Words of Inspiration

“We look forward to the addition of the Sultanate’s Aflaj Irrigation System to the World Heritage List at the forthcoming meeting of the World Heritage Committee in 2006. The falaj is a unique and important water source that has made a major contribution to Omani society throughout its history. Not only is it regarded as one of the most historical sites in Oman, but it also represents the ability of Omanis to build civilizations in the face of severe challenges and, at the same time, enrich the world’s heritage through their intellectual and creative endeavors.”

Qaboos Bin Said
Sultan of Oman
4th October 2005
AFLAJ OMAN
IN THE WORLD HERITAGE LIST

PUBLISHED BY
MINISTRY OF REGIONAL MUNICIPALITIES & WATER RESOURCES
SULTANATE OF OMAN
MUSCAT 2008
Contents

AFLAJ OMAN
IN THE WORLD HERITAGE LIST

Introduction ................................................................................................................ 6
Falaj Structure and Utilization .................................................................................. 8
The Aflaj Inscribed in the World Heritage List ..................................................... 10
Falaj Daris .................................................................................................................. 16
Falaj Al-Khatmeen .................................................................................................... 24
Falaj Al-Malki ............................................................................................................. 30
Falaj Al-Muyassar ....................................................................................................... 36
Falaj Al-Jeela .............................................................................................................. 42
The strong flows of Al Hoqain famous waterfalls in rain seasons are sources of a Ghaili falaj that irrigates the farms in the area and supplies water for the local people.
Introduction

Aflaj are an important heritage that illustrates the diligence and determination of the Omani people in building a civilization and enriching global human heritage. This unique water system gave a boost to agriculture in Oman, which represents, alongside fishing, a heritage that enabled Omanis to establish an inveterate civilization throughout centuries and provided subsistence for generations who survived in harsh climatic and environmental conditions.

Aflaj rise from within mountains, flowing down in channels like waterfalls and passing through vast hills and plains to bring life to land and spread greenness and foliage all around.

Aflaj date back more than two thousand years, during which Omanis developed special tools and means that enabled them to maintain these aflaj and create new ones that meet the growing subsistence demands and the development of agriculture which has always been an important part of Oman’s economy despite being short on rainfall. Providing fresh water has been a major challenge faced by Omani generations who insisted on overcoming any obstacles to preserve the cherished heritage of agriculture.
This wonderful falaj is in Wadi bani Khalid, Al Sharqiyah Region.
Falaj Structure and Utilization

A falaj consists of a main channel extended from the aflaj source, locally known as «Um Al-Falaj». This channel often exists in mountains and stretches long or short distances depending on the location of the falaj and the village it irrigates. The channel carries water to subsidiary channels that mostly exist within the target village.

The main channels were designed in a unique way based on two fundamental considerations; minimizing financial costs and avoiding the use of mechanical instruments to carry water. Thus, all of these channels are noticeably sloped to a certain degree, streaming from the groundwater source all the way down to villages and branching out through the small channels to irrigate groves and trees and supply the locals with drinking water. Once a falaj starts running, it never dries up, no matter how hot or dry the weather gets, because the massive water pockets that hold about 90% of rainwater inside rocky layers constantly feed the falaj.

A falaj can run as long as several kilometers. The depth of the aflaj main well reaches 65 to 200 feet. The falaj system is basically built to carry groundwater from elevated areas down to the target sites, which is clear evidence of the skillfulness and expertise of Omanis in setting up this unique engineering system that requires applying special techniques given the fact that the terrain of most Omani mountains is rocky and unlevelled.

In a medium-size falaj water flows at a rate of 9 gallons per second, an amount sufficient for irrigating large areas of agricultural lands on a permanent basis. Falaj water is distributed to the adjacent farms and groves according to a special approved system based on two main elements: time and amount of water.

The time-based water distribution system operates in limited temporal units: «Al-Athar», which equals half an hour, «Al-Ruba’a», which equals three hours, «Al-Bada», which equals twelve hours or 24 Athars and «Al-Qama»,
This detailed drawing illustrates the falaj system and its use. Its main canal is excavated from the source of the falaj in mountains and wadies to cross wide areas as buried canals with holes for airing and maintenance and as exposed canals near the village which in turn pass by the houses and then distribute as separate canals to irrigate the farms surrounding the village or near it. (The drawing is from (Oman Geologic Heritage))
The structural design of falaj water delivery canal is distinguished by the efficiency of water transportation in the different sections, regardless of whether they are rough or far from the sources and outlets.

which equal seven and a half minutes. A sundial was used in the past to time each cycle.

