

Baardheere - Bu'aale

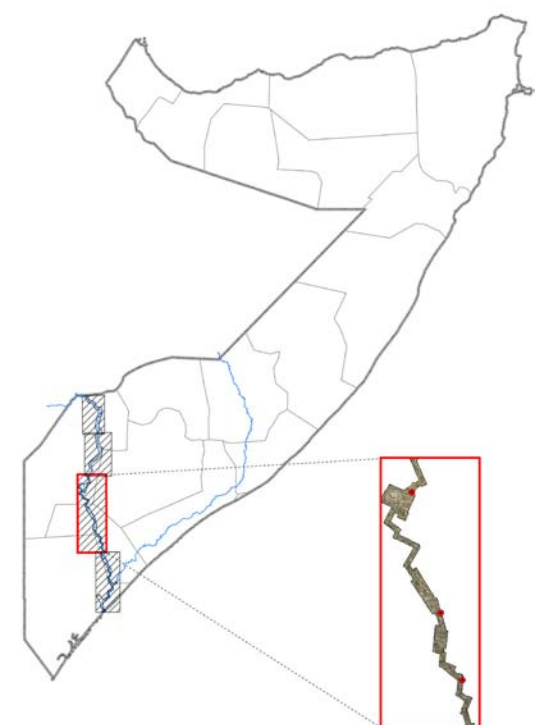
Bu'aale sub - section (Waax-hoosaadka Bu'aale)



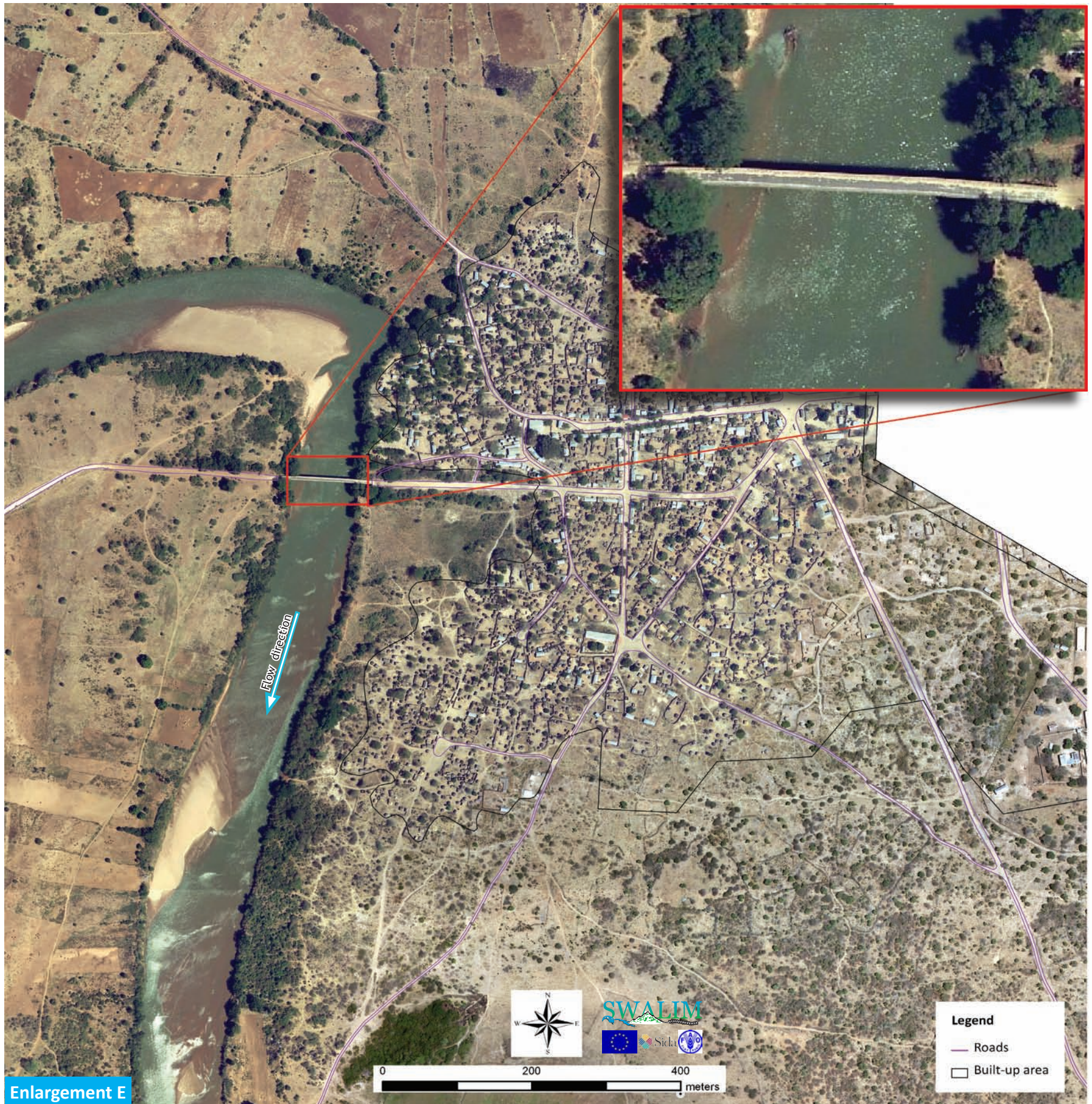
Bu'aale is a small town, capital of Middle Juba Region, established in the 1970s. It is situated on the eastern side of the Juba River, downstream of Saakow town. At the start of its establishment, it was the administrative centre for Dujuma agricultural settlement. This settlement was created to resettle people affected by the catastrophic drought in the central and northern regions. A few years later, most of the Dujuma settled people were relocated to Marerey village near Jilib town.

Bu'aale waa magaalo yar oo caasimadda ah Gobolka Jubada Dhexe, la asaasayna 1970-aadkii. Waxay ku taal dhinaca bari ee Wabiga Juba ee biyoshubka ka hooseeya Magaalada Saakow. Markii la bilaabay, waxay ahayd xaruntii laga maamulayey dadkii dib udejinta beeraleydi Dujuma. Dib u dejintaa waxay abuurtay in ay dagaan dad badan oo abaaro halis ku waxyeelleeyeen gobollada dhexe iyo kuwa waqooyi. Sanado yar ka dib, dadkii Dujuma la dejiyey waxaa intooda badan loo wareejiyey tuulada Mareerey oo u dhow Magaalada Jilib.

