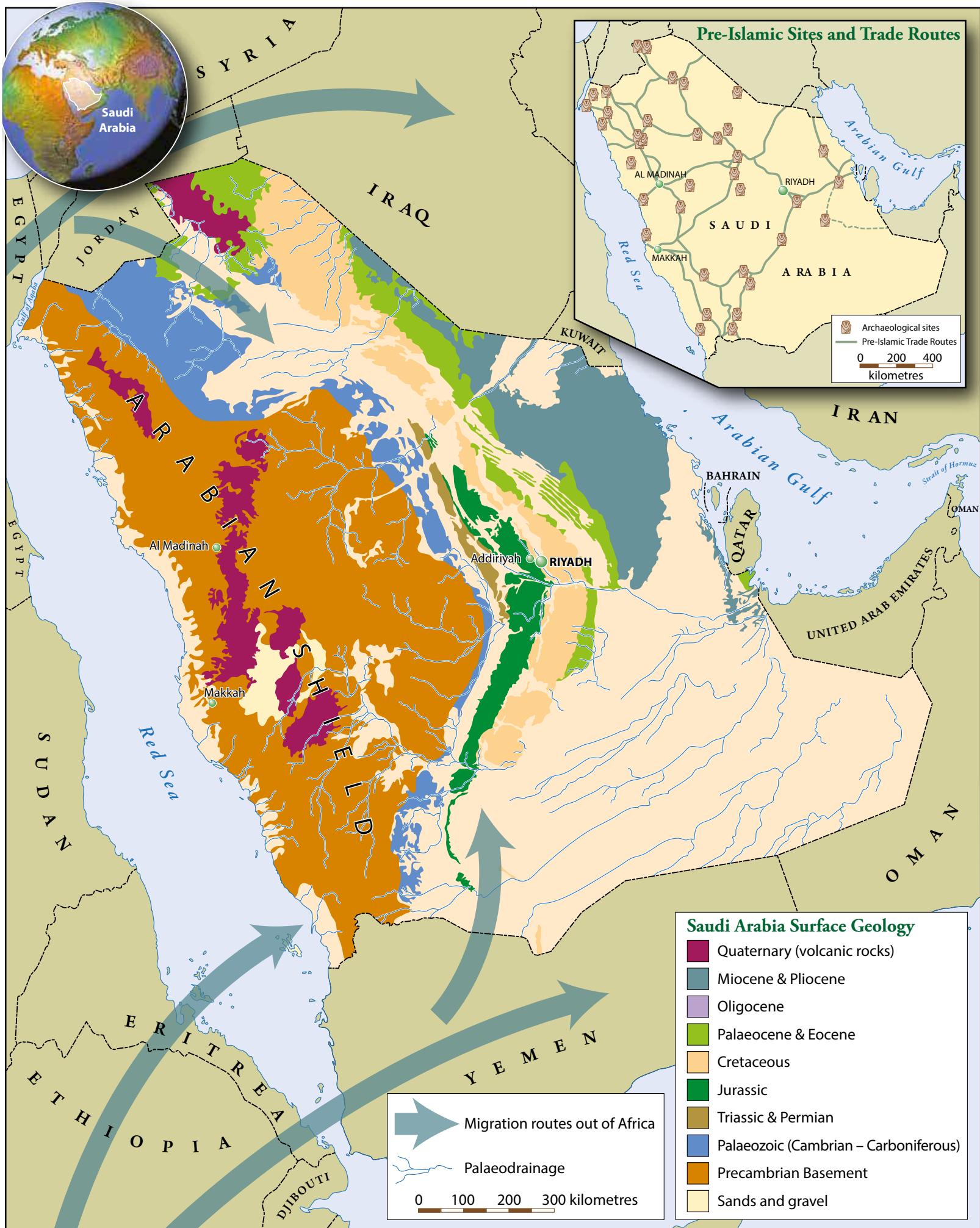
Almost two centuries later, its neighbour, Riyadh, became the capital of the nation-state of Saudi Arabia with its custodianship of Islam's two holiest places of Makkah and Al Madinah. Within a few years of the unification and foundation of the Kingdom, surveys and exploration of the late Jurassic carbonate reservoirs, which included those surrounding Riyadh, Wadi Hanifah and the Tuwaiq Escarpment, would lead to the discovery of the world's largest and most productive oilfields and propel the remarkable growth of the modern Kingdom and its capital. The subsequent economic and infrastructure developments and challenges inspired a vision for Riyadh that is now framed by Saudi Arabia's Vision 2030. This is the story of Riyadh, the proud capital of the Kingdom of Saudi Arabia: a vibrant society, thriving economy and ambitious nation at the heart of the Arab and Islamic worlds.

#### Opposite:

The Wadi Hanifah drainage system has historically favoured the development of Riyadh and numerous other towns by providing shallow ground-water supplies that support irrigation. Riyadh can receive 250 millimetres of rainfall in a wet year and here the wadi bed is filled with fast-flowing surface water run-off.



In 1744 Addiriyah was established as the capital of the First Saudi State and grew up on the banks of Wadi Hanifah. This picture, from the early 1990s, looks over Atturaif across the wadi towards what is now the modern capital of Riyadh.



## 2 From Prehistory to Islam

Water, climate change and strategic location have provided compelling reasons for migration to and from the Central Arabian Plateau and the extensive drainage area of Wadi Hanifah. Over many thousands of years the region around Riyadh has witnessed a panoply of peoples and experienced the gamut of human activities: hunter-gatherers, domestication, herders and pastoralists, the first cultivators of the agricultural revolution, proto-Bedouin herders, Arab traders, desert nomads and early oasis dwellers. Subsequently, Islam heralded the growth of structured Muslim towns and the machine age brought pumps, electricity and modern transport. Most recently, planners, architects, engineers and entrepreneurs have played their part in moulding the Saudi capital into a sophisticated 21st-century metropolis geared for innovation in the information era.

Detecting and tracing the inscrutable beginnings of the ever-expanding area that has become the capital of Saudi Arabia is fascinating, intriguing and challenging. Casting back towards the earliest horizons of prehistory to examine and interpret the faint traces of human activity, there is increasing recognition that the Arabian Peninsula, with its central location providing a clear geographic connection between Africa and Eurasia, is far more significant than initially believed. Indeed, when ancient or palaeo climates are factored in, it becomes clear that Arabia plays a crucial role and holds a pivotal position in terms of our common history and early human dispersals.

Just as stereotyped narratives portray the plateau region around Riyadh as being historically wholly isolated, marginal and perpetually arid, so until recently was all of Arabia considered a blank or at best peripheral when telling the story of the spread of modern humans. But sophisticated archaeology, forensic techniques and complex modelling and research into past climatic periods reveal that early humans and animals migrated to or passed through the interior of the Arabian Peninsula. As conditions changed, populations emerged, expanded and thrived. During some periods, usually associated with climatic change, they also contracted and perhaps entirely disappeared.

The Saudi Commission for Tourism and National Heritage in 2012 instigated a five-year 'Palaeodeserts Project' in collaboration with leading universities and institutions to study the effects of environmental change on the Arabian Peninsula over the last two million years. The focus of international scientific and archaeological researchers teamed with Saudi scholars is to determine how long-term climate change affected early humans and animals that settled or passed through the region, and what responses determined whether they were able to survive.

Using the latest scientific techniques, these ongoing studies of Arabian palaeo environments, the effect of climate change on prehistoric populations and the nature of human occupations and dispersals are producing exciting discoveries. They point to Arabia being a nexus of the development in our common story and recognise Central Arabia's significance in prehistory as well as in more recent historic periods.

We know that there were marked wet phases in Arabia's past that reach back into the Pleistocene and more recent Holocene epoch, and frontier research is now applying the latest techniques to refining dates in both epochs of the Quaternary Period. The Pleistocene stretches from 11,700 years to 2.5 million years ago, and attempts to cast this far back into the epoch to model ancient climates, chart climatic changes and their impact on regional environments present enormous challenges.

But investigations on strata in beds of numerous ancient former lakes and rivers in central Saudi Arabia and sophisticated modelling techniques are now beginning to tease out new evidence of past climates and their effects from several hundred thousand years ago to the more recent climatic wet phases that began nearly 12,000 years ago in our current epoch, the Holocene. As well as revealing that Arabia played a major part in the story of early humankind these studies are helping us understand more about the impact of climate change on the environment and both human and animal populations.

### Overleaf

An old stone-paved camel trail with hairpin bends ascends the Tuwaiq Escarpment west of Riyadh. This is one of several trails used for transporting goods by camel and as pilgrimage routes until the arrival of motor transport and development of modern roads.  
(Photo by Mohsen Aldajani)





Research conducted by the Saudi Commission for Tourism and National Heritage into past climatic periods reveals that early humans and animals migrated to or passed through the interior of the Arabian Peninsula. Wadi Hanifah has been continuously settled over millennia and archaeological finds in the area such as these Palaeolithic core axes provide evidence of earliest human habitation.



As well as numerous lacustrine deposits throughout Arabia, near-surface geology in much of the area of Riyadh reveals evidence of ancient drainage systems with sediments and alluvial silt and gravels that have helped sustain cultivation and communities in the Wadi Hanifah basin. Climatic changes through glacial and interglacial periods led to times of desiccation alternating with rejuvenation of ancient rivers and improved conditions. The terraces of Wadi Hanifah have yielded archaeological evidence of human habitation during the Middle Palaeolithic era as have ancient lake beds east of Riyadh containing flint deposits used as raw material for tool making. Surveys, including seismic refraction of the extensive site of King Khaled International Airport, reveal alluvial deposits up to 50 metres deep. Recurrent wet phases would have attracted settlement, and archaeological discoveries in and around the capital include a rich collection of Acheulean stone hand-axes, hammers, knives, choppers and cores used for fabricating tools by early humans on the scene as far back as the Lower Palaeolithic over a million years ago.

Some of the sites have revealed prolific finds of napped artefacts, debitage and fire-cracked rocks pointing towards areas of relatively dense settlement and human activity involving local stone tool resources during periods of

favourable climatic conditions. As for the Upper Palaeolithic period, the trail for evidence of human occupation in Arabia goes cold, but buried in deep sediments throughout the flanks of the numerous wadis, under the Aruma Plateau east of the capital and along the base and summit of the Tuwaiq Escarpment, there likely lies exciting evidence of early human activity awaiting discovery.

There is no doubt that Palaeolithic peoples were busy napping stone cores at numerous sites around Riyadh, even if the last phase remains shrouded in mystery. However, with the more recent wet phases in the region come the first indications of a shift from hunter-gathering communities to the beginning of the Neolithic period when human innovation led to improved stone tool technologies and the first signs of cultivation. The inventory of artefacts produced shows signs of increasing skill and sophistication with techniques such as bifacial pressure flaking used to produce tanged arrowheads and other projectiles and blades, all of which have been discovered around Riyadh.

Wadi banks, pans and small lake beds and sand dunes in and around the area of the capital have produced substantial finds that also include stone tools, hearthstones and grindstones

that point to the domestication of plants and animals. Discoveries of granite artefacts, including stone tools made from volcanic material such as olivine, suggest the emergence of early trading of materials between communities. Other finds provide evidence of the development of rudimentary cultivation and later metal working and pottery production in the area.

Stone-built structures – which include funerary features, dwellings and enigmatic stone circles, kites, tails, troughs and inscrutable standing stone pillars as well as petroglyphs and later inscriptions – reveal a more developed and complex range of human activities in the region. Such features proliferate in the Wadi Hanifah drainage basin, along the upper parts of the Tuwaiq Escarpment west of Riyadh, to the east along the flanks of Jabal Aruma and around the current site of King Khaled International Airport and at Thumamah. Some 14,000 years ago, after numerous waves of previous migration commencing with the earliest movements

out of Africa, the last great warming period occurred. This brought copious monsoonal rains that greened the heart of Arabia and spurred a rapid spread of population, which led in turn to the revolution of human activity from hunter-gathering to the first signs of the domestication of animals and plants in the region and the emergence of agrarian society. By 8000 BCE people had started to settle, cultivate date palms, sorghum and barley, and herd goats, sheep and camels for milk, meat, leather and wool. Around Thumamah, archaeologists have uncovered evidence of Neolithic settlements dating from 8,000 years ago, with finds including stone tools, grindstones and remains of stone structures.

The domestication of the Arabian camel and equids as means of transport led to the opening up of trade routes around 3,500 years ago. By this time the Arabian horse, the earliest pure breed known to man, was used for riding. Both the camel and the horse were to form an integral part of the



Abundant archaeological evidence such as stone tools including arrowheads, spears and blades with fine workmanship indicate the presence of Neolithic communities around Riyadh as far back as 7,000 years ago. Hunter-gatherer communities gradually adopted and incorporated the process of domestication and settlement.

way of life and culture of Arabia, promoting the development of long-distance trade and later the spread of Islam.

As settlements grew, the first clear evidence of Arabic-speaking peoples emerged nearly 3,000 years ago. Trade in aromatics, spices, exotic plants and gold to Mesopotamia and the Levant from southern and southwest Arabia, and from India through the Arabian Gulf coast and Oman, placed Central Arabia in a strategic position to control and benefit from emerging trans-Arabian routes. Caravan routes developed, passing through Najran, Qaryat Al Faw, Al Sulayil, the oasis settlements of Al Ahsa, Yabrin, Al Aflaj to Al Kharj and into Wadi Hanifah, and northwards towards the Levant and west to the Hejaz.

Wadi Hanifah and Al Kharj became increasingly significant in the unfolding history of the Arabian Peninsula and by

1,200 years before Islam they formed the centre of the two proto-Arab states comprising the legendary lost tribes of Tasim and Jadis. They were cultivators and, like the Nabataeans, experts in exploiting wadi and oasis water resources. They were also master builders who constructed fortresses and lofty limestone watchtowers. The main centre for the people of Jadis was located around present-day Al Kharj and the people of Tasim settled on a south-flowing tributary of Wadi Hanifah then known as Wadi Al Arid. Their main town, named Hajar, was located on the ancient alluvial silts on the western flanks of Wadi Wutr (later named Wadi Al Battha) and it spread and grew among palm groves and cultivated gardens. This provides the earliest reference to a known and named populated place on the site of today's Saudi capital and it was linked with others scattered along the course of Wadi Hanifah and its tributaries.

The domestication of the Arabian camel around 3,500 years ago and its subsequent use as a means of long-distance desert transport led to the opening up of early pre-Islamic trade routes across Arabia.





Some two or three centuries before the rise of Islam, numerous major trade routes through the region had become well established and protected but, mysteriously, the twin states of Tasim and Jadis fade and disappear. Historians argue that the demise of the legendary early nations was possibly brought about by Himyaritic invasions from Yemen. Others contend that drought or disease led to their disappearance or assimilation by occupiers of the region on the eve of the coming of Islam.

Pre-Islamic and Islamic sources now begin to refer to the area of Al Yamamah. Although still not clearly defined by archaeology, Arab chronicles or ancient poetry, this now iconic name corresponds to the plateau east of the middle and northern stretches of the Tuwaiq Escarpment as well as the open plains ranging to the west. Al Yamamah is still nostalgically used in and around the capital, lending its name to the primary executive office of the Saudi

Custodian of the Two Holy Mosques, Riyadh's first newspaper, a private university, a hospital, hotels, trading companies and an international Saudi investment offset programme.

A migrating tribe, the Bani Hanifah, now appears on the scene in Lower Nejd and some of the nomads settle on the cultivated land and groves in the abandoned villages and towns of the lost tribes of Tasim and Jadis, including the protected gardens of Hadr. From this time until the present, Wadi Al Arid becomes known by the name of Wadi Hanifah after its new Arab residents, cultivators and traders. By the birth of Islam, agriculture and trade were thriving and the area of Wadi Hanifah had become famed for its grain and dates. With the spread of Islam, Wadi Hanifah would also soon become famous for an epic battle that would lead to the Bani Hanifah embracing Islam and also result in the Holy Quran being recorded in writing.

The date palm was an early plant species to be domesticated as people in central Arabia shifted from hunter-gathering towards an agrarian society.

#### Overleaf

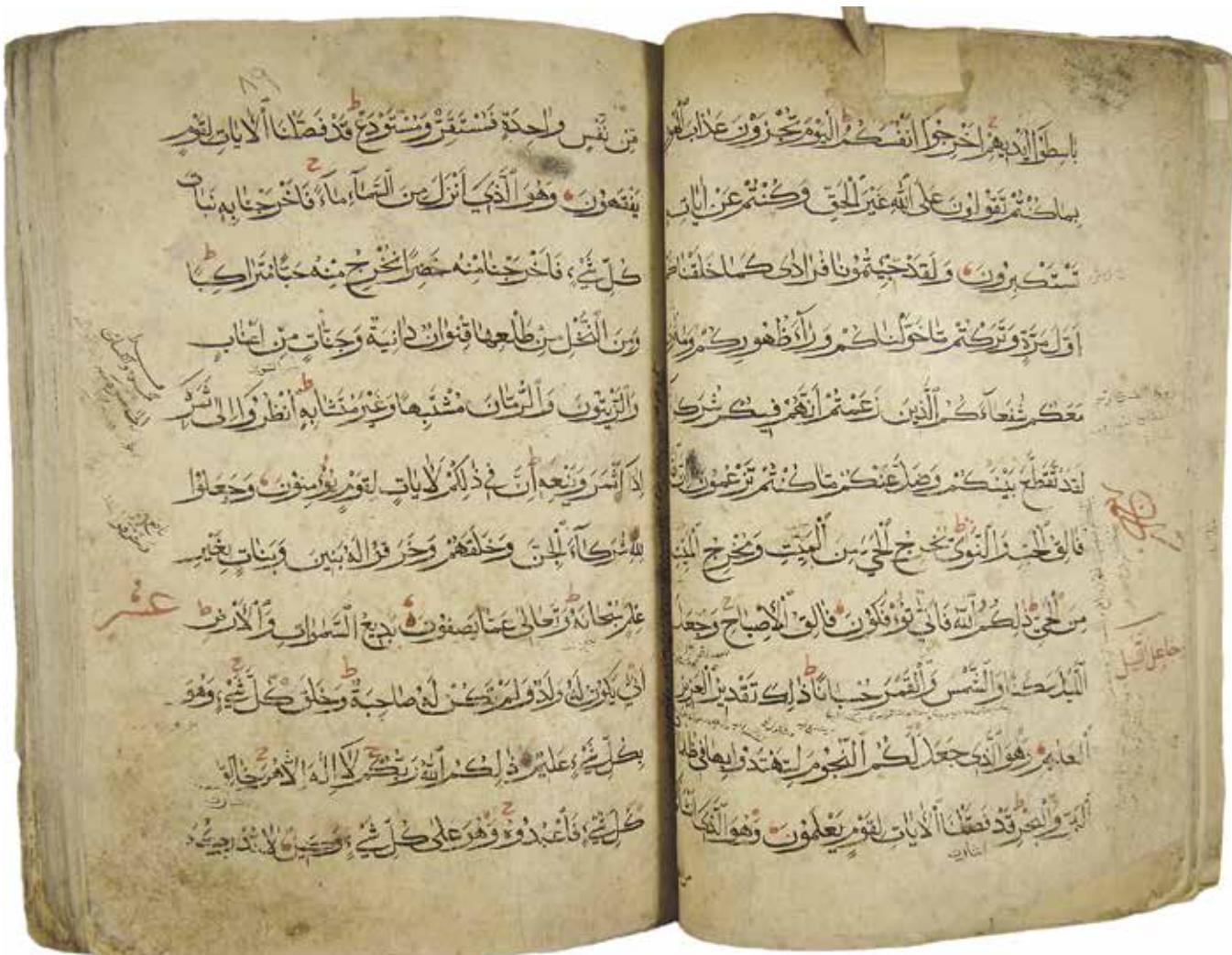
This extensive Neolithic site at Thumamah has burial mounds visible in the background. Numerous archaeological remains in the area include stone structures and tools.





A page from a rare copy of the Holy Quran from the manuscript collection at the King Faisal Centre for Research and Islamic Studies in Riyadh. It shows Verse 99 from Chapter 6 which refers to God's bounty provided by rain including palm trees with their dates, fruit, and grain. This 15th-century (9th century AH) Quran is copied in Thuluth script.

99 from Chapter 6 which refers to God's bounty provided by rain including palm trees with their dates, fruit, and grain. This 15th-century (9th century AH) Quran is copied in Thuluth script.



### Sūrat l-an‘ām (The Cattle)

*It is He Who sends down water [rain] from the sky, and with it We bring forth vegetation of all kinds, and out of it We bring forth green stalks, from which We bring forth thick clustered grain. And out of the date-palm and its spathe come forth clusters of dates hanging low and near, and gardens of grapes, olives and pomegranates, each similar [in kind] yet different [in variety and taste]. Look at their fruits when they begin to bear, and the ripeness thereof. Verily! In these things there are signs for people who believe.*

(Translation: The King Fahd Complex for the Printing of the Holy Quran)

### 3 The Spread of Islam

**A**t the time of the birth of Islam, the communities of Wadi Hanifah in Al Yamamah were politically independent, powerful and prosperous. They conducted and brokered flourishing trade with the oases of Al Kharj and Al Ahsa to the east and with more distant Al Madinah, Makkah and Taif in the west, as well as with the Persian Empire and with the sources of incense in southern Arabia. Hajar, located on the site of what was to be renamed Riyad, was the capital of the province of Al Yamamah and an important centre for the region of Lower Nejd which included Wadi Hanifah. These strategically located communities controlled trade routes and exported grain, dates, bloodstock and livestock and fiercely opposed any external pressures which could threaten their economic interests.

Following the divine revelation of the Holy Quran during the last two decades of the life of the Prophet Mohammad (Peace Be Upon Him), many of the tribes of Arabia united and embraced Islam. This created the foundations for the growing Muslim community (Ummah) and the base for the subsequent expansion of the Islamic world. However, although delegations from sedentary populations and nomadic groups from Al Yamamah visited Makkah and Al Madinah and the Hajj began to draw more pilgrims to Makkah from Nejd, there was still early resistance to the spread of the new religion of Islam.

When Al Yamamah's leader, Hawtha bin Ali, died around 630 CE his successor, Musaylamah al Kazzab (the Liar), began to make spurious religious claims. By the time of the death of the Prophet (PBUH) in 632, a number of apostatising and rebellious cults in Central and Eastern Arabia had emerged. One of them was a movement initiated by Musaylamah among the Bani Hanifah, many of whom had not converted to Islam. Bolstered by the economic prosperity and independence of the area and its status as a breadbasket on which Makkah depended, Al Yamamah threatened the cause of universalising Prophet Mohammad's revelation.

After the Prophet's Companion Abu Bakr Al Siddiq (May Allah be Pleased with Him) took command of the affairs of the expanding Muslim State, attention turned towards

removing disbelievers and spreading Islam throughout Arabia. Abu Bakr had successfully participated in and led campaigns during the life of the Prophet and he now staged a campaign into Nejd. The series of battles over two years became known as *Hurub Al Riddah* (the Wars of Apostasy). Al Yamamah and the Bani Hanifah, encouraged by their leader Musaylamah and fearing they would lose economic independence and cultural autonomy, stubbornly resisted. The Muslim army was twice defeated, and the loyalties of tribes and towns were in flux. Caliph Abu Bakr Al Siddiq appointed his general, Khaled bin Al Walid (May Allah be Pleased with Them), to march on Central Arabia. The campaign to subdue Al Yamamah and its fortress towns was to culminate in the Battle of Al Yamamah in 634, the death of Musaylamah and victory for the Muslim army.

The battle was a turning point in Islamic history and within a short period almost the entire population of the Arabian Peninsula had embraced Islam. It was a pivotal moment in the history of Nejd, ending a period of strife among the desert Arabs, and also had another highly significant bearing on the course of Islamic history. In the campaign in Nejd and its climax with the battles of Al Yamamah, there had been heavy casualties among the Muslim army, including Companions of the Prophet, teachers and members of the faithful who carried the title Hafiz. Huffaz were those who had memorised the Holy Quran and an estimated 700 of them died in the course of the campaign. This loss encouraged the process of compiling the Holy Quran in its entirety.

During the remaining period of the Rashidun Caliphate and subsequent Umayyad period a large number of the Bani Hanifah and other Central Arabian tribes migrated into new and widening Islamic territories while Al Yamamah and its capital, Hajar, became a province of the expanding Islamic administration. A new Islamic architectural aesthetic was beginning to appear in Nejd. As more and more communities embraced Islam, the construction of mosques attempted to keep pace. The numerous mosques that communities subsequently established in Nejdi towns, such as Hajar, were made from mud-brick and typically characterised by low minarets, square in plan, accessed by steps up an angular

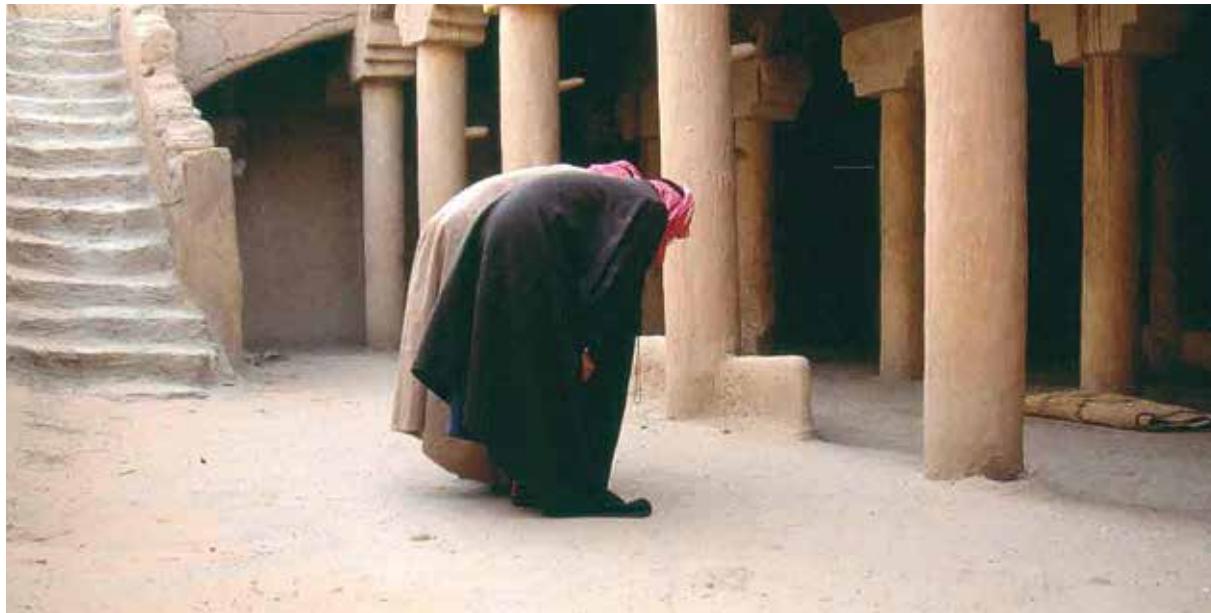
#### Overleaf

Shahada, the profession of faith, is the first of the five pillars of Islam. After the Battle of Yamamah in 634 CE the tribes of Central Arabia embraced Islam and the Muslim community (Ummah) continued to expand across Arabia and beyond. Travellers at prayer in the desert near Riyad. Photograph Abdullah Philby, 1917.





The ritual of prayer five times daily is another of the five pillars of the Muslim faith. As Islam spread into Central Arabia mosques were built in the settlements of Wadi Hanifah.



ramp to the side. Muslim conquest and the submission of the peoples of Al Yamamah resulted in the imposition of a clear central authority on the region with the key town remaining Hajr. The precise location of ancient Hajr is still uncertain but it is thought to be located towards the centre of today's Riyadh – according to some authorities just outside the former old northern walls of the capital.

The Hajj and Umrah became important features in the lives of the population, with caravans departing on the annual journey to Makkah and numerous frequent and smaller departures of pilgrims for the lesser pilgrimage of Umrah. Trade thrived and developed in tandem with pilgrimage and migration, as did the exchange of ideas and contact with an ever growing Ummah, as the Islamic community spread well beyond Arabia into Asia, Africa, the Levant and beyond.

Around 846 CE, nearly a century after the foundation of the Abbasid rule with its capital in Baghdad, the economic prosperity of Al Yamamah and its capital began to show signs of waning and the hitherto relative independence of the area weakened. In 866 Al Yamamah broke away from the Abbasid Empire and the area fell under the rule of the Ukhaidhir Dynasty, who moved the capital from Hajr to nearby Al Kharj. As the Golden Age of Islam was focused to the north, the region continued its long period

of relative decline, weakened further by recurrent drought and epidemics.

But two centuries later the dynasty waned and the Bani Hanifah tribe, who had fled, re-established themselves and restored agricultural prosperity. The region was famed for the abundant crops it produced, many of which were exported to Makkah.

There are occasional glimpses of life over the centuries in the area of today's Riyadh after the coming of Islam and before Nejdi chroniclers and scholars, as well as travellers, were to provide more details. In around 1051, a Persian traveller and pilgrim, Nasir Khusraw, passed through the area and gave a brief description of conditions at the time. He certainly visited Al Kharj, although there is no evidence that he visited Hajr or any of the towns along Wadi Hanifah. However, he described the mosques, and both surface and underground irrigation systems in extensive use in the area.

In 1331, the famous Muslim traveller Ibn Battuta passed through Wadi Hanifah on his third Hajj and visited the town of Hajr and described his visit in brief and tantalising detail. Arriving on the Arabian Gulf coast, he joined a pilgrimage caravan passing through Al Ahsa and west into Wadi Hanifah where he confirmed Hajr remained the centre of Al



By the 19th century, as calculation of longitude became more precise so maps become more accurate. This map by William Darton shows the pilgrim route to Makkah across Central Arabia and places Addiriyah as Deraieh and Riyadh under its former name of Miqrin (Megren). The settlement of Hajar is not to be confused with Hajr, the original name of Riyadh, and is the ancient gold mine of Al Hajr, 210 kilometres west of the capital.

Yamamah and that the town's Emir was Tufail Ibn Ghanim. The Bani Hanifah were still present in the area and he refers to its extensive network of irrigation canals and extensive palm groves.

Around 1400, the Jabrid Dynasty emerged in Eastern Arabia and extended its reach into Al Yamamah. The Jabrid rulers, who originated from Nejd, greatly respected Islamic scholarship and schools of jurisprudence that had developed in Al Yamamah. They encouraged trade and pilgrimage and protected the Hajj routes from the Arabian Gulf through Central Arabia. With developing pilgrimage and monsoon-driven trade to the Gulf from across the Indian Ocean, huge camel caravans now passed through Hajar and other towns

in Al Yamamah, bringing with them exotic goods from India and the Orient that found their way into the local communities.

From the 16th century, Hajar began to decline. Factors such as drought, feuding with neighbouring towns such as Manfuhah and Addiriyah, as well as more general instability in the region, may have all contributed to the fading of Riyadh's once powerful predecessor. During this period, other settlements in and around Wadi Hanifah, such as Addiriyah, Al Uyaynah, Manfuhah and Durma became more powerful and, along with Ushaiqer further west, established themselves as Nejdi centres of Islamic scholarship. These in time would rival and then supersede



#### The Islamic Hijiri Calendar

The Hijiri lunar calendar dates to the migration (Hijrah) of the Prophet Mohammad from Makkah to Al Madinah where, in 622 CE, Muslims first attained religious and political autonomy.

Hejiri dates are shown with 'H' or 'AH', which stands for the Latin *anno Hegire*, 'year of the Hijra'.

1 Muharram, 1 AH corresponds to 16 July, 622 CE.

0 200 400 600 Kilometres

the status of Hajar which, by the close of the 16th century is referred to as Miqal. Another century later, the waning town is named as Mugrin. With their location on the silt flats west of Wadi Hanifah alongside the tributary Wadi Al Wutr (later named Wadi Al Battha) both Miqal and Mugrin certainly refer to areas within the former Al Yamamah capital of Hajar. Mugrin emerges as a survivor of this cluster of fortified agricultural villages that formerly collectively made up Hajar.

After 1620 the area suffered 50 years of severe recurrent drought. The agricultural communities and their groves and gardens survived; however, their influence and size dwindled while other communities on Wadi Hanifah rose in prosperity and authority. During the 17th century, the name Riyadh begins to appear more often to refer to these settlements based on old Hajar. A few kilometres south was the substantial walled town of Manfuhah, ruled by Dawwas bin Abdullah bin Shalan.

In 1737 his son Diham took over, and started briefly to turn round the fortunes of Riyadh. There are indications that during this time he built a massive wall encircling the extensive groves and scattered buildings and mosques, effectively enclosing it as a single town, and constructed a palace that served subsequent Emirs until destroyed by Al

Rashid in 1891. The extent and precise locations of these places on which Riyadh was founded is still a cause for speculation.

William Facey, in his account 'Riyadh the Old City: From its Origins to the 1950s', considers it possible that Riyadh's centre occupied the same area as the core of the town that Diham ruled, but that the earlier settlement covered a larger area than did the capital of the Second Saudi State. Hence Diham's city may have had an inner nucleus on the site of the later city, with an outer defended area which might have enclosed some of the smaller settlements such as Miqal which were later excluded. If this is the case, 'Riyadh' would have been a city of settlements and gardens, all encircled by a wall – in the same way, Addiriyah was encircled by an extensive perimeter wall when it was at its zenith as the capital of the First Saudi State.

In Riyadh, Diham was to oppose the growing power of its rival neighbour on Wadi Hanifah. Over nearly three decades, involving dozens of confrontations, he defied the authority of ascendant Addiriyah, the emerging Reform Movement and the foundation and expansion of the First Saudi State until he and many of his followers capitulated and fled.



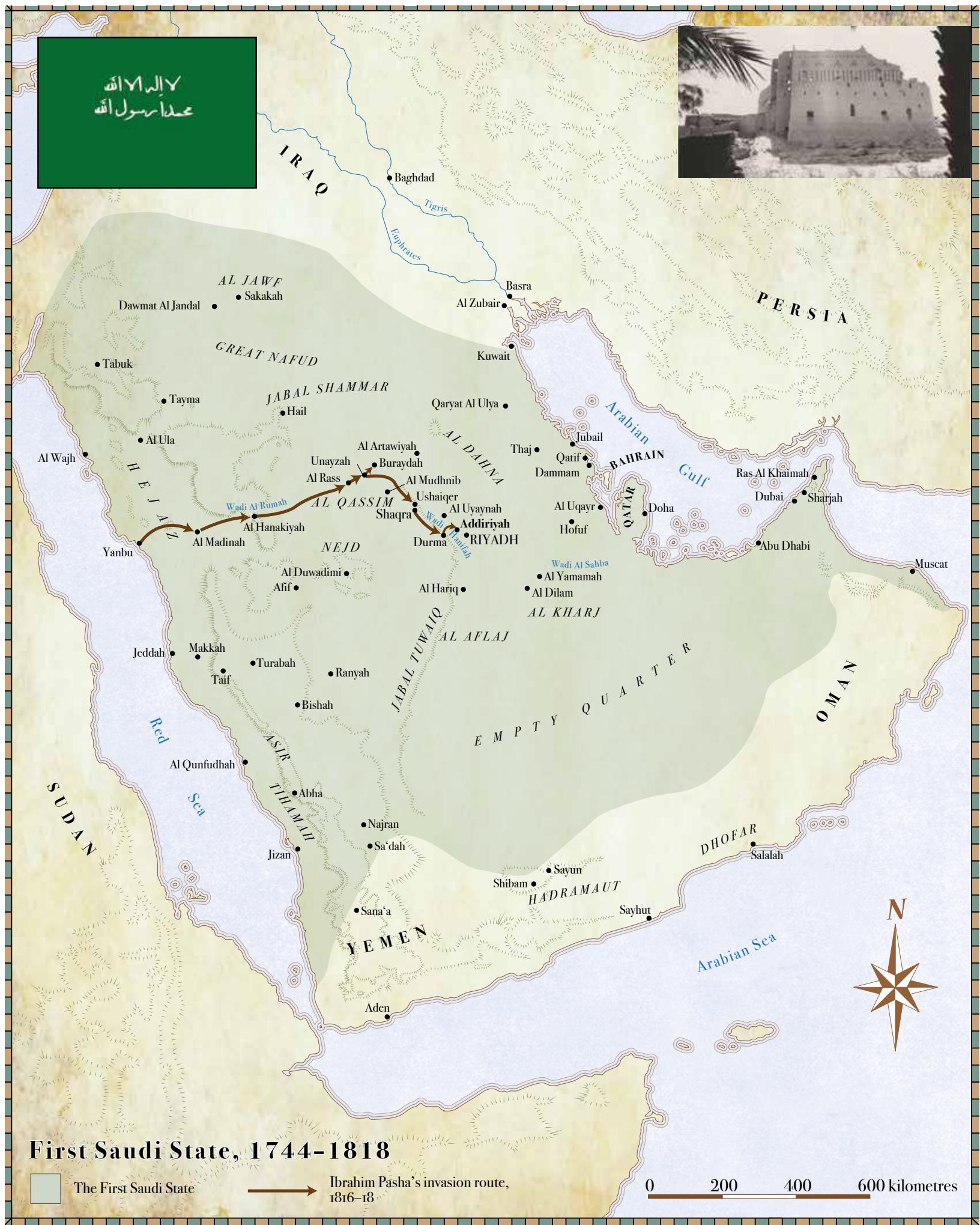
The Mosque of Subalat Mudi in Addiriyah is typical of the mosque architecture that developed in Nejd. Low, square minarets with columns made from local stone and sun-dried mud bricks were a common feature.

#### Overleaf

The Hajj and Umrah became important features in the lives of the population, with caravans departing on the annual Hajj to Makkah and departures for the lesser pilgrimage of Umrah. Pilgrimage by camel caravan from Riyadh was an arduous 1,000-kilometre desert journey. This rare photograph taken of the Hajj of 1912 (1330 AH) is from the H.V. Weakley Collection.







## 4 The First Saudi State

Midway between Riyadh and Huraymilah, towards the headwaters of Wadi Hanifah, is the town of Al Uyaynah, once among the most powerful and prosperous towns in Nejd and renowned as a centre of teaching and learning. One of Al Uyaynah's distinguished scholars was Sheikh Abdulwahhab bin Sulayman bin Ali bin Musharraf from the noble Tamim tribe. In 1703 (1115 H), his second son was born and named Mohammad; he was raised in an extended family respected and known for their knowledge of classical Arabic and teaching of the Quran, Hadith and jurisprudence. Since the town was then a magnet for visiting scholars from far and wide, the young Mohammad bin Abdulwahhab was surrounded by experts in many branches of religious learning.

By the age of ten, by which time his father had become *qadi* (judge in Islamic law) in Al Uyaynah, Mohammad had memorised every verse of the Holy Quran and continued to immerse himself in religious studies, becoming skilled in calligraphy. In around 1723 he performed the Hajj and travelled on to stay in Al Madinah, where he was influenced and guided by scholars from across the Islamic world. After two years he returned to his native town. Here his stay was short lived, perhaps because of local resistance to his teachings which included zealous proscription of loose and wayward interpretations of Islam and in particular the attachment to saints and the care of shrines, tombs and graves.

He next headed eastwards, across the Dahna sands to Hofuf, the largest of the oasis settlements of Al Ahsa, renowned as another great seat of religious learning in Arabia. From here he travelled north to Basra, where he was tutored and profoundly influenced by leading religious scholars of the day.

His return to his homeland in 1738 took him briefly to the town of Huraymilah, where his father had moved in 1726, and then back to his birthplace. In 1744 he left Al Uyaynah for the oasis of Addiriyah, which had been ruled since 1726 by Emir Mohammad bin Saud. Here, from a hamlet at the northern end of the walled oasis, Sheikh Mohammad continued his teachings and was made welcome by the Emir, who supported his reformist call. Sheikh Mohammad

took up residence with his family and a growing number of followers, opposite the ruler's citadel of Atturaif in the district of Al Bujairi which began to develop in the extensive palm groves and gardens alongside Wadi Hanifah.

Addiriyah now witnessed the founding of an historic alliance in which Mohammad bin Saud as ruler and Imam would lead political, economic and military affairs of state and Sheikh Mohammad and his reformist teachings would provide the religious underpinning with legal counsel, guidance and inspiration. The essence of the Da'wah, to become widely known as the Reformist Call of Sheikh Mohammad bin Abdulwahhab, was a return to the uncompromising, fundamental and literal teachings of the Quran, the oneness of God and fully authenticated Sunnah and Hadith. Thus, in 1744, the First Saudi State was established with its capital of Addiriyah. To this day, the principles of the Reformist Call remain in effect in Saudi Arabia.

As the capital of the First Saudi State, Addiriyah grew during the succeeding years. The substantial walls protected the large and prosperous town of Atturaif, as well as enclosing villages and palm groves. As in all the ancient communities along Wadi Hanifah, buildings were constructed using sun-dried mud bricks, with limestone used for larger foundations and columns. This age-old technique was highly adaptive of local materials and climatic conditions, and involved skill, patience, dexterity and effort combined with ingenuity developed over millennia. The 19th-century chronicler of Nejd, Ibn Bishr, reports on a thriving town full of houses of all sizes, fields and palm groves: the streets were found full of men of affluence, accompanied by large retinues with weapons ornate with gold and silver as well as purebred Arabian horses and fast camels from Oman. Extensive palm groves provided a source of dates and molasses for consumption by man and beast, for fuel, and of materials for buildings and basketry and other domestic products. Amid the date palm groves and along the wadi banks, cultivated and irrigated gardens and fields provided cereals such as wheat and barley, which formed the staple diet, and alfalfa for fodder. Orchards produced a wide range of fruits, and herbs, vines and medicinal plants were also cultivated, as well as cotton.

### Map inset

The imposing defensive Palace of Umar bin Saud, brother of Imam Abdullah, in Addiriyah overlooking Wadi Hanifah. Photograph by Hassan Fathy.

### Overleaf

The view towards the ruined citadel of Atturaif over Wadi Hanifah reveals the extent of Addiriyah, the oasis capital of the First Saudi State. In 1818 Ibrahim Pasha mounted his guns on this hill and bombarded the citadel. This historic photograph of December 1917 was taken by Philby, who wrote: "In all things the Dara'iyya of old was but the prototype of modern Riyadh, built to replace it."





Pages from a handwritten manuscript of the chronicles of Ibn Bishr on the history of Nejd from the mid-18th century to 1854. Ibn Bishr refers to the teachings of Sheikh Mohammad Abdulwahhab during the First Saudi State. Although not a contemporary of the Sheikh, Ibn Bishr interviewed people who met and knew him. Courtesy of the British Library.



Supported and propelled by the political and military power of Al Saud, the Call of Sheikh Mohammad bin Abdulwahhab reverberated along Wadi Hanifah. Alliances were formed and hostilities raged, truces made and broken. Al Uyaynah and Huraymilah were aligned with Addiriyah and in 1746 Manfuhah recognised the authority of the House of Saud. However, Riyadh, under the rule of Diham bin Dawwas, who also laid claim to nearby Manfuhah, resisted the Call and teachings emanating from Addiriyah. In the 25 years that followed the allegiance between the two Imams, Mohammad bin Abdulwahhab and Mohammad bin Saud, there were dozens of skirmishes between the then capital Addiriyah and its neighbour Riyadh.

In 1765, Imam Mohammad bin Saud died and his son and heir Abdulaziz took control of Addiriyah, whereupon hostilities with Riyadh heightened. Abdulaziz had already lost two of his brothers, Saud and Faisal, in the long-running feud in which Riyadh under Diham bin Dawwas

alternately embraced and then rejected the teachings of the nascent Reform Movement. Finally, in 1773, weakened by continued assaults from the burgeoning force of Addiriyah, Diham, himself having lost two sons and a brother in the protracted struggle, capitulated and fled to Al Kharj with several hundred of his followers. Chroniclers estimate that over 27 years Riyadh's losses exceeded 2,000 men, a significant proportion of its population of the time. With Diham's departure, the debilitated settlement came under the authority of the capital, Addiriyah, and the Saudi State now held sway over all of Wadi Hanifah.

Propelled by the zeal of the Reform Movement of Imam Mohammad bin Abdulwahhab, the influence and territories of the First Saudi State rapidly expanded throughout Nejd eastwards to Al Ahsa and the shores of the Arabian Gulf and Oman on the Indian Ocean, and northwards to impinge on Ottoman-ruled Greater Syria and Mesopotamia.

The Reform Movement also began to look westwards to the Hejaz, to the two Holy Cities of Makkah and Al Madinah and the Red Sea littoral. With the new-found security offered by the expanding Saudi State, Riyadh's walls crumbled. The town's office of Emir was appointed by Addiriyah and charged with the maintenance of order within the settlement's walls and assisting with collection of Zakat. Of this obligatory Islamic tax contributed by the citizens of Riyadh, Addiriyah took a quarter, with revenues also allocated for the upkeep of Riyadh's public wells and mosques and provision of alms and welfare for the poor. Defence, justice, religious affairs and education were administered by the Imam from the nearby capital in Atturaif.