Falaj water is used on priority. For example, drinking water is taken at the source, followed by washing (bathing) areas that consist of separate rooms. Mosques get ablution water directly from the falaj, which then extends through groves and farms for irrigation as agreed upon by their owners. Portions are divided among individuals and partners according to their hard work and contribution. The portions can also be hereditary, that is the ownership is transferred from the falaj owner upon his death to his offspring.

The sizes of Omani aflaj vary from a falaj that serves one or two families to those that cater for thousands of residents. Small aflaj can be managed by one person who handles all of the administrative work on a daily or annual basis, while large aflaj require the partnership of all the locals.

The management structure of aflaj can be divided into two main groups according to the amount of implemented work: the first group is called the upper management of falaj workers, and the second group is called «Al-Baidara», or the workers who carry out manual labor.

According to the results of the national aflaj inventory project, there are 4112 aflaj distributed throughout the Regions of Oman. 3017 are live (active) aflaj. The government is providing the necessary support and state-of-the-art technology for the maintenance and renewal of aflaj which are considered one of the main sources of irrigation water in Oman.

The Aflaj Inscribed in the World Heritage List

The inscription of Falaj Daris and Falaj Al-Khatmeen in Willayat Nizwa, Falaj Al-Malaki in Willayat Izki, Falaj Al-Mayssar in Willayat Al-Rustaq and Falaj Al-Jeela in Willayat Sur in the world heritage List is not only restricted to the falaj channel, but also includes the location and the surrounding ancient monuments, buildings, farms, industries and other on-site activities.
Jabel Al Akhdar high mastabas are irrigated by the falaj which is excavated skillfully on the edges of the mountains.
These five aflaj were inscribed in the World Heritage List based on the following criteria:

1. These aflaj are very old in structure in terms of the water channels and the beams carrying them as well as the engineering techniques by which the aflaj were excavated and the water was located and extracted from ground depths, a process that is nowadays very costly and cannot be done without using the latest in advanced technology.

2. These aflaj gave rise to an ancient civilization made up of residential settlements in the falaj geographical vicinity and created from times of old human activities like agriculture along with different kinds of food and vocational industries that still persist to this current day.

3. Long ago, these aflaj brought about a system of social solidarity and local management of water and farms that still exists to this day. Aflaj created a sense of collaboration among society since the days of our ancestors and up to this day. Realizing that aflaj are the backbone of life and stability, the locals

In most areas of Oman, agriculture depends mainly on water from aflaj, which not only makes the soil fertile and irrigates plants, but also contributes to the production of high quality fruit and vegetables that are sold in traditional markets as shown in this stall, as well as in the public auction of pomegranates from Jebel Akhdar in the popular central market in Nizwa on the adjoining page.
AFLAJ OMAN IN THE WORLD HERITAGE LIST
made sure to come up with efficient ways for the preservation and management of aflaj.

4. Many ancient monuments, like forts and old buildings, as well as some industries (Sarooj) were mainly created around aflaj.

The inscription of these five aflaj in the World Heritage List is important because:

1. The world will come to know about the falaj system in the Sultanate of Oman along with the ancient Omani civilization born around the aflaj.

2. Monetary, technical and scientific contributions can be obtained from around the world to help preserve the sustainability of these aflaj and maintain their world heritage status.

3. The sites of these aflaj can be economically utilized through eco-tourism that will undoubtedly give rise to economic and commercial projects and therefore benefit falaj residents in particular and all members of the Omani society in general.

4. These aflaj are now in the spotlight and have grabbed local and global attention, which will help in their protection, development and sustainability.

In November 2006, the Advisory Tender for the Development and Management of the Aflaj Inscribed in the World Heritage List was put up for bidding. It aims at:

* Describing each of the five sites in terms of topography, population, establishments and the different kinds of existing activities.

* Illustrating the traditional, historic, social and economic value of these aflaj.

* Defining the obstacles and pressures that affect the archaeological value of these sites.

* Preparing a plan for the development and preservation of the existing ancient buildings and monuments as well as the traditional water distribution system.

