

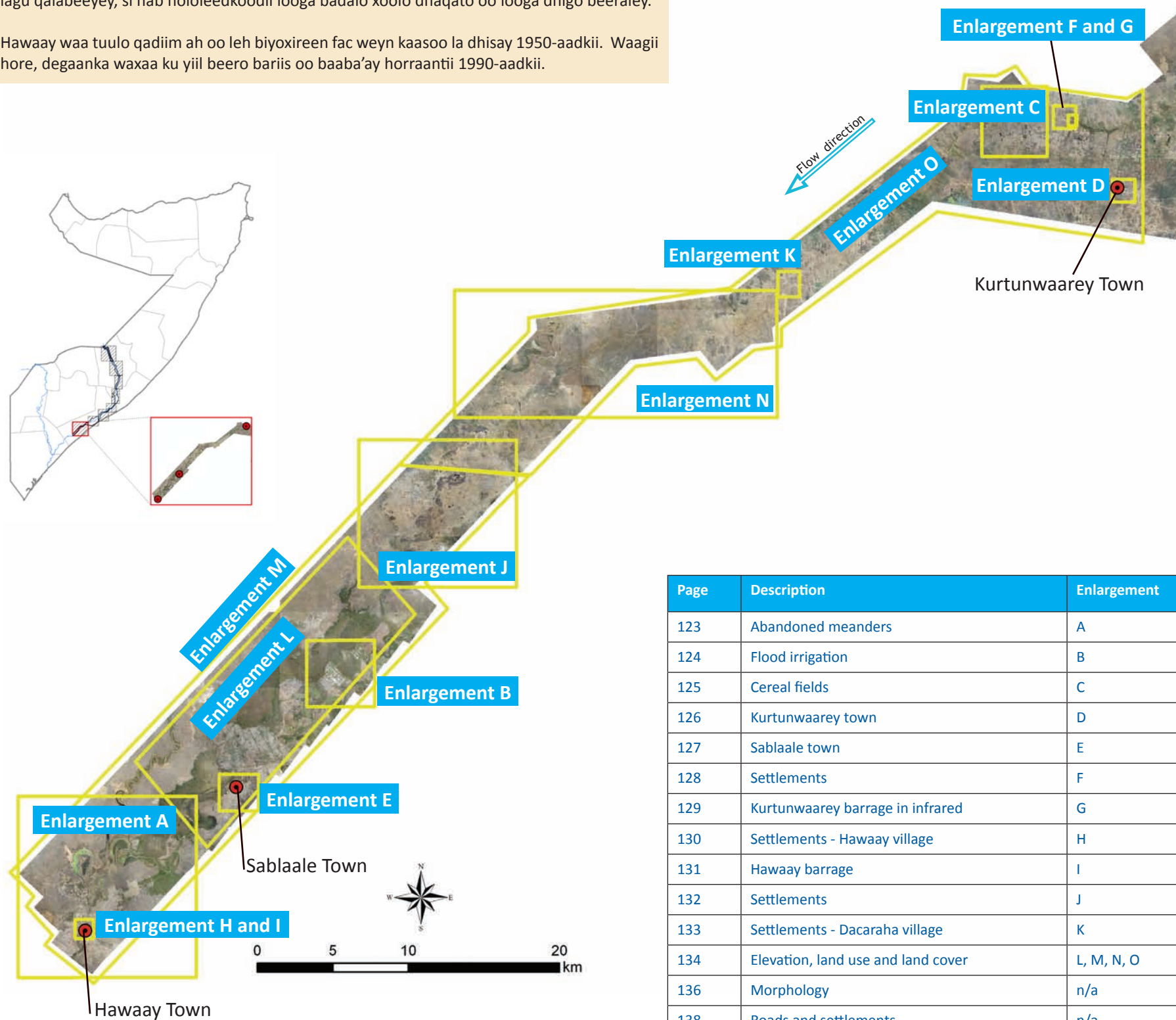
## Kurtunwaarey-Sablaale-Hawaay

Kurtunwaarey and Sablaale settlements were created to resettle populations affected by severe drought that hit the central and northern regions of Somalia between 1973 and 1974. Two barrages were built to help the settled population, previously pastoralists, to grow irrigated crops in heavily mechanized schemes, changing their livelihood system from pastoralism to farming.

Hawaay is an old village with one of the oldest barrages built in the 1950s. Previously the area had big rice schemes which collapsed in the early 1990s.

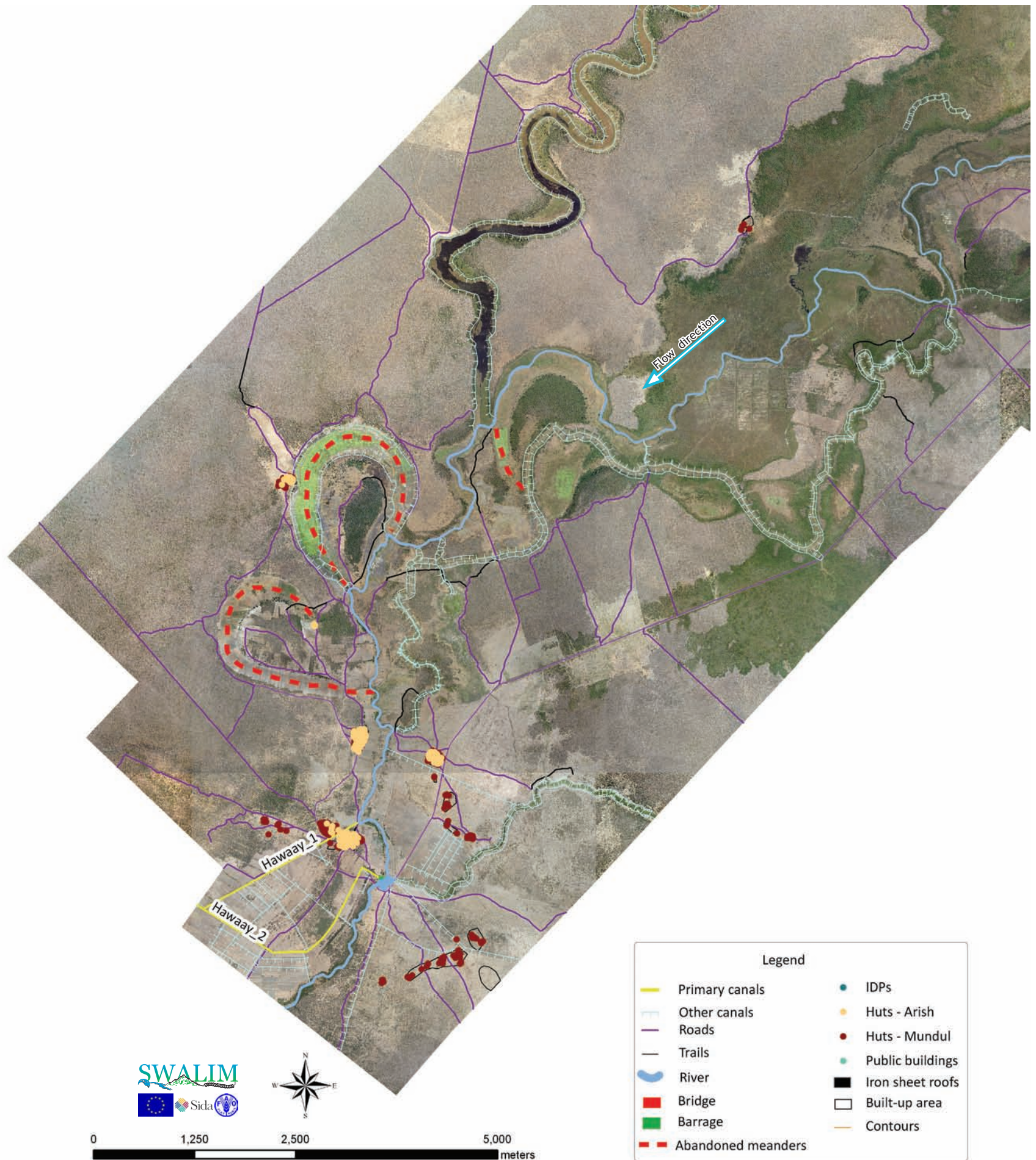
Degmooyinka Kurtunwaarey iyo Sablaale waxaa loo abuuray dib-udejinta dadweyne ay waxyeeshay abaar ba'an oo ka dhacday gobollada dhexe iyo waqooyi ee Soomaaliya mudadii u dhexaysay 1973 iyo 1974. Labo biyoxireen ayaa la dhisay si caawiyo dadkii la dejiyey, oo horay u ahaa xoolo dhaqato, si ay u beertaan dalagyada waraabka oo qalabka makiinadaha culus lagu qalabeeyey, si hab nololeedkoodii looga badalo xoolo dhaqato oo looga dhigo beeraley.