Sheikh Mohammad bin Abdulwahhab died in June 1792 (*Shawwal* 1206 AH) at the age of 89 and was buried in Addiriyah. Over a period of nearly 50 years the founder of the Reformist Call was guide and mentor to two Saudi Imams. In the words of the Nejdi chronicler Ibn Bishr: "No army rode out and no opinion was issued by the Imam Mohammad and Abdulaziz except on his advice and approval." In his daily life he is reported to have been a model of virtue, a man of deep piety, dedication, kindness and humility. He was stern with men of influence, but magnanimous in victory and avuncular with his students. A man of frugal habits, Sheikh Mohammad bin Abdulwahhab was unconcerned with his own status and took no interest in worldly gain.

Imam Abdulaziz bin Mohammad bin Saud ruled for 38 years and during this period he campaigned throughout much of Arabia and into southern Mesopotamia. In November 1803, at the age of 82, he was assassinated whilst at afternoon prayer at Atturaif Mosque in the oasis capital.

His heir, Saud bin Abdulaziz, immediately took power. By 1805, as the third Imam of the First Saudi State, he had extended Saudi rule to the Holy Cities of Makkah and Al Madinah, with control over major pilgrimage routes. The State now controlled much of the Red Sea littoral and, to the east, Al Ahsa, the Arabian Gulf and Oman. Addiriyah under the rule of Saud grew into a wealthy and powerful military and Islamic capital, enriched by revenues from Nejd and surrounding territories and bolstered by trade and tribute.

Growing power and influence along with the inexorable spread of the Call alarmed the Ottoman authorities in Istanbul and the Ottoman *walis* in Iraq, Syria and Egypt. Control of Al Haramayn (the two Holy Cities) and the Hajj were essential elements to Ottoman rule and legitimacy. Increasing international pressure was also now exerted on Ottoman authorities, in both Istanbul and Cairo, to take punitive measures to halt the threat to European seaborne trade and coastal interests around the Arabian Peninsula.

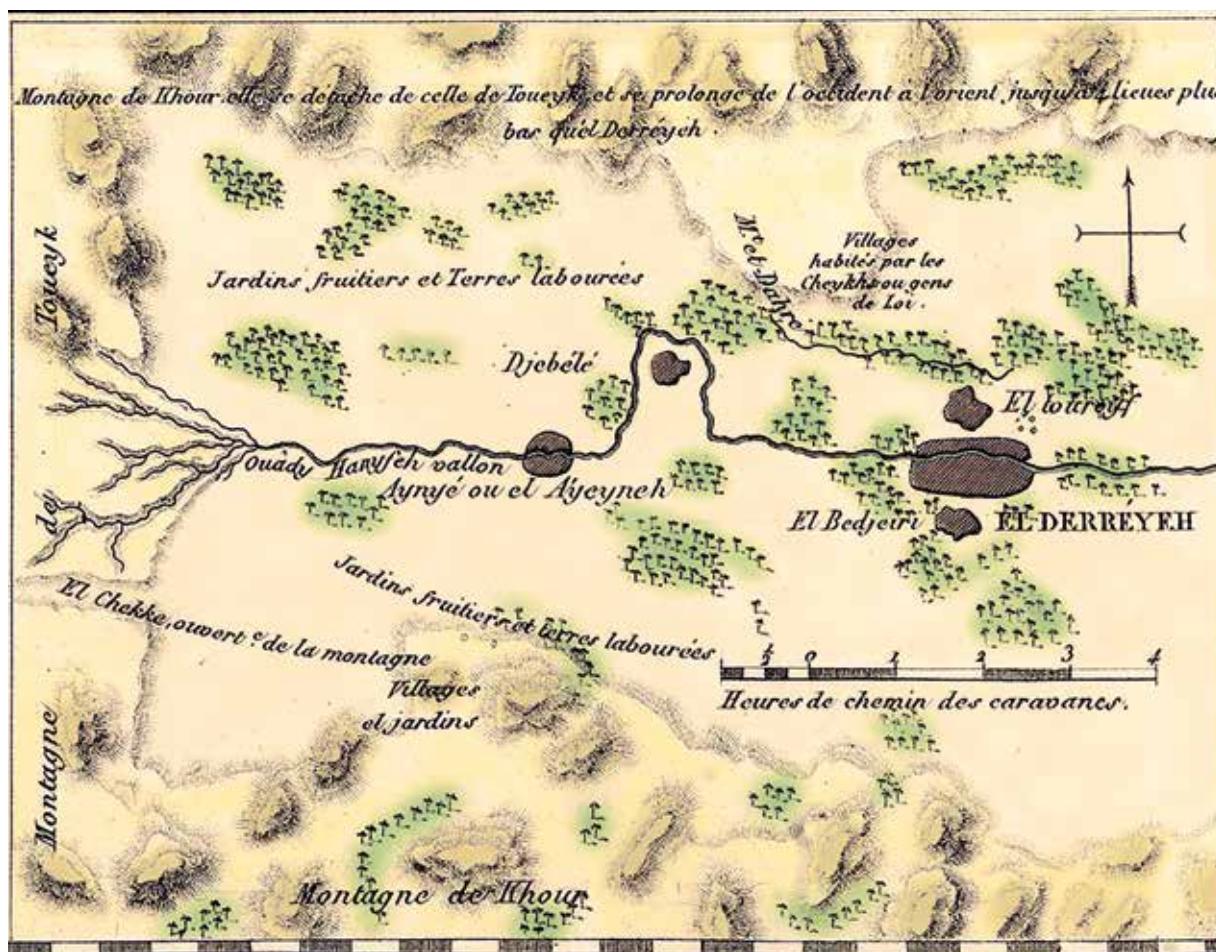
The response was aimed at curtailing, once and for all, the expansion of the Saudi State and the spread of the Call. A military expedition into Arabia was planned, with the Red Sea port of Yanbu as a bridgehead for marching on Al Madinah and from there into Nejd. Preparations came under the authority of the Ottoman Wali of Egypt of Albanian origin, Mohammad Ali Pasha. Raising funds for the bold invasion from taxes and loans, he placed the military forces under the control of his 18-year-old son Ahmad Tusun. In 1812, Al Madinah was retaken.

In 1814, the decade-long rule of Imam Saud came to an end with his death, and his son Abdullah took over at a time of a looming external threat to the First Saudi State. Within a year, the invading forces had taken Taif and began their offensive into Central Nejd. Initially, on the borders of Al Qassim the two sides discussed peace overtures and an armistice in which Saudi rule would be confined to Nejd.

In the autumn of 1816 Mohammad Ali dispatched a new expeditionary force led by his eldest son Ibrahim. Ten thousand men landed at Yanbu, launching a concerted campaign to finally crush the spreading Reform Movement. Leaving Al Madinah, the forces swept through Al Qassim, taking its prosperous towns. In January 1818 Ibrahim Pasha and his troops turned south towards Shaqra and onwards to Durma. This stronghold was an important centre, with Abdullah bin Saud's main stud of several thousand fine Arabian cavalry horses. After strong resistance Durma fell and was sacked and from here, in the spring of 1818, the forces moved up and over the Tuwaiq Escarpment, entering Wadi Hanifah around Al Uyaynah and then southwards to lay siege on the Saudi capital.

The siege of the fortified mud-walled oasis Saudi capital





An early 19th-century map of Addiriyah showing extensive palm groves and orchards in the area. The sketch appears as an inset to a map of Arabia by E F Lombard shortly after the siege of Addiriyah. The scale is shown by distance covered per hour by camel and indicates a five-hour journey by camel from Addiriyah to Uyaynah along Wadi Hanifah.

lasted six months. Turkish, Albanian and North African infantrymen, along with a motley band of opportunists who joined the campaign, took part in the attack. It was supported by cavalry, cameleers with 6,000 camels to maintain supply chains, European soldiers of fortune, military advisors, logisticians, engineers and miners, and a formidable array of equipment that included artillery, firepower and high explosives. After protracted and debilitating mortar bombardments of nearby Wadi towns and the walled oasis capital, the defender lost control of the wadi bed, and the main fortified citadel of Atturaif came under direct and relentless bombardment. On 9 September, 1818 (*Dhu Al Qa'da* 1233 AH) the defenders hoisted the flag of peace and sent an envoy to Ibrahim Pasha to request an

armistice and conference, to which the Pasha agreed. Imam Abdullah capitulated, offering himself as ransom for the population and their possessions and wealth in an attempt to secure terms for the Saudi capital's surviving defenders.

The assault on Addiriyah was the culmination of seven years of military campaigns and expeditions into Arabia with the heart of Nejd as the ultimate goal. More than 1,200 men of Addiriyah were killed in the assault, including 21 members of the family of Al Saud. Several days after surrender, the Turco-Egyptian forces took Imam Abdullah to Cairo and thence to Istanbul. Here in late November 1818 the Sultan-Caliph Mahmud II ordered his execution, which took place at the gates of the Topkapi Palace.

The ruined Subalat Mudi Mosque in Addiriyah in 1965, now restored. This photograph was taken by the famous and pioneering Egyptian architect Hassan Fathy recognised as the father of sustainable architecture in the Middle East. He worked in the early 60s with Doxiadis and spent time in Riyadh.



Source: The Historical Atlas of the Kingdom of Saudi Arabia, 2nd edition, Riyadh, 2000. Published by the King Abdulaziz Foundation for Research and Archives.

## 5 The Second Saudi State

The six-month siege of Addiriyah over the summer and Ramadan brought an end to the First Saudi State in September 1818. The settlement lay in partial but not yet total ruins and the curtain fell on its role as capital. With its capitulation, Ottoman attention turned to dismantling the Saudi power base and its political and military capacity.

Chroniclers from Nejd such as Ibn Bishr describe the retribution of Ibrahim Pasha: wholesale and ruthless collective punishment, destruction of palm groves and gardens, confiscation of property, plunder, forced labour and exile to Cairo of hundreds from the families of Al Saud and Al Asheikh. In the neighbouring towns of Riyadh and Manfuhah and elsewhere in the Wadi, defensive walls were levelled, stocks of locally-grown wheat and barley looted, horses, livestock and camels commandeered and weapons confiscated. Famine and the attendant and opportunistic scourge of disease were the natural and inevitable result.

As food resources, always precarious in Nejd, became scarce, the restless population suffered and grew more hostile. The occupiers, too, became increasingly alarmed and by 1819 Ibrahim Pasha had opted for a phased withdrawal of his forces from Nejd. This was accompanied by a further wave of extortion, killings and more deportations. The widespread destruction from the punitive expedition, the siege and sack of Addiriyah, depredation of Nejdi settlements and the consequent collapse of the First Saudi State and its economy created a vacuum that would lead to further incursions from across the Red Sea. It also ushered in a period of internal turmoil and instability in which various leaders of settlements along Wadi Hanifah and elsewhere in Nejd opportunistically vied for control and ascendancy. In addition to forced exile, there was a wave of mass emigration. This resulted in a Nejdi diaspora. People migrated westwards across the Red Sea, east to the Gulf and beyond, and north into Iraq, and many settled and founded communities in far-flung places. However, the remaining population in the region, accustomed to surviving periods of acute hardship

and thriving in times of plenty, tenaciously held on to the prospect of restoring the Saudi State. They would soon turn to nearby Riyadh as its new capital.

There was to be one short-lived attempt to restore Addiriyah as the capital just a year after its collapse. Mohammad bin Mishari bin Muammar, a descendant of the long-standing rulers of Al Uyaynah, followers of Sheikh Mohammad bin Abdulwahhab and his Reform Movement, settled among the ruins laying claim to the rulership and with it the control of Nejd. The people of nearby Riyadh, Al Kharj and Huraymilah resisted. However, the populations of Manfuhah and other settlements in Wadi Hanifah as well as the towns of Al Sudair, 150 kilometres north of Riyadh, threw their lot in with Ibn Muammar.

In the spring of 1820, various members of Al Saud arrived back in the Wadi. Among those to emerge from hiding in the desert was Turki bin Abdullah bin Mohammad bin Saud and he was destined to found the Second Saudi State with Riyadh as the new capital. Shortly after he appeared on the scene, Mishari bin Saud bin Abdulaziz returned, having escaped his captors while being taken to Yanbu to board a vessel bound for exile in Egypt. Mishari was the brother of the last Imam and ruler of the First Saudi State, Abdullah bin Saud bin Abdulaziz, and on return to Riyadh he immediately laid claim to its rulership, convincing Ibn Muammar to recognise his authority.

Restoration of Addiriyah continued under Mishari's brief rule. Turki bin Abdullah was appointed governor of Riyadh, which, although damaged in parts, had suffered far less than Addiriyah and its surrounding groves and gardens. However, the fragile alliance was short-lived. Ibn Muammar took over, arrested Mishari and replaced Turki with his son as Riyadh's governor. Despite the many shifting local alliances, the return of members of Al Saud and Al Asheikh to Wadi Hanifah now signalled the restoration of the Saudi State and its religious Reform Movement. Mohammad Ali Pasha reacted by

### Map inset

The first known sketch map of Riyadh drawn by W G Palgrave during his visit to the capital of the Second Saudi State in 1862.

### Overleaf

Rooftop view of Riyadh's Imam Turki bin Abdullah Mosque and adjacent thronging suq. The mosque's low square minaret is seen on the north side and the exterior of the Qibla niche facing Makkah is near the southern end of the western wall. The central open area occupies a quarter of the space and covered areas are supported by rows of stone pillars. The photo by T E Walters of Aramco was taken in 1949, several years before the mosque was replaced by a new concrete structure.





moving to contain such ambitions. He ordered a return of forces and Ibn Muammar was conveniently confirmed as a compliant ruler from the diminished but by now partially restored Addiriyah.

Turki took immediate and decisive action. He captured Addiriyah and Riyadh, removed both Ibn Muammar and his son from their defensive base of Riyadh and prepared for the reaction: Egyptian reinforcements soon arrived on the scene, the town fell and Turki fled. The expedition sent by Mohammad Ali under Ottoman authority was led by the Egyptian commander Husayn Bey. In 1821, the rebuilt portions of Addiriyah were razed and a reign of terror with mass killings swept along the Wadi and over much of Nejd. Addiriyah lay in complete ruin.

Riyadh, along with its sister settlement Manfuhah, became Turco-Egyptian garrison towns. With these setbacks, Turki was determined to wrest back control of the settlements that had fallen under the control of opportunistic local rulers obedient to the Ottoman powers. Manfuhah was the first to expel the occupiers after its emir and citizens pledged allegiance to Turki and pressed the garrison to surrender and evacuate. The Emir of Riyadh was not so cooperative and in 1823 Turki made several attempts to lay siege and take the heavily fortified settlement by gathering local support. Cut off from supplies, the garrison commander surrendered and negotiated safe passage from the region. To be sure they would not return, Turki followed the Turkish and Egyptian soldiers out of Wadi Hanifah as far west as Shaqra on their retreat towards Al Madinah and back to Cairo.

Thus, from October 1824, Riyadh became the capital under Imam Turki bin Abdullah and within months the oasis settlements of Al Kharj were taken. Now all of Wadi Hanifah and most of Nejd was under his control and from this point, except for an 11-year interlude at the turn of the century, Riyadh would remain the capital. Turki bin Abdullah, the founder of the Second Saudi State with Riyadh the capital, was the grandson of the founder of the First Saudi State. He was also destined to become the great-grandfather of Abdulaziz bin Abdulrahman Al Saud, the unifier and founder of the Kingdom of Saudi Arabia.

The Call of Sheikh Mohammad bin Abdulwahhab had a new centre and, in 1825, members of the families of Al Asheikh and Al Saud returned to their homeland, many of them from exile, and took up residence in the new Saudi capital. Among them was the reformist's grandson, Abdulrahman bin Hassan bin Mohammad, who was appointed Qadi of Riyadh. This renowned judge, scholar and religious teacher was to remain an influential figure over the next four decades. Imam Turki based his rule on the return to orthodox Islamic precepts laid down in the First Saudi State and the movement regenerated. But this time expansion was more cautious and limited and, after Imam Turki received the allegiance of the towns of Al Qassim and Jabal Shammar to the north, he tentatively edged control and influence eastwards to the oasis of Al Ahsa and towards the coasts of the Arabian Gulf and Oman.

Imam Turki set about restoring Riyadh's defensive integrity, repairing walls, towers and gates. He expanded buildings and the fortified main Qasr (palace), and constructed a Grand Mosque, later named after him, at the settlement's centre adjoining the palace. These stood as the dominant features of the capital's mud-brick skyline for more than a century. Imam Turki also encouraged trade and standardised weights and measures across the region. Barter was extensively used along with limited use of externally sourced coinage – the silver Maria Theresa thaler being the most popular and trusted. Although communities used a variety of weights, the trusted thaler could not be clipped because of its elaborate edging. Other currency included smaller coins, metal lumps and cowrie shells. Among the decrees to standardise weights and measures and transactions, Imam Turki also introduced laws to ensure bargains once struck were strictly adhered to, which greatly benefited mercantile activity. He remained wary of the prospect of recurring external threats and avoided rapid territorial expansion. He also astutely and pragmatically established relationships with both the Ottoman and emerging British interests in the region, policies that his grandson Abdulaziz would successfully adopt in the 20th century.

In May 1834, Imam Turki was assassinated after Friday prayers at the Grand Mosque he had built a decade earlier.



The plot had been hatched by Mishari, who now attained his goal of taking over, albeit for a brief period. This ushered in a time of instability during which six of the ruling family would take power on ten occasions, incrementally weakening the Second Saudi State until control fell into the hands of an ambitious and ascendant rival dynasty based in Hail.

Imam Turki's son Faisal was out of Riyadh on that Friday, the last day of the Hijra year of 1249, when the assassination

took place. Like others of the family, Faisal had been captured and exiled to Egypt after the fall of Addiriyah, but escaped and returned to Nejd. Supported by local leaders, he now marched on the heavily fortified walls of Riyadh to lay siege to the capital. Mishari was captured and killed less than two months after the assassination of Imam Turki. Not for the last time Riyadh was retaken and Faisal received support and recognition as the Imam and ruler. He would rule from Riyadh twice for a total of more than 25 years.

The colonnaded walkway between the Royal Palace and the treasury in 1935. Photograph by De Gaury.

Faisal's first reign was short-lived: in 1837 news reached the Saudi capital of the imminent arrival in Nejd of yet another invading expeditionary force. Tagging along with the commanders and 7,000 Turco-Egyptian troops was Khalid bin Saud bin Abdulaziz, the brother of the last Imam of the First Saudi State who had been in forced exile in Cairo for 18 years before opting to throw his lot in with the expedition. The threat of invasion divided the citizens of Riyadh and Faisal opted to retreat as the troops along with Khalid bin Saud approached from Al Qassim and then took control of the capital.

Faisal reacted to the installation of the new ruler with several concerted attempts to besiege Riyadh and its newly formed garrison of Turco-Egyptian troops. But reinforcements arrived and for the second time Faisal was captured and led into exile to Cairo, while more garrisons arrived made up of Egyptians, Moroccans and other Arabs and took control of most of the towns in the area. Khalid became a proxy governor and, in 1840, external conflicts and pressures forced the occupiers to begin reducing their presence in the Arabian Peninsula. This left him with little support. In 1841, Abdullah bin Thunayan, a great-great-grandson of the brother of the founder of the First Saudi State, determined to put an end to Turco-Egyptian meddling in the region, seized Riyadh by overthrowing Khalid and took power and began his short-lived efforts to consolidate his power base.

Back again in Cairo, Faisal took advantage of mounting turmoil and in 1843 escaped for the second time. He returned to Riyadh via Jabal Shammar, where he stayed with his friend Al Rashid in Hail, and with their support was able to wrest control from Ibn Thunayan. Faisal's second rule from 1843 was to last for 22 years and was to be the longest period of relative peace in a turbulent century. Each of the ten subsequent periods of rule of the Second Saudi State lasted no more than seven years.

Imam Faisal's leadership was stern, unifying and stabilising. Mindful of the fate that befell his father after Friday prayers, he constructed a covered walkway from the mosque's second storey to the Qasr opposite, so he could safely walk directly to the mosque from his private quarters. He encouraged agriculture and, like his father, stimulated trade and improved economic conditions and security. As well as the traditional use of barter by merchants and citizens, external coinage continued to gain increasing acceptance in the region. Ottoman silver Majedi coins were disparaged as inferior whilst British sovereigns, Indian rupees and other popular coinage were accepted. But by far the most trusted and popular coin remained the indomitable and impressive silver Maria Theresa thaler. Faisal also oversaw the re-establishment of breeding of the famed Nejdi purebred desert Arabian horse. He received stallions as tribute from other areas, including Hail, and this saw a profitable boom in

View of Riyadh's eastern walls and Al Thumairi Gate which led out from the city onto the track to Al Ahsa. The turrets of Al Masmak fort are a short distance from the gate along the main thoroughfare which leads to the Grand Mosque. Lt-Col Gerard Leachman, 1912.





One of Riyadh's busy suqs. Imam Turki bin Abdullah, the founder of the Second Saudi State with Riyadh as capital, encouraged trade and standardised weights and measures across the region. Barter was extensively used along with limited use of imported coinage. He also encouraged trade by introducing laws to ensure bargains were adhered to once agreed.



Outside Riyadh's western wall with surrounding palm groves. In 1865 the traveller Lewis Pelly described Riyadh as a "neat looking place, without, however, any pretensions to beauty; but built of sun dried bricks, and its suburbs enlivened by a few date groves".

equine exports to Iraq, India and Europe. During his second exile in Cairo he had seen the prestigious value placed on the fine purebred Arabian horses that Mohammad Ali and his sons had seized from Nejd and taken with them on their expeditions into Central Arabia.

Towards the end of Imam Faisal's rule, two Western travellers – William Palgrave and Lewis Pelly – arrived in Riyadh and met with the Imam. Both recorded their observations of the capital, their audiences with the ruler, his court and life in the capital, as well as remarking on his famed purebred horses, many of which were pastured in Al Kharj and Durma. Pelly describes his approach to Riyadh in 1865 and comments on the tidy appearance of the capital: "About an hour before reaching Riyadh we passed a country house and garden belonging to the Ameer; and immediately afterwards, descending slightly, saw the town on our right front. It is built on a plateau at no great distance from the Wadi Haneefeh: and it appeared a considerable and neat looking place, without, however, any pretensions to beauty; but built of sun dried bricks, and its suburbs enlivened by a few date groves. The word Riyadh is said to mean gardens or cultivated ground, in the plural. There are several cultivated enclosures in the neighbourhood, in which the crops are artificially watered from wells of about 47 feet [14 metres]. In general the town and suburbs seem to be in good repair, as though things were looked after." Pelly also acknowledged the horses of the Imam as "the finest stud in the world".

After Imam Faisal's death in 1865, the Imam's eldest son and appointed heir, Crown Prince Abdullah, took over. He initiated the construction of a new palace complex in the heart of the city that included within it the imposing Al Masmak fortress. But in 1866, despite developments in the capital, the Second Saudi State was on the cusp of a self-destructive phase of turmoil that would lead to its ultimate

demise. This was mainly brought about by feuding between Faisal's two eldest sons as Saud, aided by his sons, vied for power with his elder brother Abdullah. Two other brothers, Mohammad and Abdulrahman, would also play their part in the turbulent period. The youngest, Abdulrahman, would twice take power and, at the low point of Riyadh's fortunes, he produced a son who was destined to change the course of history.

In 1871, Saud seized Riyadh and plundered the capital and other settlements in Wadi Hanifah and destroyed date palms and farms along its course. Coincidentally drought, famine and pestilence also visited the region and the fortunes of the capital and its surroundings were further weakened by the strains of internal strife. In addition to local factors, increasingly complex regional and international dynamics came into play. Among these was the rise of the dynasty of Al Rashid from its base in the northern oasis settlement of Hail, the Ottoman occupation of Al Ahsa and much of the Arabian Gulf, British involvement from their emerging naval-backed toeholds in the Arabian Gulf, and easier access to the Arabian Peninsula with the opening of the Suez Canal in 1869.

With Saud's death in 1875, dynastic control of the State shifted between brothers, with the sons of Saud also attempting to gain control. Riyadh came under the influence of Al Rashid and, in 1887, was finally brought under the authority of their appointed governor, Salim bin Sabhan, effectively bringing to an end the Second Saudi State.

In this nadir of Riyadh's fortunes, Abdulrahman was appointed Emir, although still under the influence of Al Rashid's representative, Salim bin Sabhan. In 1889, he made a bold attempt to wrest control of the capital from the proxy governor by blockading and laying siege to the city over a period of 40 days. Al Rashid's forces retaliated by destroying

Outside Riyadh's northern walls and Shamsiyah Gate camels are gathered in preparation for a desert campaign. This is one of the earliest panoramic photographs taken in Arabia.  
Shakespear, 1914.



8,000 palm trees in the extensive groves outside the walls and cutting off supplies to Riyadh. A short-lived truce was negotiated when Al Rashid's forces became distracted and stretched with other threats. But once these had been dealt with, they returned in even greater strength and took control of the Saudi capital.

In 1891, Abdulrahman and his immediate family – including Abdulaziz and his beloved sister Nora – left Riyadh for self-imposed exile. After periods spent with the Al Murrah tribe in their vast Empty Quarter domains, the wandering family moved on to Qatar, then Bahrain, and finally found their way to Kuwait.

Throughout this period, the young Prince Abdulaziz remained in contact with his supporters in Riyadh and maintained his claim and aspirations to return and re-establish his family's rule. From 1900, Abdulaziz and his followers tested Al Rashid with raids on towns north of Riyadh. They also staged a short-lived recapture of the city. After this, once their control of the city was re-established, Al Rashid demolished parts of its defensive walls. This was to subsequently prove a short-sighted measure that would assist Abdulaziz in staging his audacious surprise raid on Riyadh.

The young Abdulaziz had nursed a vision of regaining his birthplace and family seat of power. While in Kuwait, he would leave the town and from a solitary low hill in the desert gaze over the desert towards his birthplace 500 kilometres to the south, reflecting and planning to bring this about. The opportunity arrived in the winter of 1901 when Abdulaziz left Kuwait with a small group of relatives and compatriots and headed for Riyadh, eluding the scouts of Al Rashid, and arrived at the walls.

In the pre-dawn hours of 15 January 1902, Abdulaziz staged

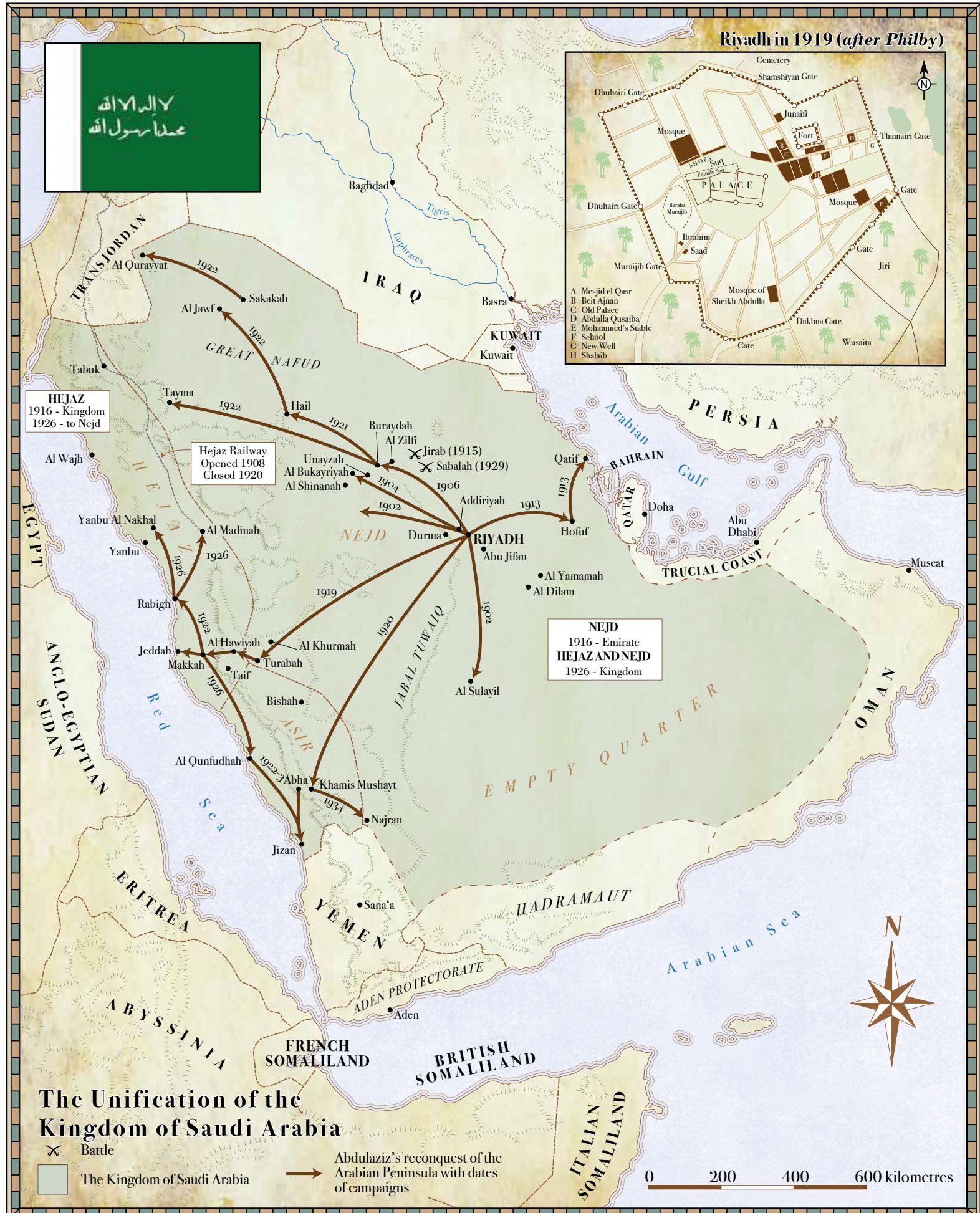
his audacious raid to recapture the capital. By scaling the partly demolished northern walls near the Shamsiyah Gate, he and his men seized Al Masmak and took control of Riyadh. This was a pivotal and historic moment. With the restoration of the Emirate and its capital, Abdulaziz laid the foundations of the modern Saudi State. It set in train the eventful and pioneering path towards unification that, 30 years later, culminated in the inauguration by Abdulaziz of the Kingdom of Saudi Arabia.

From childhood, Abdulaziz had gained inspiration from his father, Abdulrahman bin Faisal. The devout Imam had lived through and witnessed first-hand the disastrous impact of family feuding on the fragile Second Saudi State. He had imbued in his son his own determination to regain control of the Saudi capital and fulfil his destiny by reconquering lost territory – including the Holy Cities, which had formed part of the dominion of his forefathers, the founders of the First Saudi State.

During exile with his father and family, Abdulaziz had learnt the hard lessons of desert life. The famed trackers and canny Bedouin Al Murrah of the Empty Quarter had schooled him in desert lore and survival, and in Kuwait he had gained inspiration from Sheikh Mubarak's political acumen in handling the threat of the Ottoman-backed Al Rashid dynasty and dealing with numerous representatives of foreign powers including Russians, British, French, Germans and Turks.

Perhaps most significantly, the tragic events Abdulrahman had witnessed in Riyadh after the death of his father enabled him to vividly impress on his son the essential link between unity and internal security. Over the next half century, Abdulaziz passed these hard-earned lessons on to his own sons and successors to great effect.





Source: The Historical Atlas of the Kingdom of Saudi Arabia, 2nd edition, Riyadh, 2000. Published by the King Abdulaziz Foundation for Research and Archives.

## 6 1902: King Abdulaziz and Unification

Retaking Riyadh was a pivotal moment in the history of the city. It set the trajectory of unification and nation-building that in three decades would establish the foundations for the proclamation of the modern state of Saudi Arabia. The city that Abdulaziz had claimed in January 1902 had fewer than 10,000 residents, most of them living within a core area covering little more than one square kilometre. The city defences, including stretches of the encircling wall, had been torn down along with strategic buildings such as Qasr Al Hokm, the fortress palace adjacent to the Grand Mosque.

Imam Abdulrahman bin Faisal, now returned from exile to Riyadh. On his arrival Abdulaziz led a cavalcade of 500 citizens mounted on colourful, caparisoned purebred Arabian horses to welcome his father as he approached the outskirts of his capital. Work commenced to restore the dilapidated and damaged defences of Riyadh. Abdulrahman and his son supervised rebuilding and strengthening the walls, over nine metres tall in parts, along with the flanking towers and the tamarisk wood gates. With the defensive integrity restored, guards closed these gates every night

at dusk and also during Friday congregational prayers, preventing entry and departure from the town, a tradition that continued for another 17 years. Visitors and traders who arrived with their camels after the gates had shut at night slept immediately outside the imposing walls and entered the settlement at dawn.

The decision to strengthen the walls proved prescient. In the spring of 1903, the forces of Al Rashid unsuccessfully attempted to retake Riyadh after learning Abdulaziz and many of his followers had headed to Kuwait to assist its ruler, Sheikh Mubarak, who was also under recurrent threat from Al Rashid's forces. This was the last challenge to the status of Riyadh as the Saudi capital. Towards the end of 1903, at a Friday gathering at the Grand Mosque, Imam Abdulrahman renounced his rule in favour of his son Abdulaziz, presenting him with the magnificent sword of the penultimate ruler of the First Saudi State, Saud bin Abdulaziz, which had been passed down through the family. Abdulaziz publicly affirmed his support for the Reform Movement and took up residence in the restored palace of his grandfather, Imam Faisal.



King Abdulaziz (seated, centre) with his family members and retainers while on campaign in Thaj, photographed by Shakespear in March 1911. Standing behind and to the right of the King is Saad bin Abdulrahman (1888–1916), the only full brother of Abdulaziz who died in an ambush near Hofuf that also wounded Abdulaziz.

### Overleaf

From 1902 King Abdulaziz directed campaigns of territorial expansion and unification. This dramatic and historic photograph taken by Captain Shakespear on 8 January, 1911 shows the forces of Abdulaziz on the march northwest of Riyadh approaching Shaqra. One of three photographs taken, this view of the approaching cavalry is rarely reproduced and Shakespear's iconic view from the flanks is more often seen.







Senior members of the Al Saud family and retainers beside a large well in the palm grove and gardens outside the northern Riyadh wall photographed by Shakespear in 1914.

Riyadh became the nexus from which Abdulaziz directed his campaigns towards unification. During the first three decades of his rule, the population of Riyadh grew more than threefold to some 30,000. Several factors drove this expansion during a period in which finances for the nascent modern state were limited. They included the decision by Abdulaziz to encourage nomadic Bedouin from far and wide to settle in and around Riyadh as well as greatly improved security under his firm rule. These improved conditions augured well for the capital and the surrounding region. A new sense of optimism and stability made Riyadh a place of opportunity, and arrivals from surrounding areas spurred population growth.

As military and diplomatic campaigns successfully progressed, so the significance, size, population and influence of the Saudi capital grew. For the first nine years after retaking Riyadh, Abdulaziz spent most of his time out of the city expanding and consolidating the territories over which he held sway. During the frequent periods that Abdulaziz was away from the capital, his father Abdulrahman, took over the role of Emir in Riyadh. Otherwise Abdulrahman, who retained the title of Imam, spent most of his remaining years retired from public affairs.

The traditional architecture of the settlement stood as it had for several centuries. It was simple and cubist, the exterior walls blank with homes looking inwards around courtyards that provided shade. Where openings were incorporated, they were vertical or triangular in the distinctive Nejdi style. The flat roofs that topped the buildings were well used in hot weather as families gathered together in the evening and slept out in the open. These were the ancient and traditional Arabian architectural principles that evolved in a hot, dry region where the basic building material was the earth itself. Apart from the initial strengthening of the city's defences, Riyadh remained much as it had been during the Second Saudi State, with its narrow, sandy streets and mud-brick houses, many two storeys high with internal and balconied courtyards offering privacy. The larger residences had their own courtyard wells and elsewhere on the unpaved streets there were wells for communal use. The traditional urban layout was simple, with roads and lanes fanning out from the palace at the core towards the city walls and the nine main gates. Outside the walls were extensive palm groves and gardens watered from numerous wells. Paths led away to other nearby wadi settlements and merged with ancient pilgrimage and trade routes connecting Riyadh and Wadi Hanifah to the outer reaches of Arabia.

The main entrance to Riyadh was via the track from the east regularly used by camel caravans bringing traders and merchandise as well as transiting pilgrims from Hofuf, its nearby port of Al Uqayr and other Gulf ports. Outside and not far from the gate ran Wadi Al Batha and a series of stone wells. This important city gate was demolished in 1953, but has since been rebuilt along with a watchtower and a section of the wall facing towards the northeast, Al Suwaylim Gate, named after the prominent family that lived in that quarter.

By 1911 there were tentative signs of urban development which, although still along traditional lines with defensive characteristics, started to change the face of the city and shape the capital. The old fortified and moated mud-brick Qasr Al Hokm in the heart of the city was reconstructed. It was built higher and covered a greater area, and was encircled with its own mud walls with two square towers at the eastern end flanking a huge double-door entrance gate (Safaqat). When complete, the complex formed an imposing and dominant landmark on the skyline. This became the seat of Abdulaziz's government and the focal point of Riyadh, whose influence was gradually expanding well beyond the boundaries of Nejd. Its majlis, a traditional carpeted audience chamber, was supported by stone pillars and could hold up to 3,000 citizens. Interiors were whitewashed with gypsum lime with Quranic verses inscribed in the walls as well as colourful geometric designs and motifs. The nearby imposing Al Masmak Fort, with its four massive walls and interior courtyard was no longer required as a defensive inner-city bastion and became an arsenal and general storehouse, and doubled up as a jail. The capital's defensive integrity was retained and new towers were built at strategic points in the city walls, and the wooden gates were clad and strengthened with iron. Construction also began on new institutional buildings.

The pattern of life in Riyadh in these early years of the rule of Abdulaziz continued as it had for centuries. With the gates closed, citizens slept soon after the last prayer of Al Isha and the streets and alleys fell silent. During warm evenings women cooked on rooftops screened from view by low parapets, and families remained on the roof and after the day's last prayer slept under the star-spangled sky. There was no noise or light pollution and on moonless nights, the

settlement was enveloped in complete darkness. There were no machines or motor vehicles, no electricity, running water, air conditioners or modern forms of communications. At dawn, herdsmen led the residents' goats and sheep to graze and water the flocks outside the walls, returning them to their owners and household pens before the sunset call for Maghreb prayer.

Among the main aspects of daily life that had significantly improved since Abdulaziz took back the city as the Saudi capital was the remarkable growth of confidence brought about by a new-found stability and security. This was considered a blessing after centuries of uncertainty caused by invasions, feuds, lawlessness, occupations and punitive raids, famine and pestilence. The quest of Abdulaziz for stability and internal security has subsequently formed a cornerstone of the Islamic governance of the modern Saudi State.

After Abdulaziz had successfully consolidated the area around Riyadh making up central Nejd and traditionally known as Al Arid, he moved south, retaking the towns in the oases of Al Kharj, Al Aflaj and along Wadi Al Dawasir. In 1910 he turned his attention north towards the region of Al Qassim and subsequently to the territories in the east. By 1913 Saudi forces had taken Al Ahsa oasis occupied by the Ottomans, including the garrison town of Hofuf and its nearby strategic coastal entrepôt of Al Uqayr. By the end of World War I, Abdulaziz set his sights on further expansion. In November 1921, after laying a siege lasting nearly two months, he took the walled fortress city of Hail and brought to an end the 85 years of the Emirate of Al Rashid. By 1922, the Saudi forces were still moving outwards, further extending his territories. The final stages in the historic campaign of unification were the series of expeditions in the Hejaz and Asir, which laid the ground for the proclamation, on 23 September 1932, of the establishment of the Kingdom of Saudi Arabia.

The provision of water to Riyadh and desert communities was always a preoccupation and priority of Abdulaziz. By 1917, he was making plans to bring oil-powered water pumps to Riyadh. The population was then estimated at nearly 20,000 and continued to grow rapidly, with increasing numbers settling outside the walls in and around the date palm groves and gardens. Until then water had been brought



to the surface at larger wells by animal power and some of these draw wells, called *sawani*, had a depth of nearly 30 metres. Many made use of camels while others employed the hardy breed of Al Ahsa donkeys. At the larger draw wells, as many as eight animals abreast would haul goat skins attached to hemp ropes up to the beam gantry above the well head, from where the buckets disgorged water into the masonry reservoir and irrigation channels below. However, one of the familiar daily sounds heard by the citizens in and around Riyadh was to change: as Abdulaziz continued with tentative modernisation of the city, the regular dull pop of diesel pumps replaced the incessant squeaking, wooden wheels at the wells.

Riyadh continued to spill beyond its original walls. The first significant expansion was on the south and towards Manfuhah, a few kilometres away. Outside Riyadh's southeast wall, inhabitants cut down palm groves and in their place developed new residential quarters of Al Wusaita and Jiri. By 1929 these two new districts, proto suburbs of the capital, had been enclosed by extensions to the original city walls, with three new towers added.

Abdulaziz administered the affairs of Nejd and the expanding territories of the nascent state from his royal court at Qasr Al Hokm. From here, when in the capital, he chaired the council every morning and evening. There was the Royal Guard and a department handling the royal camel corps. A delegations and hospitality department attended to guests and delegations from settled citizens, and with hosting nomadic delegations. A department focused on handling the needs of Bedouin tribes and the affairs of Nejd, and another section administered accounts and gifts. Opposite the eastern wall of Qasr Al Hokm were the main stables and horse-breeding department. There were also as many as 18 smaller stables for Arabian horses located within the city walls where notables bred and cared for their precious purebred Nejdi bloodstock.

Abdulaziz focused considerable attention and energy on Islamic affairs and the spiritual needs of the community throughout his expanding territories. Prominent among the *ulema* were Al Asheikh, direct descendants of Mohammad

bin Abdulwahhab, founder of the Reform Movement in the First Saudi State. In Riyadh many of the influential clerical family resided in Dakhna Quarter, the southern section of the capital around the mosque of Sheikh Abdallah bin Abdulatif Al Sheikh. This mosque was given its name when he was among the first to pray in it in 1773, when Riyadh came under the rule of the First Saudi State.

As for the non-spiritual and worldly aspects of development in the capital, Abdulaziz recognised the value of technology in his quest towards unification. Following the introduction of mechanised water pumps, the first motor vehicles began to be seen in Riyadh shortly before 1920. At various stages of their journey from Jeddah they had to be dragged through stretches of soft sand by camels. An arc lamp imported from Bombay was installed atop a tower in the centre of the capital. The effects of modernisation were changing the nature, sounds, smells and feel of life in the capital and beyond. A growing motor transport department gradually took over from the camel herders and horse breeders. To the southeast of the city, an extensive area of palm groves gave way to house the royal garage and vehicle repair facilities. To the east across Wadi Al Battha an early suburb grew up to accommodate a new influx to the capital of mechanics and chauffeurs from other Arab countries. These were among the first expatriates attracted to Riyadh by lucrative employment opportunities.

Abdulaziz arranged the last Hajj for his father by making use of a Fiat sedan. It was among the first vehicles to arrive in the Saudi capital and was modified to carry his father, the ageing Imam, in relative comfort compared to the rigours of travel before motorised transport. Imam Abdulrahman's previous departure on Hajj in 1916 had been made by camel caravan under the escort of his second son, Mohammad. But the journey proved too arduous and he had reluctantly left the pilgrims at the fifth stage of the long overland route to Makkah to return to Riyadh, leaving Mohammad to complete the Hajj. Nevertheless, as Philby recounted, this pilgrimage of 1916 had been a notable ceremony, "... the first of its kind under the auspices of the new-made King of the Hejaz, and it was said that the Nejdis, who rode in the pilgrimage, were not less than 7,000 souls, men, women

Beyond the walls of Riyadh  
lay extensive palm groves and  
gardens irrigated by channels from  
numerous wells such as these near  
Al Batin later known as Al Badiah  
west of the capital alongside Wadi  
Hanifah.

and children". When Imam Abdulrahman later made the Hajj by car, it was to be the final pilgrimage of a ruler who had lived nearly all his life in a world without modern technology, and also marked the first recorded journey by a motorised vehicle from Riyadh to Makkah.

Panoramic photograph of Al Thumairi Street in 1914 taken by Shakespear looking westwards towards the central square of the Grand Mosque and palace with a tower of the Masmak Fort on the right of the street. The capital's traditional architecture remained as it had for several centuries.

Abdulrahman spent his last years peacefully and meditatively in a modest, if extensive, palace near Al Masmak Fort. He lived to see his son successfully consolidate nearly all the territories of today's Saudi Arabia and gain early recognition from major world powers such as Russia, Britain, France and the Netherlands. In January

1927 he also saw his son proclaimed King of the Hejaz and Sultan of Nejd and its Dependencies. In June, 1928 Imam Abdulrahman died in Riyadh. It was a loss that was deeply felt by Abdulaziz, to whom he had provided inspiration, unwavering support, invaluable advice and guidance as he successfully consolidated and unified the Kingdom.

The passing of Imam Abdulrahman bin Faisal bin Turki marked the close of an age in which life in the heartland of Arabia was simple, austere and often harsh. It was an era in which the resilient and tenacious character of the modern Saudi state was forged.