* Preparing a management plan on how to develop each site to meet tourism requirements.

* Preparing an awareness plan that aims at educating the public on the traditional significance of these aflaj and how important it is to cooperate in protecting them.

Towers, which are part of Omani architectural heritage, are constructed in carefully selected places to monitor the flow of aflaj as well as ensure that its water is used judiciously.
Aflaj have emerged as one of Oman’s tourist attractions, especially those excavated by the side of mountains.

Some Omani traditional crafts such as pottery and Sarooj for buildings depend on aflaj water.
Falaj Daris

Falaj Daris is one of the most famous Dawoodi aflaj in Oman and the largest falaj in the Interior Region. It has a powerful flow that exceeds 2000 liters / second and its water is of high quality (electric conductivity of 477 microsims / cm. Ph: 7.3 temperature: 29 degrees centigrade). Falaj Daris has two branches: the large branch which is about 1700 meters long with a source depth of 17.5 meters, and the small branch which has less water. This branch is 1900 meters long and it flows from Wadi Al-Abyadh and its source depth is about 16 meters. Both the large and the small branches are joining at a point called «Fardh Al-Multaqa», located in Wadi Al-Abyadh. The total of the falaj channels from the source to the demand area is about 7990 m. feed the Falaj with water. The most important wadis that feed the Falaj are Wadi Al-abyadh, Wadi Al-Hijri, Wadi Al-Massalah, Wadi Kammah and Wadi Al-Suwaihiya.
An aerial shot of the historic city of Nizwa highlights a blend of modern and traditional architecture.
Site Description:
Falaj Daris is located in Willayat Nizwa underneath the foothill of Al-Jebal Al-Akhadar, 180 kilometers away from Muscat Governorate (the capital). The Falaj source is located at these coordinates (0554936 east) and (2543496 north), while the Falaj Sharlia is at (2540635 north) and (0556315 east). Willayat Nizwa is the largest city in the Omani interior and the center of the area, which made it the regional capital of the Interior Region. Rainfall occurs in Willayat Nizwa, especially in Al-Jebal Al-Akhadar, twice a year. During the summer, the area of Al-Jebal Al-Akhadar is affected by the southeastern wind coming from the Indian Ocean toward the west, causing rainfall, and during the winter the area is affected by the pressure over the Arabian Gulf and by the north-eastern wind coming from the Gulf, also causing rainfall. This makes the area of Al-Jebal Al-Akhadar the main source of water in Willayat Nizwa as wadis stream towards the south.

Area Served by the Falaj:
The Falaj serves agricultural and domestic utilization. The demand area covers 2,382,642 square meters and the agricultural area covers an estimated 1,715,502 square meters, consuming about 95% of the water. The area is famous for its palm trees, mango, limon sugarcane, fodder, seasonal crops, vegetables like cucumbers and tomatoes, melon and many more. Houses and other establishments are scattered between palm trees and at the edges of the agricultural area and the wadi.

Prominent Archaeological and Tourist Features at the Site:
The area is surrounded with ophiolite mountains from the west and southwest, and adjoined from the east and north-east with the western Al-Hajar mountains which are known for their geological multiform. The view from a high hill reveals a beautiful image of palm trees interwoven with houses and wadis streaming alongside the agricultural area.
Together with the refurbished main mosque, rounded fort in Nizwa is one of the most historic landmarks of the city. The two structures have become the symbol of the ancient times of the city.
In addition to the role of Falaj Dares as the source of water for irrigating farms and gardens, its surroundings have also been developed into a public park for local and foreign visitors who are usually fascinated by the sprawling canals of the falaj.

True to the saying that water is life, one of the canals of Falaj Dares irrigates palm, mango, banana and other plants in this farm in Nizwa.
Nizwa Fort is the most prominent archaeological monument at the site. It was built by the Imam Sultan bin Saif bin Malik Al-Yorubi in 1668. The Fort is 24 meters high. Its outside parameter is 43 meters, and the inside 39 meters.

Another famous ancient monument is Jami Nizwa (Nizwa Mosque). It has received the Royal Attention of His Majesty Sultan Qaboos bin Said when His Majesty gave directives to restore the Mosque at His Majesty’s own expense by applying the most updated architectural designs. The Mosque has maintained its role of being an educational institute. It is now called Jami A’ Sultan Qaboos (Sultan Qaboos Mosque). Nizwa is also famous for its Old Souq where traditional shops blend with new ones and shoppers can find whatever they need, be it foodstuff, pottery, home appliances, shoes, perfumes, clothing, old crafts, gold, silver or old manufactured goods.