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Bu'aale town Magaalada Bu'aale



Enlargement E

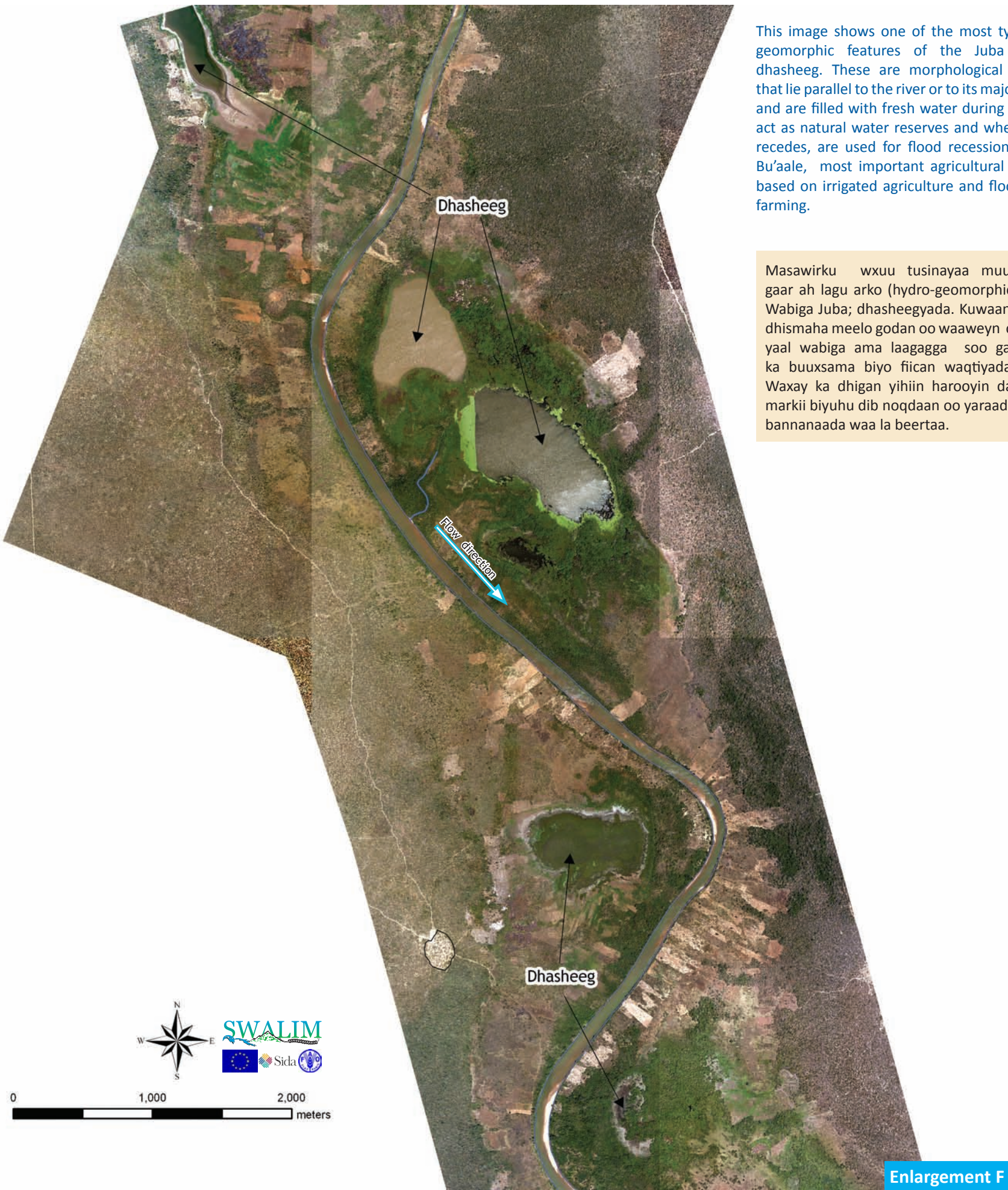
The Bu'aale bridge (inset) is made of solid metal and is quite high. This bridge connects the eastern and western parts of the country and is an important trade route.

Kaabadda Bu'aale (gudaha) waxay ka samaysan tahay bir macdan adag korna waa u dheer tahay. Kaabaddaan waxay isku xirta qaybta bari iyo qabta galbeed ee dalka waana jid muhiim u ah ganacsiga.

Dhasheegs Dhasheegyada

This image shows one of the most typical hydro-geomorphic features of the Juba River; the dhasheeg. These are morphological depressions that lie parallel to the river or to its major tributaries and are filled with fresh water during floods. They act as natural water reserves and when the water recedes, are used for flood recession farming. In Bu'aale, most important agricultural systems are based on irrigated agriculture and flood recession farming.

Masawirku wxuu tusinayaa muuqaallada si gaar ah lagu arko (hydro-geomorphic) baxaalliga Wabiga Juba; dhasheegyada. Kuwaani waa qaabdhismaha meelo godan oo waaweyn oo ku barbar yaal wabiga ama laagagga soo gala waxaana ka buuxsama biyo fiican waqtiyada daadadka. Waxay ka dhigan yihiin harooyin dabiici ah oo markii biyuhu dib noqdaan oo yaraanba dhulka bannanaada waa la beertaa.



Crop fields Beeraha dalagyada



Enlargement G

This photo, taken in Bu'aale area, shows crop fields with burnt crop residues in the center, and harvested stock of sesame in the western and southern periphery of the photo. The small and frequent dots (brown) are the sesame stocks, prepared for desiccation of the seeds.

Masawirkaan oo ah degaanka Bu'aale wuxuu tusinayaa beeraha dalagyada ku yaal dhexda oo la gubey xashiishkii ku soo haray, dhinacyada galbeedka iyo koonfur waxaa tuban sisin la gooyey. Baraha yaryar oo faraha badan (midabka xareedda) waa sisin la tubay, oo loo diyaariyey in miraha la engejiyo.

Elevation, land use and land cover

Joogga, isticmaalka dhulka iyo hu'ga dhulka

Elevation

This contour map shows how the river valley is still confined but with its valley sides more gentle than those upstream. Occasionally some higher hills with steeper slopes are present and just southward of this area the Juba valley starts widening.