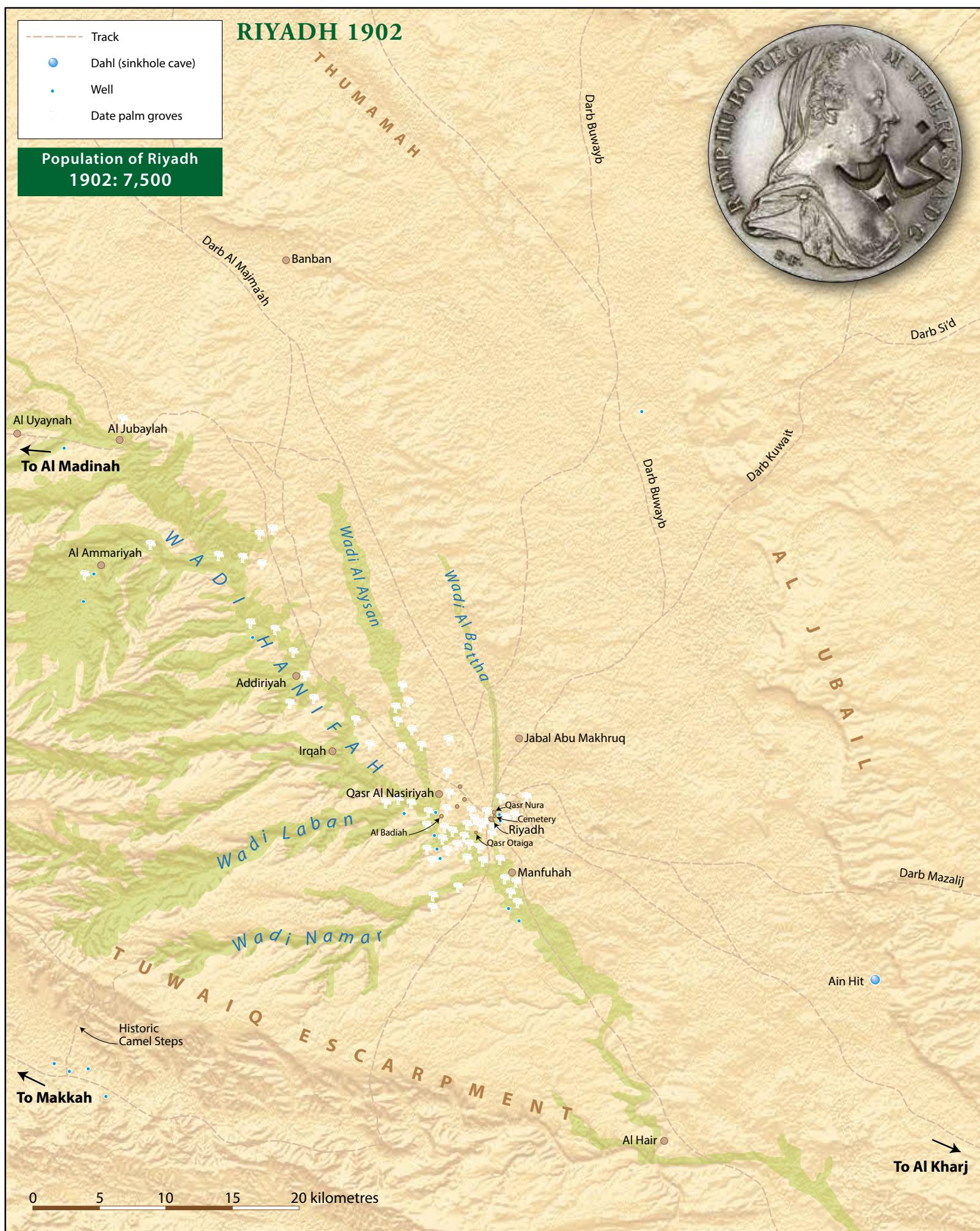


#### Overleaf

The purebred desert horses of Nejd are considered the finest Arabian horses in the world. A horse-breeding department managed Riyadh's main stables and there were nearly 20 smaller stables located within the city. Major stables were located at Al Kharj, seen in this photograph, and Durma.

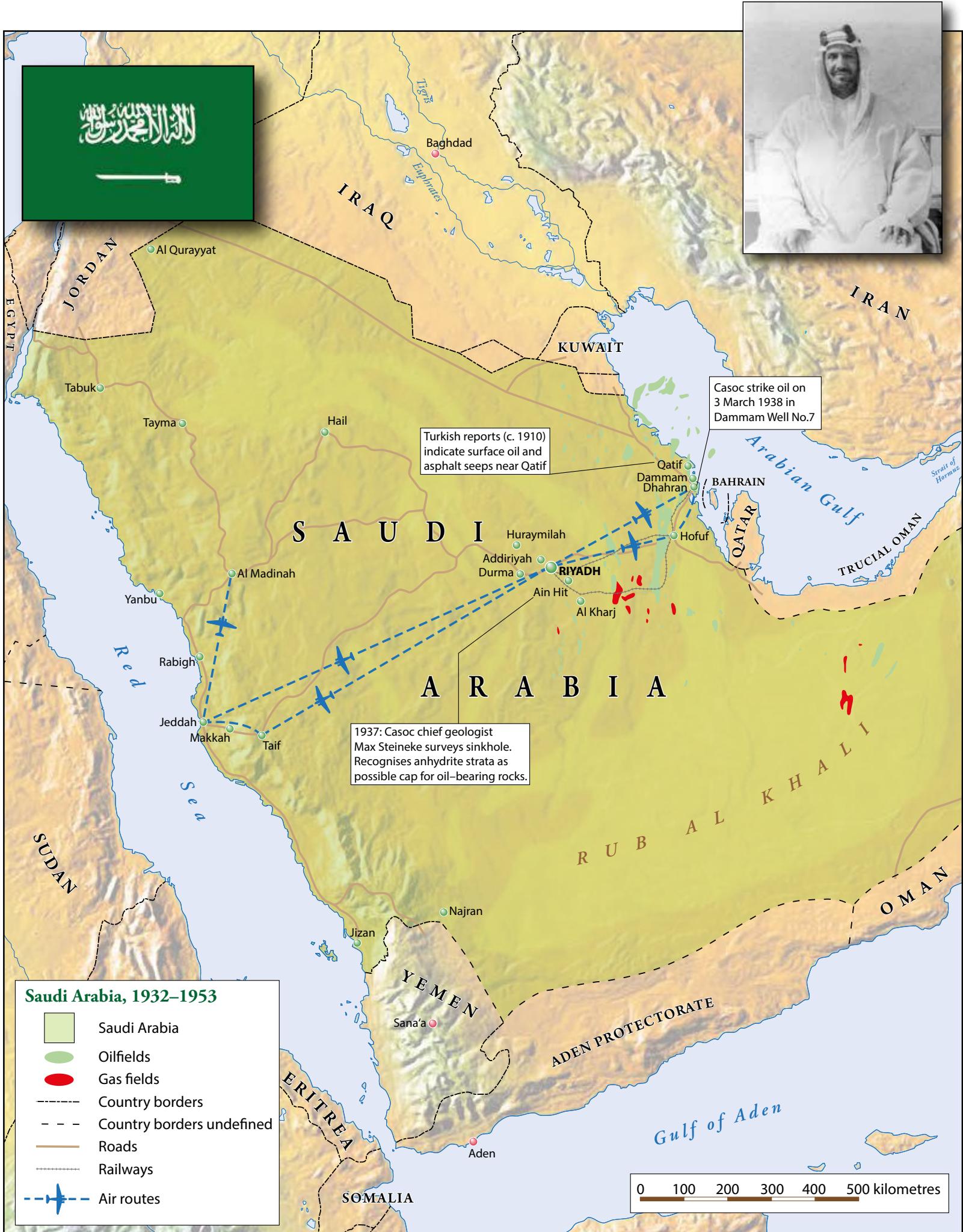
#### Map inset

External coinage remained in common use with the Maria Theresa thaler among the most popular in circulation. In the early part of his rule Abdulaziz had coins over-stamped with the word 'Nejd'. In the 1920s Abdulaziz approved the first minting of Saudi coinage.









## 7 1932: Modern Foundations

The drive to unification and the proclamation of the Kingdom of Saudi Arabia on 23 September 1932 set in motion the building of a modern nation-state with Riyadh as the capital. But these were initially testing times. The Great Depression hit world economies and the financial resources of Saudi Arabia were stretched to the limit. The Hajj produced revenues but these were unpredictable and declined sharply. The number of foreign pilgrims making the Hajj fell from 100,000 in 1929 to fewer than 20,000 in 1933 as a result of the economic downturn and growing international unrest before World War II. The pearl-fishing industry of the Arabian Gulf, which had previously brought revenues to Riyadh, fell into rapid decline because of collapsing demand and the expansion of Japan's cultured pearl industry.

Another traditional mainstay of the economy of Nejd, the camel trade, was in its twilight years as motorised transport

took over the haulage of goods across the Peninsula. The export of Arabian horses from the famed stables of Riyadh and elsewhere in Nejd was also coming to an end. Purebred Arabian bloodstock was now plentiful in Europe and North America, and the mechanisation of military forces around the world spelled the end of the principle role of operational mounted cavalry. It would be nearly half a century before the resurgence in interest in breeding and the heritage of these two iconic desert-bred animals was to lead to a significant improvement in their lot and numbers in the Arabian Peninsula.

Despite the many challenges of nation-building, King Abdulaziz had laid secure foundations for the transformation of Saudi Arabia and its capital. In the concluding words of Kenneth Williams's historical study and the first English-language biography of King Abdulaziz, Ibn Sa'ud, published in 1933, "... if any man can bring to this barren territory a

Qasr Al Murabba was built in 1936 to the north of the old city to accommodate King Abdulaziz, his family and growing administration. It was the last great mud-brick complex constructed in the capital and the development marked the expansion of the city well beyond its walls.



**Map inset**

King Abdulaziz bin Abdulrahman Al Saud photographed in Riyadh.

**Overleaf**

King Abdulaziz in Riyadh's central square after Friday prayers photographed by Gerald de Gaury in 1935. Recalling his audiences with Abdulaziz, de Gaury observed, "The King speaks forcibly and well, decorating his conversation with old Arab proverbs, Bedouin sayings and quotations from the Quran" adding, "His freshness and clearness of view would be remarkable anywhere, but come with double-hitting power in the heart of Arabia."





source of lasting prosperity, as he has already brought lasting peace, King Abdulaziz is he”.

Riyadh was now poised for change. The government ordered more pumps and drilling equipment to develop water supplies. Exploratory drilling work, followed by wells sunk in and around the capital, provided water to satisfy urban demand and irrigation needs in the remaining palm groves. In surrounding areas, wells irrigated new agricultural projects established with the encouragement of the Saudi monarch. The quest for artesian water supplies, always seen by Abdulaziz as a priority, would soon conflate with the search for another valuable natural resource that lay deeper underground in sedimentary strata.

Telegraph communications had arrived on both coasts of the Arabian Gulf more than half a century earlier and King Abdulaziz was well aware of the benefits of this new invention. He had seen the telegraph during his stay in Kuwait and, in 1925, in his newly unified territories. In Makkah, he encountered first-hand the communication technologies that had been introduced by the Ottoman authorities. The western region already had eight telegraph stations, including links between the two Holy Cities and a rudimentary telephone line between Makkah and Jeddah.

In Riyadh King Abdulaziz used his pragmatic leadership and acumen to gain consensus for the introduction of modern communications. There were practical demonstrations of exchanges of official messages and transmissions of verses from the Holy Quran to convince those in the conservative capital with concerns that wireless telegraphy was not in conflict with Islamic principles but rather a scientific invention to serve communities and to be used for everyone's benefit.

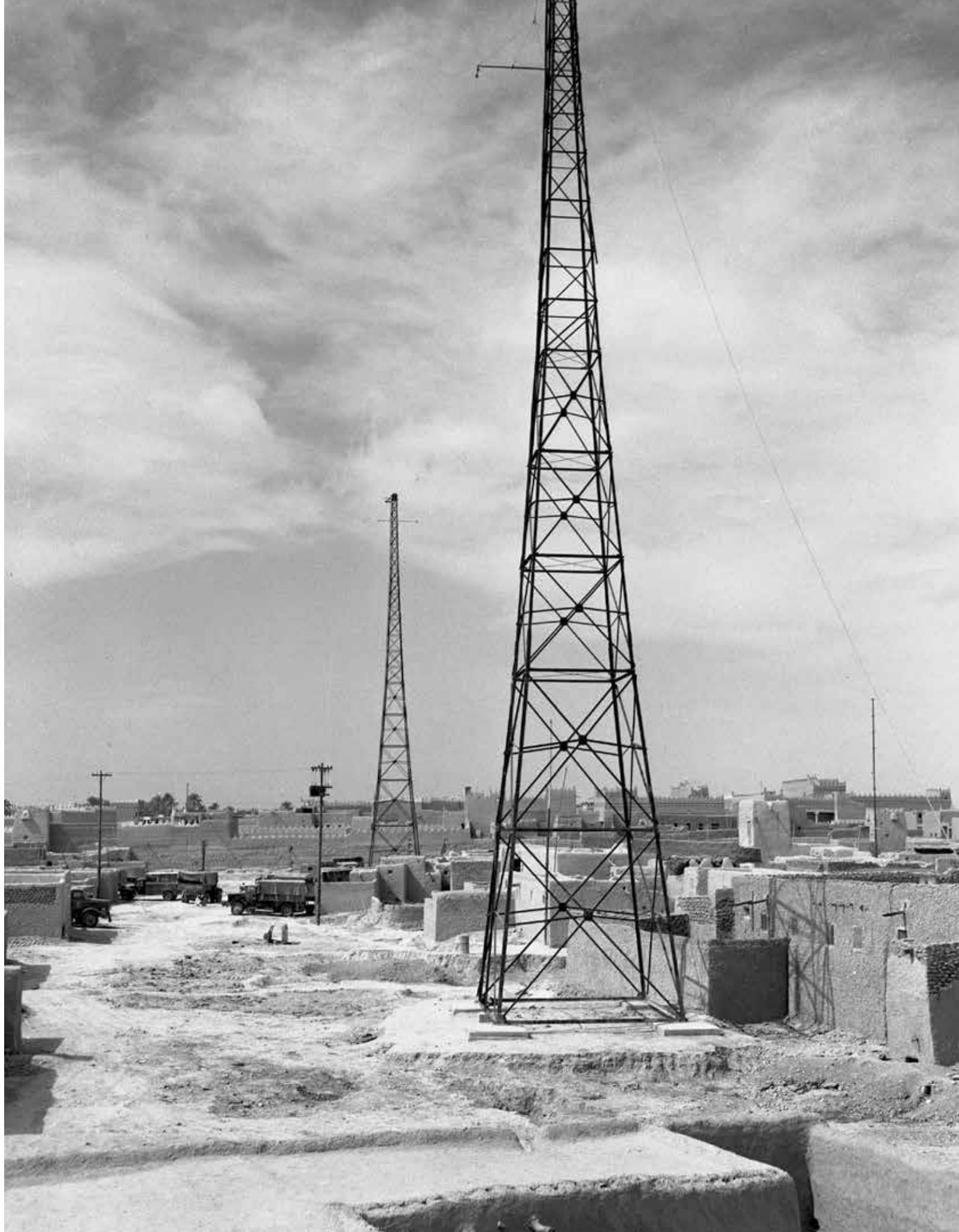
Communications facilities rapidly developed and improved and by 1932 the new five-kilowatt Marconi radio station outside the south walls of Riyadh, adjacent to the Government garages, made contact with Makkah and other new provincial stations. By 1933, 28 telegraph stations were in use, of which six were mobile for when Abdulaziz and his diwan travelled. The first small portable boxed unit imported earlier for use by Abdulaziz was known as *al-shanta al-malkia*

(‘the royal case’). By 1936 there were around 50 telephones in Riyadh connecting the new residences springing up outside the city walls with those inside the old walled city. By the end of the decade, a postal service had also started between Riyadh and Makkah, with twice-monthly services along tracks across the desert ranges and rugged western highlands.

The introduction of radio communications to Riyadh, although arriving later than in surrounding Arab capitals, brought rapid and significant changes. Before this, the mosques and residents were informed of the local time calculated by solar observations. The new day commenced at sunset when clocks and watches were set to *Ghuroobi* or ‘Islamic’ time, with adjustments required every few days. In 19th-century Europe and North America, the coming of the railway, and with it the telegraph, connected settlements and enabled them to set clocks to a standard time rather than local times that varied with longitude. In Saudi Arabia, the introduction of radio communications for the first time enabled accurate and standardised timekeeping across most of the desert Kingdom, while communities and mosques still kept local solar time for the five daily calls to prayer which vary from west to east across the country by more than 30 minutes. With instantaneous communications available, effective administration of the vast territories radically improved. Citizens around the Kingdom could also present requests, complaints and petitions to the King without the need to journey to the royal court. In another decade, the introduction of public radio broadcasting from Riyadh would herald further political, societal and cultural change.

Riyadh continued expanding beyond the limits of its mud walls. By the mid-1930s, the traditional residence and busy seat of governance, Qasr Al Hokm, was stretched to capacity. The King decided to build an extensive complex two kilometres north of the walls. Named Qasr Al Murabba (the Square) it was built over a square area, each side approximately 400 metres long. The complex was surrounded by squat towers and comprised of mud-brick palaces for Abdulaziz and his family, living quarters for his retinue and administration buildings. It was designed and built to accommodate motor vehicles, and provided electricity supplied from generators, as well as drainage and

The wireless station in Riyadh in 1949. King Abdulaziz was keen to adopt technology and introduce modern communications to the conservative capital. By 1932 the Marconi radio station outside the south walls of Riyadh made contact with Makkah and other new provincial stations and in 1949 public radio was first broadcast from the capital.



water closets. Yet it retained the traditional Nejdi architectural style: cubist, incorporating inward-facing courtyards and imposing blank outer walls. Skilled builders from Riyadh and nearby settlements employed time-honoured techniques of mud-brick construction. They made use of local materials such as clay to produce sun-dried bricks, Riyadh limestone, tamarisk wood and palm fronds. Craftsmen used gypsum to render interior walls, which were then artfully decorated with typical Nejdi motifs. Saudi architect and scholar Dr Saleh Al Hathloul has written extensively on the architecture of Riyadh and sums up the significance of the new complex: "Being of much larger size than any other earlier building in Riyadh, Al Murabba provided a positive example of how one can adapt and apply a traditional building technology to large-scale projects".

This became the King's official residence and a venue for audiences. His daily routine now involved making the relatively short journey every morning to Qasr Al Hokm in

Dira (the location of the present Justice Palace) for official state duties. He would return to Qasr Al Murabba after midday prayer, where he worked through the afternoon and evening. With a paved street linking the complex with the old palace and Grand Mosque in the heart of the capital and reliable motor vehicles available, commuting in Riyadh had begun. In the latter years of Abdulaziz's life, Qasr Al Murabba would become the seat of government, with the old Qasr Al Hokm within the walled city used for various state functions.

Completed in 1938, Al Murabba became a significant feature of the emerging new urban landscape. The imposing walled palace complex with its distinctive towers was the last major construction of its kind – employing traditional, mud-brick architecture – to grace the Saudi capital. However, some 40 years later planners and architects at the Arriyadh Development Authority (ADA) would adopt and incorporate the traditional style and adapt some of

By 1932 transport by camel was becoming a thing of the past. However camels were still used to transport goods to Riyadh as evident from this mid-1930s photograph of the *suq* area known as Baraha Al Muraighib west of the central palace near Al Badiah Gate.





The 1,000-kilometre journey from Riyadh to Jeddah by car was a major expedition before tarred roads connected the Kingdom. This photograph of 1935 shows a diplomatic mission including the British minister Sir Andrew Ryan, who had met with King Abdulaziz, pausing after departing the capital and descending the Tuwaiq Escarpment.

the techniques into international award-winning modern developments in the city.

Al Murabba marked the development of the expansion of Riyadh beyond its historic core and would be soon be followed by more construction and modernisation. The development spurred the growth of a modern suburb called Al Futah along the western side of the street between the old city and the new walled residential and administrative Al Murabba complex. Some years earlier Prince Saud Al Kabir, husband of Princess Nora, the sister of King Abdulaziz, built Al Shamsiyah Palace outside Riyadh's northeastern gate that led to Qasr Al Murabba. These developments defined the northern axis as the predominant direction of the subsequent phases of Riyadh's urban expansion.

In the same year, 400 kilometres to the east on the Arabian Gulf, another new landmark – a test drilling rig – produced an event that set the Kingdom on the road to rapid development

and extraordinary change. Although the successful quest for oil in Saudi Arabia was initially focused on the Eastern Region, which makes up more than a third of the area of modern Saudi Arabia, Riyadh itself was to play a crucial role in the remarkable story of discovery and development.

In the summer of 1922, Major Frank Holmes, a New Zealand adventurer and engineer who represented a London-based syndicate, had arrived in the capital from Bahrain seeking an audience with Abdulaziz. Holmes negotiated a short-term concession, covering areas that would prove to be among the prolific proven oilfields of eastern Saudi Arabia. However, cursory surveys meant that key pointers were missed and the agreement made by Holmes expired. History was to take another course.

Initially, Abdulaziz was preoccupied with finding artesian water supplies, particularly around Riyadh. Faced with diminishing state finances, he recognised that there were



A drilling rig prospects for artesian water supplies. The 1935 photograph from Al Badiah guesthouse, looks eastward across Wadi Hanifah to the drilling camp with the capital seven kilometres beyond. Riyadh's growing population led to rapid increases in the demand for water and King Abdulaziz was preoccupied with finding new sources.

also tantalising opportunities for discovering valuable mineral resources in the country's vast territories including, perhaps, oil. In 1931, with the King's support, American mining engineer Karl Twitchell travelled from Jeddah across the Arabian Peninsula to the Arabian Gulf via Riyadh surveying and assessing potential natural resources. In 1932, oil was discovered in Bahrain and on 7 July the following year Saudi Royal Decree Number 1135 granted Standard Oil of California (Socal) a concession for the exploration of petroleum. Socal formed a subsidiary, California-Arabian Standard Oil Company (Casoc), to manage the prospect and in 1944 this became Aramco – the Arabian American Oil Company, renamed Saudi Aramco in 1988.

Initial drilling results near Dammam proved disappointing. In 1936, Casoc appointed Max Steineke as chief geologist. The following year, he crossed Arabia gathering information that laid down a foundation for the geological profiles of the Kingdom. He and his party travelled as far as the igneous

Arabian Shield, 200 kilometres west of Riyadh. What Steineke had seen on his way westwards intrigued him and on his return he spent time in and around the capital investigating geological formations in the area. It was a fortuitous decision. Some 30 kilometres southeast of Riyadh, just beyond today's city limits, Steineke's astute observations of a remarkable geological feature were to help contribute to a momentous discovery.

The imposing features of the Tuwaiq Escarpment as well as smaller cliffs and bluffs near Riyadh reveal sedimentary rocks laid down over hundreds of millions of years. As a guest of King Abdulaziz, Steineke was guided to Dahl Hit, a remarkable, deep sinkhole that lies at the base of the Sulaiy Escarpment, close to Riyadh. At the time it was filled to near the surface with fresh water and at the cavern's entrance Steineke noticed a distinctive stratum with a pearly blue lustre. This he recognised as anhydrite, an impermeable mineral created by the evaporation of seawater which once

inundated the region. He realised that this could be a seal above oil reservoirs.

At the time, American and Saudi crews were drilling a deep test well, Well No. 7, on the Dammam Dome. Casoc had already ordered a halt to drilling other costly test wells. Well No. 7 was penetrating beyond 1,200 metres and had already encountered numerous problems and setbacks, and Casoc was now urging a halt to this last remaining troublesome test well. At 1,277 metres No. 7 began to return anhydrite drill cuttings. "A light bulb must have gone off in Steineke's head. If this was the same anhydrite he had seen hundreds of kilometres away near Riyadh, then it meant that this perfect sealing rock extended all across the Peninsula." Against advice, Steineke insisted the rig crew continue: "Drill deeper". This has since become a common mantra among Saudi Aramcons.

Steineke was right. On 3 March 1938 at 1,441 metres, Well No. 7 gushed oil from the reservoirs of the Jurassic Arab Formation below the anhydrite. This was Saudi Arabia's first commercial drilling success. It heralded an era of prosperity and development for the Kingdom and the expansion of infrastructure, welfare facilities, administrative centres and institutions and what would become the world's largest oil company. For the Saudi capital, from where King Abdulaziz had overseen the historic quest for oil and an American geologist cannily observed formations at a desert watering hole, this marked the beginning of unprecedented urban growth and change. Just over a year later, King Abdulaziz and his retinue of family and officials travelled from Riyadh to the Arabian Gulf, where he ceremonially opened the valve to load Saudi oil onto the first tanker to berth at Ras Tanurah. Half a century later Riyadh Province itself was to become a major oil producer, with significant finds around Hawtah, south of the capital, in 1989, followed by Nuayyim and Khurais to the east in 2009.

In 1939 Saudi Arabia suffered a serious drought. There was major loss of livestock herded in the desert pastures surrounding Riyadh and the King summoned expertise to search for underground aquifers. As Aramco expanded exploration and drilling activities, experts began also to chart the underground aquifers they found during their search for oil. They suggested the presence of substantial supplies

of fossil water. The company provided engineers and equipment from Dhahran to drill for water in and around Riyadh, and imported mechanical pumps continued to replace hand and animal power at existing water well heads.

The pace of development in and around the city now accelerated, with continued expansion beyond the city walls. Mud and other locally sourced materials were still widely employed for construction, but in the early 1940s King Abdulaziz had new extensions added to Al Murabba Palace complex making use of local limestone.

In 1945, President Franklin Roosevelt presented a Douglas DC-3 as a gift from the United States to King Abdulaziz, an event that heralded the introduction of civil aviation in the Kingdom. The nation's flag carrier, Saudia, was founded as Saudi Arabian Airlines in September 1945 as a fully-owned government agency under the control of the Ministry of Defence. About nine kilometres north of the old walled city, a desert landing strip was opened in 1946 and flights to and from the capital commenced. In 1947, Aramco commenced construction of a 447-kilometre railway linking Dammam with Riyadh. It was inaugurated by King Abdulaziz in 1951, in what was to be his last official public appearance. The railway made transport of heavy materials easier and soon concrete was being used in construction on a large scale for the first time in the capital. This was to dramatically change the look, style, colour and texture of the capital's architecture. Oil revenues now fuelled budget expenditures and, as the wealth of citizens grew, modern development became bolder and more visionary.

Radio broadcasting in Riyadh commenced in 1949. Privately-owned radio sets were already popular, particularly in the Hejaz and Eastern Region. In 1951, Riyadh Electricity Company was established. The introduction of electricity followed, initially providing light to mosques, government buildings and palaces and later supplying residential areas. The kerosene lamps that after sunset cast their flickering golden glow across mud-brick walls and courtyards in the brief period before most residents slept following Al Isha prayers; gradually gave way to electric lighting. Related paraphernalia such as transformers, stabilisers, cabling, wires, and a plethora of plug and socket types began to be imported along with modern conveniences such as ceiling

Two Saudi Arabian Airlines' Douglas DC-3s at Riyadh Airport nine kilometres north of the old centre. Before two runways were laid and a stone terminal building constructed in 1953, aircraft touched down and took off on an unmade strip. The DC-3 in the background has the original 1945 livery of the fledgling airline.



fans, water fan coolers, air conditioning units, refrigerators, washing machines, street and traffic lights and neon signs. By 1950, the city's historic mud walls were considered redundant and their gradual demolition commenced. Abdulaziz now ordered the construction of new buildings made of reinforced concrete in the northeast of Al Murabba complex. Around the same time, Al Nasiriyah Palace was constructed by Crown Prince Saud. It was made of concrete and surrounded by houses built on a grid pattern plan, along with a relatively long stretch of surfaced road, among the first to be asphalted, linking it to the city centre.

By the end of King Abdulaziz's rule in 1953, Riyadh was on the cusp of a new era of development that would result in yet more far-reaching changes to the fabric of the city. King Abdulaziz died in Taif on 9 November 1953 and was laid to rest in Riyadh. Shortly afterwards, the remaining defensive mud walls and gates including Al Thumairi Gate (now restored) that led out onto Al Ahsa Road were taken down. Some of the large old buildings in the city, such as Qasr Al Hokm and the Grand Mosque of Imam Turki bin Abdullah, were also demolished to make way for concrete replacements.



In just over half a century after he regained Riyadh as the Saudi capital in January 1902, King Abdulaziz unified territories from the Red Sea to the Arabian Gulf and proclaimed a new nation-state. Riyadh's population grew tenfold to exceed 120,000 and oil was discovered, with daily production, climbing to over half a million barrels, helping to increase state revenues by more than tenfold in the last decade of his rule. Motorised vehicles had arrived and Aramco had built a railway linking the capital with its historic trading sisters, Hofuf and Dammam. The first aircraft had landed on a rudimentary desert strip north of the walled city, where construction work had laid two runways and built the first terminals for a new airport. Diesel pumps had replaced animal power for raising water from wells for irrigation, livestock and citizens.

Electricity supplies began to replace kerosene lamps and provide power to operate radio transmitters and receivers that connected Riyadh with other administrative centres throughout the Kingdom and beyond. The first telephone system was introduced in the capital and imported domestic appliances arrived. Concrete structures replaced traditional mud-brick buildings and the network of dusty roads and few limestone paved streets gave way to asphalt-surfaced boulevards and roads as the capital's population spilled beyond the confines of its walls and urban limits marched outwards. Riyadh was now undergoing a remarkable transformation from a traditional austere desert oasis town into a rapidly developing and expanding modern metropolis.

19 October 1951: King Abdulaziz accompanied by his son Prince (King) Saud inaugurates the Dammam–Riyadh railway with a ceremonial rail spike. The railway was built with Aramco's assistance. The photographer, Ilo Battigelli, was an Italian employee of Aramco. Known as "Ilo the Pirate", he dressed in colourful split-sleeve shirts, flannel shorts and big earrings, with a knotted bandana as headwear. It is likely he appeared in more formal attire when taking this historic photograph.



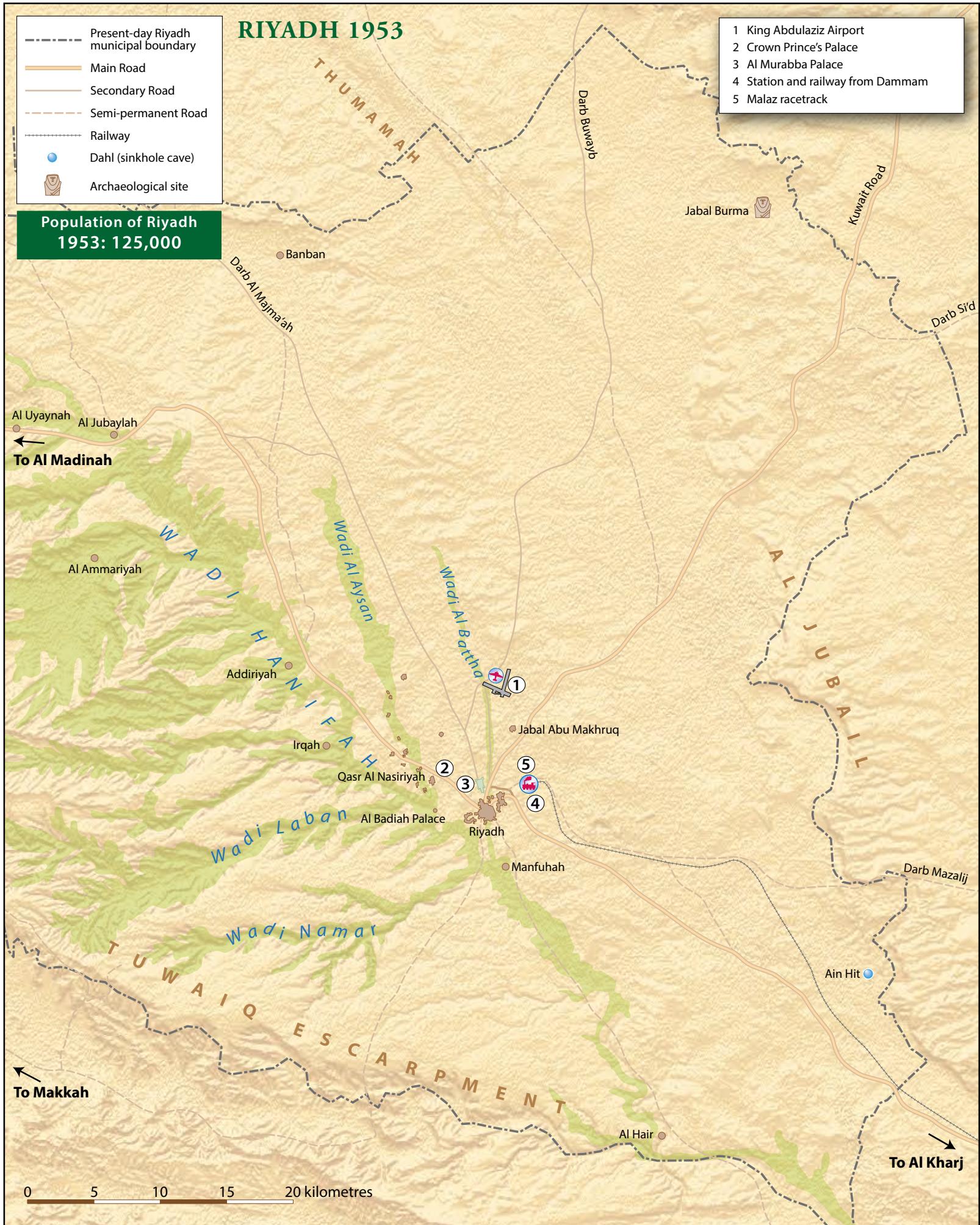
**Above**

This historic photograph over the rooftops of Riyadh looking east was taken by Aramco photographer T.F. Walters in 1949 and shows citizens outside the Hospitality Palace in the main square. Masmak Fort is in the middle ground.

**Opposite**

One of the numerous unpaved and narrow streets in old Riyadh. From the 1940s many streets were widened with buildings demolished to accommodate increasing numbers of cars. The triangular protuberances on the wall to the left are a typical Nejdi feature to disperse rainwater flow over the mud walls. The lower wooden drainage pipes that are visible have elsewhere been replaced with metal piping.





## 8 Riyadh After King Abdulaziz

Saudi Arabia's oil resources and the boom years after World War II fuelled the development and expansion of the Kingdom's economy and brought with it a period of rapid urban growth and change. Oil not only generated revenues for the government, but also provided entirely new and exhilarating business and employment opportunities, showed what was possible in terms of construction and infrastructure development and helped provide the capital, know-how and equipment to initiate large-scale projects. It fuelled an array of oil industry, construction and consumer imports as well as foreign experts and advisors, and it led to the creation of a new generation of Saudi technocrats and entrepreneurs.

King Saud enthusiastically championed transformational development and the results were soon seen in the capital. His pronouncements to build national infrastructure, encourage education and create a strong army and economy were popularly embraced and resulted in remarkable changes. He set up new ministries and oversaw the transfer of others to Riyadh. He established the country's first university and fully equipped hospital in the capital, led the country to membership of the International Monetary Fund and began the transformation of what had previously been a traditional economy of mainly small-scale local craft and household enterprises by embarking on an ambitious programme of national industrial development.

In the capital, shortly after the death of King Abdulaziz, the city's gates were dismantled. This included Al Thumairi Gate which opened from the historic centre to the ancient, well-worn track to Al Ahsa. The defensive mud walls and many of the city's traditional mud buildings were also demolished. These included Qasr Al Hokm and the adjacent Grand Mosque of Turki bin Abdullah with the distinctive and iconic second-storey covered walkway linking the two. In their place King Saud built a new mosque, of stone and concrete with two tall circular minarets, and a government complex. The old heart of Riyadh lost much of its architectural heritage and a number of its most remarkable landmarks, which had witnessed and withstood a turbulent and eventful

past. Traditional buildings along Al Thumairi Street, (first captured in a panoramic photograph by Captain Shakespear in 1914) were also demolished and replaced with modern structures, creating a new and bustling thoroughfare lined with shops and leading to the central square, which would soon be overlooked by multi-storey concrete buildings. Just outside and parallel to the eastern walls, Riyadh's first shopping centre was constructed along Wazeer Street, later renamed King Faisal Street.

Beyond the confines of the historic old city, an era of modern planning was seen large-scale urban development. There was a focus on road design to accommodate the exponential increase in the number of motor vehicles in the capital and the subsequent rapid expansion of the city. The growth of modern suburbs formed nodes of new development around the outer margins of the city from which further planned expansion occurred. Along with the increase in road traffic, the new railway – built and initially operated by Aramco – was encouraging the growth of an industrial area around the railway station on the eastern outskirts of the capital. The inauguration of the railway in 1951 made Riyadh more accessible. Every day except Fridays a passenger train departed at 11.30 a.m. (as the Riyadh-bound train arrived) on the six-and-a-half-hour journey to Dammam, and a first class ticket cost 30 Riyals.

But it was for shifting heavy goods more than transporting passengers that the new railway really helped in the development of Riyadh. Freight trains arrived from Dammam loaded with imported construction materials. Construction with reinforced concrete using rebar (reinforcing bars) now took over from the time-honoured traditional building techniques of laying sun-dried bricks. Ironically, when conceived and planned under King Abdulaziz, the railway was considered to be in danger of becoming a white elephant. The naysayers were soon proved wrong: as demand soared for imported construction materials and heavy goods such as air conditioning equipment, generators, water pumps, rebars and pipes, the railway emerged as the essential lifeline supporting the expansion and transformation of the capital.

### Overleaf

The view westwards along Al Shumaisi Street towards the Government Hospital c. 1968. Around this time, work commenced on a land drainage system for the fast-growing city. The channels, often along the courses of former natural stream beds, were excavated, lined with concrete and covered.





As well as building the rail link to Riyadh from Dammam, Aramco directly and indirectly assisted with new projects that included an airport, electricity generation and supply, sewage systems, paving roads and building bridges. With the oil company's help, supplies of asphalt arrived in the capital for road construction. Most roads were previously dusty gravel tracks with just a few important urban routes paved with limestone or concrete, and soon many had been surfaced to become blacktops, reducing dust and making city trips by car and bicycle more comfortable.

Developments occurring nearly 400 kilometres away on the Arabian Gulf were increasingly making themselves felt in the conservative Saudi capital. One of the first visible influences of contemporary architecture in Saudi Arabia was the arrival in Dhahran after 1938 of Aramco's American suburban-style housing, which was initially in prefabricated units. As new oilfields came on stream, Aramco engineers also constructed infrastructure, educational, medical and retail facilities for thousands of its employees and their families. These were to influence developments in Riyadh and elsewhere, and the inevitable impact on the Kingdom's society and culture brought with it initial signs of tension between tradition and modernity that would take several decades to address.

The extensive early programme of laying roads in Riyadh created an unprecedented demand for construction equipment and asphalt, seen here being laid on the outskirts of the capital in 1956. The Government's plan to establish Riyadh as the administrative and later the political and financial centre of Saudi Arabia resulted in extensive construction of new government buildings, infrastructure development including national highways and flood-control projects.

By the early 1950s Saudi government officials had adopted plain and functional settlements laid out in a gridiron plan as a model for urban development. At this point, Riyadh's population exceeded 100,000 and the Royal Decree relocating most government office headquarters from Jeddah to the capital to join the existing ministries of Finance and Defence created a frenetic phase of major construction work. In 1953, Riyadh Airport was inaugurated nine kilometres north of the old city on the site of the former landing strip, with two runways equipped for night flights. Sharia Al Matar (Airport Road), previously a wide motor track, was laid out as a boulevard, and along its length from Al Battha, seven ministries were built and opened in 1957. In 1968 the airport was also to be used by the new King Faisal Air Academy for training Royal Saudi Air Force officer pilot cadets.

Riyadh's first real suburb at a distance from the old city sprang up in an area named Malaz, east of the ministry-lined boulevard. Government agencies handled the development and construction teams worked on an area covering five square kilometres, creating an organised grid pattern. For the first time, Riyadh witnessed the introduction of an entirely new kind of home: the detached villa. Described by Saudi architect and urban planner Dr Saleh Al Hathloul as "international Mediterranean" style, 750 villas and several



apartment buildings were built in Malaz on neat tree-lined streets. Malaz became known as Riyadh Al Jadidah (the New Riyadh). Its modern designs were radical – often whimsical – in their exteriors, colour, layout and use of internal space. This was the capital's first significant departure from the old order, the traditional urban layout within the walled confines of an Islamic settlement comprising courtyard homes, narrow streets and an intricate maze of alleyways offering shade to pedestrians. Aligned in different directions and radiating from the central core of the mosque and palace, the irregular orientations and zigzags artfully prevented sand and dust being carried along the lengths of streets and alleyways. Now Riyadh, observed Al Hathloul, had distinctively split into a city made up of contrasting old and new districts.

The traditional mud-brick houses built round a central courtyard with a door and blank walls looking onto narrow, sandy streets gave way to concrete forms that were turned literally inside out with windows set into the exterior walls along sidewalks and asphalted streets. Wooden external gates made way for concrete entrances, some capped with flying canopies over steel gates, many emblazoned in green with the Saudi national emblem of the palm tree. Sharp lines on buildings enabled by construction with reinforced concrete now replaced the rounded corners of old mud-

brick structures, some of which were now rendered with concrete to provide a pastiche of modernity. The influence of Malaz District, with its detached villas and radical new layout, was to become ubiquitous as planners began adopting the latest concepts in urban design, development and construction.

The magnetic appeal of Riyadh attracted Saudis from far and wide, the names of areas often reflecting the origins of the arrivals: Hilat Al Qusman and Hilat Al Dawasir formed new suburbs for settlers from the oasis towns of Al Qassim and the wadi communities of the southern extremity of Riyadh Region. Suburban growth rapidly extended the limits of the city and focal areas of residential and commercial buildings emerged as centres for further expansion. On the eastern side, the industrial zone of Sinaiyah continued to expand around the railway station. To the west, centres of planned development expanded around the new palace complex of Al Nasiriyah and Al Shumaisi, and on the road leading to palaces and guesthouses at Al Badiah on Wadi Hanifah. Just north of the old city, major building development took place in areas around the Al Murabba complex. Wazeer Street, which ran alongside the former eastern city walls parallel to Al Battha Street, also continued to develop as a thriving commercial district, with shops and new high-rise



The exterior of the first Government Hospital in Riyadh, captured by Aramco photographer T F Walters in 1949. By 1959, there were three major hospitals, a maternity clinic and a military hospital in the capital.

apartments to cater for and house the continuing influx of ever-increasing numbers of foreign workers to the city.

Along with villas, more apartment buildings sprang up in the capital. Curiously, among the first to be built outside of Malaz was a six-storey block constructed in 1959 within the confines of the old city, at the end of Al Thumairi Street and overlooking Justice (Al Adl) Square. The new concrete buildings mimicked the tan colour of mud-bricks and incorporated balconies. Blank walls to the side prevented older and smaller traditional homes from being overlooked. Later, new-build apartments in Al Futah District adjacent to Al Murabba caused concerns among existing residents since the upper storeys overlooked their traditional homes. The response was the adoption of high-wall screening around homes.

The Riyadh Municipality was established in 1953 to address such concerns and introduce planning and building regulations. It was also tasked with managing many of the city's services such as street cleaning and sanitation for the rapidly growing population. Building and planning included guidelines for hierarchical streets of differing widths, and square plots for villas with setbacks on each side, all features first introduced in Malaz.

In 1960, a new Ministry of Petroleum and Minerals was established, taking over the original Office of Mines from the Ministry of Finance, which until then had supervised the Aramco Concession. Its new headquarters now moved to Riyadh to handle all mineral resources. It was at the time among the first modern buildings designed to incorporate the traditional Nejdi mud-brick forms and motifs. The Ministry's neo-traditional features included an inner courtyard, triangular openings and trapezoidal windows, and square corner towers echoing Riyadh's Al Murabba complex and other traditional buildings in the region.

In the decade following the death of King Abdulaziz, Riyadh's population rapidly increased to exceed 180,000. With annual population growth approaching 10 percent, water supply became a pressing need with domestic, municipal, industrial, agricultural and construction demand. Until the 1930s, supplies came from hand-dug wells but water levels began to fall and water quality deteriorated due to seepage. In 1948, with the city's population at less than half of what it was in 1963, Aramco had already studied and reported on the capital's water supply, recommending consumption controls, waste prevention, and a halt to cultivation of additional land. Riyadh's water was by then supplied from pumping stations and relatively shallow boreholes in Al

By the 1950s narrow and crooked streets in the heart of Riyadh presented problems for motor traffic. A programme of road widening commenced, resulting in demolition of mud-brick buildings on the road fringes. This two-lane road is divided by a central line of flower beds. New concrete apartment buildings with balconies and high-walled rooftop parapets begin to appear in the city centre.