Various traditional crafts and arts can be found at the site. These crafts are inspired by the local environment surrounding the falaj. Among the old crafts that still exist today are:

**Al-Bisr**: It is dried dates produced from a palm tree known as (Alimbassali). When fully ripe, the dates are picked and cooked in boilers then dried. The final product is called (imbassal).

**Halwa**: It is a type of sweet prepared from starch, sugar (locally produced red sugar), local ghee and eggs with pinches of cardamom and saffron. Halwa is served with traditional Omani coffee on special occasions, like Eid celebrations and weddings.

**Sugar**: Sugar manufacturing was very popular in the old days, and red sugar in particular was largely produced.

**Silver and gold manufacturing**: This popular traditional craft has huge demand, especially on Khanjar (traditional Omani dagger), medals, ornamented swords, khanjar holding belts, trinkets and jewelry.

**Indigo**: This substance is extracted from a tree called Al-Adhlem (indigo plant). It is soaked in earthen vessels, locally known as Al-Khawabi, to produce a blue dye used in coloring women’s clothes.
Spinning and weaving of wools is one of the distinguished crafts among Omanis, especially inhabitants of the mountains, whose products are among Oman’s best selling products.

The making of traditional daggers, sabers and silver jewelry speaks volumes about the proficiency of Omani craftsmanship.

The artistic process of dyeing fabrics with dark purple hues (Al Neelah) extracted from plants that grow along wadi courses. Traditionally made fabrics are currently facing stiff competition from imported textile materials.
Falaj Al-Khatmeen

Falaj Al Khatmeen is considered a Dawoodi falaj in the Interior region. Its flow is 2000 liters/second with electric conductivity of about (440 microsimens/cm), Ph (7.61) and temperature is 30º Celsius. The total length of the falaj from the mother well up to Sharia (the point at which water first appears on the surface of the earth) is about 2,450 meters with mother well depth of 17.5 meters. It has no sub-branches and is fed by wadi Al Maiden, one of the most important wadis which springs from the foothill of Al Jebal Al khaddar and flowing in a semi circle to its branches on the outskirts of the villages surrounding the cultivated areas. It is most characterized by its three equal water divisions at the Sharia, when three equal balls are thrown prior to the dividing point; each ball is carried away in the three channels indicating the ingenuity of the falaj design.

Site Description:

It is located in Niabat Birkat Al Mouz, which is one of the villages of Al-Dakhiliyah region renowned for its suburbs and archeological features. It intermingles with the village to draw a spectacular picture of a beautiful Omani village. It can easily
The lush green farms of Niyabat Birkat al Moaz seen from the top of Jebel Akhdar are truly a blessing derived from the steady flow of aflaj.
be reached by visitors via Muscat-Nizwa road. It is the entrance of Al Jebal Al Akhdar. The mother well of Falaj Al Khattameen is located at coordinates (0569288) E, (2536777) N, while the falaj Sharia is at (0568473) E, (2535269) N.

Area Served by the Falaj:
The falaj is used for agricultural and domestic purposes. The total demand area is estimated to be 1004340 square meters. The cultivated area is estimated to be 723124 m². The falaj course is divided at the entrance of the town into three equal uses, one of which is to irrigate local farms and the other two get together again in one course to irrigate Bait Al-Mal agricultural land. The area is famous for its cultivation of palm, mango and lemon trees, as well as fodder and seasonal vegetables. The demand area is characterized by its old houses built of clay, gravel and bricks, reflecting traditional architecture.