Joogga

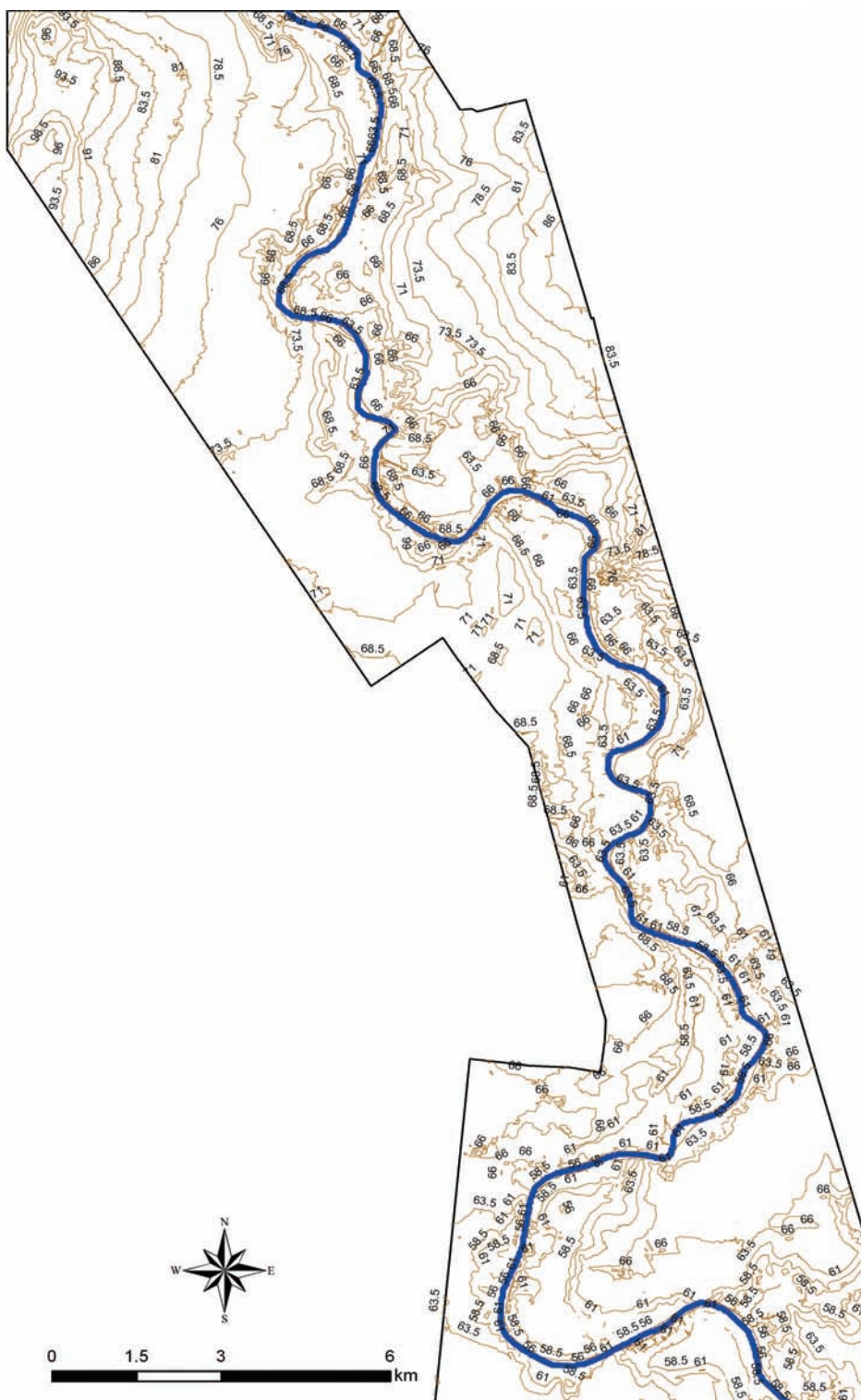
Jooga - khariidaddaan xarriijimaha joog isle'egwaxay tusinaysaa in wabigu uu weli ku xadidan yahay gebiyada dooxiisa oo ka yara dabacsan kuwa dhanka biyoshubka kore. Marmar qaarkood waxaa jira buuro kor dheer oo janjeer hoobad leh, hadan dhanka koonfur ka jira degaankaan dooxa Juba wuxuu bi-laaba inuu ballaarto.

Land use and land cover

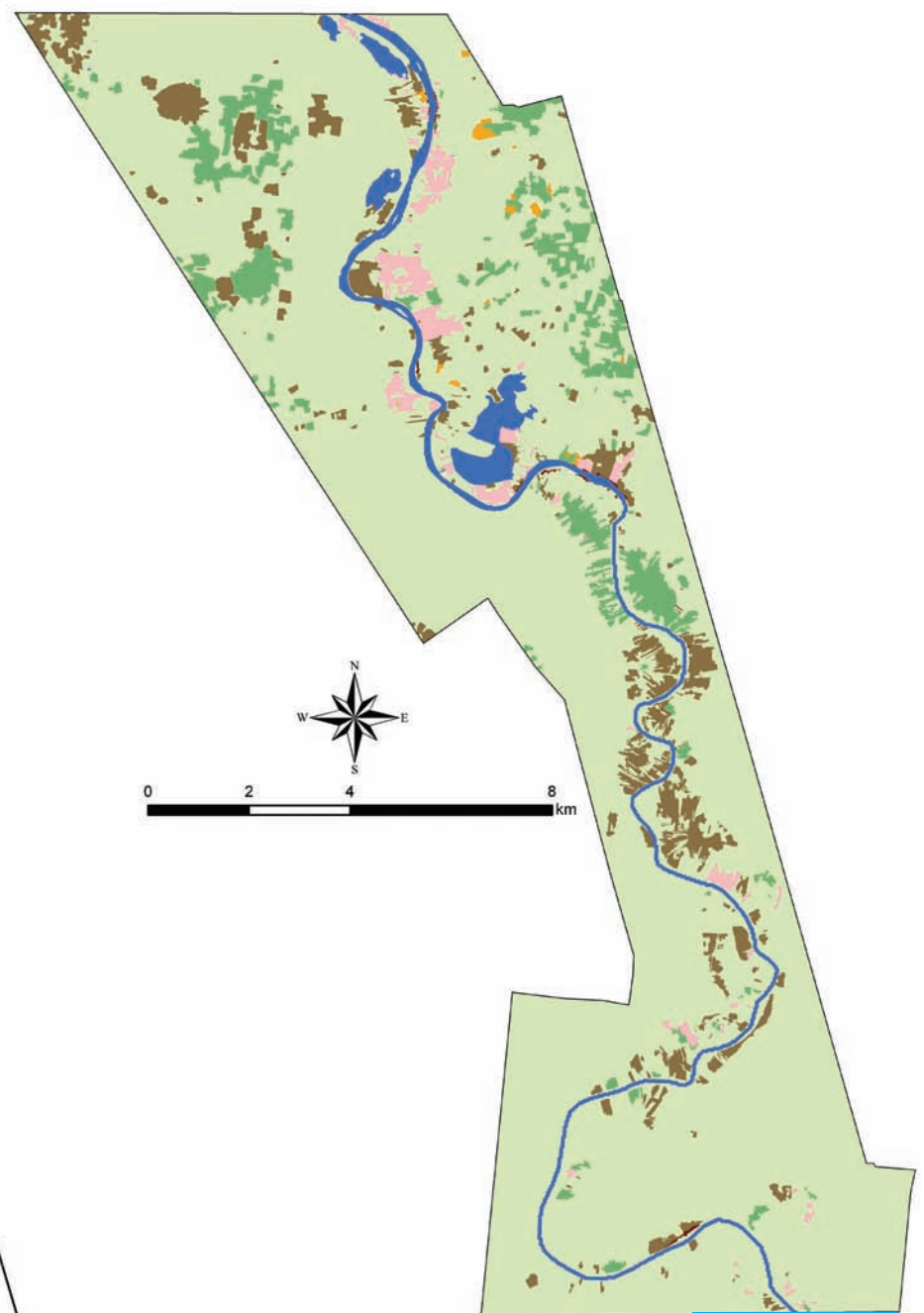
Farming activities are common in areas close to Bu'aale town. Numerous crop fields are distributed both close to the river course and away from it. The major crops are cereals and sesame.

Isticmaalka dhulka iyo hu'ga dhulka

Hawlaha waxbeerashada wax caadi ka ah gudaha dagaanka u dhaw magaalada Bu'aale. Beero dalagyo badan leh ayaa ku firirisan meelaha u dhaw dooxa wabiga iyo meelaha wabiga kafog labadaba.