Hawaay waa tuulo qadiim ah oo leh biyoxireen fac weyn kaasoo la dhisay 1950-aadkii. Waagii hore, degaanka waxaa ku yiil beero bariis oo baaba'ay horraantii 1990-aadkii.



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## Abandoned meanders Leexleexyo laga guuray

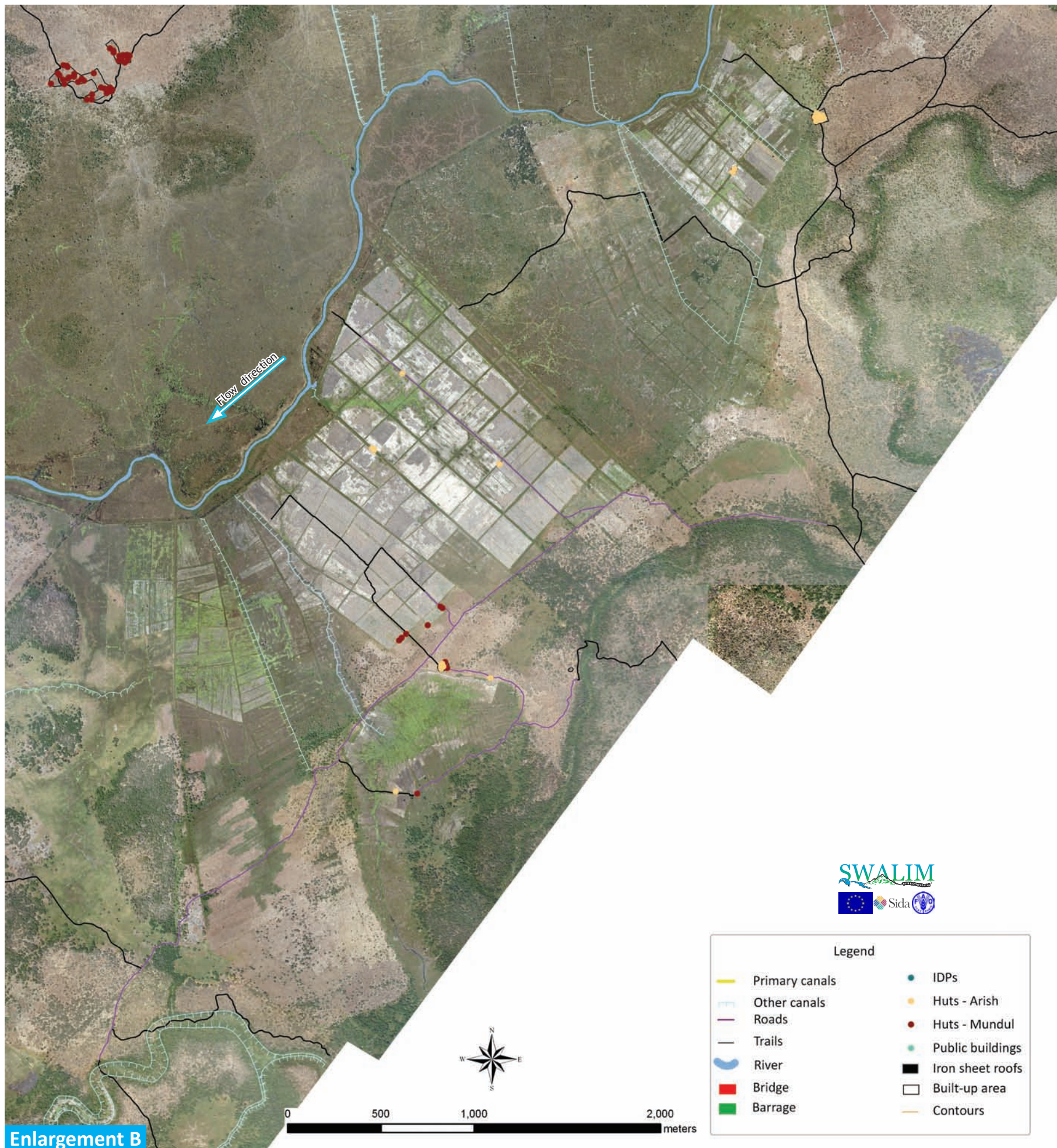


**Enlargement A**

A few kilometers downstream of Kurtunwaarey, the Shabelle River spreads into wetlands, taking different courses. The flow reduces and most of the water gets lost before reaching Sablaale in the dry season. The light green colour in some abandoned meanders shows the presence of papyrus on the still waters, used by locals as roofing material and for making mats.

Wabiga dhabta ah waxaa lagu muujiyey xariijinta buluug ah iyo leexleexyada wabigu ka guuray oo xarriijimo casaan googo'an ah. Midabka cagaarka khafiifka ah ee ku dhexjira laga guuray waxay tusinaayaan dacaar ku dhex taal biyaha fadhiya, oo ay u isticmaalaan dadka degaanku in guryaha lagu dato iyo in darmo laga samaysto.