An early colour photograph showing the view north along Airport Road towards Riyadh's airport in the early 1960s. The wide, tree-lined boulevard was flanked on either side by new ministries. In the distance on the airport's perimeter is the parachute-jump tower used for training by the Royal Saudi Air Force. The headquarters of the Ministry of Interior (which moved to its current building in 1992) appear on the left.

Hair at the outflow of Wadi Hanifah and its tributary Wadi Namar, and from wells from the nearby wadi community of Arqah.

With population increasing so rapidly and modernity changing the way of life, demand for water soared. As shallow aquifers became depleted and others contaminated, water shortages became an increasing challenge, threatening the very existence and future of the capital. In 1956, after two years of extensive fieldwork, French geologists revealed that there were enormous reserves of fossil water deep beneath the area around Riyadh. Subsequent drilling tapped the Minjur Aquifer at depths of over 1,000 metres, bringing adequate supplies to the city.

As well as building essential infrastructure, laying the early foundations of modern Saudi Arabia included welfare provision for a growing population, which was fast gravitating to major urban centres such as Riyadh. Establishing a system of education was key among the young nation's needs. This had been set in motion at a basic

level by King Abdulaziz and after his death his sons were to accelerate the provision of education for citizens. In 1953, the Kingdom's Council of Ministers was instituted and the Ministry of Education established. The Council's inaugural session announced that Saudi Arabia's first institute of higher learning would be established in the capital. Colleges of Engineering, Agriculture and Commerce were first established with campuses in the Al Shumaisi District. King Saud University was opened in Riyadh in 1957 with college buildings established along the newly-named University Street leading towards the burgeoning suburbs of Malaz. Soon after, the Institute of Public Administration (IPA) was founded in Riyadh by Royal Decree as an autonomous academy to prepare Saudis for positions in the nation's fast-growing public sector.

By the time Faisal bin Abdulaziz was proclaimed King in 1964, Riyadh was a capital poised for a period of sustained development and continued modernisation, with unprecedented expenditure on infrastructure. Schools and training institutes opened, women were given access

Road-widening schemes destroyed much of the old architecture and at the same time exposed the interiors, many of which were graced with intricate and decorative traditional stucco work as well as columns and courtyards.

**Below**

By 1949, Riyadh saw new suburbs springing up, and the introduction of spacious villas built to house the expanding population. New roads became commonly known by their width, Thalateen Street being a carriageway of 30 metres in breadth.



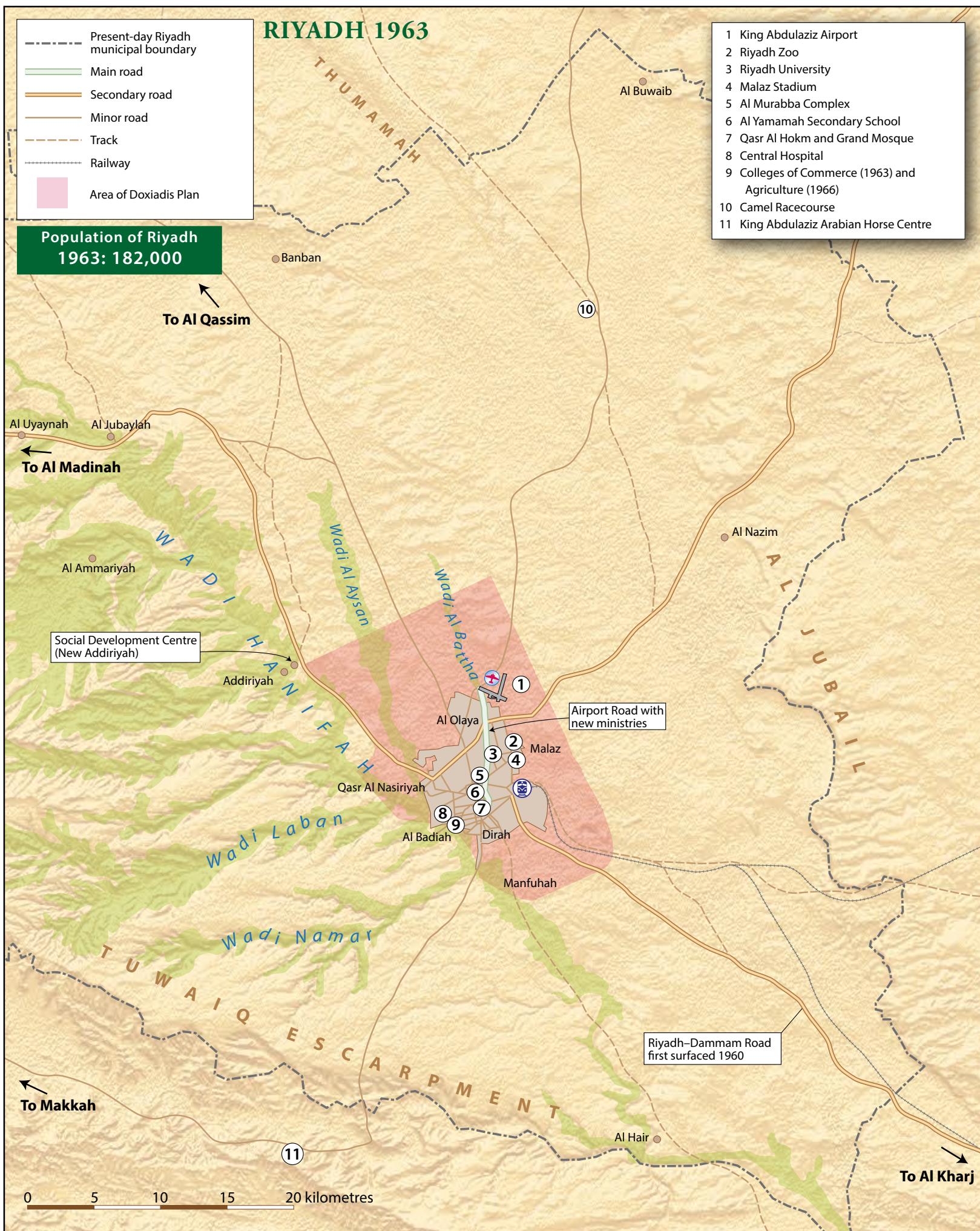
to education, health and welfare facilities were established, television broadcasts began in Riyadh, more domestic and international air routes opened and subsidies were introduced to stimulate agriculture and new businesses. Planning became an essential part of the process of development and a central planning organisation was established in 1965. In 1970 the first national Five-Year Plan was launched. Systematic urban planning studies also began that would, under King Salman, then the long-serving Governor of Riyadh, herald the formation of the High Commission for the Development of Arriyadh and Arriyadh Development Authority to lead and manage the

capital's development and create the vision required for a modern and sophisticated metropolis.

Within half a century of the start of King Faisal's rule, the population of the city would grow from nearly quarter of a million to around six million. Riyadh was set for a new era of urban planning and growth. By 1977, the built-up area of the city had expanded from its estimated original area of one square kilometre in 1902 to around 100 square kilometres. The capital's urban limits would continue their inexorable and rapid march in all directions so that by 2015 the area of Riyadh had grown by a further 15-fold.



The exposed high-ceilinged interior of a traditional Riyadh home demolished for road building reveals intricate and decorative stucco work in a coffee parlour replete with niches. The geometric motifs include fleur-de-lys, diamonds and sharks tooth patterns. Remnants of rafters of athl wood (*Tamarix aphylla*) can be seen. Stucco work was common in homes throughout Nejd.



## 9 Planning the Capital

King Faisal's enthusiastic, bold and broad-based modernisation drive led to the introduction of systematic planning and implementation of major infrastructure and welfare programmes at both the national and city level. The quest for economic development and growth with clearly defined objectives began in earnest with the introduction of Saudi Arabia's First Development Plan in 1970 with its focus on infrastructure. This was the start of national five-year plans that continue to frame and shape the economic and social development of the country. In the Kingdom's march of progress, Riyadh has led the way in urban planning and development and, under King Faisal, major cities in the Kingdom drew up master plans with 30-year horizons. Among the challenges faced by urban planners was the dichotomy then emerging between embracing modernisation and development while recognising the need to retain tangible aspects of history,

local heritage and tradition and remaining steadfast to the tenets and values of Islam.

In 1965, King Salman bin Abdulaziz, then Prince Salman, was appointed Governor of Riyadh Region. He had previously served in this position for a five-year period from 1955, and with his reappointment was now to remain governor until 2011. Riyadh was fortunate to have a leader who would actively engage and champion the development of the capital as well as staunchly protect Islamic values and endeavour to preserve the city's historic roots. Recognising the importance of effective urban planning in framing action plans, in 1968 he set up the High Committee for the Evaluation of the Riyadh Master Plan. This was to form the building block for establishing the High Commission for the Development of Arriyadh and its executive arm, the Centre for Projects and Planning.



The southern end of old Airport Road leading to Al Battha around 1969. In early planning initiatives completed at this time by Doxiadis, the proposed expansion of Riyadh followed a grid pattern. Use of concrete allowed early radical designs such as this example of a circular tower block.

### Overleaf

Modernisation under King Faisal led to the introduction of national and urban planning with Saudi Arabia's First Development Plan of 1970 focusing on infrastructure development and the emergence of modern urban planning. King Faisal here is seen with King Salman, Riyadh's Governor between 1965 and 2011. In the background Prince (later King) Abdullah and Prince Sultan are in conversation.







Open areas around Riyadh gave planners ample scope for development. The Diplomatic Quarter was the ADA's first major project, with construction work commencing in 1980. In this view of the site looking east, the King Khaled Eye Hospital is near the horizon (top left)

City officials held a competition to select expertise to help draw up plans for a modern capital. The international planning consultancy, Doxiadis Associates, won and set about studies and drafting the first strategic action plan for Riyadh. The plan, completed in 1972 and approved by the Council of Ministers, created a template for the growth and development of the city to the end of the 20th century. Constantinos Doxiadis, a famous Greek planner trained in Athens and Berlin, formulated the post-World War II urban development concept of 'Ekistics'. This recognised

a dynamic city, dynapolis, and enabled hyper-rapid expansion and thus appeared well suited for the growth and fast-emerging needs of Riyadh. It also endeavoured to maintain harmony and balance between human and social needs, the citizens of a settlement and their physical and socio-cultural environments and the inevitable forces of modern technology. Doxiadis had worked on the restructuring of Baghdad in the mid-1950s and in 1960 applied his dynapolis theories, to create a master plan for Islamabad after its selection as the new capital of Pakistan.

When Doxiadis Associates commenced their study, Riyadh covered an area of about 100 square kilometres. The city was expanding on a radial basis and there was congestion of the main arteries in and around the city. These included the ministry-lined main boulevard leading to the airport and roads in the central core of the city and new suburbs, as well as in the growing industrial zone to the east.

The priority was to quantify the historic expansion of the city and forecast growth over coming decades, taking into account Saudi migration to the capital, and the increasing foreign population as well as natural population growth, factoring in trends in birth and death rates. The historic annual population growth was estimated at seven percent. Two-thirds of the annual growth was accounted for by migration into the city and the remaining third by natural growth.

But accurately forecasting the capital's population growth is a perennial challenge. Working with the knowledge that Riyadh had a population of around 350,000 in 1970 and arguing in the face of uncertainty that it was better to err on the high side, Doxiadis projected that the capital's population would double over the coming decade. But this was to prove a significant underestimate: by 1980 Riyadh was a city of over one million inhabitants.

However, the plan was to influence fundamentally the future growth of the capital into the 21st century. With the motor car extending the range of convenient movement and increasing the pace of everyday city life, Doxiadis proposed a city with distinct sub-centres rather than a compact, centralised and dense nucleated settlement. It was to follow a grid pattern with development along an approximate north-south axis, open towards the east and the industrial zone; and parallel to the west with Wadi Hanifah, the course of which skewed the grid's alignment and initially constrained expansion and formed a natural western boundary to the city limits.

Industrial development was also helping to shape the capital and create opportunities attracting internal migrants and expatriates from neighbouring countries and placing pressure and demands on planners for improved

infrastructure and amenities. The capital's first planned Industrial City was established in 1973 in the area around the railway station. The area known as Sinaiyah already had numerous workshops and small-scale manufacturing activities. It would soon boast a planned layout with more than 50 new and larger factories, producing a variety of goods including plastic and electrical, metal and wooden products.

Three years later, a second Industrial City was established in the southeast of the city on the road to Al Kharj. With nearly 20 square kilometres available for industrial development some of the first major foreign investments located large factories and manufacturing plants here producing products that included foodstuffs, household goods, detergents, plastics and electrical appliances and equipment to satisfy the fast-growing domestic market as well as open up export prospects within the region. In four subsequent phases of development the number of factories grew to exceed 1,000, employing more than 120,000 people.

Ongoing growth of the urban limits and population of Riyadh continued to exert increasing pressures for effective and systematic urban planning and implementation. The response was a Council of Ministers' Decree issued in October 1974 establishing the High Commission for the Development of Arriyadh, constituted as the "joint organisational, planning, executive and coordinating authority responsible for the development of Arriyadh" and headed by Prince Salman and his deputy, then Prince Sattam bin Abdulaziz.

The executive body formed under the High Commission in 1983 was named Arriyadh Development Authority, with its commonly used acronym, ADA. Subsequent resolutions of the Council of Ministers would consolidate the role of the High Commission by giving it additional responsibilities to control, coordinate and implement the basic infrastructure projects in the city and establish a Projects and Planning Centre with responsibility for comprehensive development projects and planning works and studies.

Today, the High Commission and its Council, headed by the Governor of Riyadh, consists of ten members



This aerial photograph taken in 1969 shows University Road leading from Malaz towards the old Airport Road. The former buildings of King Saud University were located along this road, one of the first palm tree-lined major boulevards constructed in the capital.

representing government and quasi-government agencies. The private sector is represented by the Riyadh Chamber of Commerce, and citizens of Riyadh provide three members.

Saudi Arabia's first Five-Year Plan, which became effective in September 1970, focused on the establishment of an infrastructure to support a modern economic base, with 45 percent of the US\$9.2 billion budget allocated for capital projects. The scale of these new projects undertaken in the country had never been previously witnessed on the Arabian Peninsula. By the end of this first plan period the

Royal Commission for Jubail and Yanbu was about to be set up to plan and construct two entirely new cities.

Meanwhile, the High Commission for the Development of Arriyadh set in motion a series of bold development projects that would transform the capital. Among them was a long-awaited national decision confirmed by a Royal Decree issued in 1975. This would consolidate Riyadh's role as the Kingdom's outward-looking capital and set it on course to become a strategic gateway and a truly significant international city.



Built in 1971 the vertically-striped grey-and-white water tower on Wazeer Street served as the unofficial symbol of the new planned capital and the main landmark on the city's skyline. Many of the city's roads remained unsurfaced and the capital's outer urban limits are clearly visible.



## 10 The International Capital

Riyadh in the 1970s was the only capital in the world that had no foreign embassies. Foreign missions were scattered throughout Jeddah and relocating them in a similar piecemeal fashion to the capital was seen as impractical. In 1975 the Royal Decree issued to transfer the Kingdom's Foreign Ministry and diplomatic missions to Riyadh resulted in an ambitious scheme to bring about the move. To accommodate the growing number of embassies and their representatives and staff, Prince (now King) Salman initiated a visionary plan for the design and development of a Diplomatic Quarter (Hayy Assafarat) on the northwest edge of the city. The chosen location covered nearly ten square kilometres: rough and rocky terrain fringing the steep side of Wadi Hanifah. The location was almost equidistant from the historic heart of Riyadh and Addiriyah, the capital of the First Saudi State.

Over a five-year period the project would develop this area to take more than 80 diplomatic missions and provide accommodation, infrastructure and services for the estimated 8,500 relocated employees. In addition to the Diplomatic Quarter, plans were drawn up and work commenced on constructing the new headquarters of the Ministry of Foreign Affairs along with the project for a separate housing complex for ministry staff relocating from Jeddah.

The Master Plan for the new Diplomatic Quarter ensured Saudi nationals would ultimately make up more than half of its residents. The community would have sophisticated infrastructure including parks and facilities for education, leisure and sport and incorporate landscaping sensitive to the natural desert environment, creating an integrated ecosystem rather than a patchwork of isolated green areas. Roads were designed to avoid the ubiquitous gridiron pattern and a network of trails wound around the fringes.

Five years of construction work commenced in 1980. Allocation of plots for the initial few dozen embassies

A forest of cranes dominates the skyline during construction of the Diplomatic Quarter between 1980 and 1985. The urban limits of Riyadh grew at an unprecedented rate expanding in all directions, and distinct new sub-centres emerged around the old and overcrowded city centre.

was random, with the doyen of the diplomatic corps, at the time the ambassador of Cameroon, ceremonially drawing names from a bowl at a special event held in Jeddah. Embassies commissioned leading international architects for their buildings, encouraging creative designs while remaining sympathetic to the local environment. The result was a rich mixture of buildings and, in some cases, edgy contemporary styles. The nascent Arriyadh Development Authority undertook and managed design and construction of infrastructure and facilities, which included a central plaza, mosque, commercial area and its own headquarters. This central area was named Al Kindi Plaza in honour of Abu Yusef Yaqoub ibn Ishaq Al Kindi, the 9th-century scientist, mathematician, astronomer and father of Islamic philosophy.

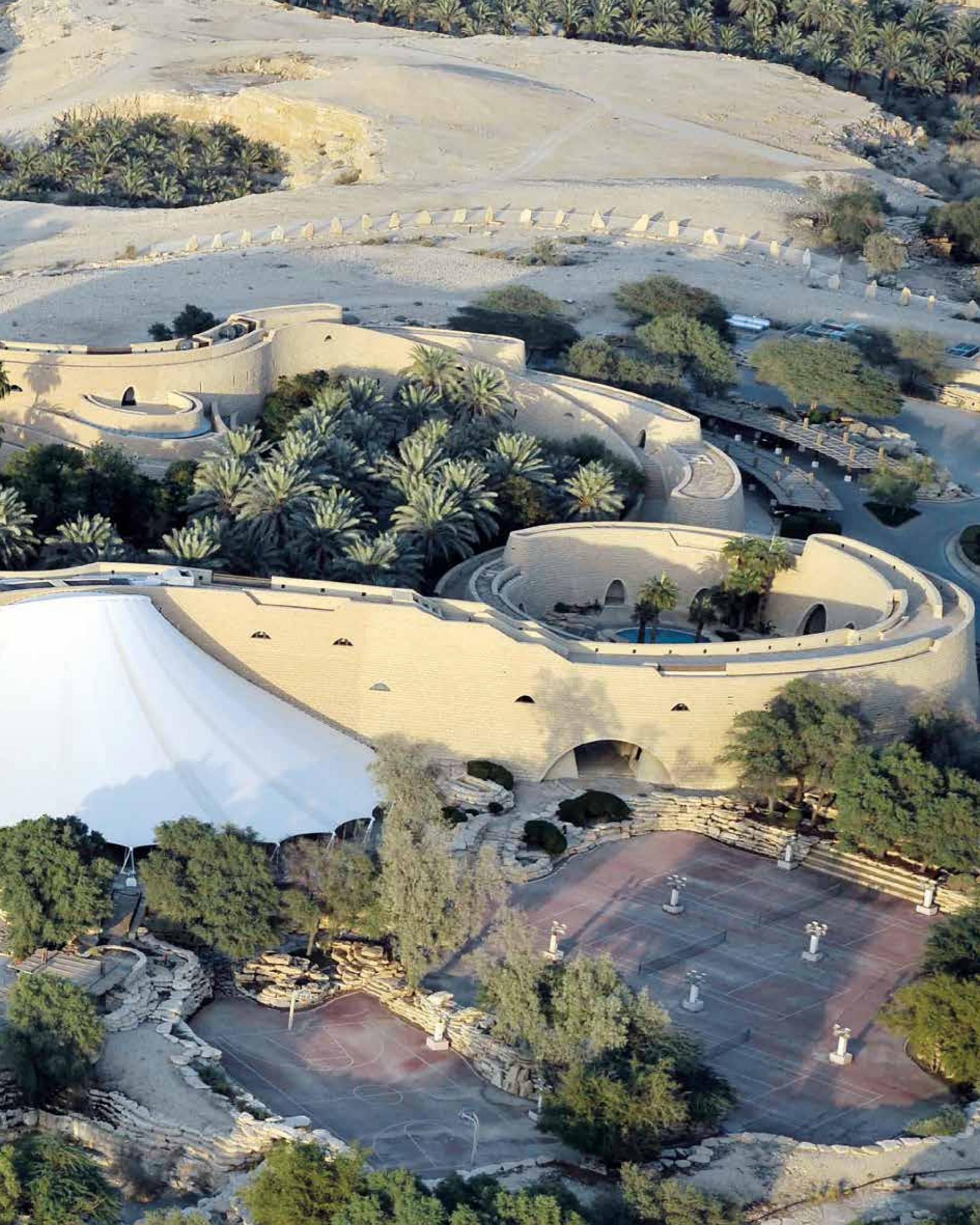
Al Kindi Plaza forms the heart of the community and its design and buildings reflect the traditional architecture of Nejd. It comprises a mosque, library and gardens, offices of the Arriyadh Development Authority, shops and other services, all linked by covered passages and arcades. Courtyards and open spaces are scattered among the buildings, which are centred on a triangular open public space reserved for pedestrian movement.

In 1989, Al Kindi Plaza and the overall landscaping of the Diplomatic Quarter each received the Aga Khan Award for Architecture. The jury considered Al Kindi Plaza "an ideal model for cities in Islamic and Arab societies for having attractively preserved the traditional link between the mosque and the other public services of the city". The award for the comprehensive landscaping of the Diplomatic Quarter cited that the entire project was successfully planned as a self-sustaining ecological system, in which the majority of 250,000 plants introduced made use of species found in the surrounding desert environment. The jury found the landscaping to be "a realistic and imaginative understanding of the natural and spatial organisation in hot and arid regions".

### Overleaf

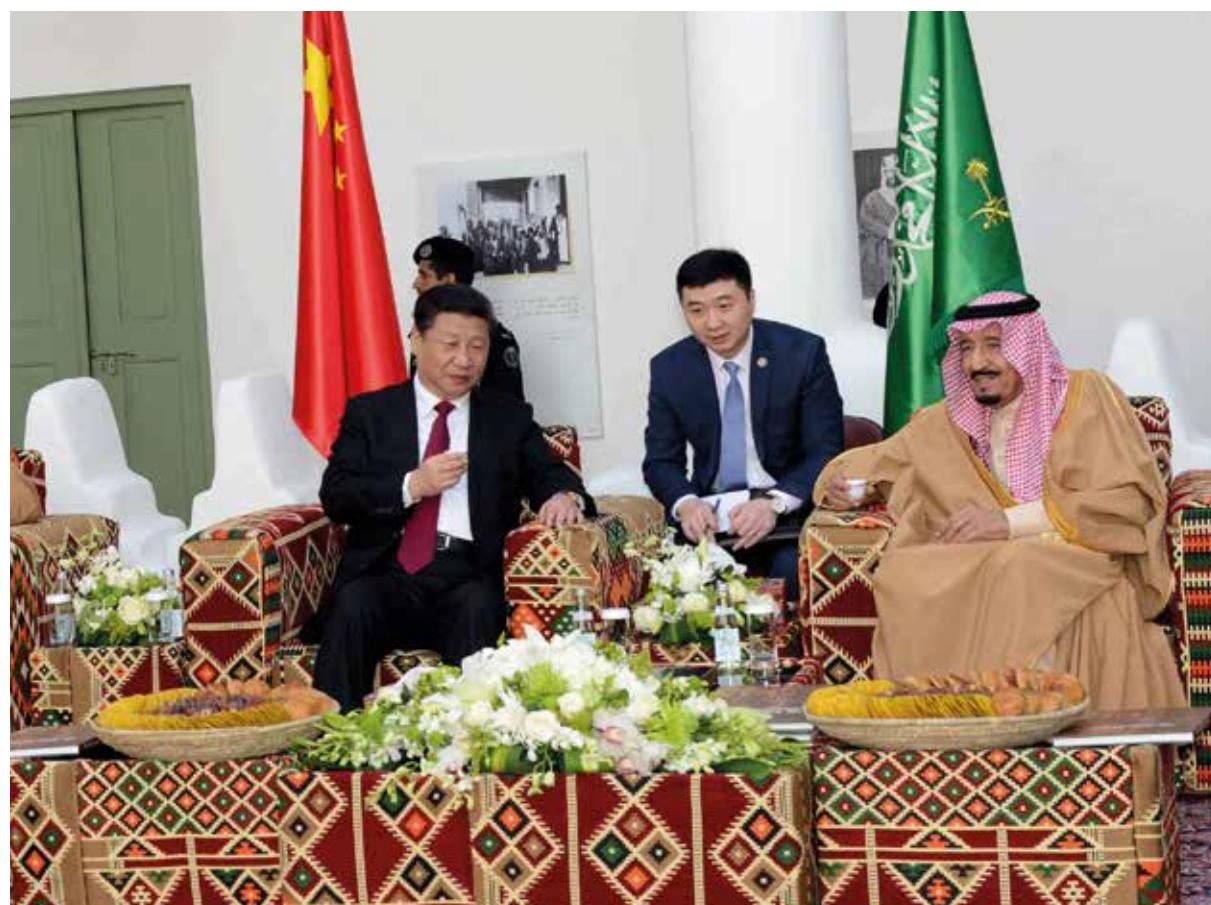
The Tuwaiq Palace overlooks Wadi Hanifah in the Diplomatic Quarter and is a recipient of the Aga Khan Award for Architecture. Inspired and named after the majestic Tuwaiq Escarpment, the building forms an oasis with terraces, courtyards and caves enclosed within its sinuous outer wall.





The move of diplomatic missions and the Ministry of Foreign Affairs from Jeddah to Riyadh concentrated diplomacy and international affairs in the capital.

Here King Salman welcomes visiting Chinese President Xi Jinping in the restored Al Murabba Palace at the King Abdulaziz Historical Centre. The 2016 visit strengthened Sino–Saudi relations and furthered bilateral agreements in joint ventures, trade and research cooperation.



Another recipient of the prestigious Aga Khan Award for Architecture was the distinctive Tuwaiq Palace on the fringes of the Diplomatic Quarter overlooking Wadi Hanifah. Completed in 1985, a year before the other two prize-winning projects, it would be recognised in the 1998 awards cycle. Managed by Arriyadh Development Authority, the Tuwaiq Palace now serves as a venue for official functions, receptions, conferences and cultural festivals. It also includes recreational facilities, gardens and landscaping.

The Palace is as dramatic in form as the Nejd's most prominent landform feature from which it takes its name: the 800-kilometre-long Central Arabian escarpment nearly 50 kilometres to the west. From a distance, it appears to be a fort surrounded by an encampment, enriched by

tents, walls, oases, walkways and ever-changing vistas. The layout seeks to maximise harmony with the site and immediate landscape, providing an oasis with terraces, courtyards, and caves enclosed within its sinuous outer wall. The structure comprises curving, reinforced-concrete, limestone-clad external walls with a walkway along its snaking top. Attached to the outer walls are three massive tensile structures in the form of white tents made of Teflon-coated fibre fabric.

The Aga Khan Award jury recognised Tuwaiq Palace for its blend of traditional and ultra-modern elements, and for fitting seamlessly into its environment. The building "makes reference to two local archetypes – the fortress and the tent – and incorporates the natural phenomenon of oasis". The jury states that a "unified whole is achieved by the consistent

use of materials and by subtle control of the large building mass,” adding “this reinterpretation is a daring confrontation between tradition, landscape and high technology”.

The Ministry of Foreign Affairs was completed in 1984 and provided space for over 1,000 staff. Located two kilometres from the historic city centre, the exterior face of the 85,000-square-metre complex resembles a traditional desert structure with imposing walls. The ministry is closed from the outside with small windows and is reminiscent of the citadels and palace fortresses that stood in nearby Addiriyah and within the confines of Riyadh’s old city walls. Although it appears closed from the exterior, the inside opens to a diversity of small and large, intimate and monumental rooms with fountains and luscious atriums and a four-storey triangular lobby area. Five years after completion this building was another recipient of the coveted and prestigious Aga Khan Award for Architecture, with the jury stating it “is a contemporary work of architecture in harmony with the international architectural mainstream” and citing the project for “its intelligent use and interpretation of traditional architecture and of general Islamic urban concepts”. Of the 11 projects in the six Gulf Cooperation Council nations given the distinction of the Aga Khan Award for Architecture, nine are in Saudi Arabia, of which the six that are in Riyadh are all projects of Arriyadh Development Authority.

The ADA also designed and constructed the staff housing complex for the ministry, 12 kilometres north of the city centre. This pioneering project in Riyadh saw the introduction of the concept of a pedestrian-friendly community. The complex features cul-de-sacs extending from main streets around the neighbourhood that form open spaces and courtyards for clusters of detached and semi-detached houses. This has established a successful model in subsequent planning for residential neighbourhoods in Riyadh and has also been adopted by other cities such as Al Madinah and, through the Ministry of Municipal and Rural Affairs, in planning for small- and medium-sized towns in the Kingdom.

The Master Plan for Riyadh set out that the Diplomatic Quarter would provide “a proper setting for international

diplomacy”, and in addition to its obvious rationale it was also to provide a model for future urban development in the capital and encourage a return to traditional and Islamic roots in design. The associated ADA-managed project for the housing of Ministry of Foreign Affairs staff was also to fundamentally and positively influence urban design trends in the country.

Such acclaimed projects undertaken by Arriyadh Development Authority brought another benefit. They helped foster and inspire a new generation of talented Saudi planners and technocrats who would pioneer the reintroduction of traditional elements and styles characterised in the architectural heritage of Nejd. Their concepts and the designs and new technologies that emerged resulted in buildings and complexes that have gained international recognition and awards. By creatively embracing local design traditions of Nejd and the essence of Islamic architecture and successfully placing them in a contemporary and functional setting, they successfully set standards for future projects that would continue to shape the modern capital.

The transfer of the Ministry of Foreign Affairs and diplomatic missions to Riyadh helped bring to an end half a century during which the capital of the unified Kingdom had been perceived by many as isolated and stereotyped as an inward-looking settlement in the remote and impenetrable heart of Arabia. Another major development and mega project was also being planned at the same time: the building of a world-class international airport to serve the capital and help realise the prospects offered by commercial aviation. This was timely for, by the late 1970s, regulatory constraints on airline operations were rapidly being dismantled, led by the USA, in a booming global aviation industry. Tapping the full potential of air transport would further help open up the vast country, benefit from the capital’s strategic location and contribute significantly to Riyadh’s growth and emerging status as an international and regional gateway.

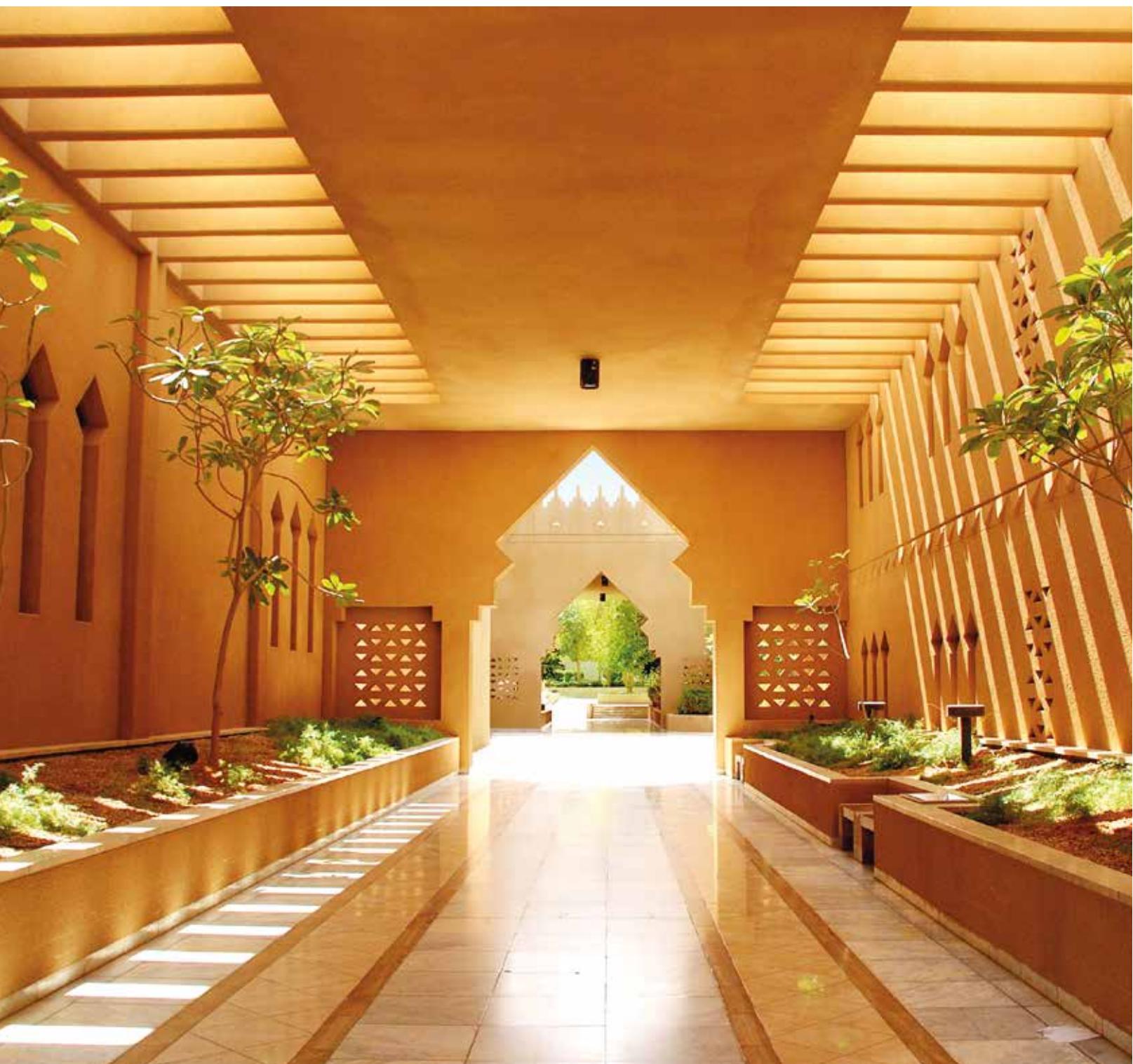
The size and demography of the Kingdom provided an impetus for the rapid development of air travel as an effective means of connecting communities. Saudi Arabian



King Khaled International Airport described when inaugurated in 1983 as "a space-age oasis for jet-age caravans". 14,000 people worked on its construction, a number that exceeded the entire population of Riyadh 70 years previously.

The interior of the Ministry of Foreign Affairs features a lobby area with fountain and other atriums and spaces which illustrate the use and interpretation of traditional architecture and of general Islamic urban concepts. Planned by Arriyad Development Authority, the building was a recipient of the Aga Khan Award for Architecture.





Public spaces within the Diplomatic Quarter (DQ) creatively embrace local design traditions of Nejd and the essence of Islamic architecture. The DQ project successfully set architectural, design and construction standards that continue to shape the modern capital.

Airlines, carrying the Kingdom's iconic flag since it was formed as an operating agency of the Ministry of Defence in 1945, enjoyed a domestic monopoly and was the sole carrier operating scheduled flights to and from Riyadh. The national airline helped link far-flung Saudi towns and cities, transport millions of pilgrims and, with rapid economic development, connect the Kingdom with numerous other regional, Arab and intercontinental destinations.

More foreign airlines secured landing rights to Dhahran and Jeddah while international flights to and from Riyadh were operated solely by the national carrier. In 1974 the decision was made to design and establish a new international airport for the capital named after King Khaled. Passenger traffic to and from Riyadh under the Saudi Arabian Airlines monopoly had continued to grow rapidly after the development and opening of the first Riyadh Airport in 1953. In 1975 nearly a million passengers passed through the modest stone-clad terminals, which were fast running out of space and capacity. From the outset, planners working on the new airport recognised the enormous growth in traffic that was projected to occur. By 1983 passenger numbers would soar to seven million, with landed cargo increasing at an even faster rate.

By the turn of the century, with the population projected to exceed two million, passenger numbers were likely to double. Demand for airfreight movement would increase even more rapidly. As a result, the plans on the drawing board encompassed a vast area hitherto unseen anywhere in international airport development. Covering an area of 225 square kilometres, with a capacity of 15 million passengers annually, this was at the time, the largest airport in the world in area. It was almost eight times more extensive than the old

airport it replaced, which remained in use as a military airbase. King Khaled International Airport was inaugurated in 1983 and, once operational, foreign airlines were granted landing rights for scheduled flights. Completed in the year that many embassies transferred to the capital, the new airport, like the Diplomatic Quarter, heralded the era of mega projects and helped define new architecture in the capital in terms of design, concept, construction technology, scale, boldness and impact.

Described at the time as "a space-age oasis for jet-age caravans", the airport was planned as spacious and ultra-modern, incorporating overarching Islamic design concepts. Its mosque pursues this theme even further. The hexagonal interior, built to accommodate 5,000 worshippers, has six columns supporting a geodesic dome 33 metres across and triangulated by more than 1,000 panels of shiny brass. Outside, mirroring the interior space, there is a hexagonal courtyard that can hold another 4,000 people.

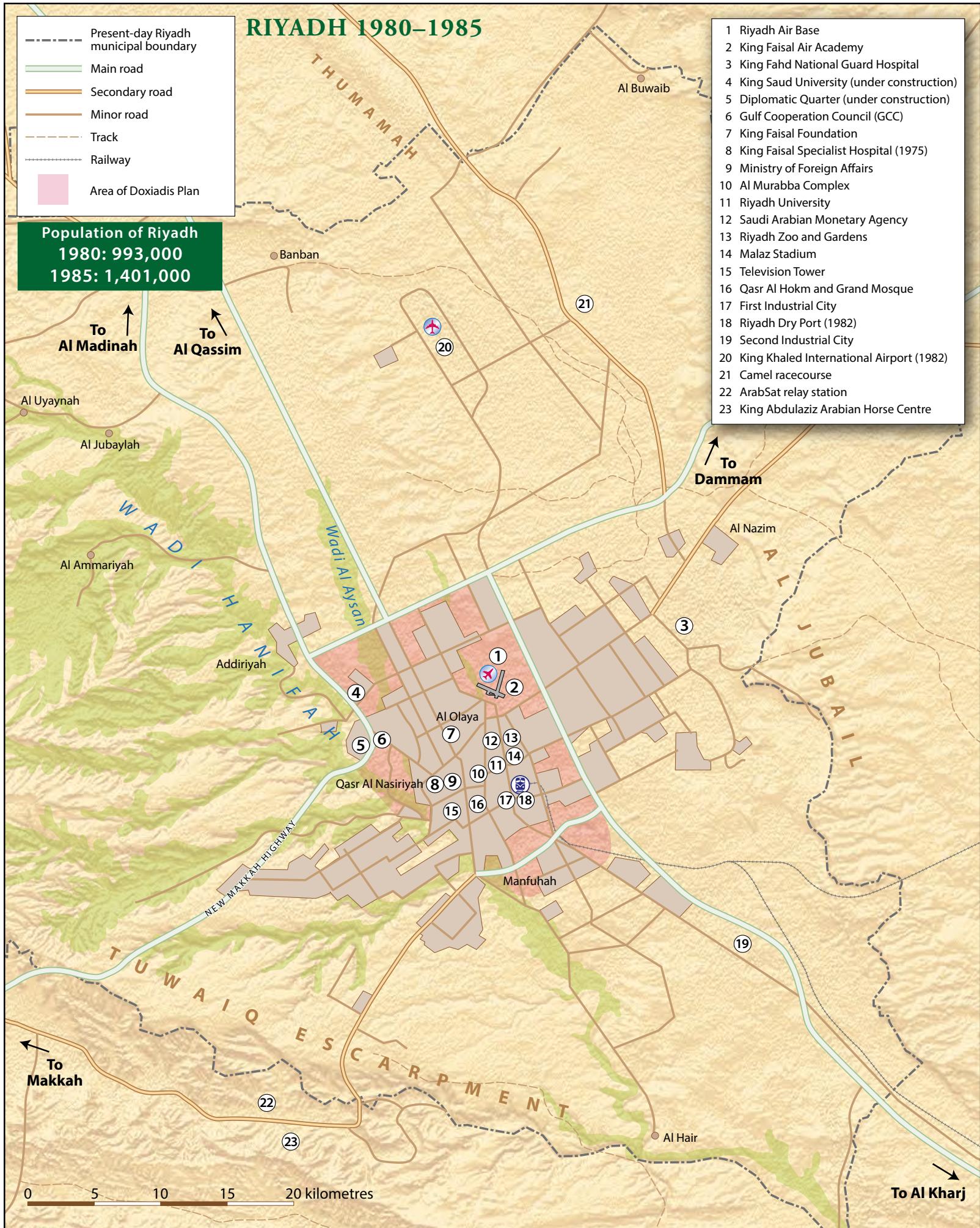
The airport construction used nearly eight million concrete blocks, 86,100 metric tons of rebar, more than seven million tons of aggregate, over 408,000 tons of cement and 29.6 million cubic metres of earthworks, with more than a third of the 66 construction contracts awarded to Saudi firms. As with the award-winning Diplomatic Quarter, greening the new airport was a significant feature of the project: landscaping within and outside the terminals used an estimated 750,000 plants, with more than 300 varieties of trees, shrubs, flowers and creepers. At the peak of construction activity, 14,000 people were working on building the new King Khaled International Airport, accommodated in the temporary housing compound built for them: this number exceeded the entire population of Riyadh 70 years previously.

#### **Overleaf**

A view of the sunset over Kindi Plaza and the mosque of the Diplomatic Quarter and families enjoying the public space over the weekend. The photograph is taken from the vantage point of the headquarters of Arriyadh Development Authority which designed and manages the area.







# 11 The Expanding Capital

By the end of the 1970s Riyadh was a city on the move experiencing unprecedented hyper-growth. The population had doubled to nearly one million in the four years to 1980, vehicle registrations had increased tenfold over the previous six years and electricity consumption was increasing by more than 50 percent a year – the highest growth rate in the world. Nowhere was urban expansion so rapid as in the north of Riyadh, where the city limits were relentlessly extending by 200 metres every month. In 1975, the new Sulaimaniya residential district, just west of Riyadh's first airport, was at the edge of town. Some five years later, one could drive 12 kilometres beyond here along a road that did not exist in 1975 and still see construction. The 'new Riyadh' was expanding in waves of growth and creating entirely new residential and commercial districts, each with its own shopping areas, commercial centres, infrastructure, services, schools and mosques. In most cities of the day citizens would recall the way things looked a decade earlier. In Riyadh, they reminisced about the way the city was just a year previously. The whole process and experience of growth was being dramatically compressed to the extent that the capital was at once simultaneously undergoing outer expansion while revitalising older inner areas that were falling into disuse and decay.

Responsible for planning, designing and implementing the capital's development, Arriyadh Development Authority had also embarked on a major and pioneering programme of urban road development and traffic management projects in the city. There were other significant developments resulting from both the public and private sector initiatives that helped create a new urban landscape and develop the social fabric of the city. Among them and at the forefront were developments that offered educational opportunities, particularly for the rapidly growing population of young people, and the latest in health facilities for the entire population. The burgeoning financial, commercial and private sectors were also creating remarkable new architecture in the city.

Saudi Arabia's first university was founded in 1957 as Riyadh University, with a faculty of arts and only nine teachers and 21 students. By 1975 faculties of science, pharmacy, commerce, agriculture, engineering, education and medicine had been added and it had become the largest university in the Kingdom with 6,000 students and 300 teachers. Faculties were scattered around University Road in the burgeoning suburbs of Malaz. With a fast-growing student population, an ambitious master plan was approved to create an entirely new campus community for the university which, in 1982, was renamed King Saud University. The project was the largest building project in the world at the time, involving more than 12,000 workers from 23 nations creating an institution covering ten square kilometres. Built from scratch, the campus for more than 15,000 students was completed in 1984 on schedule and in less than 40 months.

The design incorporated features echoing local traditional forms: materials used on exteriors cast in light brown hues, facades with deep shaded openings, flat roofs with notched parapets. The colleges were arranged along three main spines connected by covered walkways, the canopies supported by columns and arches resembling date palms. Adding further interest to the monumental architecture of the campus, the university commissioned ambitious sculptures and decorative elements for its public spaces. Sixteen metal sculptures based on instruments invented by Arabs stand in front of faculty buildings and fabric woven in leading textile centres around the world form the largest, boldest use of tapestries since the heyday of French chateaux in the 18th century.

Imam Mohammad bin Saud Islamic University was inaugurated by Royal Decree in 1974 and brought together government colleges of theology, jurisprudence and Arabic language that were established in the capital after 1953. In January 1982, King Fahd laid the foundation stone for the new campus northeast of the city towards

## Overleaf

The view south over the city from Cairo Square on King Fahd Road with the Ministry of Interior in the middle ground. Beyond to the southeast is the New Industrial Area and refinery. To the south are the circular Al Khalediya Towers. Most of these urban developments appeared in the two decades after 1980.