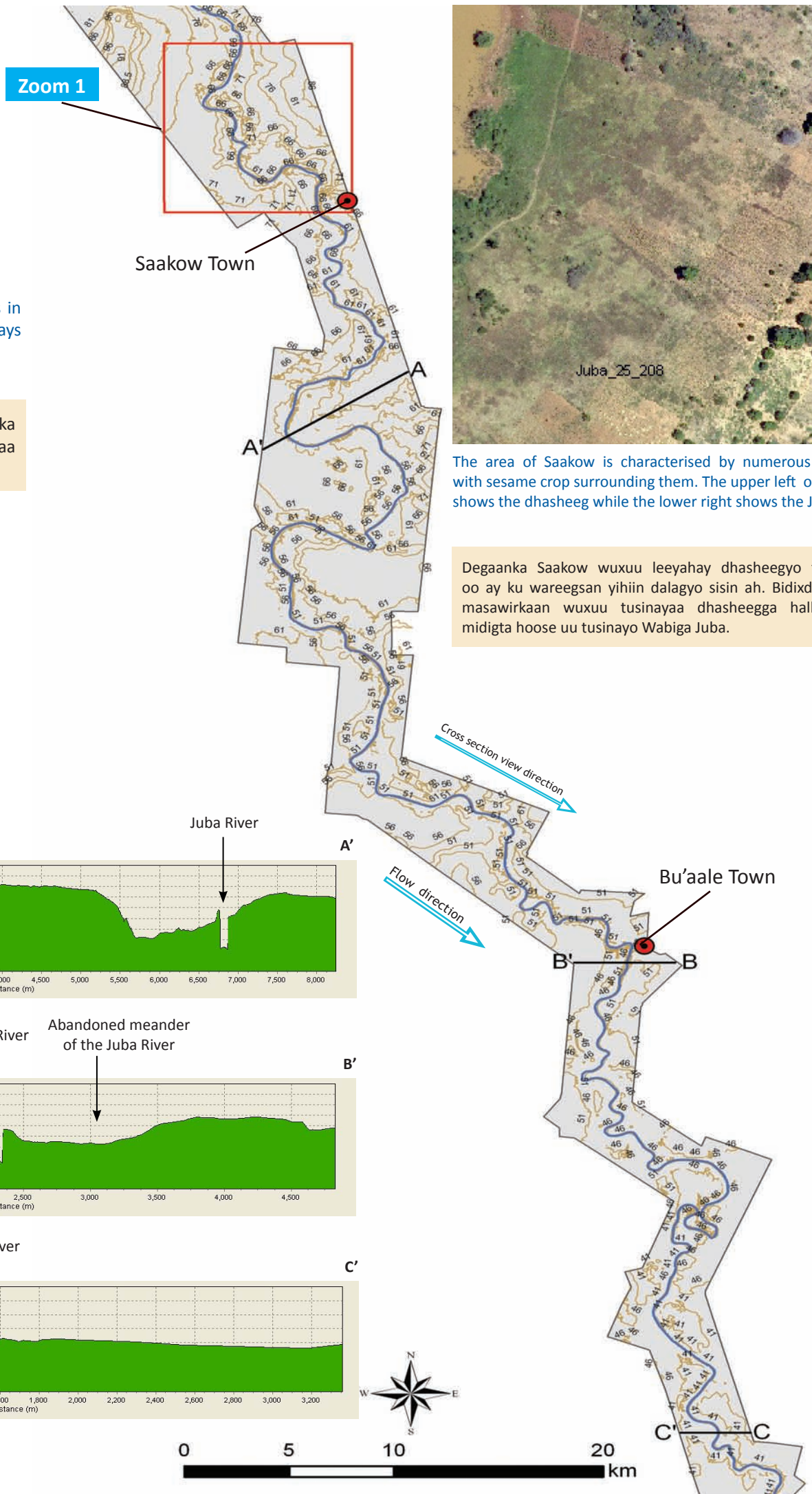
Enlargement H



Enlargement I

Crops		
Cereals	Banana	Settlement
Mixed crops	Tobacco	Bare Soil
Sesame	Mixed tree crops	Water body
Coconut	Abandoned fields	River
Mango	Natural vegetation	

Morphology Qaab-dhismaha



Zoom 1

Saakow Town

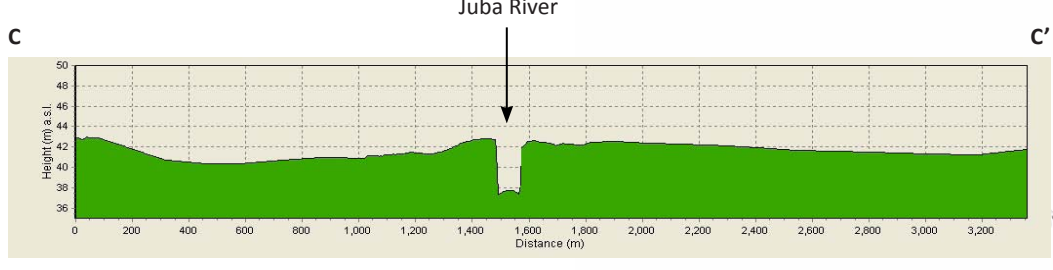
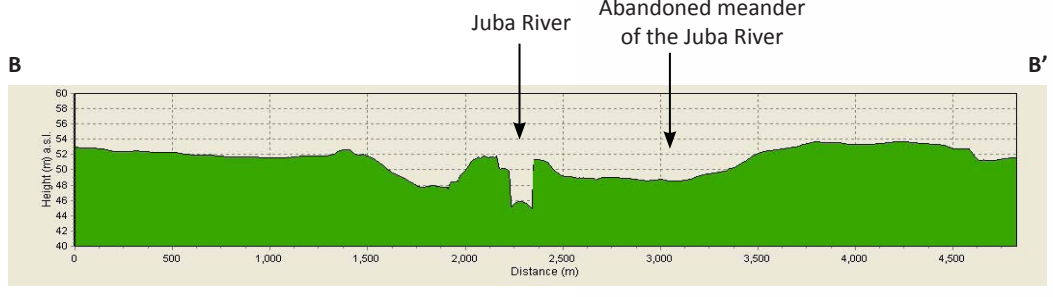
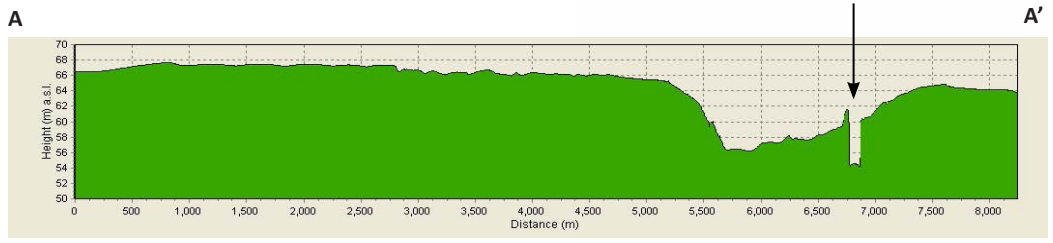


The area of Saakow is characterised by numerous dhasheegs with sesame crop surrounding them. The upper left of this image shows the dhasheeg while the lower right shows the Juba River.

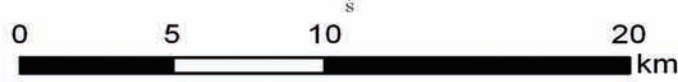
This area of Bu'aale has numerous depressions in the flood plain (Dhasheegs). Dhasheegs are always close to the river.

Degaankaan Bu'aale wuxuu leeyahay dhulka badan oo dhasheeg ah. Dhasheegyada badanaa waxay u dhaw yihiin wabiga.