Prominent Archeological and Tourists Features at the Site:
Niabat Birkat Al Mouz is well known for its suburbs and archeological features, as it blends together with the falaj to draw a spectacular picture of a beautiful Omani village. In it can be found the famous Bait Al-Radidah which is a building of two stories dating back to the Seventeenth century when it was built by Imam Sultan bin Saif bin Yorubi who took over the Imamate during (1090-1059 H) corresponding to (1649-1679). It was renewed and expanded by Sayyed Mohammed bin Al-Imam bin Ahmed bin Said. Its thick walls on which the towers are built by clay include within a magnificent architecture with its several arches, ceilings and stunning engravings. The visitor to Birkat Al Mouz will enjoy going round the old areas. Yorubi mosque is another historical feature in Birkat Al Mouz built by Imam Sultan bin Saif bin Malik Al Yorubi in the eleventh Hejira century while he was excavating Al Khattameen falaj, but it was not like what it is now because it was renovated and extended by Sayyed Mohammed bin Al-Imam bin Ahmed bin Said when he built Bait Al-Radidah at the beginning of the thirteenth Hejira century and it still exists and is used for prayers.
At the entrance to the town, Falaj Al Khatmain is masterfully channeled into three courses for the effective irrigation of the farms in the Niyaabat, which are known for producing a variety of dates, vegetables and fodder.
Usually, Aflaj are designed to first serve domestic purposes in houses before flowing on to farms and other points.

The imposing Bait Al Redaidah Castle is one of the most fascinating archeological features of Birkat Al Moaz. The foot of the castle is caressed by Falaj Al Khatmain, which also provides water for ablution in the nearby Mosque and for the convenience of those who visit the castle.
Al Yaroubi Mosque, another historic structure in Birkat Al Moaz built by Imam Sultan bin Saif Malik al Yoroubi in the eleventh century is also serviced by Falaj Al Khatmain.
Falaj Al- Malki

Falaj Al- Malki is considered a Dawoodi falaj and is one of the most ancient aflaj in Al Dakhiliyah region. It is called after Malik bin Fahm Al-Azdi. Its water flow is 200 liter/second, with electric conductivity of about 764.5 microsimens/cm, Ph: 7.82 and temperature of 37° Celsius. It is the largest in terms of its branches which are 17 in number. Therefore it is the longest falaj in the Dakhiliyah region. The total length of its branches is 14,875 m. Most of the falaj are underground covered channels with different depths, therefore visitors are not at risk because the channels are under continuous maintenance. As for open channels, water is neither deep nor risky. The Ministry has also erected guiding signboards describing the aflaj locations and channels.

Site Description:

Falaj Al-Malki is located in Willayat Izki, Al Dakhiliyah region at a distance of (0579736) km from Muscat Governorate. It can easily be reached by visitors via Muscat – Nizwa road. The mother well of the
Falaj is located at coordinates (0579736) E, (2514896) N, while the falaj Sharia is at (0578197) E, (2537266) N.

**Area Served by the Falaj:**
The total demand area is 1572739 m². The falaj previously irrigated a large area of palm trees. Due to climate conditions of the area in terms of low rainfall in addition to severe pressure faced by the reservoir feeding the falaj as a result of development expansion, the falaj water flow declined particularly during droughts; therefore a number of support wells were excavated to flow in its Sharia so as to enhance its water flow. The total cultivated area irrigated by the falaj is about 1132372 m². The falaj channel is divided into two parts, one to irrigate Al-Nazar area and the other Al-Yemen area which are considered ancient archeological sites in Oman.

**Prominent Archeological and Tourists Features at the Site:**
Falaj Al-Malki is considered the most important tourist feature in the area. The falaj area is renowned for its two ancient parts i.e. Al-Nazar and Al-Yemen where the archeological houses are built with traditional material. Al-Nazar house is big and surrounded by walls about 1.5 m thick. It is exciting because it still exists with its rectangular shape, high walls and the three corner towers. The height of the main building is about 48 m including the two towers, whose diameter is about 12 m, located on the northeastern façade. On the southeastern façade it extends to 46.5 m. The height of Al-Yemen’s surrounding wall is two meters and it is built with porcelain on rocky bricks and it is only 8 m away from Al-Nazar house. The shortage wall height is 80 m while the side walls are about 150m high with three corner towers. Ghar Jurnan is another tourist attraction in the site. It is now developed by the government. A number of towers surround the site on the foothills in addition to the big castle built during Sayyed Said bin Sultan’s era. The Willayah is famous for its handicrafts such as tannery, textile, trade, agriculture and building. The folklore is Al razfa, Al A’zi and swordplay, and Al Ta’weeb (Ya’oub) exclusively for women.
Falaj Malik, one of the oldest of dawoodi aflaj, named after Malik bin Fahem Al Zadi, is not only among the greatest aflaj of the Sultanate, but also about the biggest in Al-Dakhliyah Region.
Falaj Al Malki is divided into many branches to cover the agricultural areas of Izki, especially the villages of Al Nazar and Al Yemen.