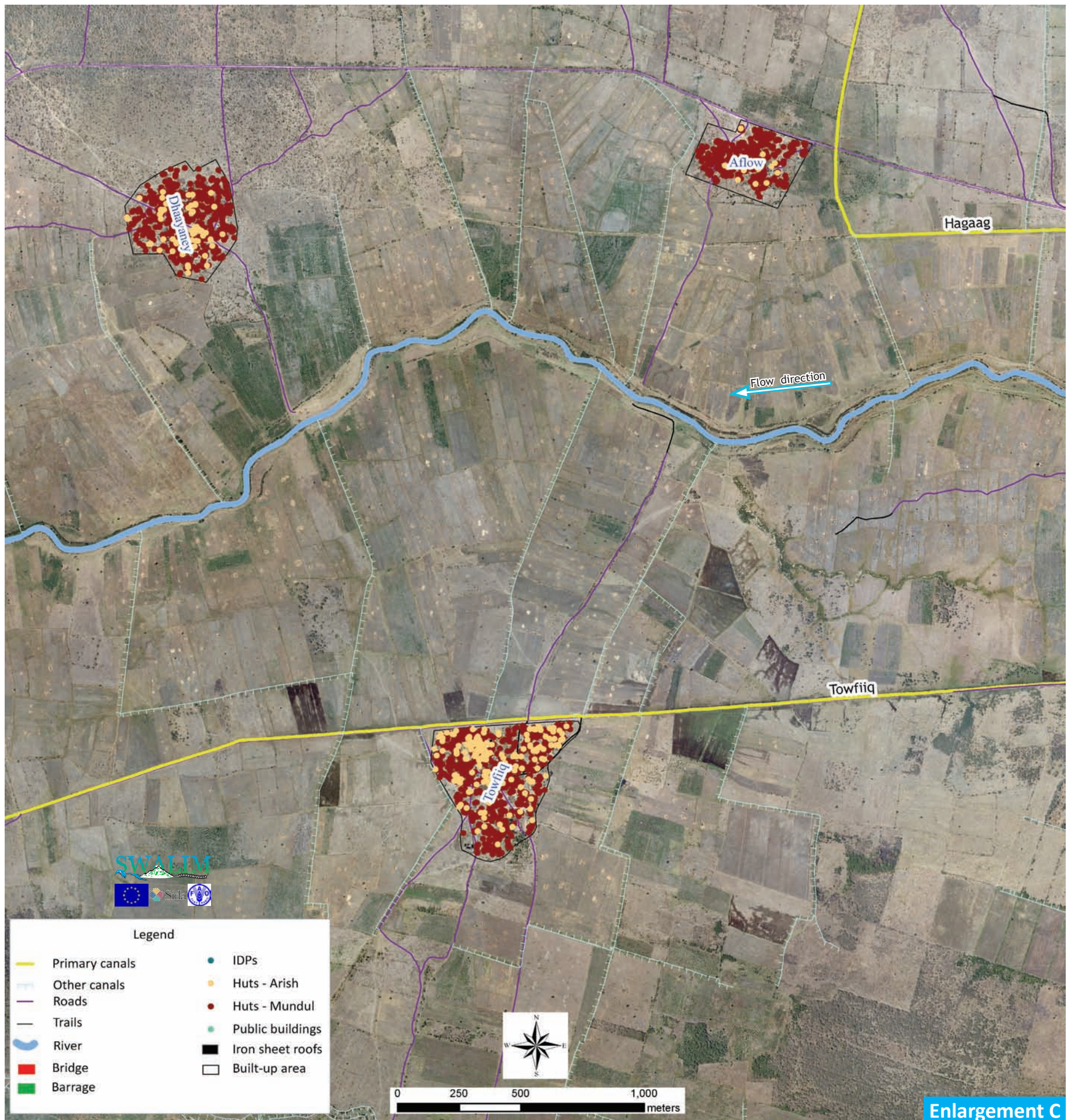
## Flood irrigation Waraab daad ah



This photo in Sablaale shows flooded blocky and bunded whitish fields in which sesame and maize are grown when the water recedes.

Masawirkaan oo ah dagaanka Sablaale wuxuu muujinayaa goobo ay biyo moosas ku wareegsan yihiin oo cadaad ka muuqdo, meelahaan waxaa lagu beeraa sisin iyo galey marka biyuhu ka guraan.

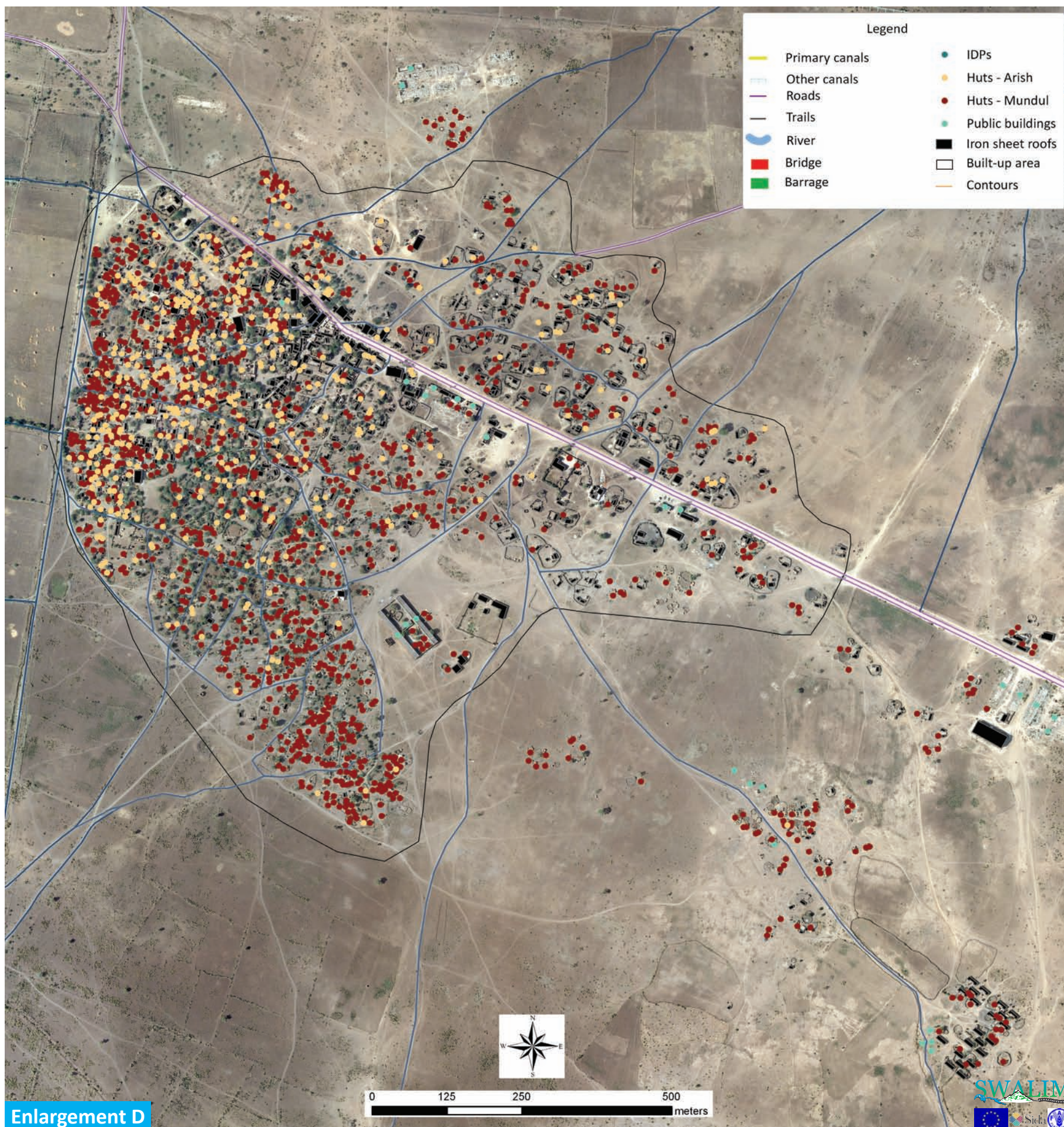
## Cereal fields Beeraha badarka



The major crop in this area of Kurtunwaarey is maize. The yellowish dots in the fields are stockpiles of cereals during the harvest season.

Dalagga la beerto ee ugu muhiimsan degaanka Kurtunwaarey waa galey. Dhibcaha hurdiga ah ee beeraha ka muuqda waa tubaal balka badarka xilligii goysmada.