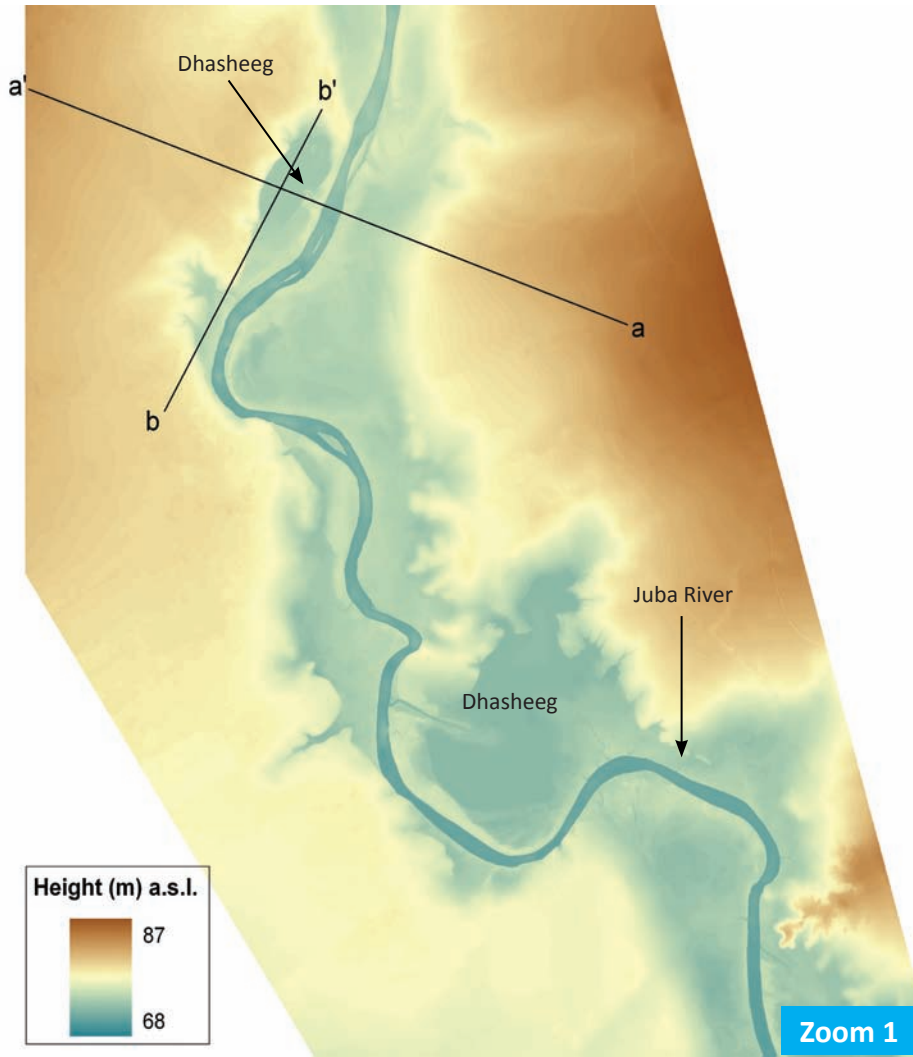
Degaanka Saakow wuxuu leeyahay dhasheegyo farabadan oo ay ku wareegsan yihiin dalagyo sisin ah. Bidixda kore ee masawirkaan wuxuu tusinayaa dhasheegga halka midka midigta hoose uu tusinayo Wabiga Juba.