The campus of King Saud University covered more than ten square kilometres and was built from scratch in less than 40 months and completed in 1984 for more than 15,000 students. The colleges are arranged along three main spines connected by covered walkways, the canopies supported by columns and arches.

the new airport. Here the college buildings were linked around central courtyards. This more compact design was in marked contrast to the extensive campus of King Saud University, where moving from the University's administration building to the furthest school within the campus, the School of Agriculture, involved a walk of nearly two kilometres.

In addition to the capital's two main university campuses, new premises were designed and constructed for the Institute of Public Administration. New schools continued to spring up in the city, with soaring pupil enrolment and mass recruitment of teachers. In 1967 there were two

secondary schools for 500 boys. By 1983 there were more than 11,000 boys and 13,000 girls enrolled. During the same period the number of primary schools increased from around 90 to over 450, with more girls than boys enrolled.

Impressive medical facilities were also being established in the capital. The new King Saud University campus included an 800-bed teaching hospital and colleges of dentistry and pharmacy. King Faisal Specialist Hospital opened in 1975 and soon established itself as an internationally recognised world-class showcase of modern medicine and a model for future healthcare in Saudi Arabia. Shortly after, a cancer research centre was inaugurated at the hospital. In 1982

the King Khaled Eye Specialist Hospital opened as the Kingdom's first comprehensive treatment and research centre dedicated to eye care which would serve the entire Middle East region and gain recognition as a centre of excellence. By 1983 the number of hospitals in the city had doubled to 19 in just five years.

As well as the huge projects spread around the capital, numerous new buildings and complexes were beginning to impose themselves on Riyadh's expanding urban skyline. In the decade after 1977 an average of 11,500 building permits were issued in Riyadh each year.

The period saw the growth of new Saudi philanthropic foundations based in the capital. Established in 1976, the King Faisal Foundation inaugurated headquarters in Olaya in 1982 comprising a pair of identical 15-storey triangular towers linked by two skywalks. A second phase opened several years later that included a research centre designed by the leading Japanese architect Kenzo Tange in modernist style and again incorporating a skywalk, echoing the historic feature that linked Imam Turki bin Abdullah Mosque and Qasr Al Hokm in the old city. As well as supporting research from visiting international scholars, the Foundation has built up a significant collection of priceless Arab and Islamic manuscripts as well as a document conservation and restoration centre. The Foundation's mosque introduced a new form of mosque architecture to the city with a hollow cylindrical structure cut off at an angle at its top, replacing a dome and providing natural light to the interior, and a simple tall square minaret. In 1979 the Foundation introduced the prestigious King Faisal International Prize as an annual award presented to "dedicated men and women whose contributions make a positive difference". The Foundation awards prizes in five categories: Service to Islam; Islamic Studies; Arabic Language and Literature; Science; and Medicine. The USA, Egypt, the UK and Saudi Arabia top the list of award winners.

In 1987, the King Fahd International Stadium was completed on the northeast outskirts of the city. It became Riyadh's first international FIFA-standard football ground,

with a capacity for 70,000 fans, reflecting the enormous popularity of the sport throughout Saudi Arabia. The stadium forms a masterpiece of tented architecture and construction and its roof consists of a number of tent-shaped Teflon-coated fibreglass units supported with cables. Previously matches had been played in Al Malaz Stadium with a capacity of just over 20,000. The three professional clubs of Riyadh – Al Shabab, the oldest, formed in 1947, Al Hilal and Al Nassr – are longstanding rivals in the capital, with loyal fans who turn out to support their teams.

The new Ministry of Interior, completed in 1989, created another futuristic urban landmark, designed as an inverted pyramid topped by a dome. Established in 1951, the ministry had moved from Jeddah to Riyadh in 1955, with its first headquarters located along with other ministries on Airport Road. The move of foreign embassies to the capital's Diplomatic Quarter and foreign airlines gaining landing rights to Riyadh's new King Khaled International Airport, was complemented by a transfer of many bank headquarters, resulting in a shift of the centre of banking and finance from the Hajj gateway and commercial port city of Jeddah to the capital. The Saudi Arabian Monetary Agency (SAMA), established in 1952 as the Kingdom's central bank, moved its headquarters from Jeddah to Riyadh in 1978 and first occupied two new buildings on Airport Road. In his design for this, Minoru Yamasaki employed two massive ten-storey towers, identical in structure and facade. Work soon commenced on a new headquarters for SAMA on Maather Street, close to the new Ministry of Interior. The monolithic, rectangular, six-storey building with nearly 100,000 square metres of office space was built around an enormous, climate-controlled courtyard with skylight. Construction of the column-free 30-metre high interior courtyard, presented engineering challenges involving pre-cast concrete forms. The headquarters also houses a currency museum in five display halls, with exhibits telling the fascinating story of Saudi currency and the relatively recent introduction by the Monetary Agency of banknotes in 1961. Among the items is a silver Dirham minted in Al Yamamah in the Hijri year 165.

Other buildings associated with the capital's fast-expanding

In 1982 King Fahd laid the foundation stone for the Imam Mohammad bin Saud Islamic University started in 1982, northeast of the city towards the new airport. Unlike King Saud University, this campus was compact, with college buildings linked around central courtyards.



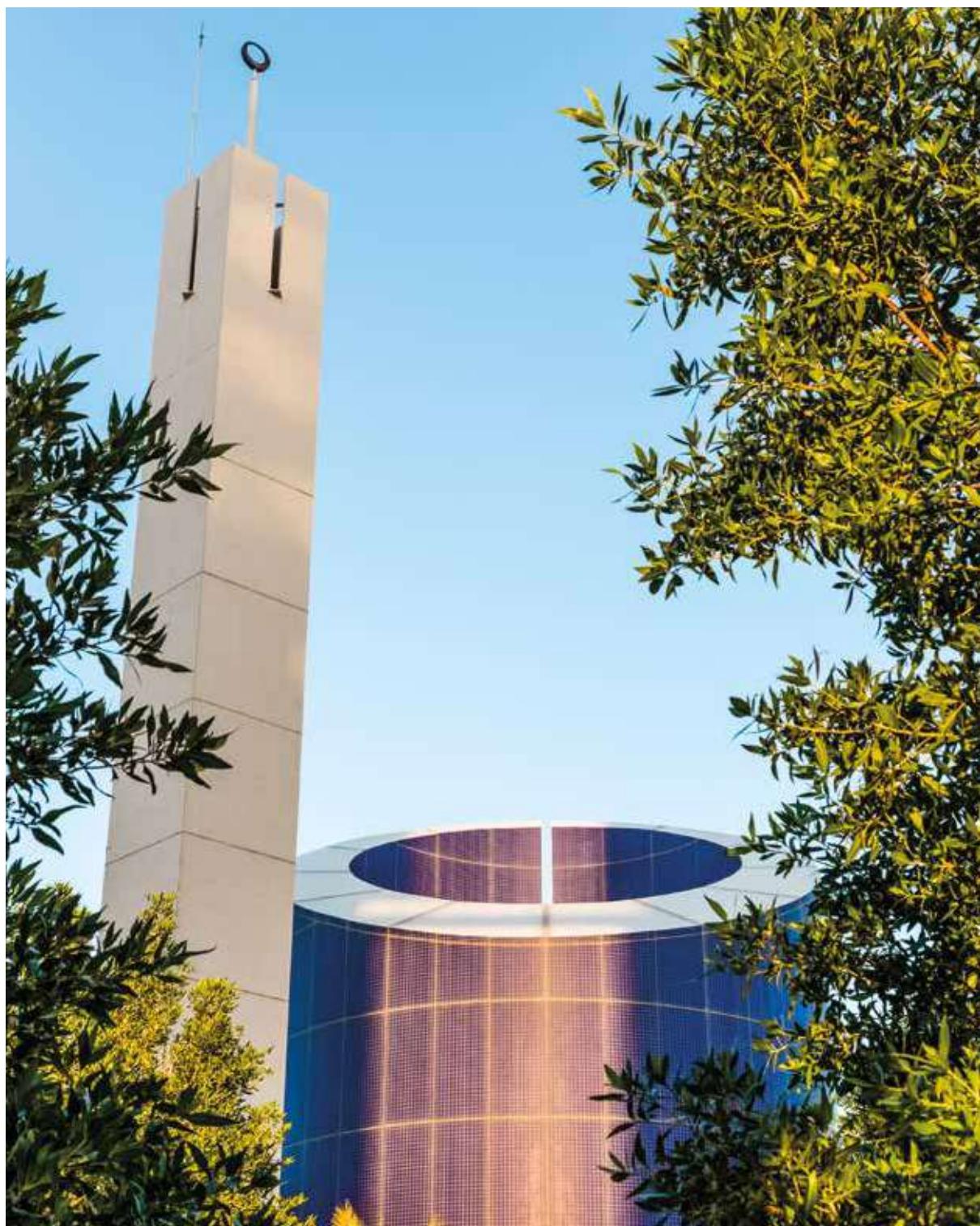
role in the financial services sector in the 1980s include the 20-storey headquarters of Riyad Bank near the old city centre and the completion of the second phase of the headquarters for the General Organisation for Social Insurance (GOSI). The GOSI headquarters, designed by Nabil Fanous and Basim Al Shihabi, is a graceful modern composition of interlocking cube-like structures completed in 1976. Its extension, built ten years later, provided a stark contrast to the original design by using reflective glass on a six-storey triangular block to mirror the older building.

The use of traditional elements was now becoming more common in new developments in Riyadh. The six-storey Saudi Fund for Development created a modern office building reflecting tradition and historical roots. It took

historic buildings of Riyadh and Addiriyah as a point of reference. The resulting exterior expression and interior arrangements around a covered courtyard have since been emulated by a number of other projects. The building adopts the traditional concept of the introverted residence through a central glass-roofed atrium around which the spaces of the building are placed.

Other elements reflecting the architectural style of Nejd include slit windows, the uppermost topped with diagonally-placed small square openings, and decorative features along the parapets of the building.

During this period of extraordinary urban growth, engineers in Riyadh designed and laid out roads and highways to link entirely new districts and endeavour to



The 1980s saw the growth of new Saudi philanthropic foundations with headquarters in the capital. The King Faisal Foundation (KFF), built in Olaya, featured a mosque with a simple minaret and introduced a new form with the hollow and angled structure replacing a dome and providing natural light to the interior.

The Ministry of Interior building completed in 1989 created another striking urban landmark for Riyadh, designed as an inverted pyramid topped by a dome.

Established in 1951, the Ministry had moved in 1955 from Jeddah to Riyadh, where its first headquarters was located along with other ministries on Airport Road.

alleviate congestion. Initially, in the 1970s, much of the work focused on road improvements. Construction teams erected prefabricated metal-framed flyovers in just weeks, in an attempt to reduce traffic bottlenecks along Airport Road and other busy streets in areas that now formed the inner parts of fast-spreading urban limits.

More ambitious construction soon followed. This included substantial projects laying out new arterial streets and urban freeways using latest road design and construction

technologies and, for the first time, incorporating major overpasses using pre-formed concrete, long tunnels, service roads, intersections and ramps. They were designed with capacity to serve the growing number of daily journeys in the city and projected traffic flow over coming decades. The north-south King Fahd Highway and the east-west Makkah Road formed major corridors cutting through the city and connecting Riyadh's first ring road. Extensive landscaping and irrigation of areas fringing and enclosed by new service roads and interchanges also comprised significant components in



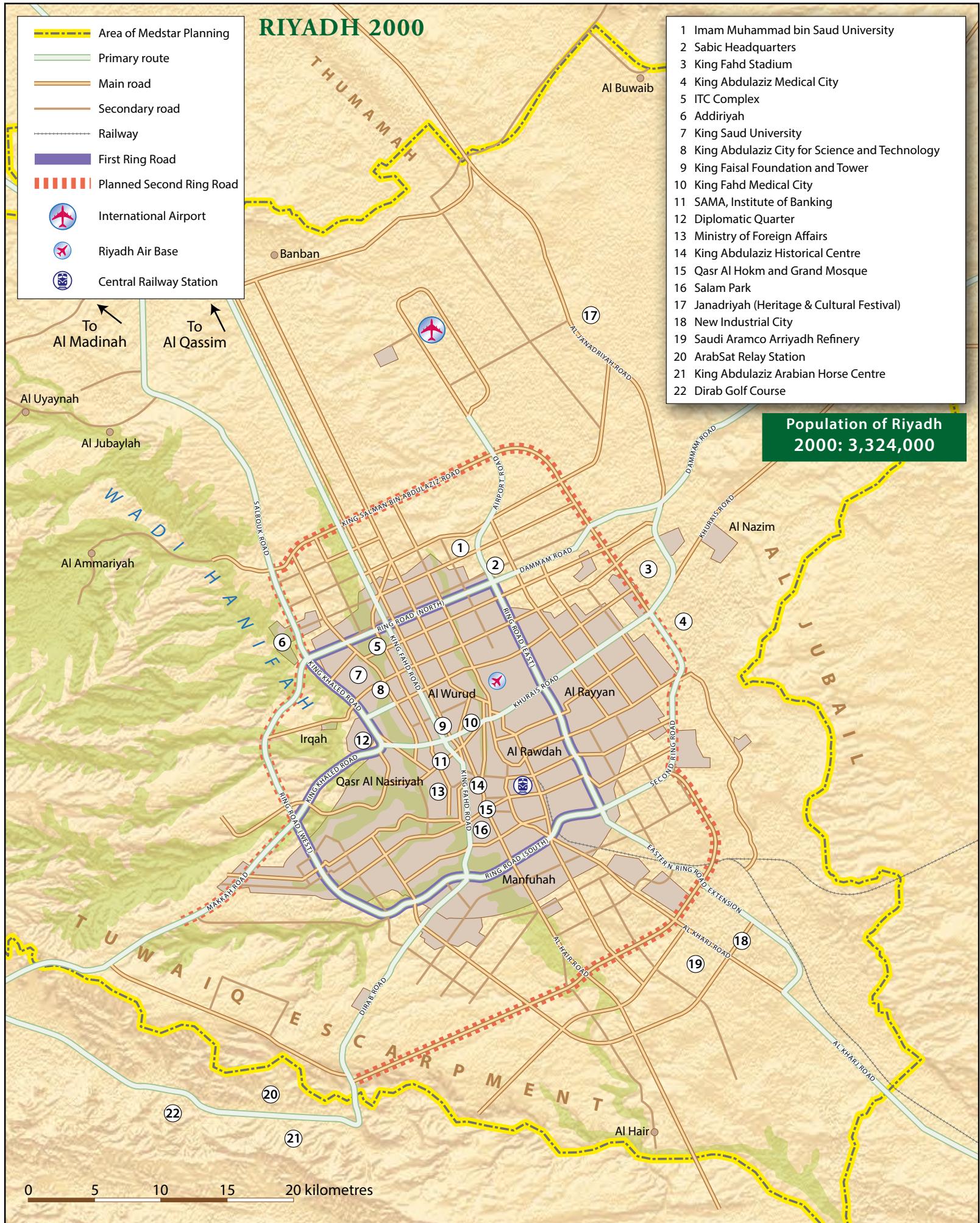
the ambitious urban road-building programme. In an attempt to provide a public transport system and alleviate congestion in the capital, Saudi Public Transport Company (SAPTCO) was incorporated in 1979 and a new fleet of German-built buses introduced.

The growth of Riyadh had brought with it awareness of the adverse consequences of disconnecting from historical roots. Arriyadh Development Authority was now leading initiatives to incorporate elements of tradition and heritage into the

process of urban planning and development and implement the designs and measures in a realistic and meaningful way. With the success of the first significant mega projects there was confidence in the future of the Saudi capital in its role as a fast-emerging and leading influential Arab and Islamic city. This helped encourage a movement that would, over the coming decades, ingeniously incorporate aspects of tradition and heritage into urban development, design and construction and create new elements in regional architecture.

Completed in 1987, the King Fahd International Stadium became Riyadh's first international FIFA-standard football pitch, with a capacity for 70,000 fans. The construction consists of a number of tent-shaped Teflon-coated fibreglass units supported with cables.





## 12 A New Heart for the Capital

The planning and development of Riyadh's Diplomatic Quarter, new Ministry of Foreign Affairs and staff housing complex involved modern architecture as well as introducing traditional elements in design. These developments went hand-in-hand with several other major urban projects undertaken by Arriyadh Development Authority. However, in contrast, these did not involve planning, design, and construction on previously empty land; rather, they called for extensive redevelopment of existing built-up areas of the capital.

The waves of growth and development emphasising modernisation that followed the discovery of oil and Saudi Arabia's new-found prosperity resulted in the neglect of the capital's historic heart. Traditional buildings had been abandoned by Saudi families moving to out to larger plots in the new suburbs. Without care and maintenance, many mud-brick buildings quickly deteriorated. Abandoned and rented buildings soon became run-down and dilapidated.

Awareness and concern over this loss led to attention to preservation efforts and the need to protect the dwindling number of buildings that still stood and represented the historic era of Riyadh as a walled city. Urban planners and architects at Arriyadh Development Authority also considered reconstruction using traditional styles and building techniques. The award-winning Al Kindi Plaza and mosque at the new Diplomatic Quarter had shown that it was possible to successfully introduce traditional designs and forms into contemporary architecture reflecting the heritage of Nejd and Islamic urban styles.

The active involvement of King Salman, then Riyadh's Governor and President of the High Commission for the Development of Arriyadh, and his interest in and understanding of the nation's history and traditions, encouraged the retention of links with the past and awareness of the need to reflect continuity through architecture. This

was an emphasis that would soon form an essential part of the vision for Riyadh's future.

Two major Arriyadh Development Authority projects worth a total of about 1.6 billion Saudi Riyals (\$425 million) became centrepieces of this effort: one was within the old city centre and the other was just outside in the area of Al Murabba, where Riyadh had seen its first dramatic expansion beyond its walls in the time of King Abdulaziz. The first redevelopment project focused on the historic core of old Riyadh in Qasr Al Hokm District. An early phase of this project started in 1974 but was limited in scope. The Italian architect, Franco Albini, and his architectural partnership, won a competition to design three new government offices in the city centre. The area had served as the historic heart of Saudi rule and government for most of the period when Riyadh was the capital of the Second Saudi State in the early 19th century. But all of the original main old core structures, apart from Al Masmak Fort, had been demolished by the end of the 1950s.

Part of Albini's commission involved designing the buildings of the Governorate, Riyadh Municipality and police headquarters situated in this central area. Albini's designs lacked regional and traditional elements and there was concern that the design concept placed too obvious an emphasis on modernity at the expense of highlighting the remarkable historic significance and heritage of the area. However, these early initiatives set in motion an ambitious second phase involving a more comprehensive rehabilitation of old Riyadh. Beeah Group Consultants were commissioned to review and update Albini's original designs for the three buildings. They retained some of the modernist aspects but modified the internal spaces of the buildings and also incorporated traditional elements of Nejdi architecture into the buildings' facades.

In 1981 the group was contracted to carry out the second

### Overleaf

1981 saw work begin on the major phase of the redevelopment of Qasr Al Hokm District. The ambitious and far-reaching design scheme involved the complete redevelopment of the historic heart of the old city including rebuilding Imam Turki bin Abdullah Mosque.





The restored Masmak Fort fronted onto a wide public square and formed an integral part of Riyadh's revitalised historic core. The project's overall design brief brought together tradition, historic legacy and values as well as cultural heritage.

and major phase of the project: the urban design for the complete Qasr Al Hokm district. Arriyadh Development Authority was responsible for the project and its ambitious scope now involved a far-reaching design scheme for the complete redevelopment of the historic heart of the old city. This included Imam Turki bin Abdullah Mosque, which had been rebuilt in concrete during King Saud's rule, government buildings, public squares and *suqs* as well as selected parts of the old city wall. In addition, Masmak Fort was to be preserved and open onto a wide public square. The overall design brief was one in which tradition, historic legacy and values as well as cultural heritage would be incorporated.

The revitalised historic core area would bring back life to what had become a fading and drab city centre that had lost much of its identity and links to the past. The project would return the capital's heart to its status as a political, cultural and administrative centre as well as a traditional and bustling desert hub of trade and commerce.

Imam Turki bin Abdullah Grand Mosque was rebuilt on its original site to accommodate 17,000 worshippers. In another key development Qasr Al Hokm, King Abdulaziz's original residence and office previously restored after retaking Riyadh, was again rebuilt on its original site in traditional architectural



style. Two covered passageways between Qasr Al Hokm and the mosque were designed and built into the complex, recalling the walkway originally installed to allow the ruler to cross above the traditional market area and invoking the strong traditional links between the old seat of government and the role and significance of the Grand Mosque.

The project also reconstructed two city gates, a portion of its wall and a watchtower on their original sites, and built several public squares and new *souqs*. The result is that pedestrians can retrace the path of 19th-century travellers arriving at the capital's walls, passing through its main eastern Al Thumairi

Gate and walking along the main thoroughfare past Masmak Fort to the main seat of government, Qasr Al Hokm, and the adjacent Grand Mosque. This second phase was recognised as a transformational redevelopment project in the capital and represented the first significant move towards the restitution of traditionalism in the city and revitalisation of the historic centre. In many ways, the story of the project and its successful realisation reflect the dichotomy between the desire for continued emphasis on and respectful acknowledgement of traditional values and the inevitable requirement to embrace modernity and progress in the country. This large-scale redevelopment and urban renewal





Iftar at Imam Turki bin Abdullah Mosque. Riyadh residents break their fast during the Holy month of Ramadan. The capital's new grand mosque was completed in 1992 and returned to traditional Nejdi architectural principles. It replaced

the previous mosque which was built in concrete in the mid-1950s on the original site of the old mud-brick mosque.

project helped realise the goal of representing the image of the Kingdom of Saudi Arabia to its citizens and the outside world. It was a pioneering project and makes a fascinating case study on the significance of culture, heritage, history and architecture in contemporary Saudi Arabia.

The Arriyadh Development Authority project to design and construct the new buildings for the Grand Mosque and Qasr Al Hokm was completed in 1992 and received prizes including the 1995 Aga Khan Award for Architecture and the 1990 Organization of Islamic Capitals and Cities award. Externally, the complex is a group of buildings behind walls, punctuated by traditional elements such as gates and towers while within, columns, courtyards and narrow passageways recall the traditional use of space. The courtyards and open squares are landscaped with shade-giving palm trees, granite benches and drinking fountains, making them a popular place for families. Imam Turki bin Abdullah Grand Mosque is clad in local limestone and its two square minarets indicate the *qibla* on the skyline. It incorporates features of traditional Nejdi mosque architecture: flat roofs, courtyards, arcades, and narrow window openings

with triangular motifs in patterned formations that reduce the glare of the sun. Its simple interior has rows of columns connected by leather-clad wooden rods from which hang lights. Echoing history and traditional building practices, the mosque connects past and present. Rather than standing separately as an independent monument, it takes its traditional place as a centre of worship integrated into the surrounding urban setting.

The Aga Khan Award jury recognised that the architect, Rasem Badran, had recreated and transformed the spatial character of the local Nejdi architectural idiom without directly copying it. He had also recognised the need to integrate the mosque with surrounding open spaces and link it with the adjacent public buildings. The award also recognised the broader significance of these achievements in that the attention given to the new mosque would likely positively influence the design of future mosques in the capital and beyond.

As work began on the main and second phase of the redevelopment of Qasr Al Hokm, planners at Arriyadh

Development Authority were already engaged on yet another integrated urban project one kilometre to the north. This was centred on the extensive mud-brick complex of Qasr Al Murabba built for King Abdulaziz in 1932, the first major development of Riyadh to spill beyond the confines of the old city walls.

The new plans that were drawn up involved restoration of some of the old buildings, the rebuilding of others and the creation of an extensive cultural precinct in the area surrounding the original Qasr Al Murabba. This covered 370,000 square metres and formed the northern focus and cultural part of the city centre. It included the new National Museum, a research and archive centre, library, mosque,

public gardens and a separate museum dedicated to the life and memory of King Abdulaziz.

At the heart was Qasr Al Murabba and associated mud-brick buildings, which were renovated using traditional local materials under the eye of Saudi master builder Ibn Ghabaa. The project also included a number of new buildings, constructed using traditional Nejdi architectural elements. This latest planned civic amenity for Riyadh was named the King Abdulaziz Historical Centre and its completion was set for January 1999, in time for Saudi Arabia's Hijri centennial celebration marking the historic retaking of Riyadh by King Abdulaziz. When completed, it was three times larger in area than the old walled city of Riyadh in 1902.

As well as new government buildings, public squares and revitalised suqs in the Qasr Al Hokm District selected parts of the old city wall were restored and in places rebuilt. The Arriyad Development Authority project received the 1990 Organisation of Islamic Capitals and Cities award and the 1995 Aga Khan Award for Architecture.



The original Qasr Al Murabba complex built for King Abdulaziz was so extensive and imposing at the time that, after it was completed, new arrivals often confused it for the centre of the capital. “Away in the distance was what I thought must be the city of Riyadh: a great fortress with many towers rising above the walls and tops of many buildings,” wrote Dame Violet Dickson (affectionately known as Umm Saud) when she visited from Kuwait in 1937. Only when Riyadh itself suddenly appeared amid the palm groves to the left did she and her husband Harold realise that “what we now saw was no city...but the King’s new palace...then in the course of erection,” and they continued to Al Thumairi Gate and thence to Qasr Al Hokm in the heart of the capital for an audience with King Abdulaziz in his state offices.

The planned area of the new King Abdulaziz Historical Centre incorporated Al Hamra Palace, just south of Al

Murabba. Named after its distinctive red colour, the palace was built by King Abdulaziz and was the residence of Crown Prince, later King, Saud until 1956, after which it served as the first venue for the Council of Ministers and later as government offices. The plans for the centre also incorporated Riyadh Water Tower, commissioned by King Faisal, designed by the Swedish engineer Sune Lindström and constructed in 1971. After its completion this colourful, striped structure with its radical design epitomised ‘modern Riyadh’ at the time and created an iconic landmark offering views from the observation gallery south to the old city and in the opposite direction across the rapidly-expanding suburbs of the city.

The extensive landscaping of the King Abdulaziz Historical Centre included 100 Palms Garden, created to symbolise the centennial. A major thoroughfare, King Saud Street, was

The award-winning Qasr Al Hokm project helped revitalise Riyadh's historic centre and once more attracted citizens to visit and explore the colourful *sugq*s of the area.



incorporated through the area, making the new centre an accessible and visible part in the memory of the city. Many of the original buildings of the Al Murabba complex were rebuilt in replica as most of the original structures could not be entirely restored. Traditional methods were used to make new bricks of mud, straw and water, dry them in the sun, and restore the palace, mosque and treasury building with its massive walls, along with other historic sites in the complex.

Part of old Qasr Al Murabba forms the King Abdulaziz Foundation for Research and Archives (Darat Al Malik Abdulaziz). Designed by German-trained architect Rasem Badran, who also worked on the Qasr Al Hokm complex in the historic heart of Riyadh, this incorporates contemporary updating of the traditional decorative detail used in central Saudi Arabian mud-brick construction.

In marked contrast to these buildings was the new neighbour, the National Museum, immediately east of the main square and covering 29,000 square metres. Designed by Moriyama & Teshima Architects, the museum stands out in a striking contemporary design with its exterior still echoing a local characteristic in shape and tone. It is fronted by a sweeping wall of yellow Riyadh limestone and its elegant curved facade and light-ochre natural earth hues draw their inspiration from sand dunes. The National Museum features comprehensive archaeological, cultural, scientific, religious and historical sections, and the unification of the Kingdom is the subject of a major, two-storey gallery.

The museum's eight halls recall and present the rich heritage of Saudi Arabia with remarkable exhibits from around the Kingdom, recreating a journey through time

Riyadh's revitalised historic centre provides courtyards, plazas and landscaped areas. Below is a view of the covered walkway leading to the treasury at the King Abdulaziz Historical Centre.



encompassing narratives and displays covering the birth and development of Islam and the development of modern Saudi Arabia. The Man and the Universe Hall presents some of the earliest evidence of human activity on the Arabian Peninsula. Halls on the Islamic Kingdoms and Pre-Islamic era chart the growth of early trade routes and the rise of the Arabic language and script and Arab tribes on the Arabian Peninsula. This includes the account of Al Yamamah and Wadi Hanifah before the advent of Islam and displays on Arabian poetry and the development of Arabic, the language of the Holy Quran.

The hall of the Prophet's Mission and another devoted to Islam and the Arabian Peninsula are reached through an enclosed pedestrian bridge that spans a courtyard linking the building's two wings. The sweeping curved corridor symbolises the Hijra and opens up into the gallery introducing the Prophet Mohammad and Islam. These halls recall the birth of Islam and its spread, and highlight the life of Prophet Mohammad including his lineage, family, marriage, and major events from his birth

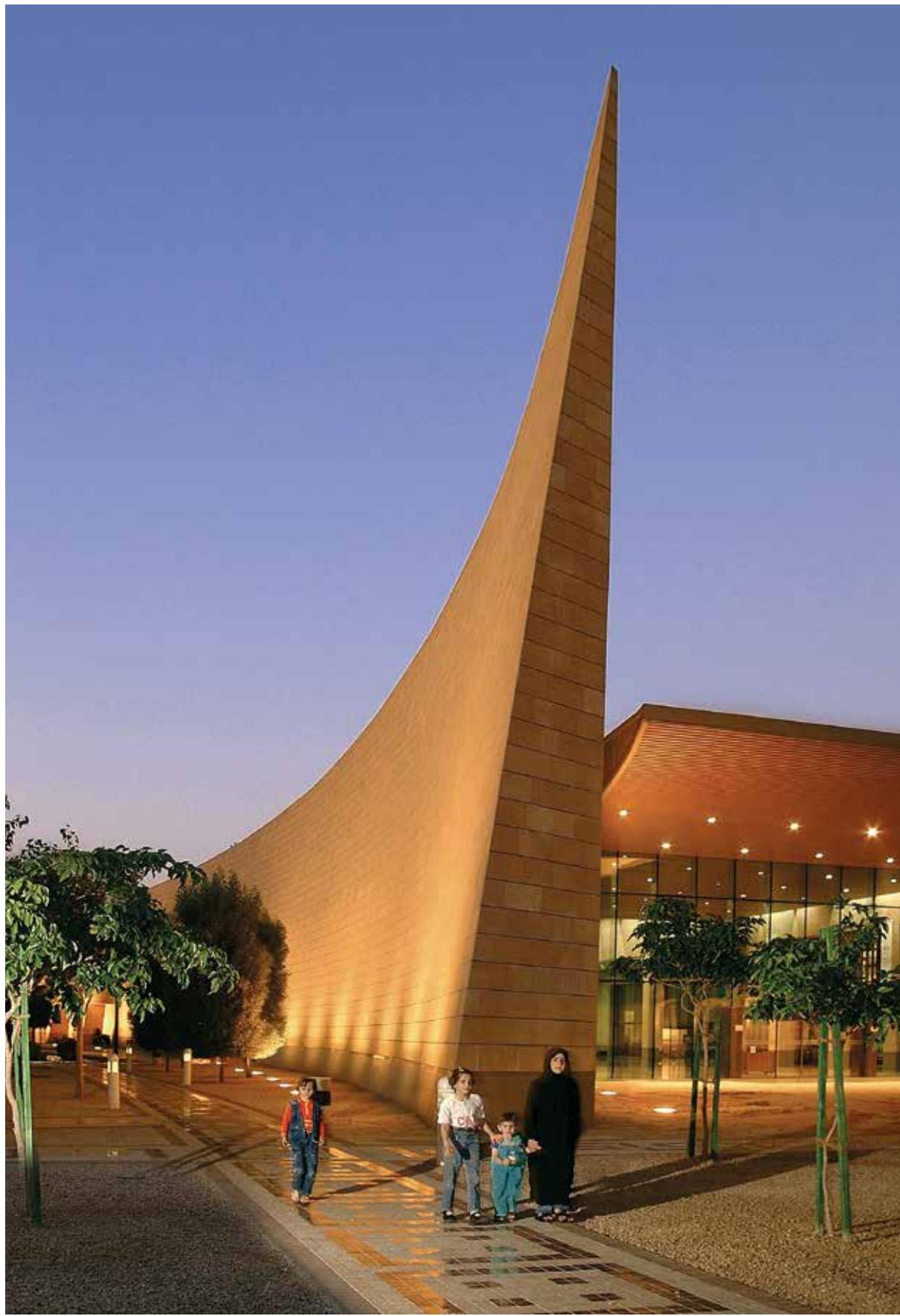
in Makkah to his migration to Al Madinah. The exhibited materials include manuscripts of the Holy Quran.

The sixth hall is dedicated to the history of the First and Second Saudi States and leads into the hall covering unification by King Abdulaziz and the foundation of modern Saudi Arabia. The eighth hall consists of five sections and focuses on the Hajj and the two Holy Mosques. It highlights Hajj rituals, historical pilgrimage routes, the development of Makkah and Al Madinah and the role of the Saudi State in providing for pilgrims.

In 2004, the King Abdulaziz Historical Centre was awarded the King Abdullah II Prize in recognition of its work in preserving historical aspects of the old city of Riyadh. The Qasr Al Hokm development and the creation of the King Abdulaziz Historical Centre represent the first significant steps towards recognising and celebrating heritage, revitalising the historic centre. Together, when completed, they marked a new-found emphasis on the restitution of traditionalism within the heart of Riyadh.

Visitors view displays and artefacts of Madain Salih, one of Saudi Arabia's three UNESCO World Heritage sites, at the National Museum. Its Arab Kingdoms Hall covers more than four millennia up to the 4th century CE. The Museum's eight halls present Saudi Arabia's rich history and heritage, and exhibits from around the Kingdom recreate a journey through time and include halls devoted to Islam.





The National Museum's striking contemporary design features an elegant curved facade of yellow Riyadh limestone. The shape and natural hues echo the local landscape and draw their inspiration from sand dunes.

#### Overleaf

The King Abdulaziz Historical Centre was developed from the original area of Qasr Al Murabba and completed for Saudi Arabia's Hijri centennial celebration in January 1999 marking the historic retaking of Riyadh by King Abdulaziz in 1902. The development is three times larger than the old walled city of Riyadh in 1902. 100-Palm-Tree Square, symbolising the century that had passed since King Abdulaziz recaptured Riyadh is between the contemporary designed National Museum and the traditional buildings to the right.







## 13 Riyadh's 21st Century Vision

Over the last decades of the 20th century, the scale of urban developments in Riyadh dwarfed all those previously carried out. The leadership of the High Commission for the Development of Arriyadh had successfully shown the results of recognising and embodying Islamic and Arab urban design principles and emphasising, explaining and elucidating them as examples for future generations while at the same time embracing modernity.

The range and complexity of projects already completed, still underway or on the drawing boards now required a strategy driven by a guiding vision for Riyadh. A clear vision was needed to provide direction and purpose in mapping and creating the capital's future. This would enable those involved in the process of development to frame objectives and plans, and action to be taken so as to arrive at goals. Support of the community and stakeholders was essential and the vision would need to reflect values embodying the Islamic principles that guide the Kingdom.

The Doxiadis Plan represented the first attempt to address the overall challenges of Riyadh's growth. But these early initiatives were inadequate. Developments rapidly overran the architectural spatial limits envisaged by the plan and the population increase had been underestimated. From these early stages the High Commission for the Development of Arriyadh began to introduce advanced and sophisticated urban planning models to meet the challenges created by the rapid development of the city. However, as with the Doxiadis Plan, Riyadh's rate of growth again surprised and surpassed the capabilities of the planning programme and the urban limits established for the capital.

Examining previous experiences, it became clear that planning needed to be a continuous process with an effective body to take the responsibility for turning strategic plans into actual projects. It also required an organisation to monitor performance and results on the ground, respond to

circumstances and changes, and continuously develop and evolve new plans and programmes.

As a result, in 1983 the Council of Ministers approved the formation of the Centre of Projects and Planning as a supporting technical body providing research and studies. Like the ADA, this came under the High Commission for the Development of Arriyadh and was established to provide and execute urban planning to meet the requirements of the fast-growing capital.

During the implementation of its first ground-breaking projects in the capital, the Arriyadh Development Authority began conducting a series of wide-ranging and detailed studies. These resulted in comprehensive on urban, economic, social and environmental reports and projected growth of the city limits and boundaries. The aim was to use the findings to formulate a comprehensive urban development strategy for the capital. The resulting programme became known as the Metropolitan Development Strategy for Arriyadh, with the acronym MEDSTAR, and would lead the development process in the city and provide an effective tool for measuring achievements. The award-winning programme of studies that followed would be used by the Arriyadh Development Authority and other organisations working in the city. In the following years, it also led to the creation of the overarching vision that has emerged to inform and guide the long-term overall development and future of Riyadh.

MEDSTAR adopted latest techniques employed by some of the world's leading cities. Arriyadh Development Authority recruited talented and qualified Saudis to establish a skilled cadre of urban development specialists and planners. It also drew on the experience of leading international advisors as well as utilising existing capabilities within government, national academic and research centres and local organisations. The programme introduced latest technologies and information-gathering

### **Opposite**

The view north towards Olaya over the Ministry of Interior. The King Abdullah Financial District is visible on the city's horizon. Riyadh is the capital of the largest economy in the Middle East and North Africa (MENA) region and continues to undergo bold, visionary and transformational urban development

The vision for the capital is for Riyadh to a beautiful and liveable city that enshrines Islamic culture through its architecture, urban forms and green spaces for its current and future generations.

Here youngsters and families enjoy the public spaces of the King Abdulaziz Historical Centre in the warm glow of evening light between Maghrib and Al Isha prayers.



techniques including geographical information systems to help accurately and dynamically monitor, record and map geospatial data for planning.

Prepared by Arriyadh Development Authority and approved in 2003 by the High Commission, MEDSTAR was among the most significant strategic planning projects undertaken for Riyadh and its immediate surrounds and the first of its kind for a Saudi Arabian city. It provided a bold and ambitious overall framework for the future development of Riyadh, including the integration of the central area into the wider future planning of the city.

MEDSTAR was formulated as a dynamic programme to reflect the ever-changing nature of a rapidly-growing and emerging world city. Flexibility allowed for continuous

improvement, absorbing new technologies and ideas, ongoing revision, robust measurement, programme and project updating, as well as constant review and assessment of the emerging challenges facing the city and its population. In 2007, the MEDSTAR won second place in the International Awards for Liveable Communities (LivCom) presented in London for the category of cities with a daytime population of over one million in a competition keenly contested by more than 250 cities around the world.

Achieving sustainable and steady economic growth was also an integral part of the strategy and so, as well as formulating plans for strategic urban developments in key sectors and areas of the capital, the strategy included a focus on investment opportunities that were to result from the projects undertaken. The economic aspect of MEDSTAR

represented a significant component by encouraging investment and stimulating innovation and economic growth. Ensuring a prosperous and sustainable city was to form a key element in the vision for Riyadh.

By 2010, an update of MEDSTAR had been prepared and approved based on a revised city population estimate of eight million by 2031. Although this focused on the city as a whole, it also put forward a concept for the capital's central area. It envisaged that this should connect with the Diplomatic Quarter to the west and the old airport to the north. This would create a triangular area in the heart of Riyadh, known as the National Capital Oasis.

Harvesting a vast trove of dynamic data on the city helped provide the strategic framework and a continuous planning and implementation process for developing Riyadh. What was still required was a simply stated yet broad and bold vision for the capital with appropriate values to guide planning strategies and their related goals, objectives and actions for the continuously-growing metropolis. This was a challenge: too much detail in a vision statement would cloud the fundamental and essential values; too little breadth and depth would make it merely operational rather than visionary.

The process used to arrive at the vision involved building on the studies and random polling of several thousand residents for their views on community needs. This revealed the desire for Riyadh to remain a true desert city. The restructuring to achieve this would involve creating a hierarchical system of oases in which sub-centres at city, district and community levels would be accessible and provide breathing spaces and focal points for urban life.

World experts with international experience in the planning and development of metropolitan areas and capital cities were invited to seminars and focus groups and in June 1997 Arriyadh Development Authority gathered them and its own specialist staff to consider a vision for Riyadh. Papers presented included Facts and Trends, Aspirations and Prospects, Developing Competitive Economies, Towards an Ecocapital of the World, and Constructing the Future of a Metropolis.

The vision statement for Riyadh that emerged contains interlinked and interdependent value-driven themes. At their core is the unifying focus on the essential component of a city whose essence is imbued with the relationship between humankind and the Creator. A driving principle of the vision infusing all its themes is "to achieve sustainability in the future planning of the city within Islamic principles." This not only expresses the desired harmonious relationship between people and nature, it also firmly embeds an obligation of citizens to help create a city for its current generation and also for future ones. The link between people and future generations enshrines the concept of responsible stewardship and sustainability.

These relationships between the people of Riyadh and God, nature and each other, aspire to create a city that reflects its role as the capital of the Kingdom of Saudi Arabia which is the birthplace of Islam and the site of the Two Holy Mosques. And as a national and international centre, Riyadh is envisaged as a city that recognises human needs by providing a quality of life and security. It is also seen as a place in which architecture satisfies the soul, interacts with people and reflects human initiative and the spirit of innovation.

As well as its role as capital, Riyadh aspires to be a contemporary oasis city in harmony with its desert environment and a city of prosperity by nature of its competitiveness and through providing investment opportunities. The vision projects Riyadh as a city of beauty, enshrining Islamic culture through its architecture, urban forms and green spaces. The city also aspires to become a world centre of innovation with scientific research and development, and a leader in energy and desert environment technologies, health sciences and education.

These core elements that make up the aspirations and 21st century vision for Riyadh perfectly align with the 2030 Vision for the Kingdom of Saudi Arabia: "the heart of the Arab and Islamic worlds, the investment powerhouse and the hub connecting three continents" – a vision built on themes of a vibrant society, a thriving economy and an ambitious nation.

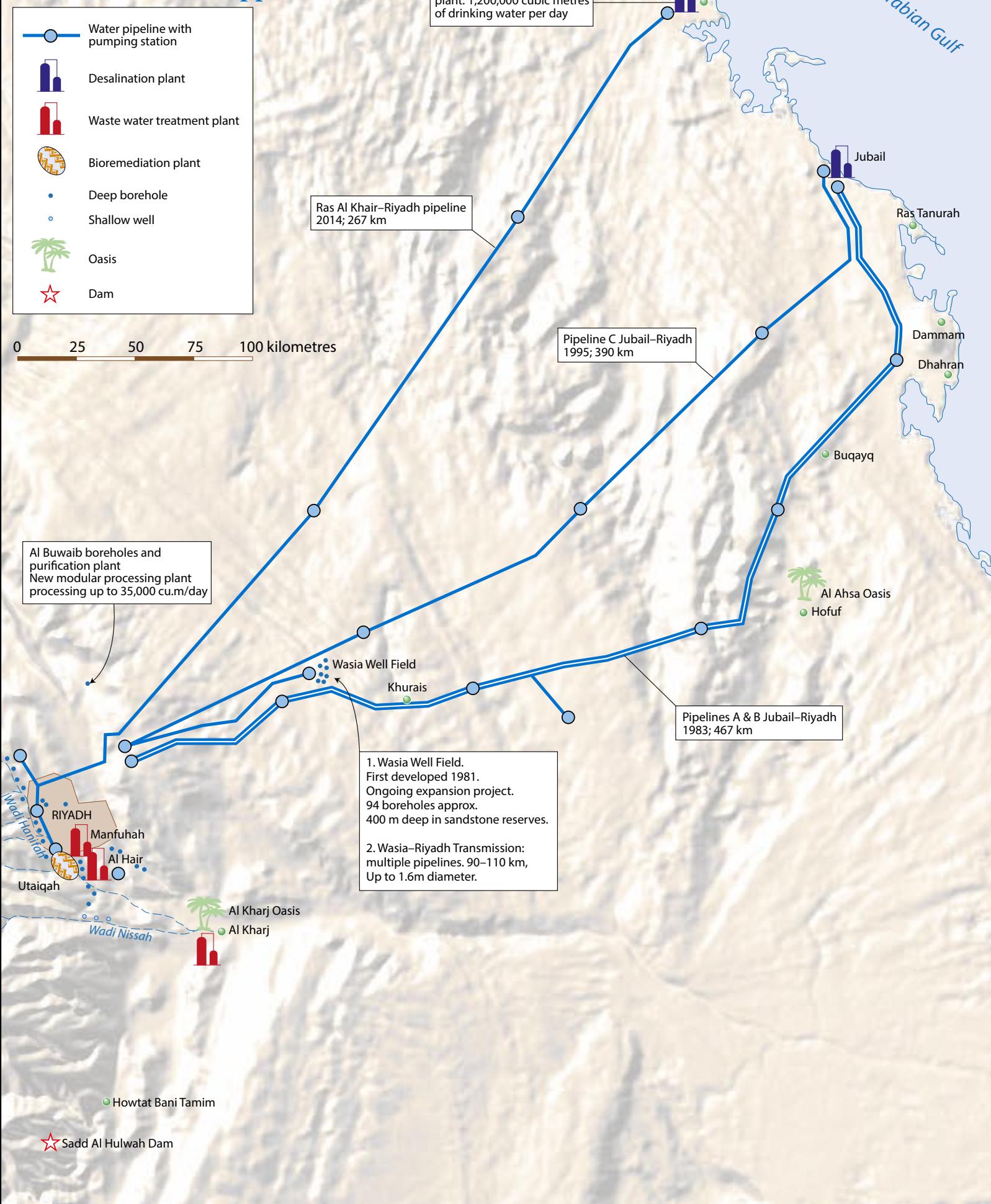
#### **Overleaf**

Citizens enjoy a sunset stroll on a cloudy evening in the Qasr Al Hokm District. The Imam Turki bin Abdullah Grand Mosque and the city's central plaza and regenerated surrounds embody the various interlinked components that form the vision for Riyadh.