## Kurtunwaarey town Magaalada Kurtunwaarey

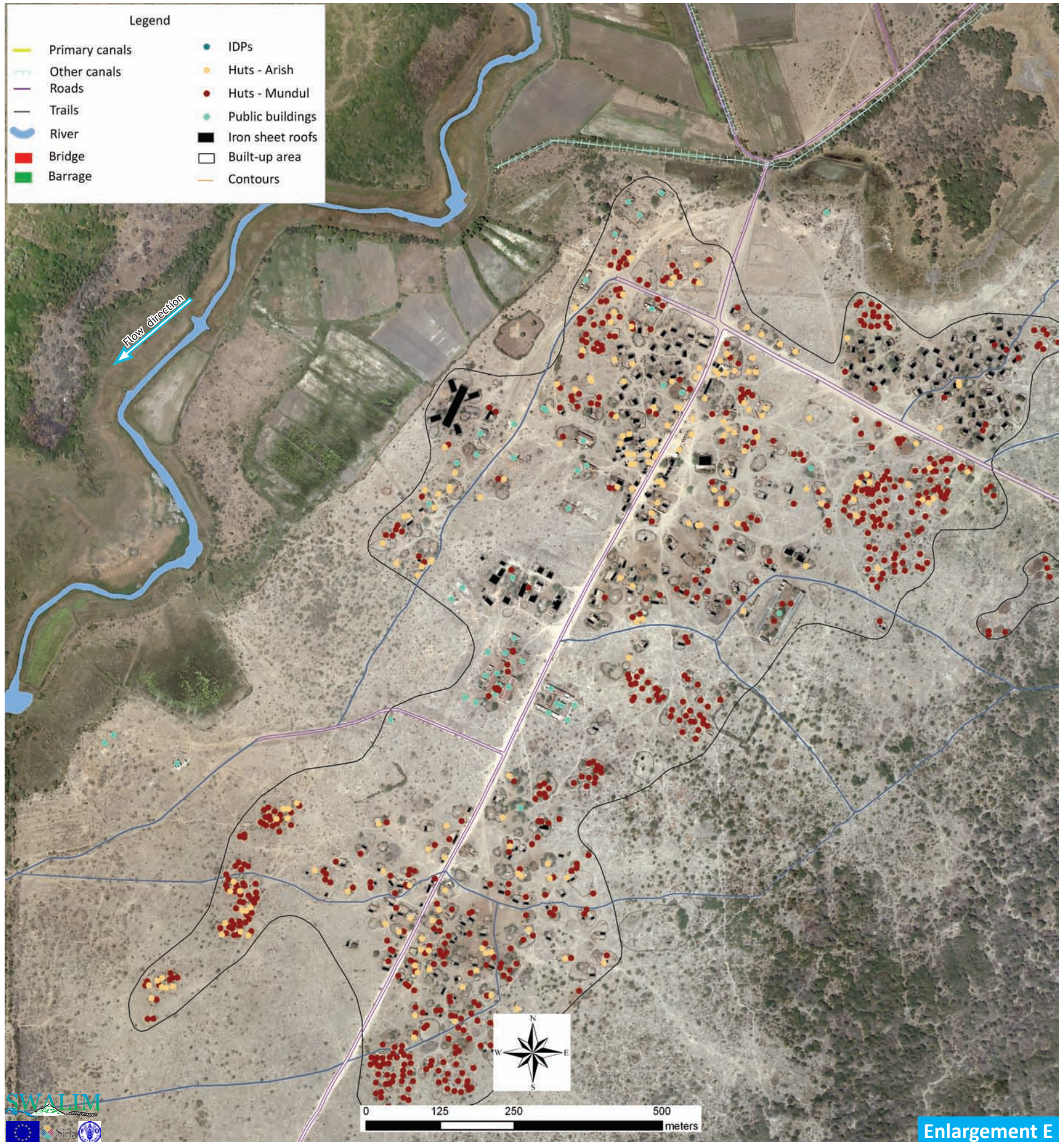


Kurtunwaarey is a district in the Lower Shabelle Region. The main road (thick white line) connects the major towns of Lower Shabelle to Mogadishu. Around the town are many farms growing mainly cereal crops.

Kurtunwaarey waa degmo ka tirsan Gobolka Shabeelaha Hoose. Waddada halbowlaha (xariijinta cad oo buuran) waxay isku xirtaa magaalooyinka muhiimka ee Gobolka Shabeellaha Hoose iyo Mogadishu. Agagaaraha magaalada waxaa ku yaal beero badan oo intooda badan badar ku beeran yahay.



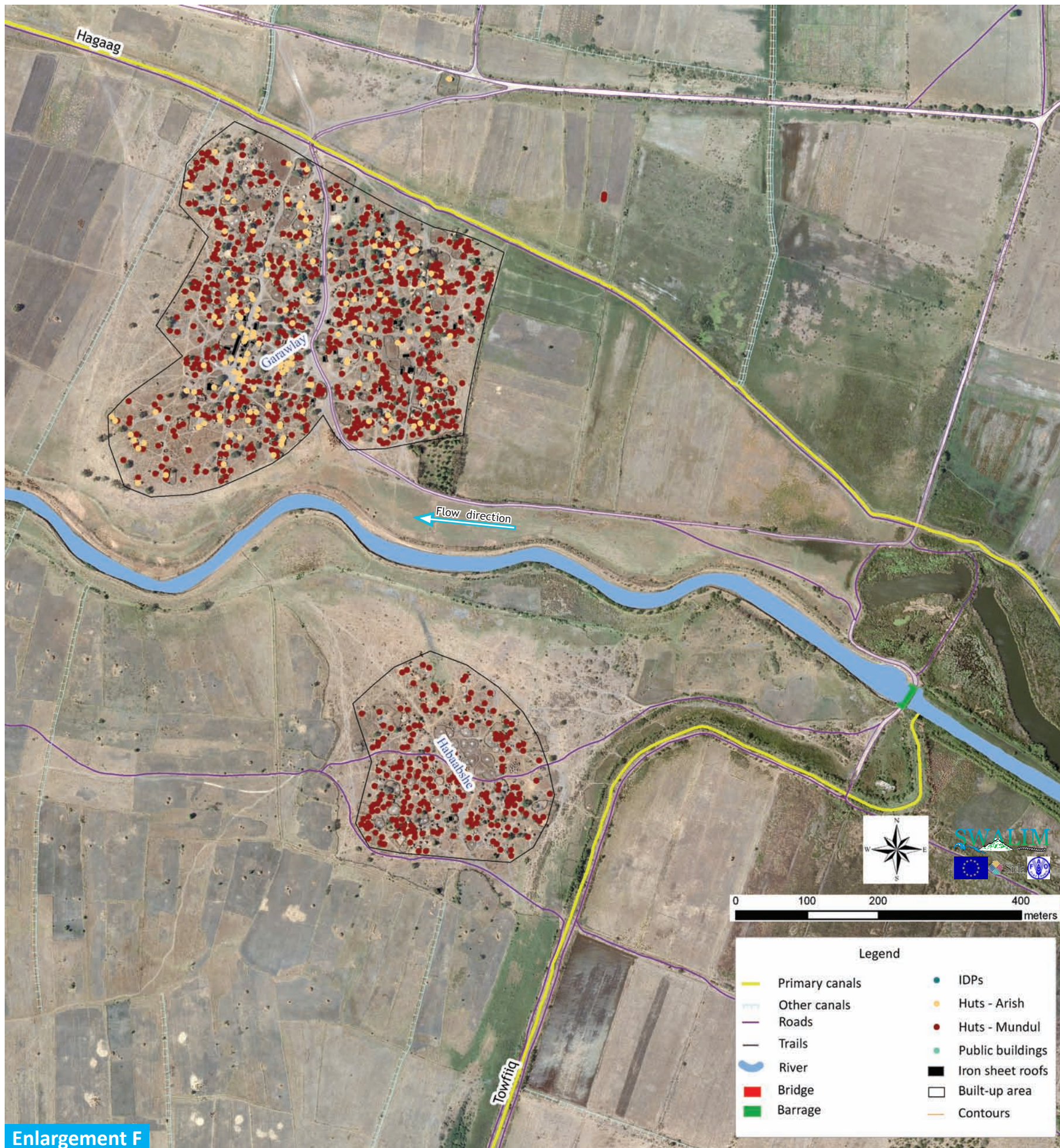
## Sablaale town Magaalada Sablaale



Sablaale is a fairly new settlement that was started in 1973 following the drought that affected populations in central and northern regions of Somalia. Once they were settled close to the river, their livelihood changed from pastoralism to agropastoralism.

Sablaale waa degmo cusub oo la bilaabay waqtigii 1975 oo dabasocota abaartii aafaysay dadkii gobollada dhexe iyo waqooyiga Soomaaliya. Markii dadkii la dejiyey wabiga agtiisa, waxaa qab nololeedkoodii xoolo raacato isu badalay mid beero iyo xoolo dhaqasho isku dhafan ah.