Cross section view direction
 Flow direction
 Bu'aale Town

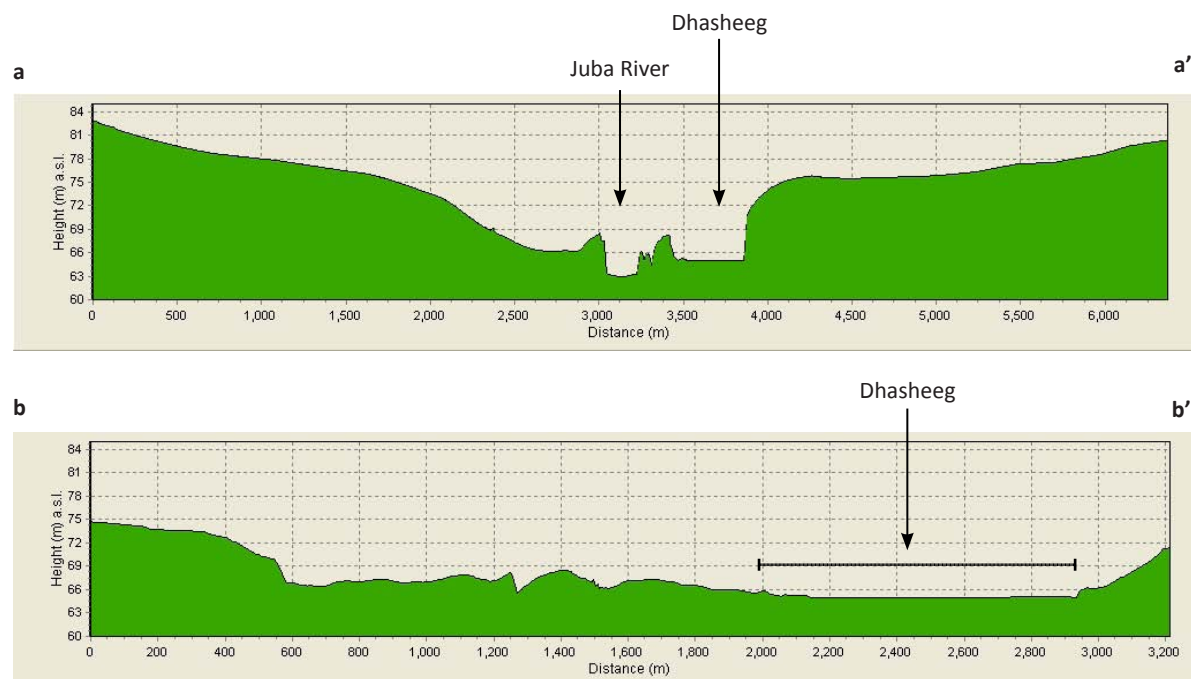


Morphology Qaab-dhismaha

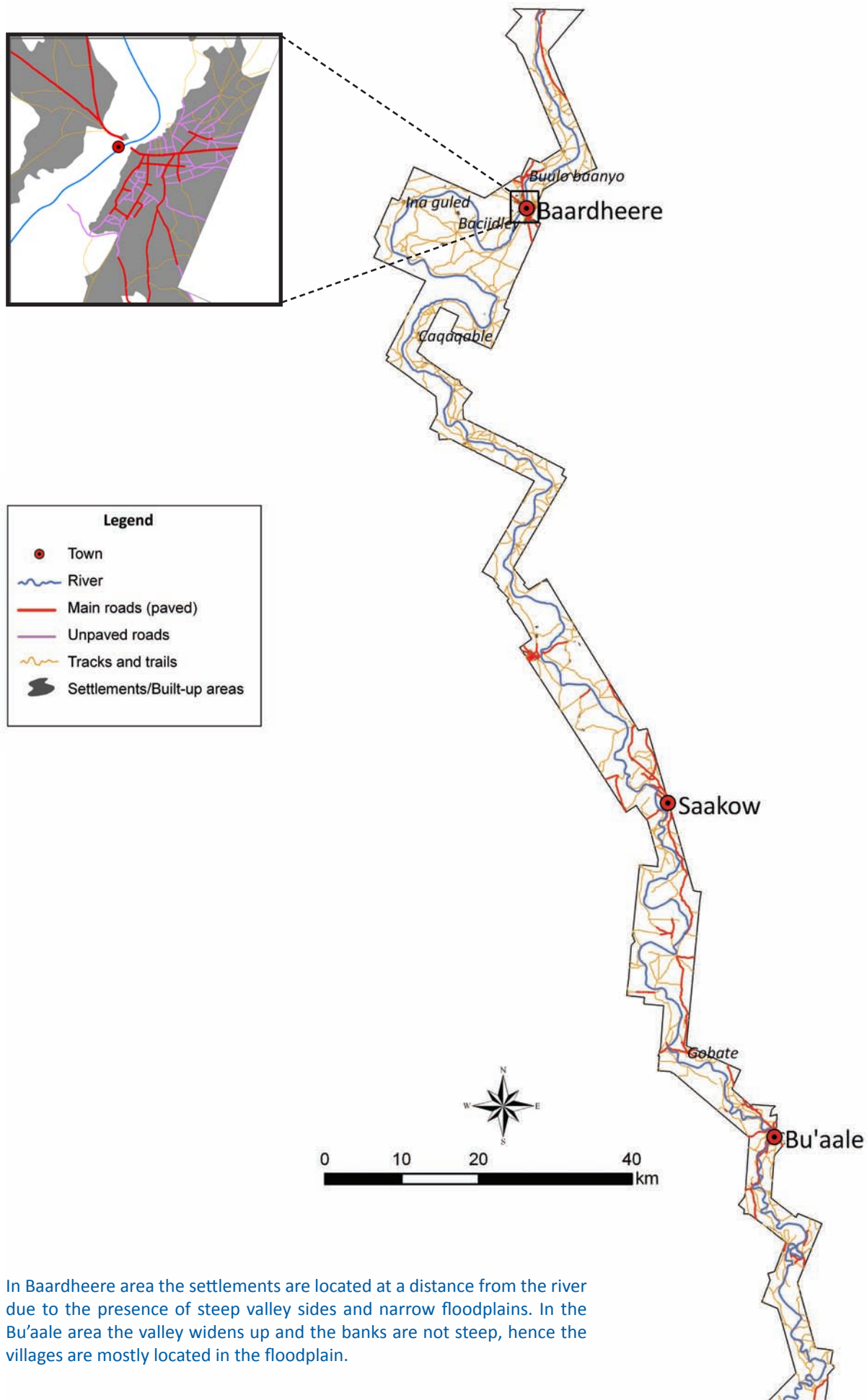


The Juba River at Bu'aale during extremely low flows

Webiga Juba oo biyuhu ay si aan caadi ahayn biyosocodu u hooseeyo aagga Bu'aale



Roads and settlements Waddooyinka iyo degmooyinka



In Baardheere area the settlements are located at a distance from the river due to the presence of steep valley sides and narrow floodplains. In the Bu'aale area the valley widens up and the banks are not steep, hence the villages are mostly located in the floodplain.

Degaanka Baardheere, degsiimooyinku waxay ku yaalaan meelo ka fog wabiga ayadoo ay ugu wacan tahay ayadoo dhinacyada dooxada wabigu ay qarar hoobad ah yihiin iyo dooxooyin carro dhig ciriiri ah. Degaanka Bu'aale, dooxu wuu ballaartaa hadana gebiyaduna ma aha hoobad sidaas awgeed tuulooyinku waxay badanaa ku yaalaan dooxada carrodhigga.



The Baardheere bridge in March 2008

Buundada Baardheere bishii Maarso 2008



The Bu'aale bridge in March 2008. This bridge has very high clearance and SWALIM maintains a river gauge below

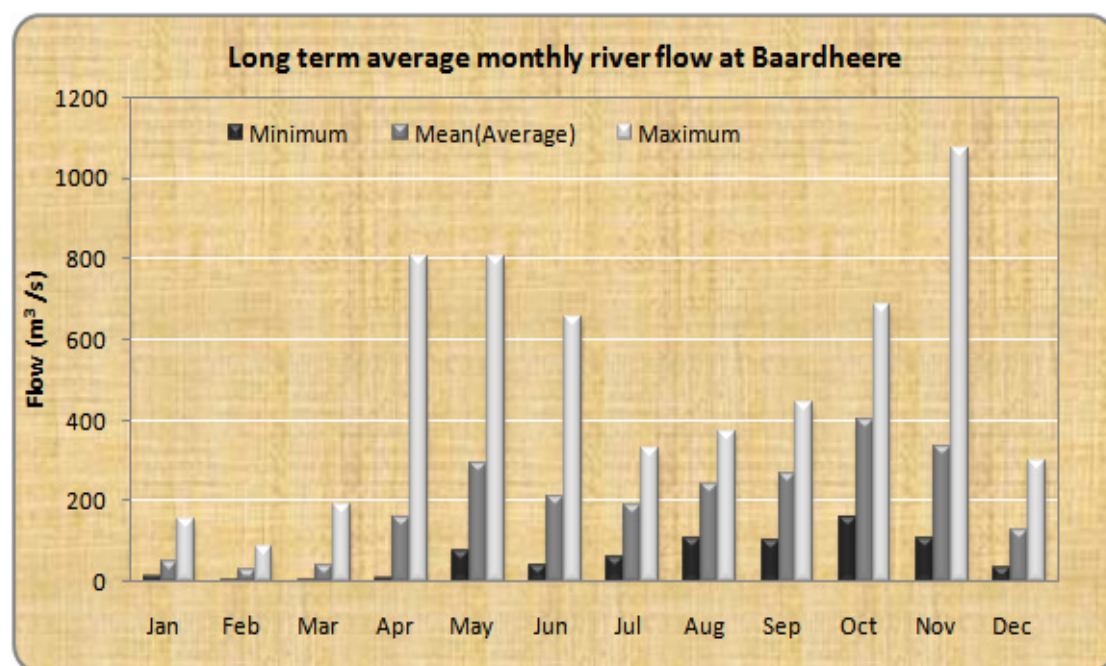
Buundada Bu'aale bishii Maarso 2008. Buundadaan aad ayey kor ugu dheer tahay oo hoosteeda waxaa SWALIM ugu yaal kob heerka biyaha wabiga laga cabiro

Climate and water resources Cimilad iyo khayraadka biyaha

The Baardheere area receives an annual average of 473 mm of rainfall. The rains are more or less equal for both the *Gu* and *Dayr* rainy seasons. Temperatures are also high during the rainy seasons, which results in high water loss through direct evaporation and evapotranspiration.

Roobabka sanadle ee Baardheere celcelis ahaan waa 473 mm. Roobabkaas qiyaas ahaan waa isle'eg yihiin xilliyada roobka Gu'ga iyo Deyrta. Heerkulka sidoo kale aad buu u sareeyaa xilligga roobabku da'ayaan, taas oo dhalisa in biyuhu ay ku lumaan uumi bax toos ah iyo uumi baxa dhinac dhirta.