## RIYADH: Water Supplies



## 14 Water

Water is the most precious of resources. In the fragile ecosystem of the desert plateau of Central Arabia its supply is essential for communities to thrive. Water has always been the prerequisite for the existence of traditional Arabian oases and it is still crucial in sustaining the contemporary oasis that Riyadh aspires to be. Water intricately connects with all the elements of the vision for the 21st-century city of Riyadh with awareness and appreciation that the God-given gift is a scarce resource to be valued and conserved. It pours life into the capital, nurtures opportunity and prosperity, supports nature, sustains the urban environment, provides places of beauty and keeps citizens safe and healthy. Adapting to scarcity and surviving prolonged periods of drought has always provided challenges and encouraged ingenuity. The value of water and the necessity to provide sustainable supplies to the capital continue to stimulate and propel innovation.

In the days before mechanical pumps arrived in and around Riyadh, among the memorable sounds wafting from the extensive palm groves and gardens that surrounded the city walls was the constant squeak and groan of the old wooden water wheels. Camels and donkeys worked to draw water from wells that tapped the shallow water table in the gravels and silts of the Wadi Hanifah drainage basin. Settlements such as Addiriyah, Al Jubaylah and Al Uyaynah took their water from the main channel of Wadi Hanifah while Riyadh drew water from wells in the tributary Wadi Al Battha, which ran along the outside of the eastern city wall, and from deeper wells within the city.

Unlike many oases where water naturally percolates to the surface from springs or through artesian wells, Riyadh's water had to be brought to the surface and channelled through extensive canals to irrigate date palms, orchards, fields of fodder and plots of farmed crops. It was a system developed over millennia and worked effectively because, except in years of acute drought, annual rainfall was adequate to replenish the aquifer. When it was not, the

results were devastating, with loss of crops and livestock and the threat of famine.

There still remains a collective memory of drought, both in oases and in the surrounding desert, and a small and dwindling number of senior citizens can vividly recall their early years and the daily hardship of obtaining good water and the dire consequences whenever it was in short supply. Many of those from in and around the capital who visited King Abdulaziz came with petitions for boreholes, improved water supplies or assistance in finding new sources for communities and livestock. Today's residents of Riyadh are more fortunate: there is a reliable supply of quality and pure water throughout the city for domestic use as well as treated water for industrial and agricultural purposes.

Arid conditions can make citizens think water scarcity relates simply to the absolute quantity of water available. It does not. Rather, it is a function of both quantity and quality and neither plentiful, polluted water nor scarce, clean water will meet needs. So, in Riyadh and throughout the Kingdom, planners and hydrologists recognise that an integrated and sustainable strategy is required, one that addresses both aspects together rather than, as in the past, dealing with them separately. The city's resulting 'green infrastructure' concept includes urban water management that makes use of natural systems such as drainage and wadi basins, wetlands and green buffers to reduce runoff, enhance water supply and improve community aesthetics.

Without meeting the challenge of supplying water, Riyadh could not have grown in the way it has. Yet how this challenge has been met is not often highlighted, perhaps because it is taken for granted or because the discovery and exploitation of oil reserves and the development of highly visible infrastructure and buildings have eclipsed the story of supplying water to the landlocked capital.

### Overleaf

The award-winning Wadi Hanifah Environmental Rehabilitation Plan has created a rich and attractive ecosystem. Numerous winter migrating birds now stop over and regular sightings include eagles, egrets, herons, cormorants, ducks and even seagulls. The area has become its own wildlife sanctuary and the National Commission for Wildlife Conservation and Development has launched a programme to study the new habitat.





Rapid urban growth of Riyadh began in the years following unification. King Abdulaziz introduced a programme to attract desert nomads to put down roots, and digging wells and sinking boreholes encouraged this. Many moved to the capital with their extended families in search of opportunities and a new way of life. The challenge of meeting the ever-increasing demand was recognised by King Abdulaziz. Well before the quest for oil began, the Saudi ruler was issuing injunctions to dig deeper for water.

There is no surface water available for development use and communities have traditionally depended on ground water. The earliest records for the area in and around Riyadh show water levels at nine metres below surface level in 1935. In 1956, water levels had sunk to an average depth of 29 metres and by 1967 they had dropped to about 35 metres. More recently, entirely new developments, technologies and solutions to meet the increasing demand for water have been necessary.

Initially, with urbanisation, the challenge was to meet demand from the growing number of consumers. But it soon became a lot more complex than just factoring in population statistics. Urbanisation was causing water demand to increase much faster than it would merely as a function of population growth. New communities, expanding city limits and improved living conditions, habits and expectations in the capital all helped dramatically increase per capita consumption. Landscaping, construction, industry and agriculture also created mounting supply needs.

Managing water supplies also presented planning challenges. Increased domestic and industrial consumption contaminated ground-water with untreated effluent, reducing immediate sources of supply. Falling water tables presented technical complexities with greater depths for drilling and pumps to lift water, and brackish water causing rapid corrosion of equipment and pipes. Precious water supplies were also wasted through leaks and unnecessary and excessive consumption. To make matters worse, heavily subsidised water tariffs were encouraging the population to take reliable and plentiful supplies for

granted and ignore the real and growing need to conserve water.

The phenomenal growth of Riyadh has been made possible by providing the city with adequate supplies of water that have kept up with exponential population and industrial growth. The citizens of Riyadh love water. Visitors are often surprised to see that picnics and outdoor activities are popular when it rains. In the past, communities would pray for rain (*istisqah*) in times of drought, in accordance with the Sunnah of Prophet Mohammad. Today, despite the reliability of water supplies to urban communities, leaders still call for prayers for rain in times of need and when rain falls people rejoice, enjoy being outside in it and eagerly await the greening and blooming of the surrounding desert in the months that follow.

Annual precipitation in the area of Riyadh varies considerably, from just ten millimetres to more than 200 mm. Severe downpours in the capital can cause serious flooding before the water evaporates or percolates into the limestone karst and runs off to disappear in the desert sands to the east.

In 1950, hydrologists presented proposals for the construction of sub-surface dams in Wadi Hanifah. However, these were not considered viable and instead surface dams were built to prevent flooding, provide water for drinking, irrigation and livestock and to recharge ground-water aquifers. Dam construction peaked in the early 1980s and there are now dams in the wadis collecting run-off during rainy periods and providing flood control.

The discovery of deep aquifers in the Riyadh region dramatically improved the supply situation and in 1957 the first borehole was commissioned at Shumaisi, tapping the fossil supplies in the 100-metre thick Minjur sandstone aquifer to the west of the city at a depth of between 1,200 and 1,500 metres. This, with its treatment plant, became the major source of municipal water for Riyadh and it is doubtful that without it the capital could have sustained its extraordinary growth in the 25 years following the death of King Abdulaziz.



The water pumped up daily from aquifers in and around the city increased from 2,160 cubic metres in 1957 to 220,000 cubic metres 20 years later and by 1979, the Minjur aquifer supplied more than 80 percent of water used in the city. During this period, water levels of the aquifer in Riyadh dropped by 75 metres. In two years up to 1980 water levels dropped 80 metres at new deep wells tapping the aquifer at Salbukh, north of Riyadh. Faced with inadequate replenishment and huge increases in demand, there was by now an acute need to exploit new sources of water.

Fortunately, another sizeable aquifer was discovered and developed. The Wasia aquifer extends in a narrow belt for 1,500 kilometres from Wadi Al Dawasir in the south of the country to Sakakah in the north and its western boundary

runs northeast of Riyadh. The Wasia aquifer is one of the most prolific in Saudi Arabia and contains huge reserves of 20,000-year-old fossil water, estimated in hundreds of billions of cubic metres. By the early 1980s, a huge integrated water project was underway to tap the aquifer and pipe water to Riyadh from wells clustered around the area of Wasia, 100 kilometres northeast of Riyadh.

Other than Wadi Hanifah and its tributaries, Riyadh has no suitable natural sink – such as a lake, perennial river or ocean – into which to discharge effluent. As a result the treatment of waste-water became a pressing need for the city, not just to prevent contamination of ground-water supplies but also to provide grey water for irrigation and landscaping. So, while developments moved ahead to tap deep-water

In the days before diesel pumps reached Riyadh, among the memorable sounds wafting from the palm groves and gardens around the city walls was the constant squeak and groan of the old wooden water wheels that provided townsfolk, farms and animals with water. The traditional water well exhibited annually at the Janadriyah National Heritage and Culture Festival always draws large and curious crowds of onlookers attracted by the sight and sound of the contraption and the memories of the past that it evokes.



The Riyadh Water Tower was built in 1971 and three years later the Saline Water Conversion Corporation (SWCC) was set up with headquarters in the capital to add to existing natural water resources. Today 60 percent of Riyadh's water supply originates from desalination plants on the Arabian Gulf.

aquifers, attention also turned to establishing waste-water treatment facilities. The first major treatment plant, with a capacity of 40,000 cubic metres per day, was completed in 1970 to serve Riyadh and a year later the city's iconic water tower with a 12-million-litre capacity was built in the Al Murabba area.

But most impressive of all Riyadh's water supply systems are the pipelines leading from the briny waters of the Arabian Gulf. The first water desalination plant was established in the Kingdom in 1928 when King Abdulaziz ordered the construction of a unit north of Jeddah to help provide drinking water for the city. The condenser technique used led to the area being named 'Kandasa'. In 1974, a Royal Decree was issued for the establishment of the Saline Water Conversion Corporation (SWCC), headquartered in Riyadh, to enhance and add to the Kingdom's existing natural water sources. Within a short period, it had expanded its operations to produce electricity at the desalination plants and production of desalinated water increased more than 100-fold, with power production also registering a greater than 80-fold increase within the next two decades. Today 60 percent of Riyadh's water supply comes from desalination plants on the Arabian Gulf. Until recently, the facility at Jubail, producing one million cubic metres per day, was the world's largest. Now, the plant commissioned at Ras Al Khair, north-west of Jubail, is the world's biggest seawater desalination facility, with a daily production capacity of more than a million cubic metres of drinking water and 2,600 megawatts of electricity.

Supplying the capital with water has involved establishing equally ambitious and world-leading infrastructure. Prior to the inauguration of the Ras Al Khair desalination plant, the Riyadh Water Transmission System (RWTS) from Jubail was already one of the world's largest high-pressure pipeline systems. Twin pipelines, each with six pumping stations, started operations in 1983, delivering more than 800,000 cubic metres per day through 466 kilometres of pipelines known as Lines A and B. The third pipeline (Line C) also runs from Jubail. It opened in 1995 over a more direct route 400 kilometres across the desert to

Riyadh, where it delivers water to a storage facility with a 300,000-cubic-metre capacity.

The inauguration of the huge Ras Al Khair facility has introduced a fourth and shorter pipeline to Riyadh. This is the world's largest water transmission line, capable of conveying one million cubic metres per day through a steel pipe with a diameter of 1.8 metres, a volume that would fill an Olympic swimming pool in a minute. This 267-kilometre pipeline takes a more direct route further north to Riyadh. The supply is mixed with treated water pumped from the deep ground-water aquifers through 200 wells drilled within a 250-kilometre radius of the city. At boreholes – some new and others rehabilitated – near Al Buwaib, 45 kilometres north of Riyadh, brackish water is fed into new modular water processing plants. The plants treat up to 30,000 cubic metres of water a day and also cool it to 32° Celsius as it surfaces at a temperature of nearly 70°.

Average daily potable water consumption in the capital is around 1.8 million cubic metres. 2,300 kilometres of pipes have been laid as part of Riyadh's water supply network, which supplies over 99 percent of the population. A two-phase strategic water storage project costing over \$1 billion is also underway to provide over ten million cubic metres of water storage as part of the programme to build a sustainable and secure water supply for Riyadh.

In the late 1980s, daily per capita consumption in the capital peaked at over 500 litres. Statistics reveal that this has reduced significantly to an average daily water consumption for those connected to the network of around 300 litres per head. This is lower than in the United States and Dubai but more than double the average daily consumption in Europe. Continuing efforts to reduce per capita consumption include public awareness campaigns and more realistic charges for water through reducing subsidies that result in some of the lowest tariffs the world.

Studies and debate also focus on implementing increased consumer tariffs to reflect the considerable cost of producing and delivering water to the capital and, in



Water intricately connects with all the elements of the vision for the 21st-century city. The phenomenal growth of Riyadh has been made possible by meeting the challenge of providing the city and its population with adequate supplies of water that keep up with its rapid development.

so doing, heighten public awareness on the value of fresh drinking water and the need to reduce wastage. In preparation for more realistic charges, there is a programme to install water meters that can be used for billing, monitoring consumption and identifying leaks. In May 2016, the management of the nation's precious water resources was placed under the newly-formed Ministry for Environment, Water and Agriculture.

With water scarcity a global concern, other initiatives in addition to consumer awareness are being brought to bear to help achieve sustainable management of water. Among them are efforts to identify and reduce leakage in the supply network. Riyadh has also embarked on an ambitious expansion programme to reclaim and reuse its waste water. With over 80 percent of households connected to the capital's sewerage system, nearly double the percentage

in 1995, there is an active programme to connect the remainder of the city's households. Reduction of leakage from the water supply system, along with increasing mains sewerage connections and treatment facilities, is also helping to alleviate local problems of high ground-water tables.

Bioremediation plants and other treatment systems are also being commissioned to provide treated water for reuse in parks, gardens and landscaped areas, as well as for local industry and agriculture. Wadi Hanifah now boasts state-of-the-art bioremediation, introduced by Arriyadh Development Authority as part of its award-winning wadi rehabilitation scheme. On a one kilometre-long stretch of the wadi, untreated water flows gradually through a series of more than 100 cells: some settle water, others introduce oxygen and in others micro-organisms,

insects, invertebrates, molluscs, fish, planted trees and grasses all help assimilate contaminants and naturally purify the water. The Wadi Hanifah facility treats over half a million cubic metres of Riyadh's wastewater every day, which is then pumped through a special system of pipes separate from the drinking-water network. Other developments include plans to double desalination output by 2025 and new innovations such as new pre-treatment processes, nano-technology filtering and electrochemical desalination, as well as use of renewables.

Over centuries, the people of Riyadh and communities along Wadi Hanifah used ingenuity, age-old skills and hard work to seek and eke out scarce water for their livelihoods. They

depended on the wells they sank, and built storage systems and employed animal power, wooden lifting gear, water skins and mud-brick troughs and channels to supply and distribute precious, life-giving supplies. From the time of King Abdulaziz, new water sources have been needed for the city, with its growing population and improving living standards.

The discoveries and technological advances that followed have made Saudi Arabia a world pioneer in desalination, water treatment and delivery, accounting for nearly 20 percent of total world desalination output. Without such advances, the extraordinary development of Riyadh into the modern city it has become would not have been possible.

More than 2,000 kilometres of pipes have been laid as part of Riyadh's water supply network, with connections to nearly half a million homes. The network covers over 95% of the population. Riyadh's average daily water consumption is two million cubic metres, far greater than London's daily consumption of 1.2 million cubic metres.

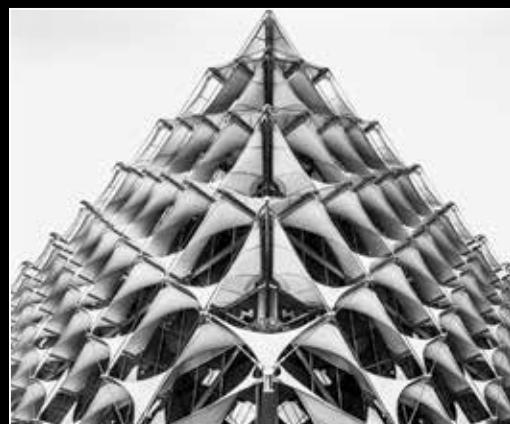
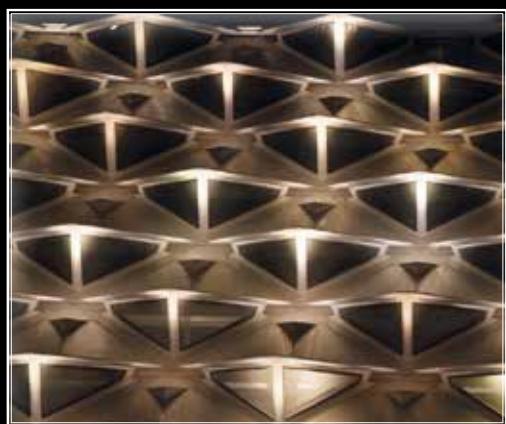


#### Overleaf

As Riyadh expanded, the treatment of waste water became a pressing need not just to prevent contamination of ground-water supplies but also to provide grey water for irrigation and landscaping. With developments progressing to tap deep-water aquifers, attention was also turned to constructing dams and establishing water treatment facilities.







## 15 The City Beautiful

Early 20th-century Western visitors to the walled capital remarked on the serene atmosphere of the nearby wadi, the surrounding magnificent, green palm groves and gardens and the austere beauty of traditional mud-brick architecture. St John (later Abdullah) Philby, on his first visit to Riyadh in 1917, recalls that in the territories of Abdulaziz bin Saud there was no building “so splendid in its proportions, so beautiful and so representative of all that is best in modern Arabian architecture as the royal palace in the heart of the settlement”.

Philby arrived after an arduous two-week trek on camel from Al Uqayr on the Arabian Gulf coast through Hofuf and across the Dahna Sands. He described the approach to Riyadh, with the striking skyline of clay towers dimly revealing itself through a screen of palms: “Up and up we went towards the line of pointed hillocks which line the summit of the slope. At length we reached the summit. Before us in the folds of the grey valley below lay a streak of emerald green; it was the gardens of Riyadh.”



### Opposite

The array of development projects in the capital provide some of the world's most remarkable and striking contemporary designs, structures and spaces giving Riyadh a reputation as Arabia's City Beautiful. These evocative studies were taken by the talented, award-winning Riyadh photographer Thamer Al Hassan.

Located at the King Abdulaziz Historical Centre, Al Medy Mosque is a place of worship that also showcases the time-honoured tradition of construction using mud-brick and other local materials. The result is a building of great charm, simple beauty and warm natural hues.



Salam Park is a popular urban oasis in the heart of the capital that echoes the meaning of city's name as gardens.

In 1959, Philby wrote of the astonishing physical transformation that Riyadh had experienced since his visit 40 years earlier: the city's area had grown to 100 square kilometres with a population of over 150,000, surrounded by a "ring of undistinguished suburbs". In the decades that followed, the pace of urban development accelerated and by the 1970s Riyadh was often described as the world's largest building site.

Today, arrival in Riyadh is likely to be by air and at night the approach offers a spectacular light show in the form of a vast mosaic of illuminated buildings and colourful neon signs threaded with a network of highways and roads filled with constant streams of traffic. However, viewed from the ground with ongoing urban development involving large-scale construction projects, it becomes difficult for residents and visitors to assess or appreciate the attractiveness of the metropolis or imagine its appearance in the future.

What makes a city beautiful? It is not only a matter of aesthetics. There are key indicators such as security, the provision of healthcare and education, effective urban design and planning, affordable housing, infrastructure, air quality, clean water and other amenities and whether the city is a good place to live and raise a family. Surveys made by the Urban Observatory of Arriyadh Development Authority show a high proportion (84 percent) of residents feel safe on the streets and in public places and satisfaction with the provision of electricity and water. They also reveal that a high proportion of residents consider as priority issues the provision of more healthcare services, affordable housing and job opportunities in the city.

Beauty is also manifested in the way the city relates to its environs. Riyadh has gained international recognition for environmental and landscaping projects that successfully embrace its high plateau desert surroundings and incorporate impressive wadi and oasis landscapes. The city boasts architecture that is diverse in scale and style, as well as amenities and public spaces that reflect and celebrate history, heritage, modernism and innovation. These create a cityscape that is full of contrasts and stimulating and goes to make up the vision for a beautiful capital.

Not all the attractive urban elements are grand or monumental. Al Medy Mosque, an ADA project, enshrines beauty yet is small and simple. It successfully reflects tradition in its delicate, warm design, recognises and respects local heritage and Islamic principles in its construction and embodies sustainability and innovation. Standing on the green fringes of the King Abdulaziz Historical Centre, the mosque has an 18-metre tall, square minaret constructed in traditional Nejdi style overlooking a vaulted roof.

The increasing awareness by Arriyadh Development Authority and Saudi architects of the need to retain connections with local heritage and traditions has helped pioneer the revival of indigenous-style architecture and recognised that this can best be achieved by developing and adopting modern building techniques. Al Medy Mosque was conceived in part to provide a place of worship and at the same time showcase appropriate building technologies with earth blocks. The aim was to demonstrate that the ancient material of stabilised earth could be effectively employed to create a modern architectural structure. A mosque, with its regular daily use, was considered an ideal prototype building.

The technology adapts time-honoured methods of manufacturing and uses materials from local resources. The main elements of the mosque, from the ground level to the top of the minaret, are made of compressed stabilised earth blocks (CSEB). Stabilised with around eight percent cement, they are water-resistant compared to raw earth and have a higher resistance to stress caused by compression and loads. The mosque's design required 160,000 blocks of various shapes and sizes for the walls, columns, arches, vaults and domes and 225 workers laid these in just 49 days, with fitting out and decoration taking a further seven months.

Construction using mud bricks is eco-friendly as well as producing architecture that is pleasing to the eye. It makes use of a highly sustainable local material that is abundant and readily available. This cost-effective material is also energy efficient and can be used to produce beautiful structures. Its work complements the growing interest in Riyadh in reviving traditional skills and linking ancestral traditions of raw earth construction with the modern technology of stabilised earth

in urban architecture. Such ADA projects, which include the major restoration of the UNESCO World Heritage site Atturaif in historic Addiriyah, construction of Al Bujairi District and the restoration of Al Daho District in the capital's historic centre, make Riyadh a world leader in mud-brick restoration and construction.

The development of Riyadh has attracted acclaimed international names in architecture, engineering and landscaping.

Together with talented Saudi planners and architects, they are creating some of the world's most remarkable and striking contemporary designs, structures and spaces. Riyadh is gaining a reputation as Arabia's own City Beautiful. Signature projects such as Qasr Al Hokm and

the King Abdulaziz Historical Centre reference and echo traditions of the Islamic city and reflect Nejdi heritage rather than conform to designs that shape Western cities. The Diplomatic Quarter has become a showcase of architectural styles and landscaping. New parks, gardens and plazas and the award-winning restoration of Wadi Hanifah have incorporated nature into parts of the city, with more tributary wadis undergoing their own rehabilitation and beautification. The flourishing private sector also continues to fund and create striking and iconic structures on the ever-expanding urban skyline.

Traditional forms, Islamic styles, Nejdi elements, Western influence, contemporary design and the latest in construction technologies all present themselves in the architecture and emerging cityscape of Riyadh. Together



Traditional elements of Nejd combine with a performance by the Addiriyah Ardah troupe. In 2015 Ardah was included on the UNESCO Intangible Cultural Heritage of Humanity list along with Arabic coffee and the cultural and social space of the majlis.

they form an exciting urban kaleidoscope revealing beautiful and often intriguing aesthetics and encourage comment and debate on issues of modernism, heritage and connections with the past.

Riyadh is often stereotyped as a place largely devoid of art. This is far from the truth: the arts scene is blossoming from relative obscurity and the capital has a sizeable, lively and growing community of talented artists, among which Saudis are well represented with a long and famed tradition of fine poetry and calligraphy. The celebrated poetry of Nejd goes back to well before the Islamic period and today a well-known poet can become as famous as a country and western or iconic folk singer in North America.

Riyadh has developed and changed so rapidly over recent decades that there is new-found creative energy and innovation and the arts scene in the capital is moving with the times. The city's youthful, educated, well-travelled population have embraced modern technology and social media and are among the most connected on earth. At the same time there is developing awareness and appreciation of heritage and the value placed on tradition and historical roots, and this is helping to generate opportunities for artistic expression which adopt many forms.

The explosion of technology and social networks has helped make art accessible to more people and provided it with global reach. Art has become both popular and fashionable in Riyadh, and the young especially are curious and eager to participate with the prosperous youthful population creating an expanding and discerning market. Universities attract increasing numbers of students to their art and design courses. Princess Nora bint Abdulrahman University has a well-equipped arts and design faculty – one of the largest on campus – with programmes for its female students that include sculpture and digital media. Private institutes offering art and design courses have also sprung up. Thousands of students from Riyadh and other parts of the Kingdom studying abroad under the King Abdullah Scholarship

Programme have participated in the creative arts scene in other countries and connected with talented artists, and have brought their experiences, enthusiasm and talents home.

Saudi art is becoming collectable and appreciated and the private sector is playing an active role. New art galleries in Riyadh hold exhibitions and events that attract increasing numbers of both local citizens and foreign visitors. Saudi artists have exhibited works that have attracted interest and critical acclaim in prestigious art centres such as London, Paris, Berlin, New York and Beijing. Young artists from Riyadh mounted an exhibit entitled 'Rhizoma (generation in waiting)' in the Saudi pavilion at the 2013 Venice Biennale. Saudi and other Gulf States art collectives have forged strong ties with the arts scene in Riyadh and are involved in establishing art foundations for young artists, a new concept for the capital and the country as a whole. The burgeoning works of Saudi artists in the form of photographs, paintings, illustrations, and even graffiti, now decorate public places, shopping malls, hotels, corporate headquarters, streets and outdoor spaces. Striking and often edgy designs are also evident in architecture, interiors, textiles, fashion and landscaping.

New small-scale businesses established by the entrepreneurial and innovative citizens of Riyadh also embrace new design elements and art. Coffee shops, restaurants, shop fronts, vibrant – almost abstract – neon signs and fashion houses conspicuously demonstrate creativity. Local and overseas visitors are drawn to the art galleries and leisure spaces, where they can also find educational programmes that feature talks by and about Saudi women photographers, lessons in calligraphy and guides to art history. Art flourishes in film, textile design, jewellery, fashion, interior design and architecture and the increasingly popular art of photography. All these forms draw on the creative energy of the capital's innovative population, making up one of the most wired, connected and youthful communities on earth and contributing towards Riyadh's aspiration to be a city of beauty.

#### Overleaf

The canvases of award-winning Riyadh artist Fahad Al Naymah in an exhibition titled 'Ebil' at the Naila Art Gallery in the capital. A growing community of Saudi artists is represented in international galleries. Photo by Mubarak Al Dossary.

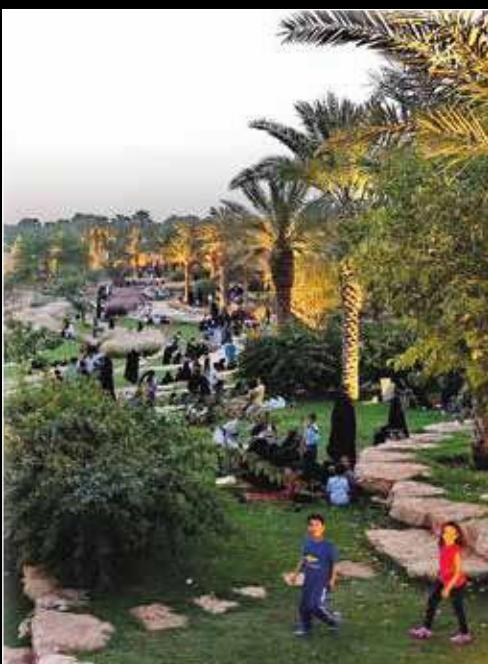






The Qasr Al Hokm and Imam Turki bin Abdullah Grand Mosque provide a beautiful evening setting for a performance of traditional dance, music and poetry. There have always been artists in Riyadh and poetry and calligraphy have been represented for the longest period with the celebrated poetry of Nejd going back to before the Islamic period.





## 16 The Human City

In any modern city health, education, vocational training, recreation and welfare are essential elements providing quality of life in addition to provision of security, housing and employment opportunities. Riyadh's population growth and youthful demographic present challenges as well as opportunities in providing these essential needs. It is one of the world's fastest-growing cities and during the eight decades since 1935 the population grew at an average annual rate of eight percent. Since 2005, annual growth rates have averaged around four percent.

In 1953 the population of 125,000 was made up mostly of Saudi nationals who were mainly engaged in traditional activities. Up to that time, male visitors to the capital arrived clothed in Saudi attire of *thobe* and the traditional plain or checkered headdress. Today's dress code, although still conservative, is far more varied for the capital has around two million non-Saudi residents representing diverse cultures and speaking scores of languages. The Saudi population is much younger compared to other countries, with the demographic pyramid by age for male and female bulging towards the base showing increasing numbers of young Saudis. Over 30 percent of the Saudi population is made up of under-15s.

As well as the obvious challenges of meeting needs, such a large proportion of young also creates future opportunities as educated, trained and aspirational Saudis reach working age. The city recognises and plans for its youthful and fast-growing urban population. There are nearly 9,000 schools with 100,000 teachers in Riyadh for more than two million pupils. Over the past half-century there have been significant developments in the provision of education and opportunities for women. In 2015 nearly 170,000 Saudi women were enrolled in higher education in the capital, 7,400 more than their young male counterparts, mirroring figures at a national level and reflecting the remarkable development since the 1960s. Vision 2030 Saudi Arabia aims to continue to develop the talents of Saudi women and invest in their productive capabilities with research, industrial

design, technology and business – all fields identified as ideal for employing Saudi women in culturally acceptable settings. The country is focusing on developing its human resources and closing the gap between the outputs of higher education and the emerging requirements of the jobs market.

One new centre of learning in Riyadh offers evidence of this trend and the response to the increasing demand for women's education is Princess Nora bint Abdulrahman University. Inaugurated in 2011 the university was built in just two years and two months, and is the world's largest women's university with a capacity for 60,000 students. Located in the northeast of the city, the eight-square-kilometre campus has 15 colleges, five of which are medical. Women's university facilities were previously scattered in three campuses around the city and opening the university provided immediate enrolment for nearly 25,000 students. A driverless monorail system, the first in the capital, helps students get about the wedge-shaped campus. The university's design incorporates traditional architectural elements that make intriguing use of multiple-layer facades, with buildings becoming progressively more open as they lead towards the main interior campus quad.

Many of the modern classroom buildings are designed around outdoor courtyards that are cooled by wind towers. The library contains five million books and an automated delivery system directs any one of them from the stacks to waiting readers at dedicated portals.

As well as long-established centres of academic excellence in the capital such as King Saud University with its high international rankings and Imam Mohammad bin Saud University, the number of private higher education institutions in Riyadh is growing. They include Prince Sultan University; Alfaisal University; Arab Open University, Riyadh Branch; Al Yamamah University; and Dar Al Uloom University. In addition, there are private colleges including Riyadh Colleges of Dentistry and Pharmacy, Al Maarefa College for Science and Technology, Al Farabi Dentistry

### Opposite

Riyadh has a young population. Demographics show that nearly one-third of Saudis in the capital are under 15 years old. Provision of education at all levels, health and welfare facilities, housing and employment prospects are given priority in planning and budget allocations. Respect for elders is imbued in Saudi youth and a growing educated, technically sophisticated male and female young generation creates significant opportunities for innovation and future development in the capital's diversifying economy.

College, Alfaisal Colleges, Al Ghad International Medical Sciences Colleges, INAYA Medical Colleges and Arab East Colleges. Technical education and vocational training are offered through the General Organisation for Technical Education and Vocational Training (GOTEVOT). Private training centres include Riyadh College of Technology, College of Telecom, and technical and vocational training institutes for females. In total there are more than 270 private training institutions for males and 88 for females. Educational and training institutions also operate in cooperation with the private sector, such as the Higher Institute for Plastics Fabrications, Saudi Oger Training Institute, General Motors, and Saudi Electronics and Home Appliances.

Health services are offered by the Ministry of Health, other government agencies and the private sector. There are over

30 hospitals in the capital. Ministry of Health hospitals include King Fahd Medical City, one of the largest and most modern facilities in the Middle East, King Salman Hospital, King Saud Medical Complex, Al Yamamah Hospital and others, most of which provide free treatment, diagnosis and surgery for citizens. There are also numerous primary healthcare centres spread throughout the city.

Medical facilities affiliated with other government agencies, such as university hospitals, include King Faisal Specialist Hospital, the Armed Forces Hospital, the Security Forces Hospital, King Khaled Eye Specialist Hospital and the General Organisation for Social Insurance (GOSI) Hospitals. Within the campus of Riyadh's King Abdulaziz Medical City of the National Guard is King Saud bin Abdulaziz University for Health Sciences (KSAU-HS),



Opened in 1983, the King Khaled Eye Specialist Hospital, the largest in the Middle East, provides comprehensive eye treatment to people in Saudi Arabia and Gulf countries. It has 250 inpatient beds and 12 theatres and is affiliated with John Hopkins Medicine in the USA for the training of the next generation of leaders in ophthalmology.

opened in 2013 and the first public university in the Kingdom of Saudi Arabia and the Middle East region, that specialises in health sciences. Riyadh also has 11 anti-smoking clinics, a forensic centre, preventive health centre, central laboratory and medical rehabilitation centre.

As the leading university in the Middle East, King Saud University has embarked on an ambitious endowment programme to support research activities and initiatives to improve education and research. In the tradition of educational endowments, this modern endowment extends support to university hospitals, healthcare services and medical research and reflects the capital's drive to become a knowledge society.

The endowment programme is helping to fund the project

of massive extension to the King Khaled University Hospital at King Saud University and involves building new medical colleges, a college of pharmacy and a dental faculty as part of Saudi Arabia's drive to systematically improve and extend its healthcare system. In addition to new colleges, the project includes administration buildings and an international hotel.

Changing lifestyles and diet have resulted in the Saudi population having among the highest rates of diabetes in the world. The new National Diabetes Centre in Riyadh has a common goal that unites the clinical, education and research arms with the singular mission of bringing lasting improvements in quality of life to diabetes patients and is working to eliminate the condition through education and research. The centre has three wings and optimises use of natural light and protection from heat with an inner oasis



As well as government-provided national healthcare, the private sector also provides healthcare services. The Riyadh-based Dr Sulaiman Al Habib Medical Group, ranked by IPSOS as among the top 100 Saudi brands, operates three hospitals in Riyadh as well as in other GCC states.

in the form of a three-storey shaded atrium under a large floating roof slab that filters the intense sunlight.

The Prince Naif Centre for Health Science Research provides two other new buildings designed for King Saud University and will form world-class research facilities, including those for research in cancer, molecular biology, genetics, infectious diseases and several other medical disciplines. The buildings are positioned on two different campus sites under the university and consist of a male and a female branch. Both facilities will house new teaching laboratories for medical students and centres for advanced medical research. Inspired by a monolith, the main building is placed on a podium, which roots the building in the urban, local context. The central Science Square is the heart of the building and features common functions such as lobby, café, library and lecture hall. Visual and physical contact connects the laboratories to the workstations on the open balconies.

Thus, the design supports informal meetings and innovation across research areas. The spectacular and outward-leaning facade of the female branch incorporates randomly placed and variously orientated right-angled triangular openings that echo the traditional Nejdi decorative elements in mud-brick buildings.

Since 1979 the King Faisal Foundation in Riyadh has awarded the prestigious King Faisal Awards to international recipients for Service to Islam, Islamic Studies, and Arabic Language and Literature. The King Faisal International Prize is the first multidisciplinary, international prize sponsored from the Arab world in modern times. Prizes for science, begun in 1982, and for medicine (1984) have brought the awards to world attention, with the science prize rotating through the disciplines of chemistry, biology, physics and mathematics in a four-year cycle. The prize for medicine is awarded for diverse and topical themes.

The oldest and premier university in Saudi Arabia, King Saud University (KSU) has a student population of over 50,000.





Princess Nora bint Abdulrahman University was inaugurated by King Abdullah in 2011 and is the world's largest women's university, with a capacity for 60,000 students. The campus has 15 colleges and is served by a monorail.



KSU's King Salman Central Library occupies seven floors and more than 50,000 square metres with seating for 4,000 students. Towering seven storeys high, the naturally-lit concourse or 'forum' covers a floor area equivalent to two football pitches.

The high proportion of young people in Riyadh creates challenges in providing education, vocational training and job opportunities while also presenting future opportunities as educated and trained Saudis reach working age.

In 2002, the King Faisal Foundation established Alfaisal University in Riyadh as one of the first private and non-profit research and teaching universities in the Kingdom committed to achieving international standards of excellence. The institution was founded by a consortium of King Faisal Foundation, Harvard and Cambridge universities, MIT, the International Space University, King Faisal Specialist Hospital, King Abdulaziz Centre for Science and Technology, MODON (Saudi Industrial

Property Authority), the French multinational company Thales Group, Saudi Aramco and Boeing.

Ongoing expansion work includes a conference centre and a new medical college building. Along with its College of Engineering, which offers programmes in mechanical, industrial, electrical, software and architectural engineering, the College of Science offers degree courses in life sciences and a pioneering programme in science

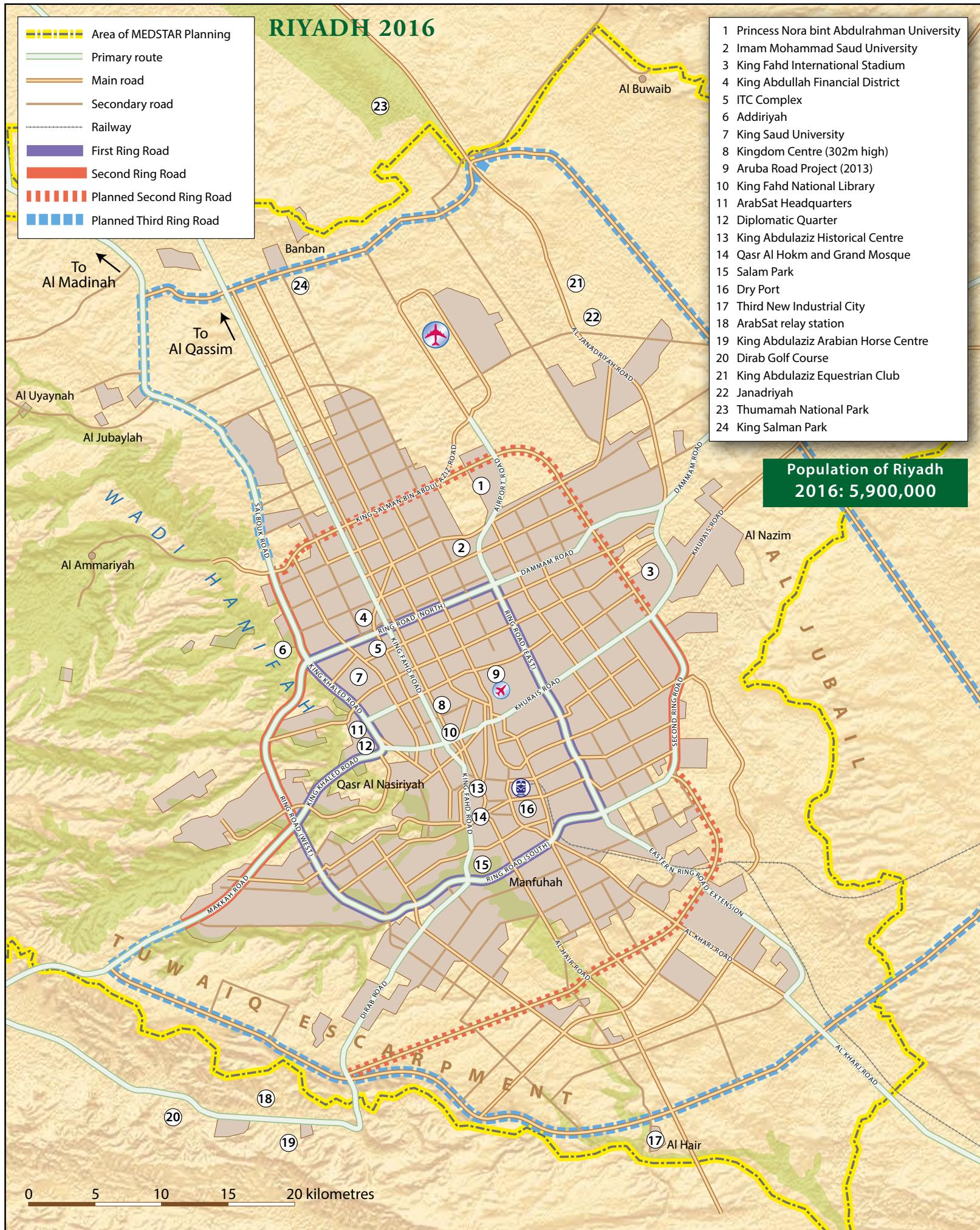


journalism. The latest additions to vocational training facilities in Riyadh include institutes providing training in aviation maintenance and transportation, as well as a Higher Institute of Advanced Technology. These all show a response to the recognition of the need to provide skills training geared for employment opportunities in the developing economy of the capital.

Recreation and welfare also help create a human city. All

over Riyadh numerous pedestrian paths have been created and pavements widened to encourage walking, and the municipality has created around 100 neighbourhood plazas that include sports facilities. Regular activities around the capital include popular farmers' days, an annual dates festival, flower shows and shopping events. The capital has also successfully launched Eid and National Day celebrations as well as events that promote visual arts, crafts, poetry, literature, theatre, folklore and heritage.





## 17 City of Innovation

The people of the ancient oasis communities along Wadi Hanifah successfully adapted and thrived in a desert environment that could be harsh and unforgiving. In times of hardship many ventured out in search of opportunities elsewhere on the Arabian Peninsula and beyond. The population was not, as sometimes stereotyped, isolationist. Rather, they were outward looking and renowned as intrepid voyagers, consummate entrepreneurs and traders.

The region benefitted from connections and exchange of ideas with the wider Arab world. The coming of Islam and pilgrimage provided further impetus for movement, new contact and opportunities. Towns such as Al Uyaynah and Addiriyah became centres of scholarship and Islamic thought. Perseverance, patience and a pragmatic ability to stoically face ever-present dangers and adversity framed an integral part of the population's hardy character. Their skills in utilising scarce water supplies and limited natural resources for building and defending urban centres, developing agriculture, tending livestock, breeding fine camels and Arabian horses, and crafting local materials for domestic use and trade items all point to an innate ability to innovate and adapt.

Today, this innovative spirit is a key driver helping shape Riyadh's long-term vision which is aligned with Vision 2030 Saudi Arabia as "a vibrant society, thriving economy and an ambitious nation". The capital has firmly set its sights on becoming a leading 21st-century city in a thoroughly modern setting. From its extensive and expanding campus in the capital, the King Abdulaziz City for Science and Technology (KACST) spearheads the Kingdom's national strategic goal of becoming one of the advanced countries in science, technology and innovation by 2025. More than 3,000 Saudi graduates have participated in research projects undertaken by KACST. With its youthful population, well-managed financial markets, readily available capital and resources, emphasis on education and training and the national focus on localisation and economic diversification, Riyadh has become a regional leader and a city ideally placed to become a knowledge-based contemporary oasis.

The King Abdullah Petroleum Studies and Research Centre (KAPSARC) is another more recent establishment based in Riyadh that focuses on research, technology and innovation. Inaugurated in January 2016 by King Salman, this independent body is now conducting objective and scientific research in the field of energy. The complex, designed in futuristic and cascading cellular and geometric shapes, forms a striking landmark adjacent to Princess Nora bint Abdulrahman University on the city's main approach road to King Khaled International Airport. Saudi Aramco planned the centre and its facilities, provided interim management and seconded staff to develop it from an idea into a reality. From its Riyadh headquarters KAPSARC reflects the Kingdom's prime global position as an energy producer and exporter and helps pioneer national initiatives and innovations towards energy diversification.

Designed by the late Zaha Hadid, the centre is an independent, non-profit institution dedicated to researching energy economics, policy, and technology, and the environment across all types of energy.

It forms a tangible symbol of environmental innovation and its master plan is rooted in the historical model of the oasis village. The hybrid ovoid-shaped building is set within a protected oasis. Pools of recycled water naturally cool the air and support native flora and gardens of endangered desert plants. The complex includes a research centre, conference facilities, Energy Knowledge Centre and Energy Computing Centre.

Under its motto 'Research. Rethink. Reshape', KAPSARC aims to become a world leader in research on energy, the economy and the environment with programmes in energy productivity, fuel and technology transitions, allocating energy resources efficiently in an economy, future transportation choices, and related regional studies addressing China and East Africa. One focus is the development of Saudi Arabia's solar power potential as a means of tapping unlimited energy resources to help Riyadh and the rest of the country meet the challenge of the high and rising use of fossil

### Overleaf

The King Abdullah Petroleum Studies and Research Centre (KAPSARC) is among developments helping make Riyadh a contemporary desert oasis with an emphasis on research and innovation. KAPSARC is an independent centre that conducts scientific research in the field of energy. The hard outer facade of the complex, designed in futuristic and cascading cellular and geometric shapes, conceals a softer interior environment.





