

## ORANGE RIVER PROJECT

# ORANGE–VAAL TRANSFER SCHEME

South Africa

## LOCATION

The Orange–Vaal Transfer Scheme (also known as the Orange–Douglas Government Water Scheme) is located on the Orange and Vaal Rivers, near the confluence of the two.

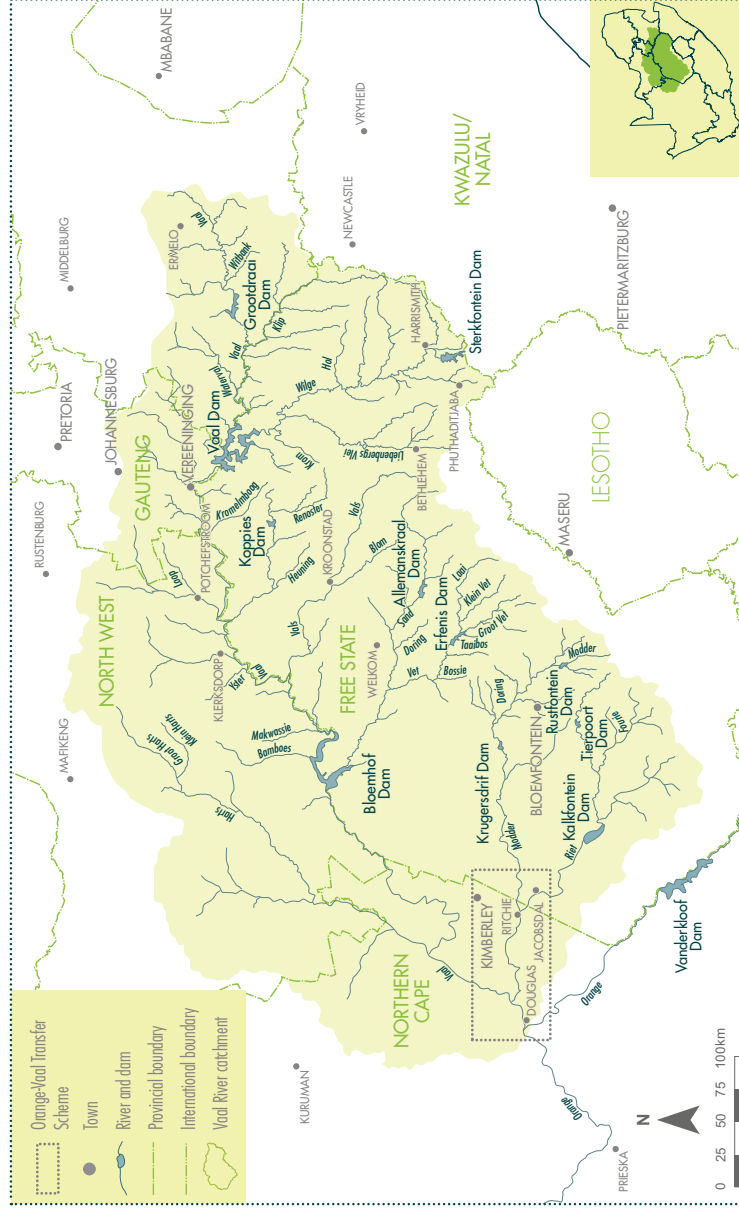
## DESCRIPTION

The transfer scheme consists of the Marksdrift Pump Station, located on the Orange River, and Douglas Weir (full supply capacity 1.6 million m<sup>3</sup>), located on the Vaal River, as well as three canals, namely:

**The Bosman Canal (or Orange–Vaal Canal):** The transfer scheme consists of a pump station at Marksdrift, with the 22 km Bosman Canal ending at Douglas Weir. Originally, the canal was unlined but in 1994 the concrete lining of the canal began. The Bosman Canal is managed by the Douglas Irrigation Board.

**The Douglas Canal:** Water is released from Douglas Weir via the 24 km Douglas Canal to the confluence of the Vaal and Orange Rivers, along the left bank of the Vaal River.