## Settlements Degmooyinka



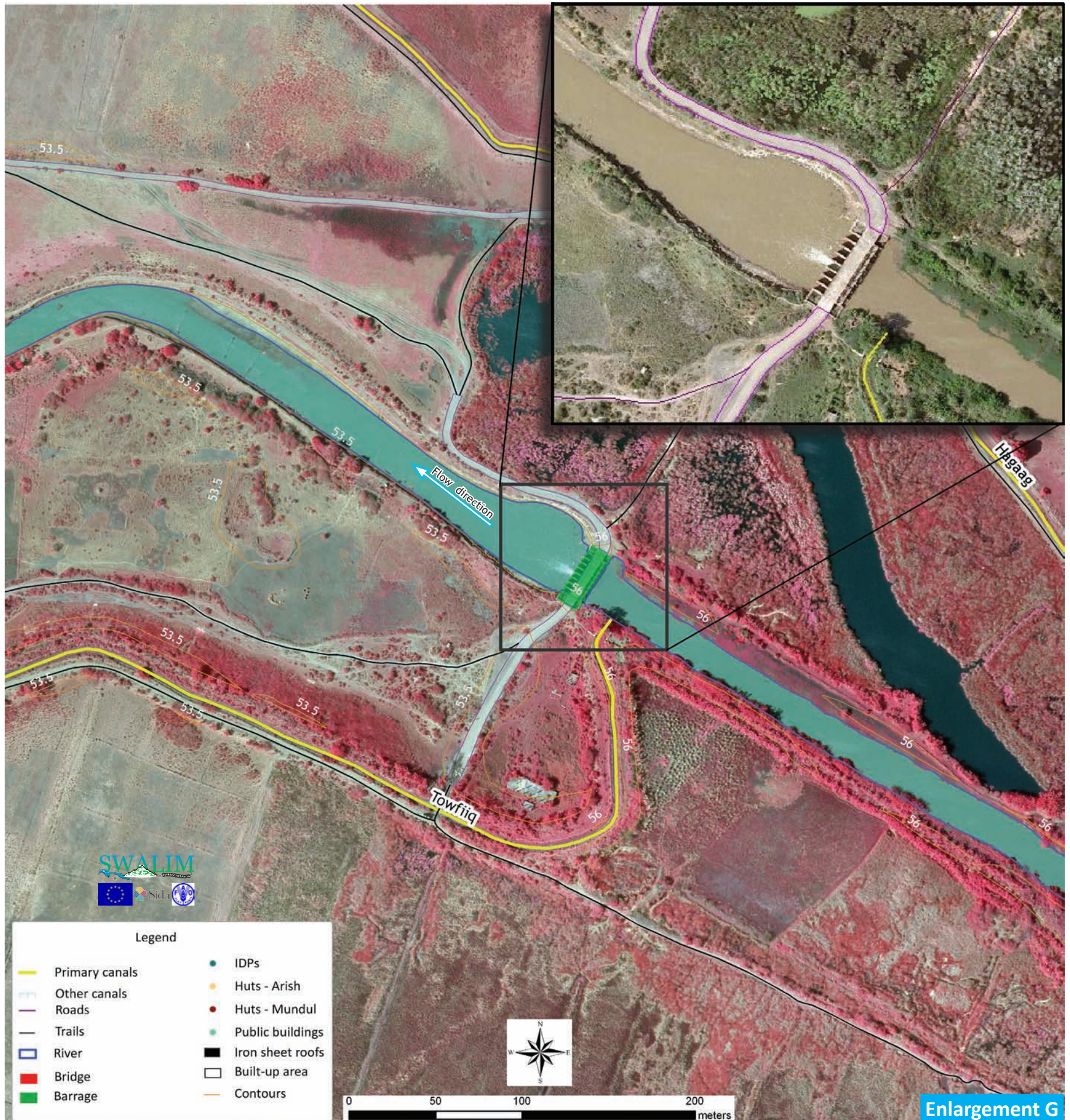
**Enlargement F**

The settlements seen here are Garawlay (west) and Habaabshe (south) villages in Kurtunwaarey district. They are strategically located between the river and two primary canals, namely Hagaag and Towfiq. The villages are surrounded by cereal crop fields.

Degmooyinka halkaan ka muuqda waa tuulooyinka Garawley (galbeed) iyo Habaabshe(koonfur). Degmooyinka waxay si xeeladaysan ugu yaalaan inta u dhaxaysa wabiga iyo labda keliy oo koowaad ah, oo lagu kala magacaabo Hagaag iyo Tawfiq. Tuulooyinka waxaa ku wareegsan beero dalagyo badar ah.

## Kurtuwaarey barrage in infrared

### Biyoxireenka Kurtunwaarey oo midabka shucaaca casaan dhaw leh

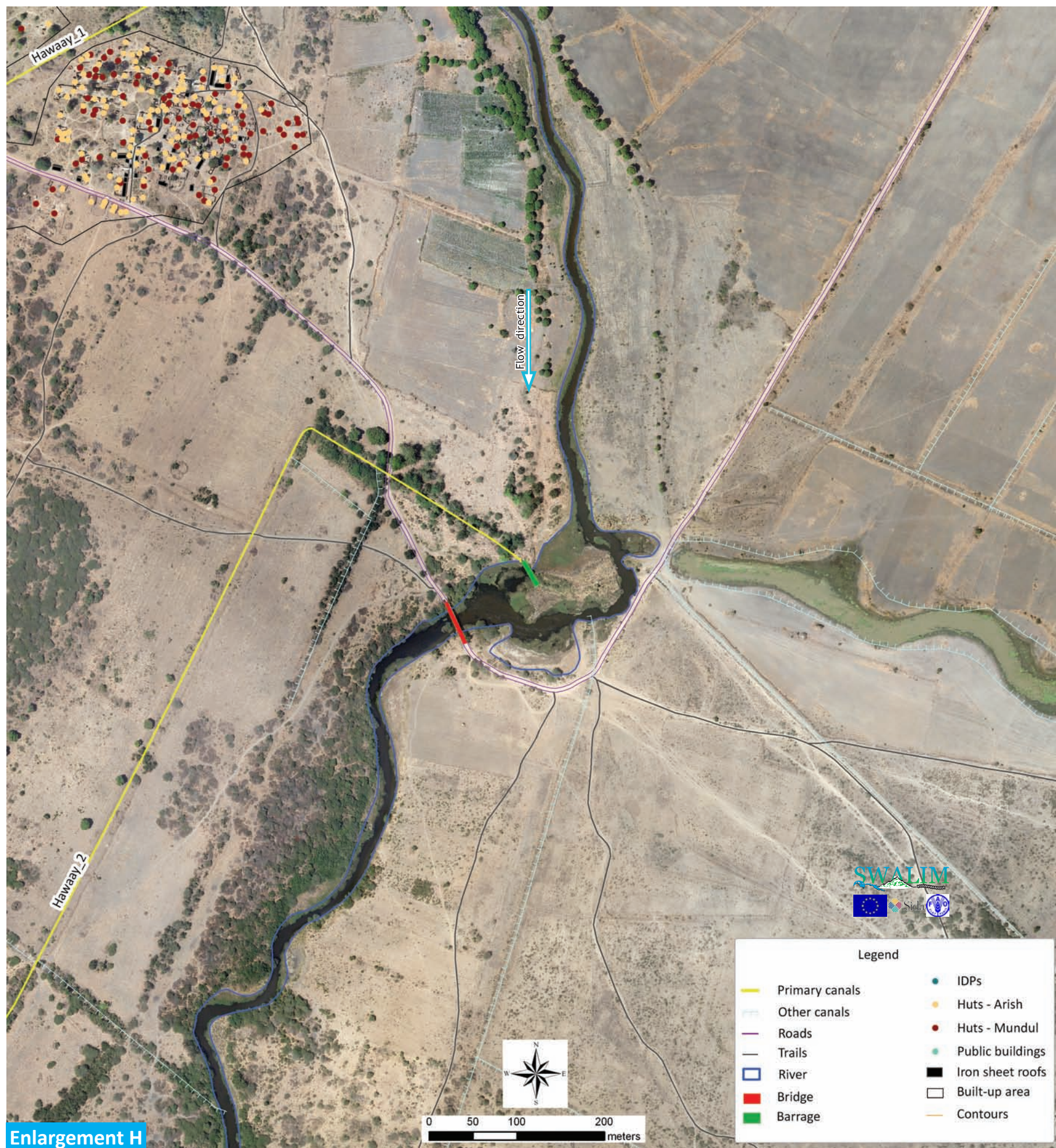


This area was previously marshland before it was artificially reclaimed in the 1970s and a new river course together with this barrage was established for the new resettlement scheme. The barrage (inset) was rehabilitated by FAO-SWALIM in 2009. The vegetation appears red and the running water greenish.