This tower serves as a vantage point for monitoring the flow of falaj water and the surrounding farms.
A portal of an ancient architectural relic in the historic city of Izki.

The historic Gar Jarman in Izki portrays the ingenuity of traditional Omani architecture, with its towers, doors and walls designed for the defence of the town and its endowments.
Falaj Al-Muyassar

Falaj Al-Muyassar is considered an Iddi falaj with a depth of 50 m under the surface. It is one of the most significant aflaj in Willayat Al-Rustaq with a large flow of water. The falaj originates from a place called (Al-Ghadadia) at the heights of wadi Bani Auf, where the mother well is of a depth more than 50 m and the total length of its channels is 5783 m. It consists of five branches, i.e. wadi Al-Sin, Al Halawa, Al-Qarn, Al-Mansour and wadi Al-Kour. It is characterized by its continuous flow as it is fed by two different wadis composed of sedimentary layers. The falaj water is pure, with an electric conductivity of 508 microsimens/cm, Ph 7.61 and water average temperature of 31.9º Celsius. The falaj flow tends to be constant but is affected by both wadis Al-Fara and Al-Sin flow where it may increase to 900 liter/second during the rise in the water level and decrease to 100 liter/second during the decline of the water level.

Site Description:
Falaj Al-Muyassar is located in Al-
Alaya' at Al-Rustaq town, which is one of the main cities in Oman and the most significant Willayah in South Al-Batinah region, and western Hajj, because it is an ancient town at a distance of (165) km northwest of Muscat. The history of Rustaq is studded with the emergence of leaders, glory, heroism, scholars and writers. In it Imam Nasser bin Saif Al Yorubi grew up, where he was recognized as Imam in 1024 Hejira corresponding to 1615. It was his capital and a center of his kingdom. In it Imam Sultan bin Saif Al Yorubi the second built the well known Al Hazem Fort. It was also the administrative capital of the kingdom of Imam Ahmed bin Said bin Mohammed Al Bausaidi and in which he is buried. The mother well of the falaj is located at coordinates (0547631) E, (2582594) N, while the falaj Sharia is at (0545097) E, (2582594) N.

**Area Served by the Falaj:**

The total demand area is 1574580 m². The total cultivated area is 1133698 m². Local people, who are estimated to be 7000 in number, depend on this falaj for irrigation of their agricultural land. Architectural engineering is quite obvious in this falaj. It is unique in its balanced distribution of water. Falaj Al-Muyassar is divided into thirteen Ada or Bada as they are locally known, i.e. A’ad Ali, A’ad Sahtan, A’ad Al-Khallis, A’ad Muhana, A’ad Libcal, A’ad Shazan, A’ad Hamsuliman, A’ad Al Neer Al Kabeer, A’ad Al Neer Al Sagheer, A’ad Al Jabri, A’ad Al Quad, A’ad Besham and A’ad Salim. The latter is the owner of the falaj and through him the falaj water is leased to those interested and the revenue is used in its maintenance. The falaj is divided into two aflaj, i.e. the upper and the lower, and each of them is further divided into two aflaj, thus falaj Al-Muyassar is divided into four aflaj or divisions, which is found only in a few aflaj in Oman. Our ancestors were skilled in the distribution of falaj water.
Falaj Al Myuassar is divided into two main courses; Ghaiz al Fouq and Ghaiz al Tahat, each of which is further sub-divided into a smaller channel, making a total of four channels for the effective coverage of the area.
so that it includes all the area, where the water is distributed into what is known locally as Al Bada or (Alad), which equals one full day to be distributed into Athar, and one Athar equals half an hour. Each person knows his turn through the falaj Arif, (administrator) who defined it by (Allamad) system. Allamad is a place built with gravel and divided in such a way that ensures fair distribution of water. In the middle of this Allamad is a long stick. This system is well known all over the Sultanate. In the night the water is distributed by using watches.