**The Alberton Canal (or Atherton Canal):** Water is released from Douglas Weir via an unlined third canal, the Alberton Canal, which runs along the right-hand side of the Vaal River to the Atherton Plots.



Upper Orange Transfer Scheme (from map produced by the SA Department of Water Affairs)

Douglas Weir is part of the Orange–Vaal Transfer Scheme, and was initially completed in 1896 but raised in 1977. Water is transferred via the 24 km concrete-lined Douglas Canal, which runs alongside the left bank of the Vaal River.

A build-up of salts occurs within the system, due to the irrigation return flows (sometimes reaching 1 400 mg/ℓ). When the system was built it was foreseen that occasional floods would assist in washing the salts from the system, however, this has not been successful.

## ORANGE-VAAI TRANSFER SCHEME

### PURPOSE

Prior to 1984 Douglas Weir was supplied from Bloemhof Dam. However, during the 1980s a severe drought occurred which resulted in water restrictions. The Bosman Canal (or Orange-Vaal Canal) was then built in 1984 as an emergency scheme to aid in the critical water shortages. In 1986 the emergency scheme was incorporated into the Orange-Douglas Government Water Scheme.

Currently the scheme is used to supply an area of 8 113 ha of irrigation. It is also used to improve water quality as salinity levels have increased in recent years.

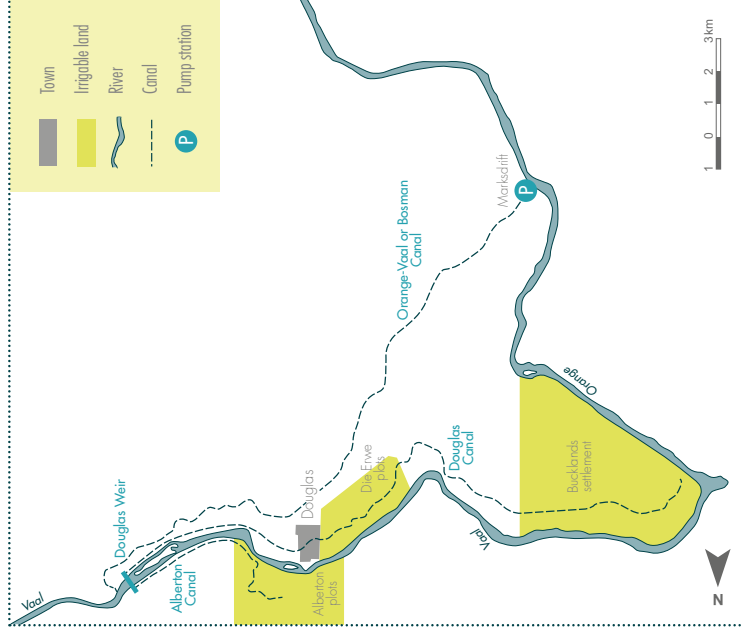
The Douglas Irrigation Board regulates the amount of water transferred to farmers along the Douglas Weir and the Riet River downstream of Soutpansdrif, as well as the areas along the Vaal River downstream of the Douglas Weir served by the Bucklands and Atherton Canals.

The Atherton Canal supplies water to irrigators on the northern bank of the Vaal River, and the Bucklands Canal transports water for 24 km to irrigators on the southern bank of the Vaal River.

### PHYSICAL INFORMATION

Canal name	Length (km)	Capacity (m <sup>3</sup> /s)
Bosman (or Orange-Vaal)	22	12
Douglas	24	7
Atherton (or Alberton)	Unknown	Unknown
Bucklands	24	Unknown

Source: ORASECOM



Orange-Vaal Transfer Scheme (from map produced for ORASECOM Infrastructure Report, 2007)

### OPERATING RULE

The Bloemhof Dam is operated in such a manner that as little water as possible enters the Douglas Weir via the Vaal River, and all water demands are met from the Orange River. To prevent supply problems along these sections of the Vaal River the Douglas Weir must be operated at not less than 1.1 m below full supply level.

The Douglas Weir irrigation schemes are operated to minimise pumping costs and water wastage. Inflows and spillages are kept to a minimum and under normal operating conditions these areas are dependent on imported water from the Orange River.