Waagii hore degaankaan wuxuu ahaa biyo fariisi ka hor intaan dib u habayn lagu samayn 1970aadkii oo marinka cusub wabiga loo sameeyey iyo biyoxireenka oo loo sameeyey beerihii dibu-dejinta cusbayd. Biyoxireenka (muuqaalka, midig sare) waxaa dayactiray FAO-SWALIM sanadkii 2009. dhirtu waxaa u muuqataa casaan, biyaha soconayana wax cagaar aad moodo.

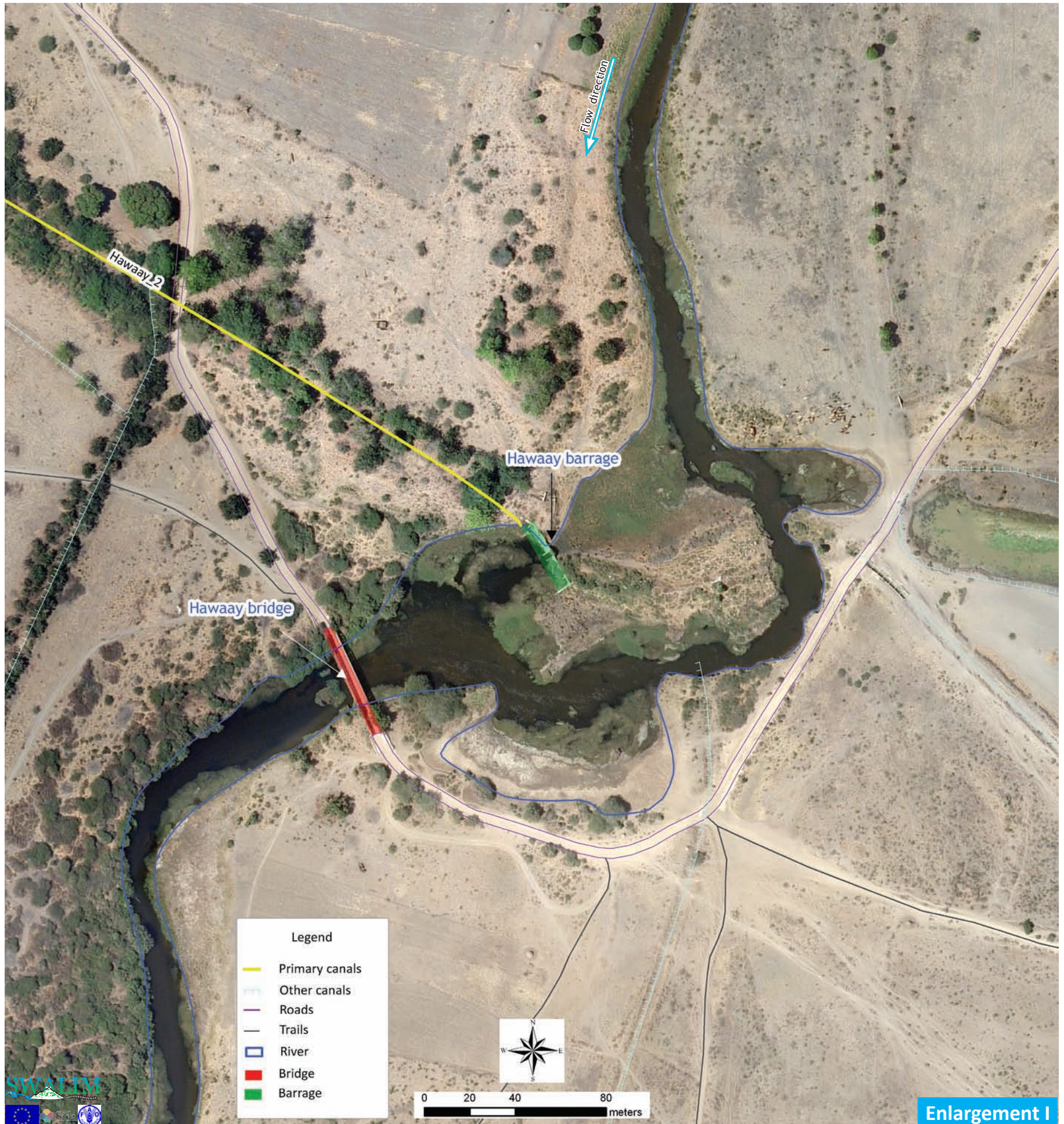


## Settlements - Hawaay village Degmooyinka - tuulada Hawaay



Enlargement H

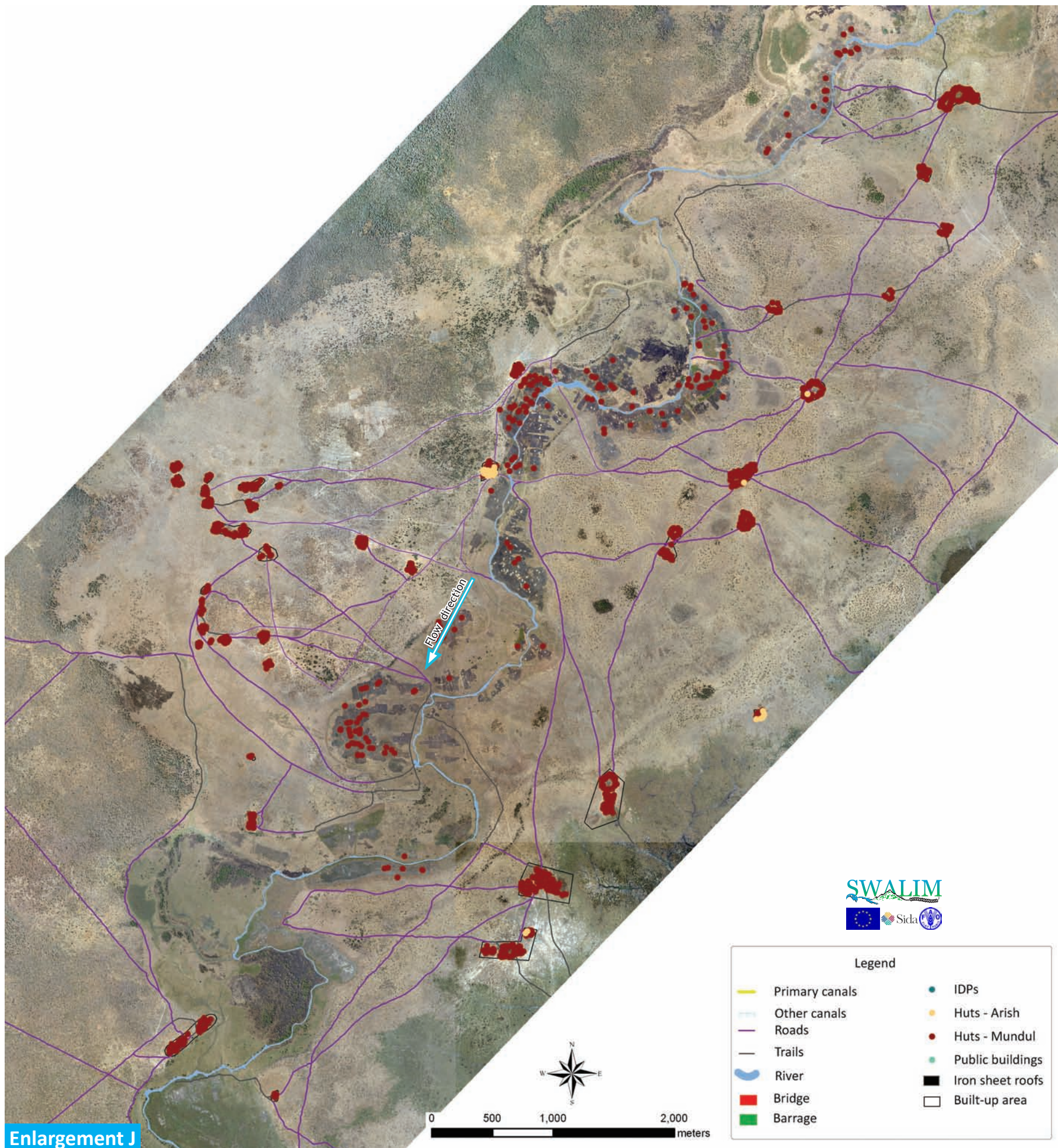
## Hawaay barrage Biyoxireenka Hawaay



The Hawaay barrage was built in the 1950s. The original river course changed during the 1997-98 El Nino rains, leaving the structure sitting on a dry river bed. The bridge, which is located downstream of the barrage, still functions as the new river course joined the old one just before the bridge.