Long term average climatic values at Baardheere												
Climatic variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall (mm)	3.0	6.0	27.0	117.0	71.0	10.0	11.0	5.0	8.0	82.0	116.0	17.0
Mean temperature (°C)	29.6	30.5	31.5	30.3	29.0	27.6	26.1	26.7	28.1	29.0	28.7	29.0
Minimum temperature (°C)	21.3	22.0	22.8	22.8	22.5	21.2	20.3	20.8	21.5	22.0	21.6	21.5
Maximum temperature (°C)	38.1	39.2	41.3	38.0	35.5	34.0	32.5	33.0	34.8	36.0	35.8	36.6
Potential evapotranspiration (mm)	232	198	220	159	173	177	182	192	201	170	165	179
Wind speed (km/hr)	12.2	8.6	7.9	5.4	10.8	15.1	15.8	16.6	14.0	10.1	9.0	8.3



River gauge station details

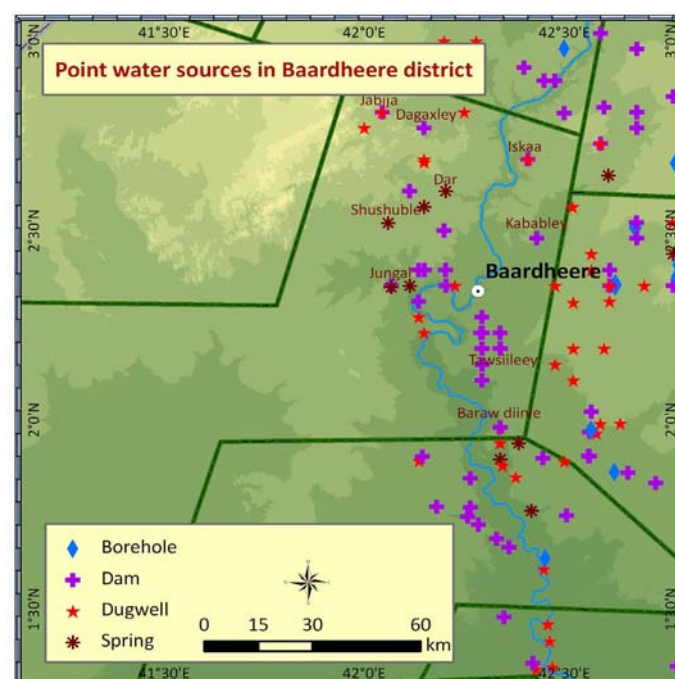
Grid reference: 2:20:30N, 42:17:00E
Altitude: 89.0 m a.s.l
Catchment area: 216 730 km²
Daily mean flow: 89.0 m³/s
Current status: Operational

The river flow at Baardheere is bimodal having peak flows during the two rainy seasons. The month of February has the least flow during the year while November has the highest.

Baardheere socodka wabigu wuxuu leeyahay laba qaab oo muujinaya marka uu gaaro meel sareysa inta lagu jiro labada xilli ee roobabku da'aan. Bisha Febraayo waa jira biyosocodka ugu yar sanadka, halka bisha nofeembar ay leedahay midka ugu sarreeya.

The strategic water sources in Baardheere comprise of boreholes, shallow wells, dams and springs. The dams (war) and shallow wells are located along the Juba River, whereas most boreholes are located some distance from the river. A certain percentage of the population use water directly from the river. The range of shallow wells depth is 6 - 15 m, while the average borehole depth is about 115 m. Underground water is more saline, EC generally ranging between 1320-8000 μS/cm. The EC range for dams and springs is 190-600 μS/cm.

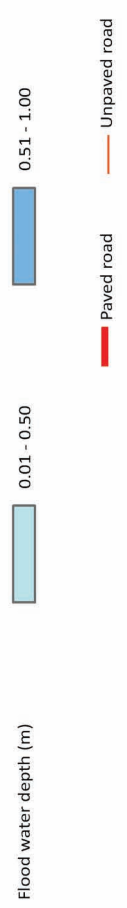
Ilaha biyaha muuhimka ee Baardheere waxay ka kooban yihiin ceelal riig ah, ceelasha gaagaaban, waro iyo Dur duro. Waraha iyo ceelasha gaagaaban waxay ku yaalaan meelo masaafad u jira jiinka wabiga Juba. Boqolkiiba qaar dadka ka mid ah waxay toos u isticmaalaan biyaha wabiga. Gunta ceelasha gaagaaban waxay u dhexeeyaan 6 - 15 m, celcelis ahaan ceelasha riiga ah waxay gaaraan qiyaas ahaan 115 m. Biyaha dhulka hoostood ku jira waxay leeyihiin milix badan, EC - da guud ahaan waxay u dhaxaysaa 1320 - 8000 μS/cm. EC - da waraha iyo durdurada waxay gaartaa 190 - 600 μS/cm.



Flood risk map for Bu'aale - 5 year return period

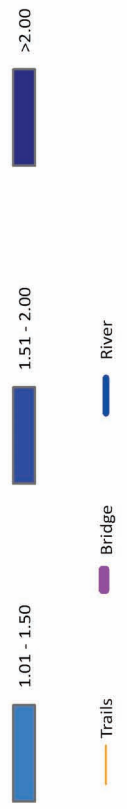
**Kharidadda halista fatahaadda ee Bu'aale
 5 sanaba soo noqota mar**

The flood risk scenarios (extent and depth) were generated using HEC-RAS hydrodynamic model. Inputs included observed flow data, river cross sections, DTM. For more information contact SWALIM (enquiries@faoswalim.org)