Prominent Archeological and Tourist Features at the Site:
Al-Rustaq fort is located at the foothill of Al Jebal Al Akhadar at the fringe of Al Batinah plain in Wilayat Al-Rustaq. It was first built on the Persian ruins during 1250 AC, but the present magnificent building was reconstructed by the first Yoruba Imamate during 624-1649 AC. It consists of two stories in addition to the ground floor. It includes dwellings, weapon stores, reception rooms, gates, a mosque, jails, wells and other utilities.
The historic Al Rustaq fort is seen here with its defensive features including ten mounted cannons and the different gates (sabahat). Sabah Al Yoroubi, Sabah Al Aelaal, Sabah Al Wusta and Sabah Al Sarha.

Al Rustaq fort is distinguished by its four towers which were built in the period 1477-1906. The Al Sheyateen tower, built by Imam Saif bin Aultan Al Yaroubi, is the tallest.
Falaj Al-Jeela

Falaj Al-Jeela is considered an Aini falaj and is located in Al-Jeela village, Willayat Sur. It is fed by wadi Shab in a rough mountainous area. It is the main water source for the village with a total length of its open channel at 161 m, which starts from the wellhead and ends at the water catchment basin. The channel is adjacent the mountain at a lofty height. It originates from a solid rocky limestone area. It has pure water where the electric conductivity is 378 microsimens/cm only, with a Ph value of 7.87 and water temperature of 29º Celsius. It flows all over the year with negligible impact as a result of increase and decrease of water level, where its average flow reaches 1 L/S.

Site Description:

Falaj Al-Jeela is located in Al-Jeela village in Niabat Tiwi, Willayat Sur in As Sharqiyah region (As Sharqiyah region is the eastern façade of Oman; it overlooks the Arab Sea from the east and includes eastern Hajr mountains from the north. It is also connected with Rimal As Sharqiyah from the south and Al Dakhiliyah region from the west). Niabat Tiwi is located at a distance of (310) km from Muscat Governorate and (76) km from Quriyat and Al-Jeela village which is situated in between eastern Al Hajr limestone mountains. It is also one of wadi Shab’s tourist attractions. Driving from Burj Al Sahwa in Muscat to Niabat Tiwi is approximately four hours. Visitors can drive through Sur road and from there to Tiwi. Another shortcut to Al-Jeela village is from Willayat Ibra via Wadi Nam road to Ismaia in Willayat Dima Wa Tayeen. The junction at Ismaia health center on a graded road towards the east will lead the visitor up eastern Al Hajr mountains where Al-Jeela village is situated at a height of 2000 m above sea level.

The mother well is located at coordinates (0723172) E, (2521664) N, while the falaj Sharia is at (0717900) E, (2521730) N.

Prominent Archeological and Tourists Features at the Site:

• Al-Jeela Towers:

A team of archeologists, in cooperation with the Ministry of Heritage and Culture in late 1991, investigated and ral coastal
A breathtaking view of Falaj Al Jeela cascading down the mountain to serve the agricultural and domestic needs of nearby villages.
area and mountain formations with their tourist attractions. Wadi Shab is a unique attraction as it is the meeting point of salt seawater and fresh water descending from the mountains. This closeness to the sea resulted in this attractive environmental diversity making it the only one of its nature in the Sultanate. Its course consists of many water pools and eroded rocky formations. Many caves of different sizes also exist along the course in addition to small waterfalls, where the murmur of their water can be heard all over the wadi.

Wadi Tiwi:
It is located at a distance of two kilometers from wadi Shab in As Sharqiyah region and extends to 36 km on a mountainous village called Mebam. It is a fertile wadi passing through many agricultural villages, where palm and banana trees are grown, reflecting an attractive view on the mountains. The wadi can be seen from the foot and from other high locations the blue sea water can be watched, where the mountains and the sea embrace each other penetrated by waterfalls, where the murmur of their water can be heard all over the wadi.
Standing 2000 m high, this tower which was built about three thousand years ago, is associated with Falaj Al jeela.

studied Al-Jeela towers and discovered that 90 towers are in good condition due to their strong buildings. All these towers are located at a height of 2000 m above sea level. The height of the towers ranges from 4-5 m with diameter 3-4 m and all of them are cylindrical and rounded on top. Some of them consist of two walls full of bricks in between and located on top of mountain heights.