The Kingdom is set to play a global role in developing latest technologies. SABIC's Saudi engineers contribute to Saudi Arabia's largest publicly listed company with its headquarters in Riyadh. It has grown into the world's largest diversified chemicals company, with offices and affiliates in more than 40 countries, and 40,000 employees, and is a pioneer in research and development and innovation.



fuel. The centre plans the country's largest solar park, using panels to harness the sun's energy and generate electricity testing and using the latest solar photo-voltaic arrays that are dust and sand resistant. The project is a forerunner to the country's ambitious solar energy programme that aims to develop capacity to 25 gigawatts of solar power and 16 gigawatts of photovoltaics by 2030 and thus become the Middle East's leader in solar energy resources.

Saudi Arabia's tenth Five-Year Plan (2015–2019) continues to emphasise capacity building in science and technology geared to enabling innovation and renewal reinforced by the National Transformation Programme aimed at diversifying the economy, stimulating investments and developing small and medium-scale enterprises. A scientific park known as Riyadh Techno Valley (RTV) has been established to contribute to the vision of transforming knowledge into economic value. This involves converting technical inventions into innovations and developing new products for local, regional and international markets.

According to KACST, 250 new patents were registered in Riyadh in 2014. This is significantly below other major cities, which, in developed countries, average over 2,000 in a year, topped by Tokyo with over 17,000 registered in 2014. The priority is therefore to continue creating conditions and develop a knowledge-based community in order to encourage innovation with significant pay-offs in terms of job creation and business opportunities.

Initiated by King Saud University, Riyadh Techno Valley is already a regional pioneer, developing scientific knowledge through research and development, accelerating innovation and creating technical industries. Covering nearly two square kilometres, the science and technology park is part of the expanded King Saud University campus. The project includes companies and research centres offering local, regional and global employment directly and indirectly and will, when fully operational in 2020, have 3,000 leading research scholars and 12,000 business experts, and provide 5,000 job opportunities for qualified graduate and postgraduate students. By fostering innovation and entrepreneurship it will act as an incubator, with clusters specialising in information and communications technology; biotechnology, pharmaceutical, medical, and food industries; engineering and manufacturing; and renewable energy, chemicals, and petrochemicals.

Riyadh also has its sights set on becoming the regional leader in atomic and molecular research and development by pioneering in applications the diverse and fast-emerging microscopic world of nanoscience and nanotechnology. King Saud University has established a programme that has developed into the King Abdullah Institute for Nanotechnology (KAIN) as part of Riyadh Techno Valley. The institute focuses on leading research and development in energy, water treatment, telecommunications, medicine, pharmacy, food, environment and study of nano-materials properties as well as simulating and modelling nano-structures.



SABIC's CEO chairs a session of the annual Global Competitiveness Forum (GCF) in Riyadh with leading industrialists and entrepreneurs. The GCF draws participants from around the world and the capital's emphasis on innovation, research, localisation and diversification of the economy forms part of the purposeful and strategic national shift away from dependence on oil.

Also in Riyadh Techno Valley, King Saud University has set up the TaQati renewable energy centre to research and develop different techniques for the production of alternative sustainable energy, which will include developing horizontal- and vertical-axis wind turbines as well as new technologies in solar power generation.

The Saudi Energy Efficiency Centre is tasked with promoting awareness on energy conservation and improving energy consumption efficiency. The consumption of electricity in the industrial sector accounts for more than 20 percent of total output. Until recently, residential, governmental, and commercial buildings in the capital and country as a whole have been characterised by excessive electricity consumption. Buildings consume 80 percent of the electricity produced in Saudi Arabia, with air conditioning taking up 50 percent. With fuel and energy prices among the lowest in the world, the centre is exploring ways to improve efficiency through awareness, improved design and conservation and developing alternative energy sources. From 2014, regulations state that airconditioners must carry energy efficiency cards rating them at a minimum of four stars for split units and three stars for window-mounted types. The objective is to improve energy efficiency through a national campaign and continue to reduce subsidies.

Generation of electricity in Saudi Arabia has doubled in the 15 years and demand (despite consumer tariff hikes, supply

still remains subsidised) continues to rise with population growth and industrial development and diversification. The country has embarked on the largest expansion plan in the Middle East for generations, including major expansion in Riyadh, which accounts for about a quarter of Saudi Electricity Company's seven million subscribers.

Existing generating capacity is powered by oil or natural gas, but there are plans to diversify fuels used, with an ambitious programme to develop renewable and sustainable energy supplies, including the introduction of nuclear generation. In 2010, a Royal Decree established the King Abdullah City for Atomic and Renewable Energy (KACARE) in Riyadh to enable a shift from dependence on non-renewable hydrocarbon resources through developing alternative energy sources to meet the ever-increasing domestic demand for power and desalinated water.

Its establishment emphasised the development of energy from a mix of nuclear, solar, wind, waste-to-energy, and geothermal resources, and declared ambitions – through research, development and innovation – of becoming a technology leader in renewable and nuclear energy, with a target of 50 percent of energy from these sources by 2032.

In 2016, the Vision 2030 announced the King Salman Renewable Energy Initiative, an initial target of 9.5 gigawatts of renewable energy in the national drive to reduce dependence on the Kingdom's output of hydrocarbons

and preserve finite resources of oil and gas well into the future, thus freeing up natural gas and oil reserves for its petrochemicals and export sectors. A new generation of Saudi scientists is emerging with advanced education and training in nuclear technology as the Kingdom prepares to play its global role through development of human resources, latest technologies and exploitation of its potential in solar, geothermal and nuclear energy.

Founded by Royal Decree in 1976 to convert Saudi Aramco's hydrocarbon gases and oil by-products, chemicals, polymers and fertilisers, SABIC (Saudi Arabia Basic Industries Corporation) has grown into Saudi Arabia's largest publicly listed company recognised as a 'home of innovation'. With its headquarters in Riyadh, it is the world's largest diversified chemicals company. With more than 40,000 employees and offices and affiliates in around 40 countries, it has become a pioneer in research and development and innovation. Building on its success, the chemicals manufacturing company has established the SABIC Academy next to its headquarters as a state-of-the-art complex for 450 students.

A focus of SABIC's mission is to harness scientific innovation and ingenious chemistry to create world-leading products from Saudi-produced oil and gas that are stronger, brighter, greener, smarter and more competitive in the international market. Located in Riyadh Techno Valley, the SABIC Plastics Application Development Centre (SPADC) has been set up for product innovation, as a support hub for synthetic products and as a training centre for SABIC customers. The centre hosts 125

researchers, trainees and support staff and is the largest product application development centre in the Middle East. Focusing on product development and the growing Saudi downstream market, the centre is pioneering development of new polymer applications and also supporting the continued expansion of SABIC's diverse new product portfolio including synthetic rubber.

SABIC's innovative plastics business has already made its mark in the world's automotive industry with a remarkable innovation that will help in the quest for improved fuel economy and emissions. This is the development of an advanced polycarbonate (PC) glazing solution for vehicle windows. The innovation provides a 35 percent weight reduction compared to the same-sized window on earlier models, even though the window is over one millimetre thicker than the production glass window it replaces. SABIC contributed glazing materials, advanced coatings technology and engineering design expertise to support the vehicle window's development and production. In addition to polycarbonate glazing, SABIC offers thermoplastic solutions for almost every major application space on a vehicle. In the 2013 Ford Fusion, about 20 kilograms of SABIC resins are used to reduce weight and meet diverse performance requirements for chassis, forward lighting, interior, exterior, electrical and other under-the-bonnet applications.

As the world's biggest energy company, Saudi Aramco recognises the need for developing and encouraging its employees to come up with new ideas and innovations and in order to create ever more opportunities from Saudi Arabia's

The traditional Nejdi crop combined with the local spirit of entrepreneurship and innovation have taken the dates of Riyadh into the global marketplace.



rich resources. As part of the 2014 Eid Al Fitr celebrations in Riyadh, Saudi Aramco presented its iThra Knowledge Program, combining science and culture in an entertaining exhibition aimed at promoting knowledge, creativity and culture. The event attracted more than a million visitors to the Riyadh International Convention and Exhibition Centre. The focus was on the young, with the theme of 'Discovering Our Past – Inspiring Our Future.' Attractions included the Inventors Studio Tent in cooperation with YouTube and the world-acclaimed interactive award-winning science exhibit '1001 Inventions'.

The major expansion of the King Salman Science Oasis is another development helping to increase interest in science, technology and innovation, inspire young Saudi talent and build a generation of pioneers and innovators. The Oasis includes 15 satellite oases located around the capital. Equipped with interactive stations, each Science Oasis is between 3,000 and 5,000 square metres and the project creates the largest science centre in the Arab world.

Riyadh's Information Technology and Communications

Complex (ITCC) is helping Riyadh emerge as a leading smart city. As part of Saudi Arabia's Vision 2030, it recognises that a sophisticated digital infrastructure is integral to advanced industrial activities, attracts investors and enhances the competitiveness of the Saudi economy. The ITCC Complex (see Chapter 18) taps into the capital's youthful, educated, innovative and entrepreneurial population, which has been brought up in the internet age and embraces technology and social media.

Riyadh's pioneering smart city initiatives and digital transformation involve partnerships with the private sector to continue developing telecommunications and information technology infrastructure, especially expanding coverage, quality and capacity of high-speed broadband. These developments, along with the emphasis on innovation, research, and localisation and diversification of the economy, are strategic elements in the purposeful shift away from oil dependence as part of Vision 2030. Riyadh, with its cutting-edge facilities and projects, is at the forefront of the drive to transform the Kingdom into a sustainable, knowledge-based society.

The Saudi Aramco iThra Knowledge Program, an entertaining exhibition aimed at encouraging creativity and innovation, drew over a million visitors to its Riyadh exhibit.





## 18 City of Prosperity

In 2005 two Saudi national public financial institutions based in Riyadh, the Capital Market Authority (CMA) and the Public Pension Agency, formed a public investment company, Rayadah Investment Company (RIC) to realise an ambitious project to construct a planned financial district from scratch. Nothing on this proposed scale, of such complexity and built over such a short time frame, had ever been tried before anywhere in the world, and from the outset there were those who said it could not be undertaken.

Yet a dramatic, futuristic high-rise skyline rose from previously empty land on the northern margins of the capital forming the King Abdullah Financial District (KAFD). In April 2016, a restructured KAFD was announced as part of Saudi Arabia's Vision for 2030 as the headquarters of the Kingdom's Public Investment Fund, the world's largest sovereign wealth fund. In addition, the redirection transforms KAFD into an enterprise zone with competitive regulations and procedures. It also repurposes some of the district's built-up areas and increases allocation of residential accommodation services and hospitality, creating an integrated and attractive living and working environment.

Riyadh is Saudi Arabia's financial hub and home to the Middle East's largest and most dynamic financial sector. Completion of KAFD's main construction phase coincided with the decision to open up the Saudi Stock Exchange (Tadawul) to foreign investors from 2015. Market capitalisation of the Tadawul is around \$500 billion with annual value of shares traded exceeding this, making it by far the largest market in terms of liquidity and market capitalisation in the Middle East and North Africa region (MENA). The eagerly-awaited new liberalisation measures are further spurring foreign investment in the Saudi economy, bringing benefits to Riyadh and providing a liquidity boost for already thriving Saudi corporations. Steered by the Ministry of Commerce and Investment, the vision for 2030 is to form advanced financial and capital markets open to the world to stimulate growth and also for the Kingdom to become a leader in competitively managing assets, funding and investment.

A cosmopolitan clientele relaxes at Riyadh's largest coffee shop with the iconic Kingdom Tower as a backdrop. Riyadh is the capital of the economic powerhouse of the Arab world. The Saudi economy represents a quarter of the region's gross national product and is part of the G20 group of leading economies

Riyadh is the capital of the economic powerhouse of the Arab world. The Saudi economy represents a quarter of the region's gross national product, is part of the G20 group of leading economies and since 2005 has been a member of the World Trade Organization. From its headquarters in Riyadh, the Saudi Arabian Monetary Agency (SAMA) prudently directs a strong financial system that has successfully navigated recent widespread stresses to regional and international credit markets without the problems encountered by major economies and other states of the Gulf Cooperation Council (GCC).

The prosperity of Riyadh highlights the Kingdom's broader strength and its consistent course of monetary conservatism, which has always underpinned the health of its financial sector. Besides finance, the development strategies in education, health and welfare, urban planning, the environment, transport and infrastructure are all evidenced in the continued growth of Riyadh and the diversification of its economy. The massive infrastructure projects, which have turned the capital into one of the world's busiest construction sites, could not have begun had it not been for the ability of the local capital markets and the banking system to raise a significant proportion of the funding. That capacity, backed by expertise, has been recognised by the World Economic Forum, which has rated Saudi Arabia as the top financial centre among the countries of the GCC. Riyadh is also a major centre for Sharia-compliant Islamic finance which, globally in terms of deal values, surpasses \$1 trillion annually.

The sort of acumen and experience throughout the Saudi financial system and so well represented in Riyadh cannot be built up in just a matter of years. It requires great diligence on the part of professionals. It also requires a high degree of trust and confidence among both investors and financiers and this taps into deep historic and traditional roots of acumen and integrity in the conduct of local trade and entrepreneurship.

Since the 1990s, pundits have been predicting that, with the growth of modern communications, the days of the physical



Riyadh's prosperity and growth taps deep and traditional roots of local trade and entrepreneurship. Its numerous gold shops attract both Saudis and expatriates – 18 and 22 carat gold is in high demand for women and dowry payments. Saudi men wear a cloak often edged with gold thread, called the *mishlah*, whenever attending formal functions, meetings and ceremonies. A boutique store provides elegant tailored traditional menswear.

Colourful spices, herbs, pulses and ingredients for traditional Arabic coffee are sold in numerous stores and markets throughout the capital.



Prosperity requires trust and confidence among investors and borrowers. The Saudi Arabian Monetary Agency (SAMA) prudently steers a strong financial and banking system that has successfully navigated widespread stresses to regional and international credit markets.

financial centre were numbered. However, the reality is that developments such as Shanghai's Lujiazui financial district, London's Canary Wharf, and La Défense-Seine-Arche in Paris are flourishing. This is because each has brought together concentrations of financial expertise and support services, all in technologically advanced and architecturally eye-catching structures.

They are joined by a new and arguably even more stunning centre of financial excellence. Riyadh's \$8 billion King Abdullah Financial District is the culmination of careful planning to create a state-of-the art complex, flexible enough to evolve with every new advance in technology and communications. There has never been a project as impressive and powerful undertaken in a single masterstroke. The result is a self-contained mega-structure, a financial and business centre that is a city in its own right, dedicated to allowing Saudi Arabia to continue to expand its pre-eminent role in Islamic and non-Islamic finance. No other world-class financial centre provides anything like this district's secure integrated accommodation for professionals in financial and capital markets and the diverse services to support them.

The 1.6-square-kilometre site is larger than London's Canary Wharf and arguably outshines New York's Wall Street and the City of London's Square Mile in terms of its facilities. Besides office space, it includes hotels and residential accommodation for 12,000 people, retail and dining premises, a children's interactive museum, exhibition halls, conference and leisure facilities, a spectacular building that houses the National Aquarium and the eye-catching Butterfly Dome, which will contain some of the world's most exotic and precious butterflies. The district has seven beautiful mosques, each with a distinct, fascinating design, one of which has won the award of the European Centre for Architecture Art Design and Urban Studies.

The KAFD's 59 towers are dominated by 77-storey, 385-metre-tall Capital Market Authority Tower with its iconic and striking architecture. Other main towers include the 67-storey World Trade Centre building, the 53-storey, 240-metre GCC Central Bank and the 41-storey, 200-metre Tadawul building.

The vision is for a modern, sustainable city based on a minimum of private motoring. From the decentralised

parking garages providing space for 62,000 vehicles within the periphery of the site, a monorail carries people to six different stations in the district that will link to the Riyadh public transport system. Most of the buildings are linked by air-conditioned skywalks that enable people to move comfortably from one part of the complex to another and enjoy stunning views as they do so: 263 elevators serve to move passengers swiftly and 90 escalators connect the different levels. The nearly 100 skywalks are a contemporary reminder of the historic mud-brick walkways that connected the grand mosques of Addiriyah, the first Saudi capital, and Riyadh with their central palace and office of government.

Among the district's many claims to outstanding architectural and planning excellence is the fact that it is the world's largest single environmentally-intensive project, maximising the use of every available technology to recycle water and generate power from solar energy. All the buildings use super high-efficiency glazing and solar shading. Besides high-performance photovoltaics to harness the abundant energy of the sun, exhaust air is recovered and used to pre-condition incoming fresh air, radically reducing energy demand compared to conventional air-conditioning systems, a cause of such high power demand in so many older buildings elsewhere in the capital.

But the emphasis is of course on work, profitable work that will continue to enhance Riyadh's pre-eminence in Middle East finance. A key part of the district is the state-of-the-art trading floor of the Saudi Stock Exchange. The market has more than 150 companies listed, along with a spread of Islamic (*sukuk*) bonds and mutuals and exchange-traded funds, and overseas interest is set to rise with the opening of the market to outside investors. Among many other national and regional leaders, the Tadawul boasts the equity presence of the Saudi Basic Industries Corporation (SABIC), the world's biggest petrochemicals producer; the world's biggest Islamic lender, Al Rajhi Bank; Almarai, the world's largest vertically integrated dairy foods company; and the Saudi Electricity Company, the GCC's largest electricity company. All of these listed corporate giants are headquartered in Riyadh.

Rayadah Investment Company is also managing another significant development in Riyadh as part of the Kingdom's strategy of moving from hydrocarbon dependence towards economic diversification, embracing technology, encouraging innovation and becoming a knowledge-based economy. The Information Technology and Communications Complex (ITCC) is the Kingdom's first smart city and, this development makes Riyadh a regional hub for information and communications technology services, combined with education, research and innovation in a crucial field that is now a major determinant of competitiveness. It is also attracting leading ITC corporations from around the world and provides two buildings as technology business incubators for new small and medium-scale Saudi enterprises.

ITCC's data centre, like that at the King Abdullah Financial District two kilometres to the north, has the highest Tier-4 rating, which allows virtually zero downtime and has a fibre-optic cable network designed to give the highest speeds and accommodate next-generation technologies for years to come. The development centres around four central towers and incorporates grey-water recycling, low-energy lighting and low-energy air conditioning. The monumental cuboid towers are covered externally with a perforated golden aluminium cladding designed to reflect ultraviolet rays and reduce solar gain by 60 percent.

Riyadh's 1st Industrial City, established in 1973 adjacent to the railway station and expanding dry port, has around 50 factories. The 2nd Industrial City, established three years later to provide more land for the development of new industries, covers nearly 20 square kilometres southeast of the capital on the road to Al Kharj. Both are overseen by the Saudi Industrial Property Authority (MODON), which was created in 2001 to establish, develop and operate the industrial cities and technology zones in partnership with the private sector. As part of the planned expansion of the private sector in national development, four major private industrial zones covering seven square kilometres are under development adjacent to Riyadh's 2nd Industrial City and include a diverse range of industrial activities supplying expanding Saudi and regional markets as well as developing market prospects further afield.



With the King Fahd National Library in the foreground, Riyadh's high-rise corridor stretches north from Olaya towards the King Abdullah Financial District on the city's outskirts. Nearly all the urban development seen in this aerial view has occurred since 1980.

As part of the planned expansion of the private sector in national development and diversification of the Saudi economy, four major private industrial zones are under development near Riyadh's 2nd Industrial City. These include a wide range of industrial activities supplying expanding Saudi and regional markets as well as emerging market prospects further afield.



#### Opposite

View north along the busy commercial Olaya Street. Riyadh is the region's most dynamic and prosperous capital. On the left is one of the early Jarir Bookstores.

Founded in 1979 the firm has mushroomed into the region's largest retailer of books and consumer electronics with over 10 stores in the capital, 16 elsewhere in the Kingdom and five in GCC states; listed on the Saudi Stock Exchange and negotiated the region's first dealership with Apple.

Today, there are more than 30 industrial cities throughout the Kingdom and the 3rd Industrial City is the latest under development in Riyadh. This is a unique project in that it has been set up in partnership with the General Directorate of Prisons through the Ministry of Interior. Located south of the capital at Al Hair, MODON's planned development of 120 factories creates a partnership, seen as a possible model not only in the Kingdom but elsewhere in the world. Covering an area of 1.4 million square metres and with capacity for 9,400 inmates the facility employs them and allows them to gain skills and work experience to help with their social reform and rehabilitation into society.

To assist and support Riyadh's fast-growing and sophisticated industrial sector, King Saud University established the Advanced Manufacturing Institute (AMI) in 2012. The

university's College of Engineering and its Industrial Engineering department are recognised throughout the Arab world as centres of excellence, and engineering design and manufacturing have become focus areas of research and development. The institute will serve industrial clients in Riyadh's fast-growing industrial sector and provide enhanced training and research leading to innovative solutions to assist in manufacturing, design and material processing. In the ever-expanding retail sector, private finance is funding the establishment of new giant shopping malls around the city. All these varied developments are enabling the rapid growth of Riyadh's industrial, retail and services sector, encouraging local and foreign investment, providing sustainable employment opportunities and successfully helping to achieve greater diversification and localisation in the capital's buoyant economy.

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The King Abdullah Financial District has risen from empty land on the northern outskirts of Riyadh. The District has its own monorail network connected to the city metro and its 59 towers now dominate the capital's skyline.









## 19 Contemporary Oasis

Intrinsic to Riyadh's vision of being a sustainable city is the concept of a contemporary oasis. This captures the meaning of the word as a green and fertile habitat, whose people and their livestock and land are blessed with perennial fresh water forming an Arcadia of tended date groves and carefully cultivated crops.

But the concept of a contemporary oasis extends beyond the literal sense. The word 'oasis' occurs in nearly every European language as well as Korean and Japanese, and lexicographers describe how in English at least half of its uses are metaphorical. In its figurative sense, it conjures up a pleasant, peaceful and tranquil area, a refuge from the hustle and bustle of a city with people constantly on the move.

Thus the vision of Riyadh as a contemporary oasis not only taps into the literal sense of its historic roots and origins and the wadi system that has nurtured it, but also encompasses the broader meaning – a haven that respects and reflects Islamic culture and Arab heritage and reminds citizens of their roots in a past where people were at one with nature. It embodies the teachings of the Holy Quran and the ancient principles and traditions of the Bedouin in respect for the environment and nature.

But such has been the pace of urban development that until quite recently the former enduring relationship faded – unfortunately, at the expense of the local environment. There are octogenarians in the capital who recall their early life in and around the old city. Before surfaced roads, electricity and modern conveniences people were close to nature. The irrigated palm groves, fields and orchards that surrounded Riyadh were a pleasant retreat with lines of palm trees, alternating green and purple flowering fields of alfalfa, vegetable gardens, patches of saffron and herbs, cotton bushes alongside irrigation channels and orchards of mulberries, citrus trees, vines, pomegranates, figs, peaches and apricots.

However, these slowly gave way to construction and by 1950 little was left of this emerald-green oasis belt that

once encircled Riyadh. With unification came rapid urban development, along with new-found security and peace creating conditions that attracted desert nomads and others from smaller settlements to the capital. Here, they could also enjoy the benefits of public services and new urban facilities in the fast-growing town, along with new opportunities for trade and employment.

At first, those from the desert community would temporarily pitch their tents around the outskirts of Riyadh. Brief visits gradually developed into longer stays. The visitors built mud walls around their tents to protect them from the wind and then employed their adaptive skills to roof the walls. Thus smaller populated areas grew up close to the city walls in and around the ancient palm groves and gardens surrounding them. Some of Riyadh's residents began to move out from the cramped original urban centre and settle in these immediate surrounds. It was not just the fabric of the walls and old gates and defensive towers that were threatened now. It was not long before the value of land surrounding the city exceeded the value of the date harvest, perennial alfalfa for fodder and other cultivated garden crops. Over the decades as Riyadh expanded, large areas of the oasis and its palm groves and gardens succumbed to urban development.

King Abdulaziz enjoyed leaving the confines of the capital and venturing into the surrounding groves and the nearby desert beyond and, when he was in residence, he liked setting out from the city on foot or on horseback. Among his favoured destinations for camping and outdoor pursuits were the gardens of Shamsiyah a few kilometres north of the walls, via Shamsiyah Gate and along the sandy watercourse of Wadi Al Battha. For trips further afield, he would ride westwards through palm groves, gardens and then open desert to the gardens of Al Badiah, traditionally known as Al Batin, on Wadi Hanifah. Today the collective memory of Riyadh's surroundings lingers and residents retain their love for the outdoors and make frequent trips to camp and picnic. But distances to the pristine desert outskirts of the city have increased with time and consequently the need to provide gardens and parks within the expanding urban

Set on the edge of an extensive upland drainage system, Riyadh and its neighbours along Wadi Hanifah have for centuries been famed as oasis settlements of Arabia supporting tended date-palm groves and carefully cultivated crops. Intrinsic to today's vision for Riyadh as a sustainable city is the concept of the capital as a contemporary oasis.





### **Previous page**

Looking north over Salam Park towards Riyadh's historic centre. An Arriyadh Development Authority project, the park creates a lush contemporary oasis in the heart of Riyadh with welcome shady amenities for families to enjoy. The park's lake holds 140,000 cubic metres of circulated water – the capacity of more than 50 Olympic swimming pools. The tree-lined King Fahd Highway forms the western boundary of the park.

View south from the restored Dakhna Gate towards the Dakhna Plaza planted with palm trees and fronting the Supreme and Criminal Justice courts. The landscaping and all the buildings are ADA projects.

limits has grown. Among the earlier public spaces in the new suburbs was Al Futah Garden just west of Al Murabba. A few kilometres to the north was the prominent landmark of Jabal Abu Makhruq, a conical hill naturally pierced at its summit by a hole and earlier used as a lookout. This became popularly known as the Camel's Eye, escaped the bulldozer and is now a small park to the west of Riyadh Zoo, which was set up in 1957 and refurbished 30 years later. The zoo's animals were originally kept in the sprawling palace complex constructed by King Saud on the Al Nasiriyah site popular with his father. Exotic animals – many of them gifts – were kept here and the lions, tigers, elephants, rhinos and monkeys attracted such huge crowds to the palace grounds that the new zoo on the outskirts of Malaz was established to house the growing menagerie.

When it came into being, the Arriyadh Development Authority recognised the need to protect the environment and control pollution in the city. Increasing concern was focused on air quality, effluent, industrial waste and contamination of ground-water and the overall impact of traffic and industrial activity on the quality of the environment. The success of major projects undertaken by the ADA such as the Diplomatic Quarter, Qasr Al Hokm and the King Abdulaziz Historical Centre – all of which incorporated gardens, parks and landscaping sensitive to

the desert conditions – won popular acclaim and a clutch of international and regional awards. By 2000, the vision for Riyadh incorporated elements that would further encourage and frame future urban developments. It would foster the environment and create a contemporary oasis: a capital that is beautiful, human, close to nature and sustainable and thus prosperous, and with the welfare of future generations in mind.

In its first major environmental rehabilitation programme the Arriyadh Development Authority focused on Wadi Hanifah, the most extensive drainage basin and by far the longest wadi system in the Riyadh area. The wadi and its numerous tributaries had over millennia provided life and resources to the communities within its catchment area. Addiriyah grew up on its banks and the eastern walls of Riyadh loomed over the watercourse of its tributary Wadi Al Battha. The expansion of the city beyond its walls resulted, by the late 1950s, in Wadi Al Battha becoming an open drainage ditch running down the middle of the main road flanked by commercial buildings. By the 1980s, it had been covered, but by this time Riyadh's growth meant that Wadi Hanifah also cut through the developed urban area of the capital.

By 2000, nearly the whole 120-kilometre length of Wadi Hanifah had become polluted and degraded. The ADA



recognised the potential to rehabilitate the wadi and develop it as a resource for the capital. Work began on implementing strict controls on pollution and an ambitious project of clearing rubble and waste, cleaning the entire wadi bed, restoring the fragile natural habitat, landscaping, creating sensitively designed recreational spaces, enhancing agricultural land and introducing state-of-the-art waste-water treatment.

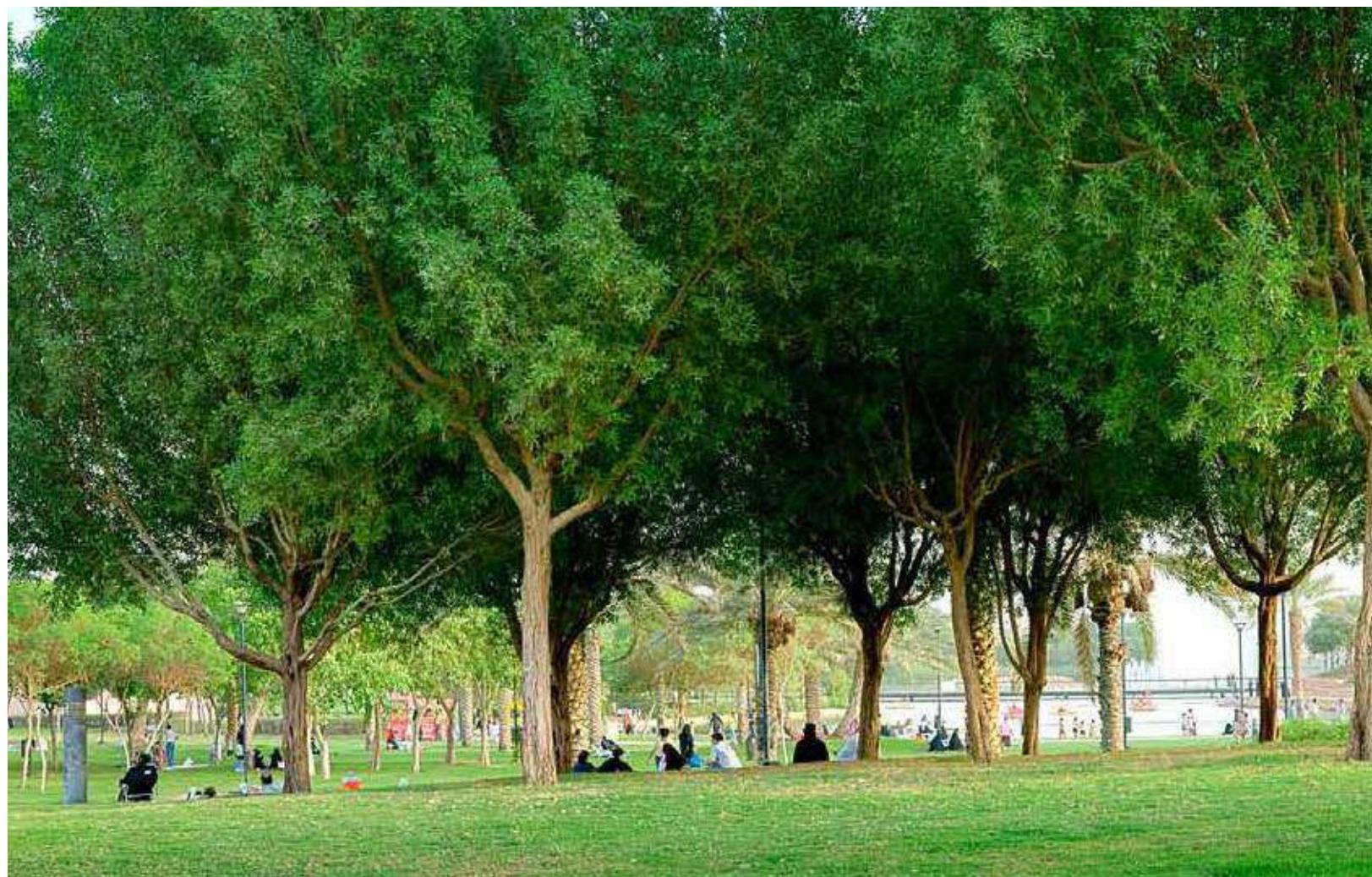
The Wadi Hanifah Wetlands Project has created nine parks, five lakes, and a series of trails and promenades. Contractors moved more than half a million cubic metres of waste material and rubble, while landscapers planted more than 30,000 shade trees and 50,000 shrubs, most of them native species. In 2010, the Arriyadh Development Authority received a fourth Aga Khan Award for Architecture for rehabilitation and improvement work on Wadi Hanifah, one of the first of the awards to be given for an environmental project.

The Award states: "The project reverses the tide of rapid urban development, which has seen public space in many cities within the Muslim world fall victim to expropriation and other practices that deprive the population of its resources. This invariably happens at the cost of environmental values and sensitive ecosystems." The citation adds, "The

Wadi Hanifah Wetlands Project eloquently demonstrates an alternative ecological way of urban development. It shows how a major natural phenomenon which, through the course of urbanisation, became a litter-strewn and dangerous place – a scar on the face of the capital city – can be transformed by sensitive planning attentive to social values and imaginative infrastructure-driven landscape solutions. The Award has been given in recognition of the project's vision and persistence in developing a sustainable environment. Using landscape as an ecological infrastructure, the project has restored and enhanced the natural systems' capacity to provide multiple services, including cleaning the contaminated water, mediating the natural forces of flood, providing habitats for biodiversity and creating opportunities for recreational, educational and aesthetic experiences." Already Wadi Hanifah has the distinction of being the longest linear park of any city. Arriyadh Development Authority's second phase of this environmental project focuses on the tributaries of Wadi Laban, Wadi Namar and Wadi Al Battha to create more green corridors, offer recreational facilities and breathe fresh air into the metropolis.

Another project managed by Arriyadh Development Authority, located 85 kilometres northeast of Riyadh, is Thumamah Park, which is flanked by Armah Escarpment and covers an area of 375 square kilometres. Thumamah has

Early travellers to the capital recalled the "streak of emerald green" that made up a first view of the "gardens of Riyadh". Today beautiful city parks and gardens as well as rehabilitated wadis provide green spaces for citizens to enjoy.

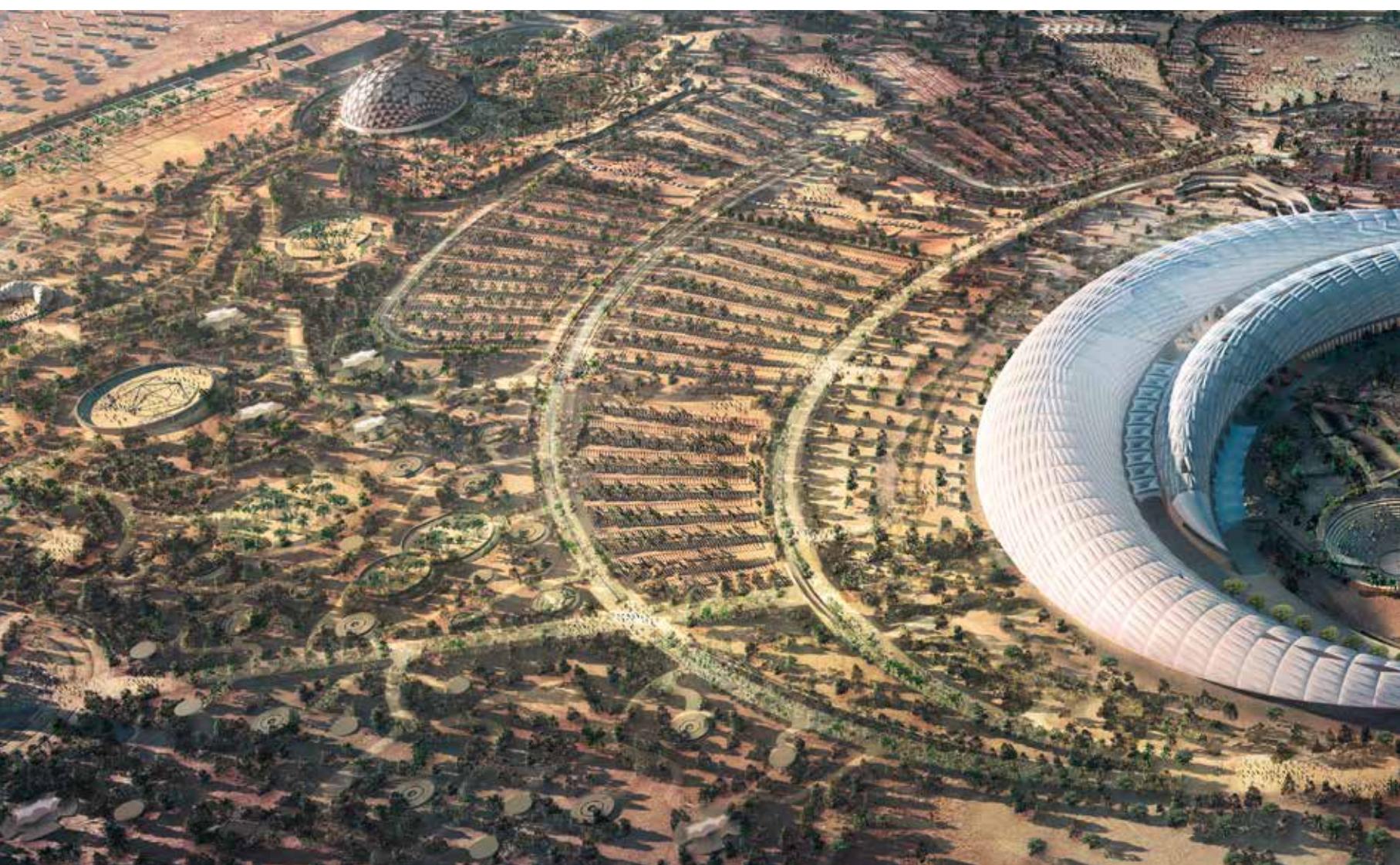


for decades been a popular camping area for citizens and it is now a protected area complete with managed eco-lodges, youth camps, communal camping areas and an airfield for the Saudi Aviation Club. When fully developed the area will include desert habitat with expanded facilities for the King Abdulaziz Arabian Horse Centre and the King Khaled Wildlife Research Centre. It will include a protected area covering 30 square kilometres to house animals from the Arabian Peninsula, a safari park and visitor centres explaining desert habitat and promoting environmental awareness.

Building on the remarkable popularity of and acclaim for the provision of extensive green areas and landscaping in earlier projects, another successful greening project to develop public gardens near the old heart of Riyadh was inaugurated in 2004. Salam Park forms a verdant oasis in the busy heart of the city. The park includes a lake covering more than a third of the 312,000 square metres, over 1,000 palm trees, 10,000 water plants, 1,900 shade trees and 100,000 shrubs. 2013 saw the opening of King Abdullah Park, adjacent to the stadium in Malaz and the site of the old racetrack. Developed by the Riyadh Municipality, the park features an illuminated dancing fountain and a venue for popular public events including Eid activities, folk dances and children's operettas.

Other developments in the greening of Riyadh include creation of 100 municipal plazas, extensive landscaping and tree planting, rehabilitation of existing parks, the 2016 opening of the King Salman Park northwest of the airport, and identifying land for new parks and gardens throughout the city. Statistics from the ADA's Urban Observatory show that the capital has 500 parks and gardens and a ratio of land allocated for recreation; of 13 square metres per person, greater than that of most developed cities.

Among the capital's planned major environmental and beautification projects is the Riyadh Municipality's King Abdullah International Gardens (KAIG), covering nearly two square kilometres on the southwest outskirts of the capital. The ambitious project includes the largest temperature-controlled garden in the world and employs on-site renewable technologies for power generation and water conservation, ensuring minimal environmental impact. The gardens are designed to explore and encourage study in the process and consequences of climate change and to present changes in flora experienced throughout Arabia's past geological eras. Palaeobotanic gardens reveal the development of plants, examining natural conditions during previous climatic periods on the Arabian Peninsula.



There is also an aviary creating a free-flight facility for birds with shelter for exotic species, a water garden, maze garden and a 'physic' garden designed to show the medicinal properties of plants, including those used in traditional healing in the region. The King Abdullah International Gardens are fringed by the magnificent Tuwaiq Escarpment, which embraces the area traditionally known

as Al Arid. A stretch of this, one of Arabia's most remarkable linear topographic features, has been approved by Arriyadh Development Authority to form a spectacular national park covering an area of 4,000 square kilometres. The park extends more than 50 kilometres along the magnificent, towering 300-metre high cliffs and encompasses extensive areas of the plateau and scarp base.



A 50-kilometre stretch of the magnificent Tuwaiq Escarpment to the west of Riyadh is proposed as part of a national park to the west of Riyadh.

#### Below

The planned King Abdullah International Gardens project instigated by Riyadh Municipality is southwest of Riyadh. KAIG is set to become 'a world-leading focus of mankind's understanding of the process, consequence and study of climate change.' The gardens will show and celebrate the wealth and variety of Arabia's ecology.





## 20 The First Capital Restored

After the fall of Addiriyah in 1818 the surviving population undertook several attempts at rebuilding. In 1821 the second of these prompted ruthless retribution by the notorious Husayn Bey: mass deportations of remaining citizens and the systematic destruction of the city and its palm groves and gardens. What remained was left to a period of slow decay, the crumbling mud ruins the haunt only of those seeking a source of building materials. The English visitors William Gifford Palgrave in 1862 and Colonel Lewis Pelly in 1865 both found the former capital completely deserted.

However, good farmland does not go uncultivated in Nejd, and the adjacent oasis hamlets remained settled and farmed more or less continuously through the decades. There was no shortage of building materials to hand. Mud from the ruins was recycled into new bricks and mortar, limestone blocks for columns and foundation courses, timbers were used for roof supports, and old wooden doors – more recently to become sought-after valued collectables – were utilised. From the time of King Abdulaziz bin Abdulrahman, as Riyadh expanded, Addiriyah slowly grew in its shadows too. In 1917, Harry St John Philby (later Abdullah Philby), on his first visit to the region, found Atturaif itself still deserted but estimated the number of inhabitants of the oasis at 7,000.

The main citadel of Atturaif, rising up on a bluff on the west side of Wadi Hanifah, remained largely neglected. But although many of the ruined structures had crumbled over time, the original layout of the monumental structures, courtyard buildings, streets and passageways remained, as well as the overall vestiges of the original fabric of the settlement and stonework foundations and columns. Despite the reoccupation and rebuilding, there had been few modern and incongruous additions to its traditional earthen architectural pattern. Meanwhile, to the north of the ruins of the old capital, a modern planned town developed and became the headquarters of Addiriyah governorate administering other important historical towns in Wadi Hanifah such as Al Uyaynah and Al Jubaylah.

In 1960, a unique social and welfare experiment took root in this new town leading to the establishment of the Social Development Centre at the northern edge of Al

Bujairi District. Set up in cooperation with the ministries of Education, Health, Agriculture, and Social Welfare, with United Nations support, this project was to successfully pioneer the country's first systematic and national development programme of its kind focusing on adult education and literacy, preventive medicine, public health and agricultural improvement. The Addiriyah programme was such a success that it was rolled out throughout the country, with 37 centres set up over the next four decades.

In 1974 Saudi Commission for Tourism and National Heritage became interested in preserving the remains of historic Addiriyah and UNESCO sponsored a study by archaeologists and conservationists. In 1976 the site was placed under the protection of the Saudi Antiquities Act and by 1982 the old settlement was almost empty, with only a handful of former residents nostalgically continuing to visit their mud-brick abodes.

In 1998 a Royal Decree approved the Historic Addiriyah Development Programme, the result of the attention that the Custodian of the Two Holy Mosques, King Salman bin Abdulaziz, attached to the site while he was Governor of Riyadh – care and attention that he continues to give. A major restoration and rehabilitation project commenced the transformation of the area, with responsibility for studies and implementation placed on Arriyadh Development Authority in coordination with the Saudi Commission for Tourism and National Heritage (SCTH) and Riyadh Municipality.

The ambitious plan involved preserving the architectural integrity of the historic capital and creating a living heritage site protected by a landscaped buffer zone. The studies, planning and painstaking project work paid off. In 2010, UNESCO declared Atturaif District in Addiriyah a World Heritage Site, two years after the archaeological site of Al Hijr (Madain Salih) became the first UNESCO World Heritage property to be inscribed in Saudi Arabia.

The core historic site of Atturaif covers 300,000 square metres and the entry point and visitor reception centre are reached from the wadi bed or by crossing the sweeping

The comprehensive restoration and development programme for historic Addiriyah began in 1998 and has transformed it into a major cultural tourism site. The planning and painstaking project work have paid off: in 2010 Atturaif was declared a UNESCO World Heritage Site.





## **Previous page**

The Addiriyah restoration project encompasses 30 square kilometres. Overview of the old city across Wadi Hanifah towards Riyadh. Addiriyah's defensive walls are visible. In the top left is the Kingdom's largest flag measuring 25 x 9 metres.

Sheikh Mohammad bin Abdulwahhab Bridge that gracefully spans Wadi Hanifah from Al Bujairi Quarter. The UNESCO site, as a living heritage centre, incorporates five museums. The project has restored facades of Atturaif's old buildings and some of their interior shells are designed and made into museum spaces with latest display techniques to highlight themed exhibits relating to the First Saudi State.