Biyoxireenka Hawaay oo la dhiso 1950aadii waxaa ka muuqata in biyiha wabigu ay ka leexdeen marinkii asaliga ahaa xilligii roobabkii El Nino ee 1997/8. Kaabadda ka muuqata dhanka biyoshubka ka hooseeya biyoxireenka wali waa shaqaynaysaa maadaama wabigu mar kale uu ku soo dhaco marinkiisii hore kaabadda ka horteeda.

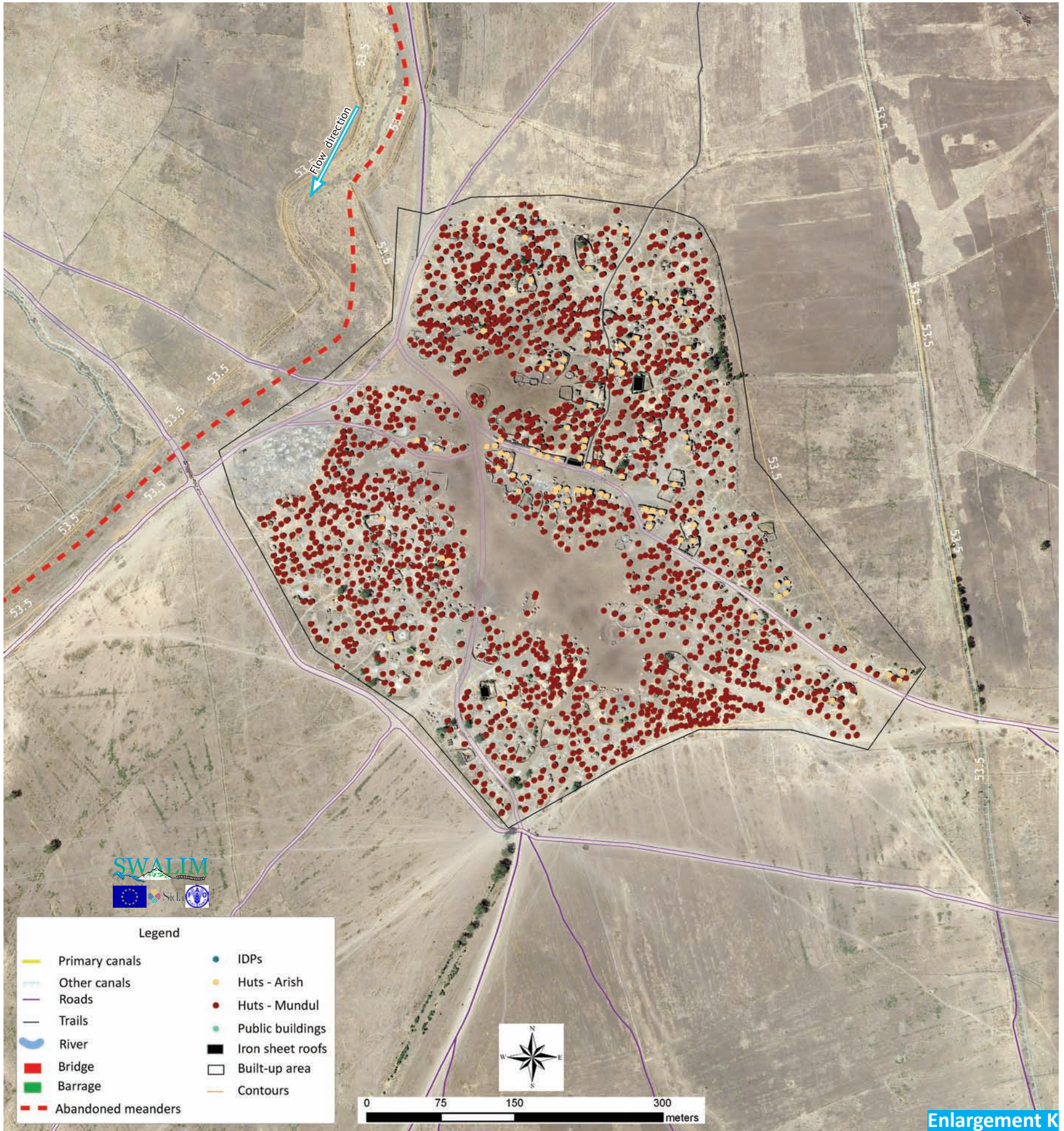
## Settlements Degmooyinka



This is a typical small rural settlement with clusters of huts along the Shabelle River and close to crop fields. Those living close to the river build their huts on the top of levees and close to their farms.

Middaan waa sifaalaha degmooyinka yaryar oo miyi oo duddo aqallo ah oo ku teedsan Wabiga Shabeelle oo u dhaw beeraha dalagyada. Dadka ku nool meelaha wabiga u dhaw waxay aqallada ka dhistaan meelaha doonka (taagga) ah oo u dhaw beerahooda.