Wadi Shab:
A visitor to Al-Jeela village may pass through many significant tourist sites such as wadi Shab. It is located in Niabat Tiwi, Willayat Sur at a distance of (76) km from Quriyat. It is one of the most renowned wadis of Sharqiyah region. It is situated along the coastal road extending between Willayat Quriyat and Sur. It lies in an area that combines the beautiful natural coastal area and mountain formations with their tourist attractions.
Region irrigated by aflaj

A falaj is used to irrigate palm trees, pomegranate and other seasonal plants in farms and gardens. The cultivated area is about (10034)m² while the total area of in need of water in the region is about (1400)m² A falaj is also used for domestic purposes and for providing livestock with water.

From ancient times, Omanis excelled in excavating aflaj channels which transfer water to cultivated areas through bridges that join wadi banks. In addition, some holes are made under the bridges through which the wadi water pass during its flow. Farms irrigated by aflaj are located in an area of higher elevation than wadis, usually on mountain slopes. Walls are built to protect soil erosion.

Handicraft

A variety of local crafts is made by utilizing raw materials from the country’s plant and animal resources. Such handicrafts can be classified as follows:

1- Palm tree crafts:
   * Marhalah: it is plate-shaped and made of palm leaves (sa’af) and used to carry food.
   * Aldharf: it is rhombus-shaped and hollowed from inside. It is used to surround palm dates to protect them from pollution and pests.
   * Woods from palm trunks and pomegranate trees are used for making ceilings or for supporting aflaj channels.

2- Crafts from animal leather
   * Ghordhat Alhemar: made of goat hair and spread on the donkey to help it carry load.
   * Jalal Alhemar: it is a quilt made of goat hair and used to cover the donkey to protect it from cold.
   * Albaab: it is put on the donkey’s neck to help in fixing stuff on it.
   * As sa’n: It is made of goat leather and used to fetch or store water.

A large basket made of palm fronds for storing dates.
Glossary of local terms

* Um Al Falaj: the Last fardah (notch) in the falaj against the direction of its water stream, from which water enters to supply (it or part of it. Water level shall be above the Shareah so the falaj continues in running.

Assaaid: one of the branches that has the same features of the falaj that helps in increasing the quantity of water running to the main cannel which meets the Saaed in Fardhah the gathering point of the Saaeds.

Ashareeah: The first place of water appearance on the ground surface or nearby it in Daawdi flaj. It is also the point of water reaching to the need zone or the beneficiary village as for the Aini and Ghaili falas.

Al Baddah: It came from the idea of the possession of an individual of a group for a definite share of falaj water which irrigates their gardens in certain times. Every falaj has more then one Baddah and they are linked to the names of property or tribes or gardens or any other thing, which means the this falaj is a property of a group of farmers who possess gardens irrigated by that falaj.

In order to organize the water shares of each garden they created a round to distribute the water between each other.

Al Athr: It is plural of Aathar and locally called Athar if it is one Atharain if they are two. They are vertical lines that separated by different gaps and drawn on the land in the two sides of the sundial (Al Nimr), in the eastern and western directions. Three small stone are placed in each line, two in the sides and one in the middle. Each of these lines have specific terms and names that differ from one falaj to another, but all of them are called (Al Baddah). From the pole to the west draws 12 lines that represent the (Aathar) from the sunrise till the middle of the day where the straight up pole and from the pole to the east draws 12 lines that represent the (Aathar) from the middle of the day till the sunset. These lines are beneficial because the times, periods and shares of irrigating the gardens depend on the sun shadow that reach to each line from the sunrise to its set. The period of time between a line to the one besides it is half an hour which equals the periods of time of the night and the day. So, from the sunrise to the middle of the day the sunshade passes on 12 lines which means 6 hours and from the middle of the day till the sunset passes on 12 lines which means 6 hours, thus the total hours are 12. This also means that for each farmer certain (Athr) for irrigating the his garden in certain hours according to the (Athar) that he owns. (Considering the time difference between the day and night during the seasons of the year).

The Sundial (Allamad): It is a pole of Iron or wood erected on the ground in an opened and leveled space nearby to the date palm farms. It is three meters height from the land surface, locally called (Al Nimr), and farmers depend on it in distributing the shares of waters for irrigating the farms during the day. Number of 24 vertical lines are drawn in the land surface, separated by different gaps and distributed in equal spaces, 12 lines at the eastern side of the sundial and other 12 in the western side. The more the shadow moves away from the sundial site, the more the gaps between the lines become wider as a result of the movement of the shadow.

Coordinates: The site is based on the map.