Flood risk map for Bu'aale - 20 year return period

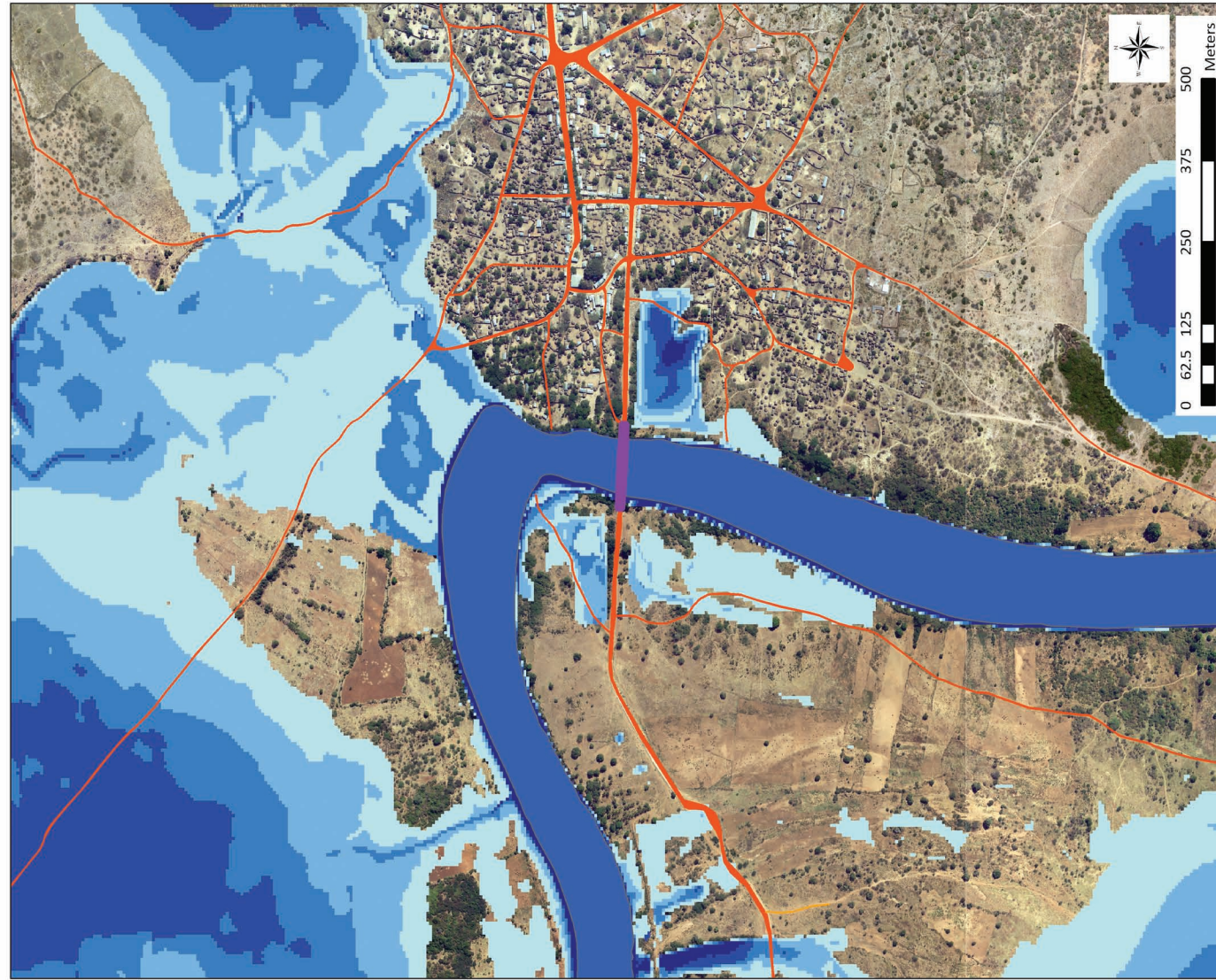
**Kharidadda halista fatahaadda ee Bu'aale
 20 sanaba soo noqota mar**



Flood risk map for Bu'aale - 50 year return period

**Kharidadda halista fatahaadda ee Bu'aale
 50 sanaba soo noqota mar**

Dacdooyinka fatahaadeed oo halis ah (baaxad iyo mool) waxaa la soo saaray ayadoo la adeegsanayo HEC-RAS qaabka biyosocodka lagu cabiro. Waxa ku jira meesha waa xogta socodka wabiga oo laga cabiray jeexyada gudban, DTM. Haddii aad macluumaad dheeraad ah aad u baahato SWALIM kala soo xiriir (enquiries@faoswalim.org)



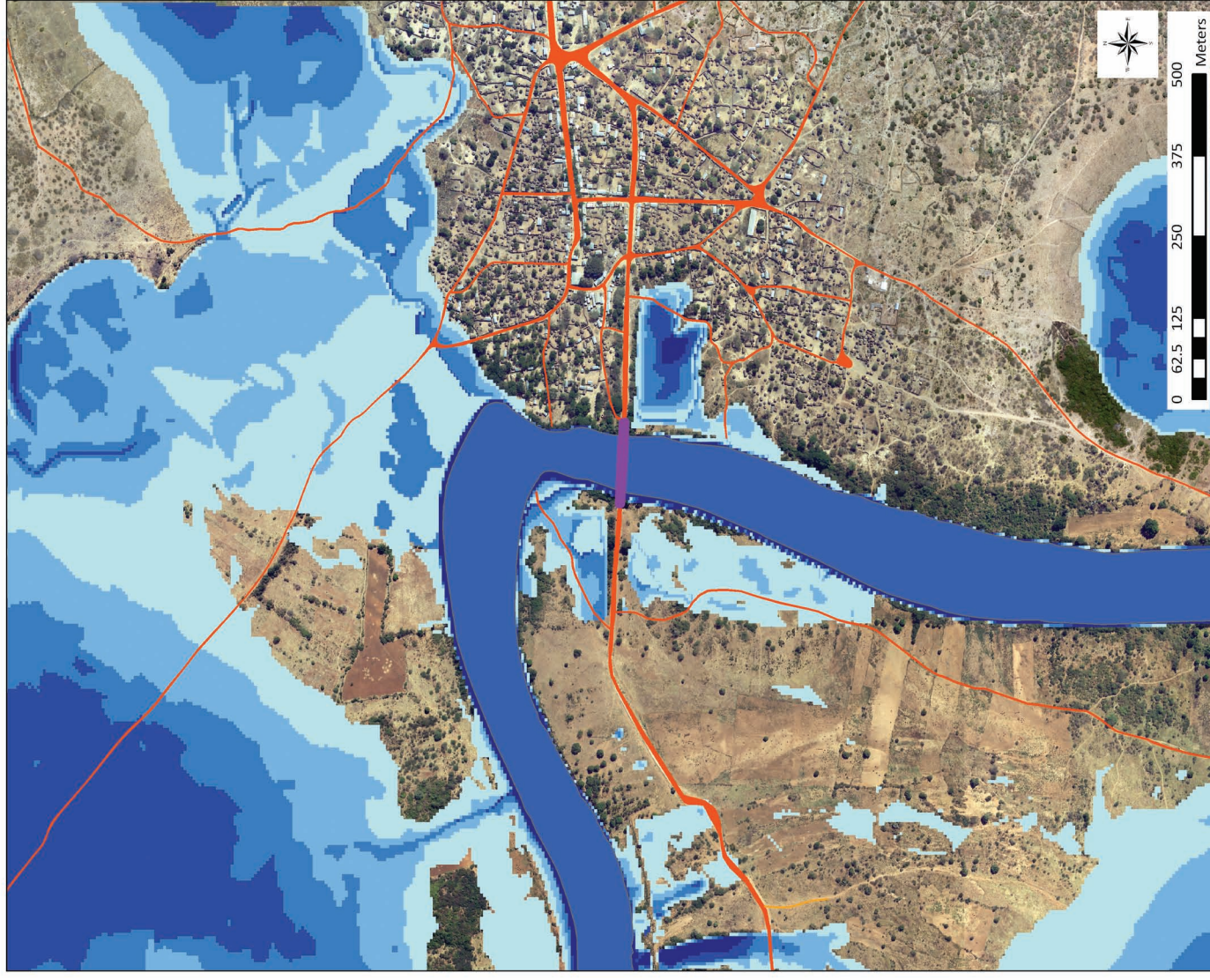
Flood water depth (m)

- 0.01 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- >2.00

— Paved road
 — Unpaved road
 — Trails
 — Bridge
 — River

Flood risk map for Bu'aale - 100 year return period

**Kharidadda halista fatahaadda ee Bu'aale
 100 sanaba soo noqota mar**



Flood water depth (m)

- 0.01 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- >2.00

— Paved road
 — Unpaved road
 — Trails
 — Bridge
 — River