The Addiriyah Museum in the restored Salwa Palace tells the story of the First Saudi State through multimedia and artefacts with an interactive walkway through the palace. Nearby is the old capital's Mohammad bin Saud Mosque (Grand Mosque), a large area of which has been excavated revealing the true scale of the mosque.

Adjacent to the palace is the Trade and Treasury Museum, which presents fascinating historical detail on economic affairs, methods of revenue collection, currencies used and common weights and measures, as well as efforts of the Saudi rulers to standardise currencies and regulate trade. The museum takes in the imposing Bayt al-Maal treasury and the hostel and small mosque of Moudi Sabala.

The Arabian Horse Museum and adjacent Stables are in the mud buildings in front of Imam Abdullah bin Saud Palace. Dedicated to the purebred Arabian horse in Nejd, the museum reveals and recalls the role, size and fame of the stud of the rulers of the First Saudi State and demonstrates the importance of the renowned purebred Arabian horse in desert and oasis life and in military conquest. Horses captured and taken as booty to Cairo bolstered the stud of Mohammad Ali Pasha. Here some of the finest Nejdi bloodstock was subsequently rebranded as 'Straight Egyptian' with numerous subsequent exports to Europe and North America, where bloodlines are carefully kept by preservationist breeders. Today, the King Abdulaziz Arabian Horse Centre at Dirab, near Riyadh, maintains the Arabian horse register and supervises national breeding programmes in Saudi Arabia that preserve the historic pure desert-bred bloodlines from the heart of Arabia.

The Military Museum incorporates Thunayan bin Saud Palace and adjacent restored mud buildings. It has displays of weaponry and armour and interactive insights into the battles and campaigns during the eventful period from 1744, culminating in 1818 with the siege of Addiriyah that led to

the collapse of the First Saudi State. Near this museum is the Ardah House, which celebrates the Saudi traditional dance that in 2015 was placed on the UNESCO list of Intangible Cultural Heritage.

The Lifestyle Museum in Omar bin Saud Palace and surrounding buildings focuses on ethnography and explains daily life, customs and traditions through an exhibition of objects used during the heyday of the capital. There is also a traditional architecture exhibition and a centre provides education on mud-brick technology, conservation and restoration and serves as a documentation and research centre that focuses on the study of the origins and history of Addiriyah.

The UNESCO citation states that "Atturaif District in Addiriyah is an outstanding example of traditional human settlement developed in a desert environment and illustrates a significant phase in the settlement of the central Arabian plateau, when in the mid-18th century the city became the capital of an independent Arab State". Throughout the site, the original streets remain and carefully restored traditional mud-brick buildings reveal original interiors. The restoration and development project has transformed Addiriyah into the country's largest heritage site. The surrounding landscaped parks and gardens and wadi terraces serve as a reminder of the times when this was an extensive, thriving, well-watered and productive agricultural oasis.

Across the wadi is Al Bujairi, the centre of religious scholarship and learning of the Reform Movement during the late 18th and early 19th centuries. As part of the Historic Addiriyah Development Programme, Al Bujairi District now stands as the gateway for visitors to Atturaif and contains gardens, a plaza, terraces along the wadi, retail and restaurant facilities, art and heritage galleries, a restored historic mud-brick mosque, and the Sheikh Mohammad bin Abdulwahhab Foundation and renovated mosque. Designed by architect, Rasem Badran, the series of modern, monumental and tilted limestone block structures of the Foundation's complex contrast in style and scale with the smaller structures in Al Bujairi.

Al Bujairi District is sympathetically built using local materials forming a subtle combination of Riyadh limestone, mud bricks and local *athl* (tamarisk) wood.

The design brief particularly specified the creation of a traffic-free space where the public can relax and experience something of the character of Al Bujairi as a seat of religious learning and appreciate its connection with Atturaif. Work commenced in 2007, starting from the perimeter of the precinct inwards, with workers removing insignificant structures, dead palm trees, rubble and undergrowth. Opened by King Salman in April 2015, Al Bujairi District is a popular attraction offering visitors a spectacular and evocative vista of the old capital and its mud buildings and palace ruins immediately across the terraced wadi.

Every year since 1985 Saudi Arabia's living heritage is celebrated at the Janadriyah National Heritage and Culture Festival to the north of Riyadh on a site that was, from 1974, the venue for camel racing. From the outset, Addiriyah featured significantly at this festival. At its inaugural event, a folk troupe from the town carried a huge Saudi flag and provided a memorable highlight as they performed traditional songs and the Nejdi ardah sword dance. Addiriyah also contributed another popular and noisy exhibit at the festival that has become a permanent and captivating exhibit for the crowds. This is the ingenious traditional contraption known as sawani mounted above wells that, before the arrival of mechanical pumps, utilised camels or donkeys to draw water from wells along Wadi Hanifah. Friction from the rotating stout shaft of athl wood carrying rope-bearing wooden wheels let out constant high-pitched squeaks as it turned and lifted water skins to the surface.

In addition to cultural events, poetry sessions, colloquia, and camel and horse-racing spectaculairs, there are demonstrations of crafts with traditional regional cuisine on offer. The festival has grown into a popular celebration of the nation's heritage and culture attracting over a million visitors.

The success and popularity of the Janadriyah Festival for a brief period each winter, inspired and drove the vision for Atturaif in Addiriyah to be developd into a permanent national living heritage site. With its UNESCO World Heritage status the site of Atturaif represents one of the largest restoration projects of a mud-brick city anywhere in the world. The programme has involved the manufacture of more than three million mud-bricks each of which has been stamped with the letters ADA so that future archaeologists



will be able to distinguish them from earlier versions. Other local materials used in the project include Riyadh limestone for columns, lintels, foundations and paving, timber from tamarisk trees and date-palm fronds.

The restoration of the first Saudi capital connects with another major project of the Arriyadh Development Authority: the award-winning rehabilitation of Wadi Hanifah, the watercourse on which Addiriyah and other settlements depended over centuries. A one-kilometre landscaped and terraced stretch of the wadi runs through the precinct of Historic Addiriyah and borders both the core UNESCO site of Atturaif and Al Bujairi District.

The World Heritage Site also provides a fitting backdrop to modern Riyadh, which has, over the last century, expanded to the edge of the new town of Addiriyah. More than two Hijri centuries have passed since the fall of the capital of the First Saudi State. Today, from the elevated vantage point of Atturaif, the heart of the restored former Saudi capital offers views across Wadi Hanifah eastwards to King Salman Square with its majestic 100-metre-high pole from which flies the Saudi national flag, and on towards Addiriyah's historic neighbour, the bustling 21st-century metropolis of Riyadh.

The Janadriyah National Heritage and Culture Festival has been celebrated annually since 1985. As well as historical re-enactments of past traditions there are craft demonstrations and exhibits. Here, a Nejdi leather worker decorates the colourful and favoured local footwear, which has now also become fashionable abroad, marketed as bespoke Saudi sandals.

#### Overleaf

The Addiriyah Development Programme is an ambitious plan of sustainable conservation reflecting the historical significance of the settlement and its original architectural integrity. It preserves the authenticity of buildings and retains the original labyrinthine network of paths and alleyways.







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## 21 Riyadh on the Move

All fast-growing cities grapple with the challenge of limiting traffic congestion and Riyadh is no exception. An integrated network of ring roads, highways and feeder roads more than 2,000 kilometres in length criss-cross and encircle the ever-expanding capital, and arterial routes connect with the national highways that now link every region of the Kingdom.

One major road project, Abubakar Al Siddiq and Al Arouba road extensions and Prince Sattam Interchange, opened in 2013. The roads incorporate impressive landscaping and bold design concepts and carry over half a million vehicles daily under and around Riyadh Air Base, which inspires aeronautical and flight themes and rows of abstract sculptures. Projects like this, as well as intelligent traffic management and sophisticated monitoring systems planned and implemented by Arriyadh Development Authority, help keep traffic moving. But with over eight million daily vehicle trips in 2015 – anticipated to rise to 12 million by 2030 – and more than 800 intersections controlled by traffic lights, the pressure on the city from traffic congestion is obvious and growing.

Only about two percent of daily commutes in Riyadh are made on public transport. Residents depend on their cars for commuting, school runs, family shopping and recreation. Government working hours, school times and opening and closing times for the private and commercial sectors mean that peak traffic periods spread across the day and well into the night. Many of the city's residents spend as long as two hours in traffic every day, driving at an average speed of 30 kilometres per hour.

Along with the frustration caused by traffic congestion, there are also significant economic and social costs associated with the high rate of road traffic accidents and pollution. Even with mandatory use of seat belts and sophisticated traffic surveillance management systems that have been introduced, the more vehicles that take to the road, the greater the chances of accidents. Emissions from vehicles are the major source of air pollution in cities and the fumes from

cars and trucks on the move or stuck on Riyadh's congested roads with engines idling have a considerable environmental impact and pose significant health risks. Part of the solution in reducing pollution is to raise vehicle emission standards and improve fuel quality, which could reduce vehicle emissions in the Kingdom by up to 90 percent. The other part of the solution is to reduce dependence on the car by providing effective public transport.

Even after 2016 price hikes, gasoline in Saudi Arabia is less than 25 cents a litre, a quarter of the world average price at the pumps. There has been an almost total dependence on the car and, until the recent developments, little to encourage Riyadh's citizens to consider alternative means of getting around the city.

In 1953, there were fewer than 200 kilometres of paved roads in the entire country. Today, there are more than 52,000 kilometres of surfaced highways. As the highway system has grown, so has the number of vehicles: in 1970, there were only 60,000 registered vehicles in the Kingdom: over the subsequent 15 years, the number of private cars increased at an average annual rate of 30 percent to four million by 1984. Today there are around seven million registered vehicles in Saudi Arabia and, according to the ADA's Riyadh Urban Observatory, in 2014 private car ownership in Riyadh was 274 vehicles per 1,000 people, compared with a global average of 176.

In a pioneering attempt to limit traffic congestion, in 1979 the Saudi Public Transport Company (SAPTCO) was set up in Riyadh as a joint private and government concern to introduce and operate a city bus service. One-hundred-and-sixty-five blue, orange or white vehicles began plying city routes. Prior to this, public transport services in the capital were limited to small owner-driver buses and taxis, and company-operated and chartered bus transport for workers. Although SAPTCO's intercity services proved popular and rapidly expanded, its initial bus operations in Riyadh were a limited success and soon declined, partly due to lack of infrastructure.

An aerial view of congestion in the busy Al Battha district of central Riyadh. With residents spending nearly two hours in traffic every day driving at an average speed of 30 kph, there is an obvious need for the public transport system. Battha will be served by the metro's Line 1 (the Blue Line) as well as by bus rapid transit services.



**Left and opposite**

The Riyadh metro station at the King Abdullah Financial District adjacent to King Fahd Road. The station is at the interchange of the Blue, Yellow and Purple lines and is connected by skybridge to a monorail which runs around the Financial District.

**Below**

The futuristic Qasr Al Hokm interchange metro station. The stainless-steel canopy marks the entrance to the station, funnels natural light to the two lines below ground and provides shade to the surrounding city-centre plaza.





Without bold measures, the use of private cars would remain the only option for commuting. It was clear that, with the pressure of the growing population and expanding city limits, road improvement and development programmes alone, however ambitious, would not provide a sustainable solution to congestion on Riyadh's road network. Private cars could not remain the only option for commuting and moving around the city: the inevitable consequences were virtually unquantifiable social and economic costs of traffic jams, pollution and accidents. Riyadh urgently needed a radical solution: a comprehensive urban transportation plan that not only included a modern road network and intelligent transport systems (ITS) but also provided for a multi-modal public transport system to help transform the way that people move around the city. In 1997, Arriyadh Development Authority transport specialists and planners initiated studies on formulating plans for a public transport programme for the capital as part of its Metropolitan Development Strategy for Arriyadh Region (MEDSTAR).

In April 2012, the Council of Ministers approved the King Abdulaziz Project for Public Transport in Riyadh with a budget approaching \$30 billion. The capital has one of the highest population growth rates in the world and, as it positions itself as the region's financial and administrative centre, expands and diversifies its manufacturing base and encourages inward investment, planners recognised that, to make a real impact, they had to design, build and operate an effective, convenient and – most importantly – highly attractive urban public transport network. To succeed, the system would have to win over the people of Riyadh so they would wholeheartedly embrace it and use the services on a regular basis.

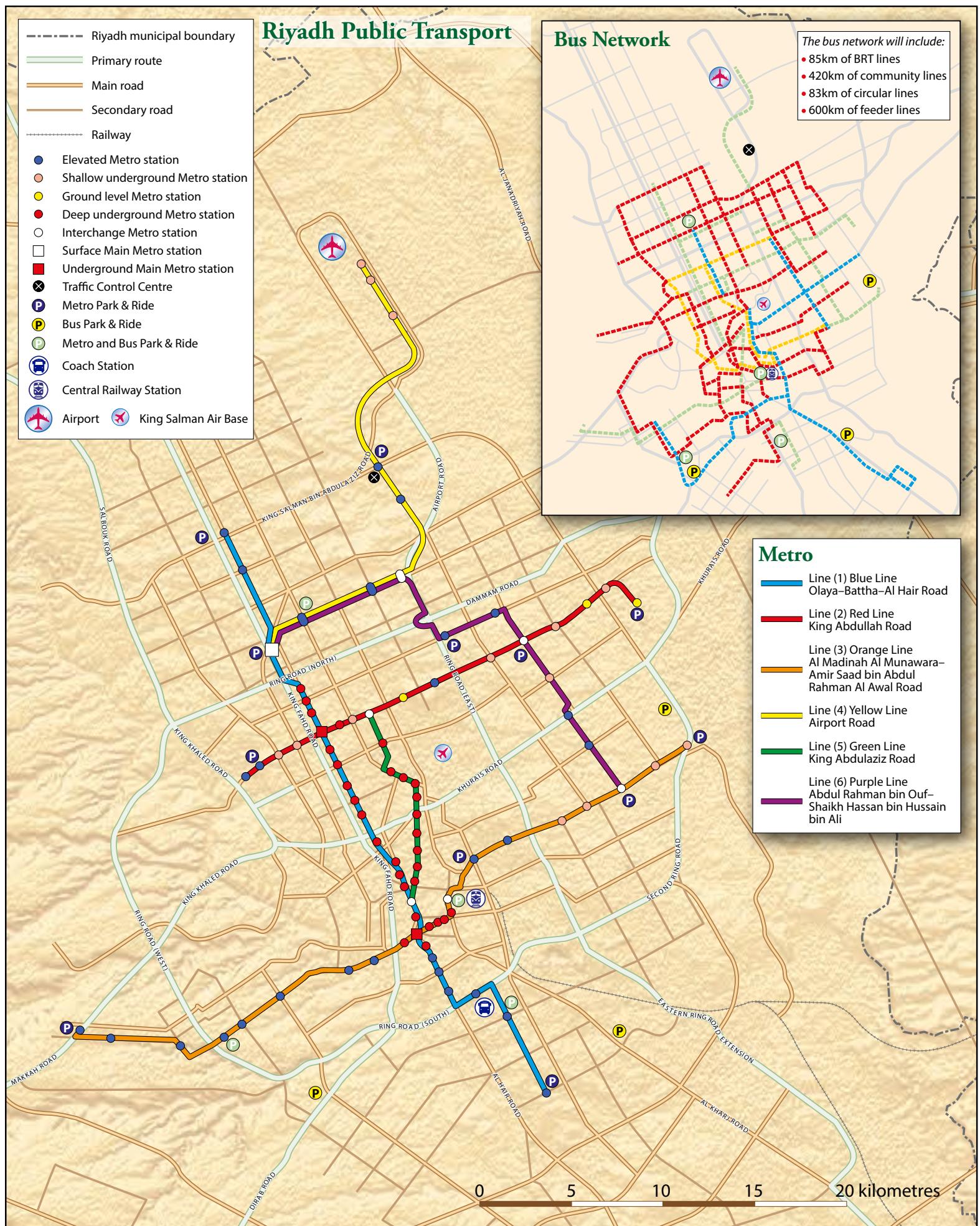
The establishment of a fast, safe, reliable and sophisticated public transport system covering the whole city is truly transformational. One of the world's largest transport infrastructure projects creates a network comprising a six-line metro system with a total route length of 176 kilometres, served by 85 stations. This is integrated with local and high-speed, cross-city bus services that include feeder routes and demand-responsive community services.

For the design and construction of the metro lines three consortia, each with major international corporations and a Saudi partner company, were taken on. The longest stretch is the 46-kilometre Orange Line (3) running approximately east to west through the Qasr Al Hokm interchange station in the historic city centre handled by Riyadh New Mobility Consortium (ANM). Construction of the Yellow, Green and Purple Lines (4, 5 and 6) was contracted to FAST Consortium, and the Blue and Red Lines (1 and 2) to the BACS Consortium.

Sixty kilometres of the system is underground, either cut and covered or deep-tunnelled by giant tunnel-boring machines (TBMs). The longest sections of the lines run at surface or elevated levels. Most of the 85 stations are being built above ground, 29 of them elevated, and there are nine stations where lines interlink. In central areas of the city there are 27 stations deep underground, while 14 more are shallow underground. Nearly all of the stations cover an area of 300 by 100 metres, with enclosed platforms and platform screen doors. Passengers can step from the air-conditioned station to comfortable, climate-controlled carriages, all configured to carry those with mobility impairments. Stations have dedicated and shielded parking lots, allowing travellers to leave their vehicles in secured locations.

Metro stations integrate with the bus network with stops for the Bus Rapid Transit (BRT) network, which operate along dedicated lanes, and halts for the regular bus line services that feed passengers to the metro lines, as well as the circular bus lines that aim to provide a key augmentation to the movement of hundreds of thousands of people every day. Park-and-ride facilities allow people to transfer conveniently from their cars to buses and onto the metro system.

The six integrated lines with driverless trains are highly automated and monitored and run from a central control centre. They are designed initially to carry 28,500 passengers per hour, operating 18 hours a day with capacity to expand to run 24 hours a day, seven days a week. Planners at the Arriyadh Development Authority envisaged an initial



demand of around a quarter of those who use cars to move around the capital switching to the rail and bus system.

The King Abdulaziz Project for Public Transport in Riyadh brings benefits in alleviating traffic jams, reducing emissions and allowing people to move swiftly around the city. The ability for students to travel independently, conveniently, cheaply, reliably, in safety and comfort to their learning establishments positively impacts educational outcomes in Riyadh, which is already leading the Kingdom in education and training.

An integral part of the public transport project is the bus network which includes a bus rapid transit (BRT) system, regular feeder bus services and the circular bus lines. Park-and-ride facilities allow people to conveniently transfer from their cars to bus stops and onto the metro system.

Transit Oriented Development (TOD) around the network will also help create vibrant, sustainable and liveable communities with the metro stations and stops on the bus network offering retail space and commercial opportunities around them. The project's gross value added in local goods

and services during construction is estimated at \$1.3 billion annually. And Arriyadh Development Authority calculated annual gross value added at around \$1.2 billion, with 7,000 jobs created annually, most filled by Saudi citizens.

The requirements for the execution of the project are staggering: 600,000 tonnes of steel (enough to build 80 Eiffel Towers) and 4.3 million cubic metres of concrete. On the local manufacturing side, opportunities include the supply of cement, aggregates, refined petroleum, rubber and plastics products. Localisation and creation of employment and business opportunities form a key strategy and a quarter of new jobs are within construction firms. A large proportion of the project's building and fitment work is outsourced locally, with an estimated half of the products and services required for the metro met locally, including civil engineering work on tunnelling, bridges and the track



itself. Besides inputs such as cement, aggregates, basic and fabricated steel, ceramics and glass, there is a need for diverse mechanical and electrical equipment and experts to install and maintain them. There is also local demand for professionals in finance, business services, information technology and communications (ITC), logistical support and manufacturing, and considerable opportunities for Saudis to train into new skills and professions offered by the project. The bus network requires products and services that include engineering design and modifications for roads, bridges and halts and the installation of intelligent transportation systems at bus stations.

The network offers long-term local opportunities. Studies by Arriyadh Development Authority show Saudi-based businesses can leverage their capacity, experience and presence in the capital with at least half of the operational

categories met locally in sectors including manufacture, assembly and maintenance of vehicles, supply and other support activities.

Riyadh already leads the Kingdom in terms of the number of talented young graduates it produces. The emphasis is to ensure there are properly qualified Saudis to occupy the wide spectrum of jobs that are coming on offer to minimise the need for imported skills in line with national policies of the Ministry of Labour and Social Development. This is being implemented through investment in training and the acquisition of new specialised skills needed for the build and operation phases of the King Abdulaziz Project for Public Transport in Riyadh. The project has helped to bring about new urbanism in the capital, improving quality of life and creating sustainable communities. It has also encouraged business, enterprise, inward investment and export growth

The Riyadh metro will operate 190 custom-built driverless train sets with a total of 470 carriages. Each train set will operate with three or four lightweight carriages with high acceleration and train braking energy-recovery systems.



through the numerous opportunities in research and development and induced innovation, products and services.

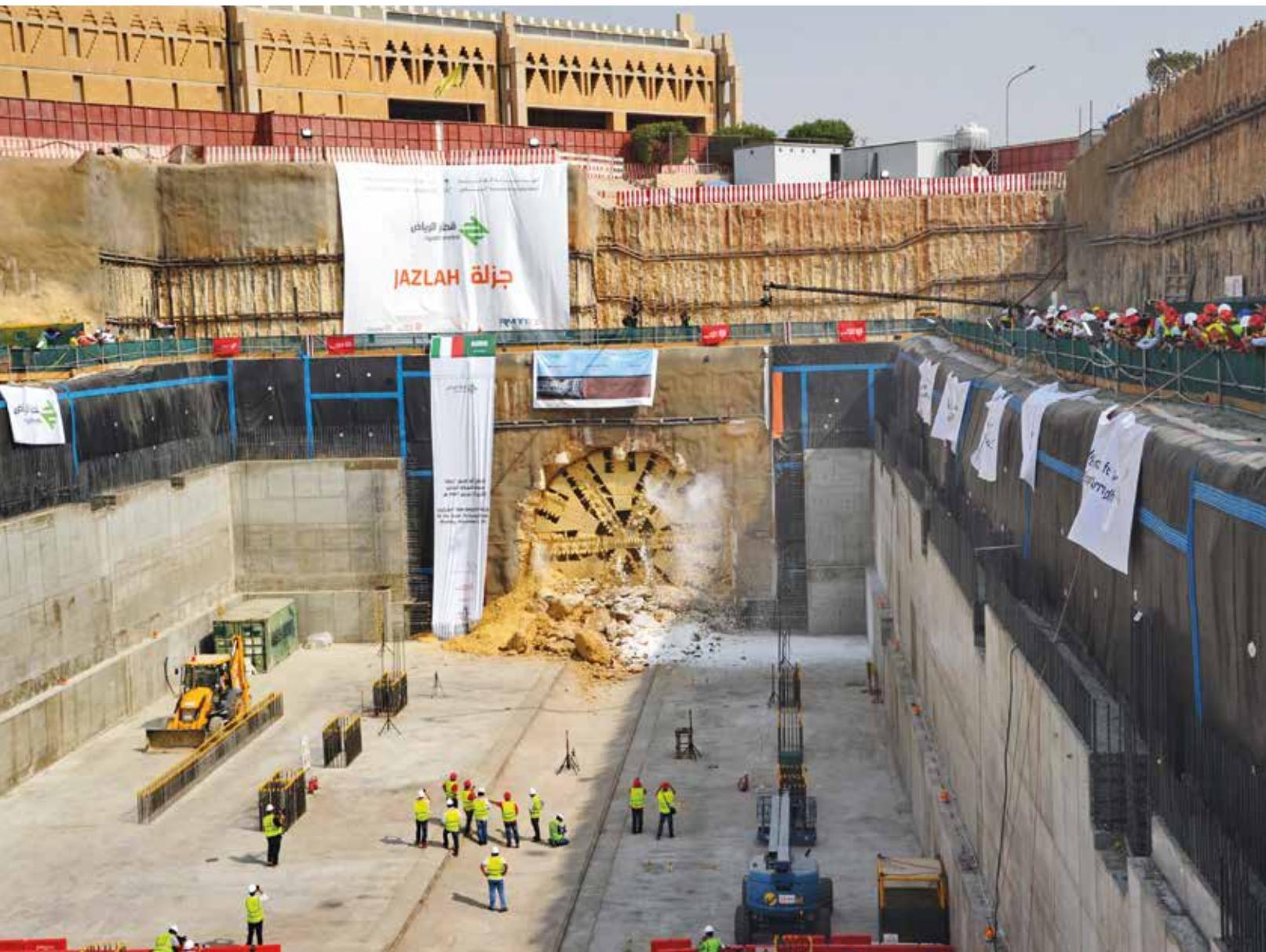
With nearly two decades of research, studies, planning, and preparation involved in the project, other Saudi urban authorities have sought the project experience and expertise of the Arriyadh Development Authority. Following the lead of the King Abdulaziz Project for Public Transport in Riyadh, new public transport projects were launched in Jeddah, Makkah, Al Madinah and Dammam metropolitan areas.

One of seven giant tunnel-boring machines named 'Jazlah' makes its breakthrough boring westwards at the metro station adjacent to Riyadh's Railway Station on the 40-km Orange Line. The TBMs were all given names in a popular public competition. The Arabic adjective *jazlah* evokes good judgement, cogency and eloquence.

In wider infrastructural terms, the Arriyadh Development

Authority intends the new public transport system to complement its long-term plans for the development of outlying areas of the capital and reinvigoration of the central areas of the city. This involves another major project to create a Capital Oasis within the central area of the city.

Just as the visionary public transport project provides a golden thread throughout the city that improves conditions and the way its residents live, thrive and move around, so Riyadh's Capital Oasis project is set to physically transform the central area of the city with a redevelopment scheme on a scale hitherto never seen anywhere in the Arab world.

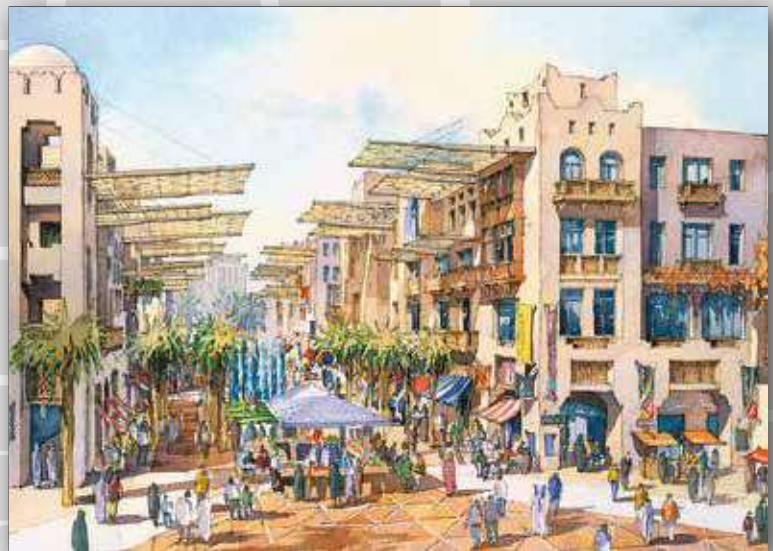
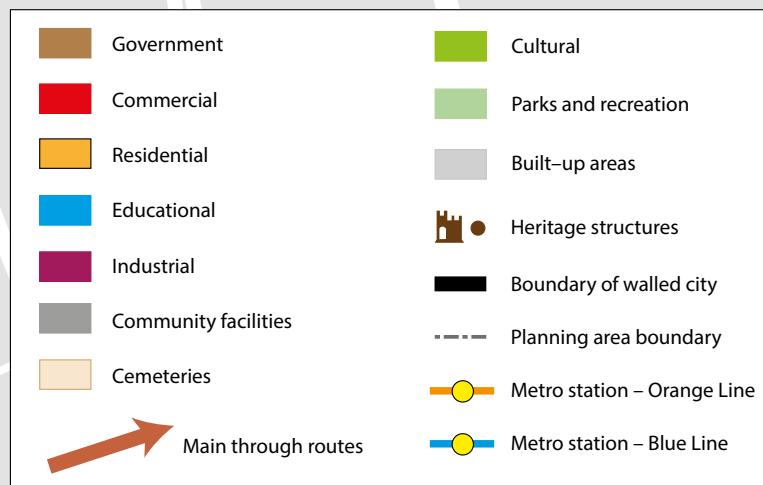


## King Abdulaziz Project for Public Transport in Riyadh: Metro Schematic



Metro map design © Martin Lubikowski, 2016

## Central Riyadh Planning – The Capital Oasis



## 22 The Future Capital Oasis

The redevelopment of Qasr Al Hokm, the historic core of the old city, and nearby Qasr Al Murabba – Riyadh's first expansion outside its walls – as the new King Abdulaziz Historical Centre; set standards and inspired planners and architects to create exciting new designs for the capital. However, these two pioneering redevelopment projects focused on and covered relatively small areas of Riyadh. Today's transformational public transport project, designed to connect the vast extent of the dynamic city and its six million or so residents, brings exciting opportunities to improve conditions in Riyadh's wider central area and fast-emerging outlying suburban districts. The capital's central area is now defined by boundaries many times larger than those of the old walled city limits and outlying suburbs now form built-up zones that just a few years ago were empty desert.

Until around 2000 and the advancement of plans for the public transportation system for the capital, planning initiatives had proposed the development of a handful of urban sub-centres for Riyadh. However, the city's integrated network of metro and bus services has reduced the significance of planning isolated sub-centres. Instead it has introduced the advantages of transit-oriented development, radically changing the economic geography of the city. There are now multiple opportunities for suburban nodes and the city centre; a chance to readapt the fabric of the capital to the reality of the transport network. Like a string of pearls, 85 metro stations offer 85 transit-oriented development prospects, opportunities that enable accessible, flexible and mixed-use centres across the city. These centres are permeable in that they enhance connectivity by encouraging and enabling pedestrian movement and easing the flow of traffic in all directions.

These dynamic, multiple centres provide development prospects and choice in urban lifestyles, and offer the potential to create beautiful spaces, and reinforce Riyadh's long-standing people-orientated vision of a Human City. Transit-oriented development also supports high-density spines of development along bus and metro routes, enabling a more accessible distribution of community and

commercial services throughout Riyadh. At the same time as broadening locational choices for people, government and business, it ensures increasing use of public transport. By reducing pollution and domestic energy consumption as well as providing investment and employment opportunities, this transit-oriented development model harmonises with the nation's Vision 2030 and the thrust for sustainability throughout the economy.

The transformation of the Saudi capital and the forging of its vision which frame its development provide a remarkable story. During the first decades when King Abdulaziz led and staged the reunification of the Kingdom from Riyadh, urban development was limited. The project then was to forge a nation-state and bring peace and security to the land, including overland pilgrimage routes and Islam's holiest places. In the years following unification, Riyadh found itself the centre of attention. Its walls were soon redundant and the city rapidly expanded beyond their confines, at first consuming many of the palm groves and cultivated areas that encircled the historic city. By 1953, following the half-century of rule by King Abdulaziz, modern development had taken off, propelled by oil as a fuel for industry, transport, agriculture and urban growth and, for Saudi Arabia, a new-found and bountiful natural resource and export commodity.

However, as the city expanded, ever-widening areas at the centre fell into decline. Many Saudi residents moved to newly built homes in the emerging suburbs. They left behind properties that soon became difficult and expensive to maintain. Complex and fragmented structures of family ownership of older buildings and small plots also posed challenges to rehabilitation. The outward movement from the central area of the capital resulted in uncontrolled inflows, mainly of low-income expatriates using the deteriorating properties as cheap rented accommodation with no incentive to maintain them, let alone improve them. By the 1970s, many Saudi families from Riyadh who could trace their roots to the old historic city had moved home, some of them several times, relocating away from the

### Overleaf

View from Al Majdoul Tower towards the King Abdullah Financial District. The distinctive 54-storey building is located on the high-rise corridor along Olaya Road and served by the metro which provides transit-oriented development opportunities.





centre to settle in more spacious walled villas. The outward migration has continued and the average household size in the capital is six people, one of the highest in the world – more than double that of Western capitals and three times that of the average household in Tokyo.

As well as being landmark developments for Riyadh, the award-winning projects of planning and building the Diplomatic Quarter, redeveloping Qasr Al Hokm and establishing the King Abdulaziz Historical Centre from King Abdulaziz's old residential complex, also strengthened the ADA's urban planning expertise and capacity. The projects also highlighted the need to arrest and reverse the decline of Riyadh's central areas. The ADA's studies and plans for the restoration of historic Addiriyah and imaginative and modern developments in

new areas of the city provided positive lessons and further impetus for improving run-down areas of Riyadh.

Socio-economic indicators help to reveal the extent and impact of the decline. Estimates are that around 80 percent of the population of 430,000 residing in Riyadh's central area is made up of non-Saudis. The area has 80,000 housing units and is characterised by relatively high levels of urban unemployment. Neglect of properties, deterioration of heritage, lack of investment and congestion creating pollution also impact the quality of life and create challenges for planners.

The transformational King Abdulaziz Project for Public Transport in Riyadh provides the opportunity to move away from piecemeal remedies. Improved accessibility to the

The ambitious city centre development programme for the 15-square-kilometre National Capital Oasis has a 20-year horizon. It will provide attractive mixed housing for Saudis as well as expatriates who currently make up over three-quarters of the area's population. Development including regenerated commercial activities will focus along two new metro corridors.



central areas of Riyadh will act as a catalyst for renewal and draw people back to that part of the city with easier access.

Planners at Arriyadh Development Authority have also worked on specific remedies to reverse the deterioration in the physical and social fabric of the wider central area and place it at the heart of Riyadh's vision and future success.

Saudis want this living heart of their capital and the memory of its past to be protected and enhanced. The benefits of retaining visible links with the past are obvious. In order to embrace the multi-faceted vision of Riyadh and its aspiration to become a prosperous capital representing the nation on the regional, Arab and global stage, its residents and many visitors need to identify readily with its heritage, traditions and history.

This central area now has a new future: it is being restored, revitalised and re-established as the Kingdom's seat of government known as the National Capital Oasis. The redevelopment will align with the overall vision for the city and the Metropolitan Development Strategy for Arriyadh Region (MEDSTAR), support planning initiatives for the wider Riyadh Region and the Kingdom's vision and link with national strategies for both housing and tourism.

The ambitious renewal plan for the 15-square-kilometre National Capital Oasis has a 20-year horizon. It embraces the private sector and will provide attractive mixed housing for Saudis as well as low-income expatriates, who currently make up over three-quarters of the area's population. The plans involve acquisition of over ten percent of the total land area as part of the redevelopment and finance will be raised to rehabilitate heritage buildings and revitalise

Development of areas surrounding metro stations in the capital will help create vibrant areas with infrastructure, shopping areas, amenities and public spaces oriented around the public transport system to provide convenient ease of access.



Custodian of the Two Holy Mosques King Salman bin Abdulaziz is greeted by a young Saudi citizen at the 2015 opening of Al Bujairi at Addiriyah. While ensuring that heritage and tradition is enshrined in modern Riyadh, King Salman recognises that the future of the nation and the Saudi capital rests on the younger generation.



the area's many bustling and vibrant *sugq*. The historic Al Daho District in the south of the old city centre, with many surviving mud-brick buildings, is undergoing restoration as a living heritage area and tourist attraction using valuable experience gained from restoration work in Atturaif. As part of the centre's open spaces there are plans to create a walkway tracing and defining the extent of the old city walls in a circuit of nearly three kilometres interspersed with restored gates and towers. The area of Al Duhaira, to the

north of the city centre, is set to be developed into a heritage quarter. The area running between 100 Palms Garden in the King Abdulaziz Historical Centre and the historic city also provides scope to become a symbolic link with cultural and green spaces.

The major regeneration, with two main metro lines that pass through the central area as well as the new bus rapid transit and other bus routes and stops, brings the potential

for transit-oriented development around the public transport corridors and the dozen stations within the area. Development including regenerated commercial activities will focus along the two new metro corridors made up of the Orange Line and Blue Line and their stations. This includes the futuristic Qasr Al Hokm central interchange station set in an urban plaza planted with shade-giving palms and lined with irrigation channels. The station exterior forms a graceful polished stainless steel canopy funnelling light into an atrium down to the lines, which are visible through glazed tubes. At platform level below there is an accessible underground garden. The metro will provide a transport hub, reducing traffic congestion in the densely populated historic centre, and Qasr Al Hokm and other stations will not only create iconic and contemporary downtown landmarks, but will themselves provide vibrant public spaces for the citizens of Riyadh to enjoy.

Just as in the case of Riyadh's public transport project, urban renewal planned on this scale creates significant economic opportunities for the private sector and the rebalanced communities open up a wide range of new employment and commercial opportunities, improve productivity, and stimulate entrepreneurship and innovation. The result is improved economic and social well-being that helps to raise living conditions and create and support employment. The renewal, when complete, will also promote diversification and generate economic benefits of 77.2 billion Riyals in the annual value of goods and services produced.

The oasis core and extended network of open space will encourage pedestrian movement. Reflecting its status as the historical heart of Riyadh and the nation, the core central area's surviving heritage assets of traditional buildings, street patterns and colourful *suqs* will be revitalised. Local museums, heritage centres and trails, boutique hotels, restaurants, cafes, boulevards, green spaces and youth facilities form an integral part of the ambitious master plan. The driving vision for a renewed city centre is to create an area that is internationally recognised and enjoyed by all as a contemporary oasis that forms the living heart of Riyadh.

On completion the ambitious renewal project will form a sustainable local community in the heart of the city as a key

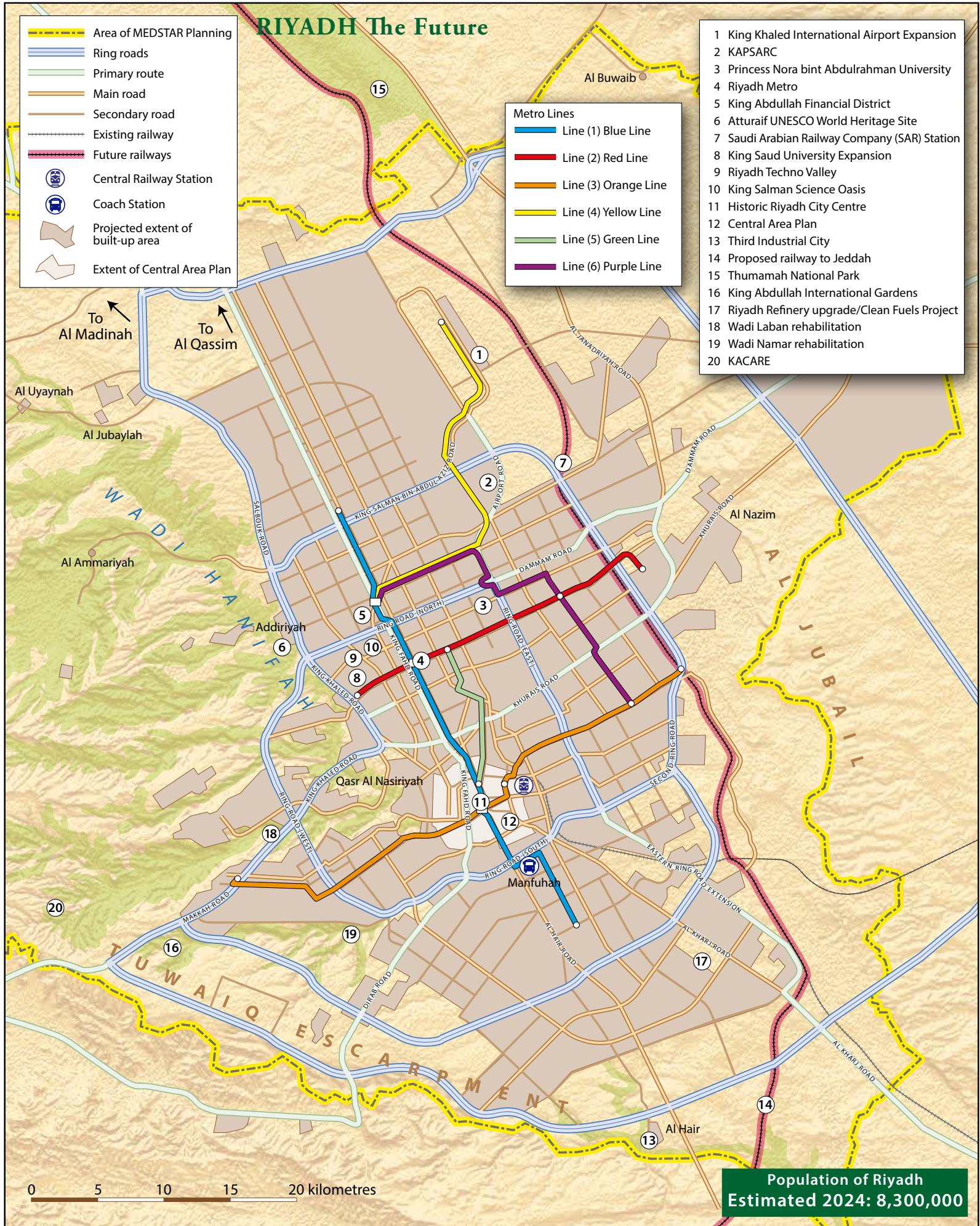
component within the National Capital Oasis. It will also provide a showcase of Saudi Arabian culture and lifestyle to the world, reinforcing Riyadh's emerging status as a city of consequence.

Other notable developments underway in the capital include new headquarters for the Arab Satellite Communications Organisation (Arabsat) located in the Diplomatic Quarter. The contemporary design commissioned by Arriyadh Development Authority links with Arabsat's vision of connecting the Arab community to itself and the world, and incorporates an interior garden.

In addition to the 59 high-rise buildings in the King Abdullah Financial District, more towers are springing up along the high-rise corridor between King Fahd and Olaya roads to complement the Al Faisaliah and Kingdom Centre towers, forming a high-density spine served by the public transport system. They include the mixed-use Al Riyadh Tower, the third-tallest building in the capital, and the connected twin Olaya Towers financed by the General Organisation for Social Insurance.

To help Riyadh as a city on the move, the expansion of King Khaled International Airport aims to boost annual capacity from the current 15 million to 35 million passengers and includes the new fifth terminal with annual capacity for 12 million passengers and development of the previously closed fourth terminal. The airport is connected to Line 3 (the Yellow Line) of Riyadh's metro, creating a direct link to the King Abdullah Financial District which, under the Vision 2030 Saudi Arabia, is restructured as a special enterprise zone.

The development of Saudi Arabia's national rail network is in tandem with Riyadh's investment in its urban road network, public transport system and airport expansion. It includes the Saudi Landbridge constructed by Saudi Railway Company (SAR) and the North-South Railway, both running through Riyadh, in addition to related improvement of the existing railway from the capital to the Arabian Gulf. The Saudi Landbridge connecting Jeddah, Dammam and Jubail ports and passing through the capital and its dry port is set to create a world-class freight and passenger rail link across the country



and reinforce Riyadh's location as a major strategic hub and transit entrepot.

The 2,400-kilometre North–South Railway is a freight and passenger line that originates in Riyadh. It passes through stations at King Khaled International Airport, Sudair new industrial city, Al Qassim, Hail and Al Jawf and on to Al Haditha near the border with Jordan. This is the world's longest route to adopt the European train control system (ETCS). The Saudi Railway Company is also constructing a main railway station to the southeast with planned links to the airport.

Riyadh is also rapidly moving towards developing into a fully-fledged 21st-century Smart City, building on its already sophisticated information and communications infrastructure and tech-savvy younger generation. Smart City services will soon embrace areas such as transportation and traffic management and information,

the environment, government, finance, health and education, utilities and security, and provide real-time information that will empower citizens and communities by breaking into previously impenetrable data silos.

The Saudi Arabian capital is a thriving, strategically located and liveable metropolis that has a clear vision, draws on decades of planning expertise and taps the resourcefulness and skills of its dynamic and youthful population.

Looking forward, Riyadh remains firmly rooted in its past and heritage and respects older and former generations who have helped found, develop and transform the city into Arabia's contemporary garden oasis. It is a vibrant financial and commercial hub, embodying technology, innovation, entrepreneurship and sustainability: a liveable capital cherishing its crafted vision whose elements align with Saudi Arabia's bold and overarching Vision 2030.



#### Above

The imaginative expansion of the King Fahd National Library blends innovative design and technology and encases the old 1980s library building. The lozenge-shaped textile awnings act as sunshades and evoke the traditional Arabian tent.

#### Overleaf

From the skybridge atop Riyadh's Kingdom Centre tower visitors can see the future-looking desert oasis capital of Riyadh unfold. Today, the capital has emerged as a prosperous liveable city and a strategically located vibrant financial and commercial hub, an oasis embodying innovation and entrepreneurship.







Technology and tradition combine against a backdrop of mud-brick walls of the capital of the First Saudi State. The high-tech light show projects the colours, patterns, heritage and leadership of the Kingdom. Addiriyah's Ardah troupe prepares to perform the iconic Saudi traditional dance which, in December 2015, was placed on the UNESCO list of Intangible World Heritage.



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