## Settlements - Dacaraha village Degmooyinka - tuulada Dacaraha

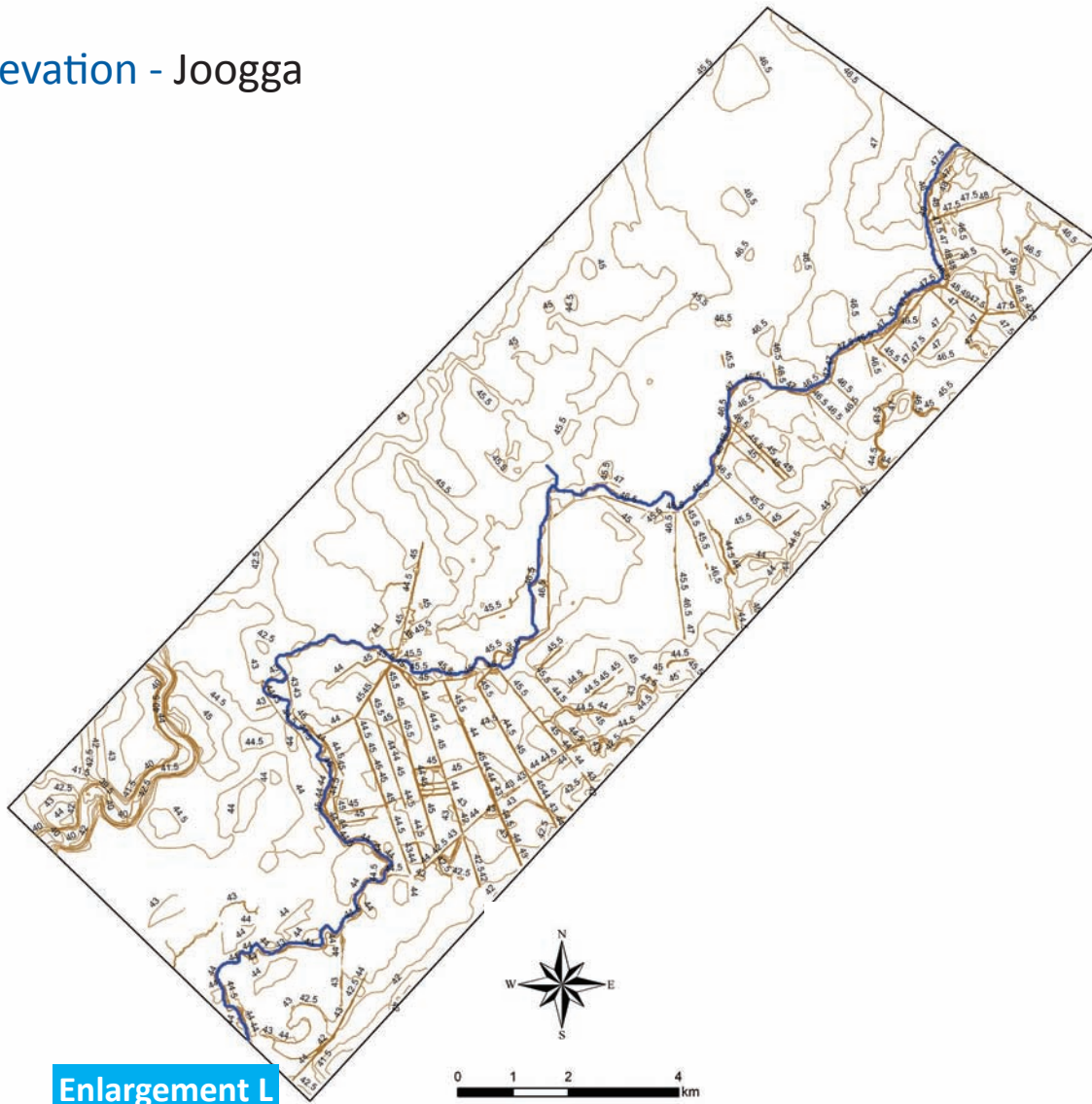


This is a more intense rural settlement surrounded by bigger and more organized crop fields, compared to the cluster of small settlements in the previous page.

Tani waa degaan tuulo miyi oo camiran ayna ku wareegsan yihiin beero dalagyo baaxad weyn oo habaysan, marka la barbar dhigo duddooyinka aqallada degmooyinka yaryar ee yaal boggii hore.

## Elevation, land use and land cover Joogga, isticmaalka dhulka iyo hu'ga dhulka

### Elevation - Joogga



Enlargement L



Banana is an important produce in Kurtunwaarey area. Some of it is for export.

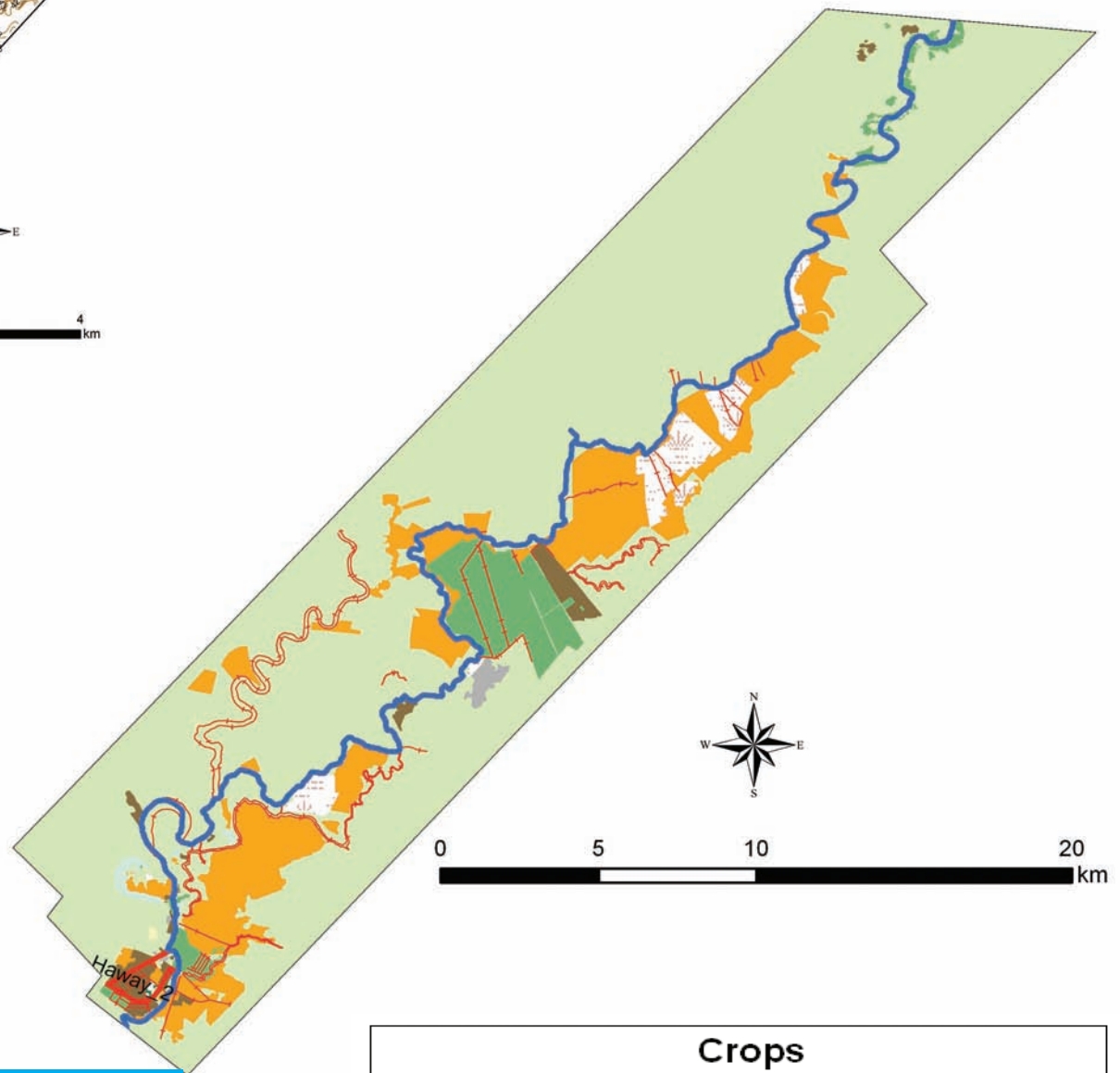
Moosku waa waxsoosaar muhiim u ah degaanka Kurtunawaarey. Qaar ka mid ah waa la dhoofiyaa.

### Land use and land cover

Irrigated farming takes place in the central and lower end of this area where irrigation infrastructure still exists. In the upper end there is less intensive farming, perhaps due to the break down of the irrigation infrastructure. Abandoned fields are very many in the area. Sesame fields also occur.

### Isticmaalka dhulka iyo hu'ga dhulka

Beeraha waraabku waxay ku yaaliin bartamaha iyo cirifka hoose ee degaankan halkaasoo kaabayaasha waraaku ay weli jiraan. Cirifka sare, kuma yaaliin beero xoog leh, waxaa laga yaabaa in ay ugu wacan tahay dhibaato gaartay kaabayaasha waraabka.

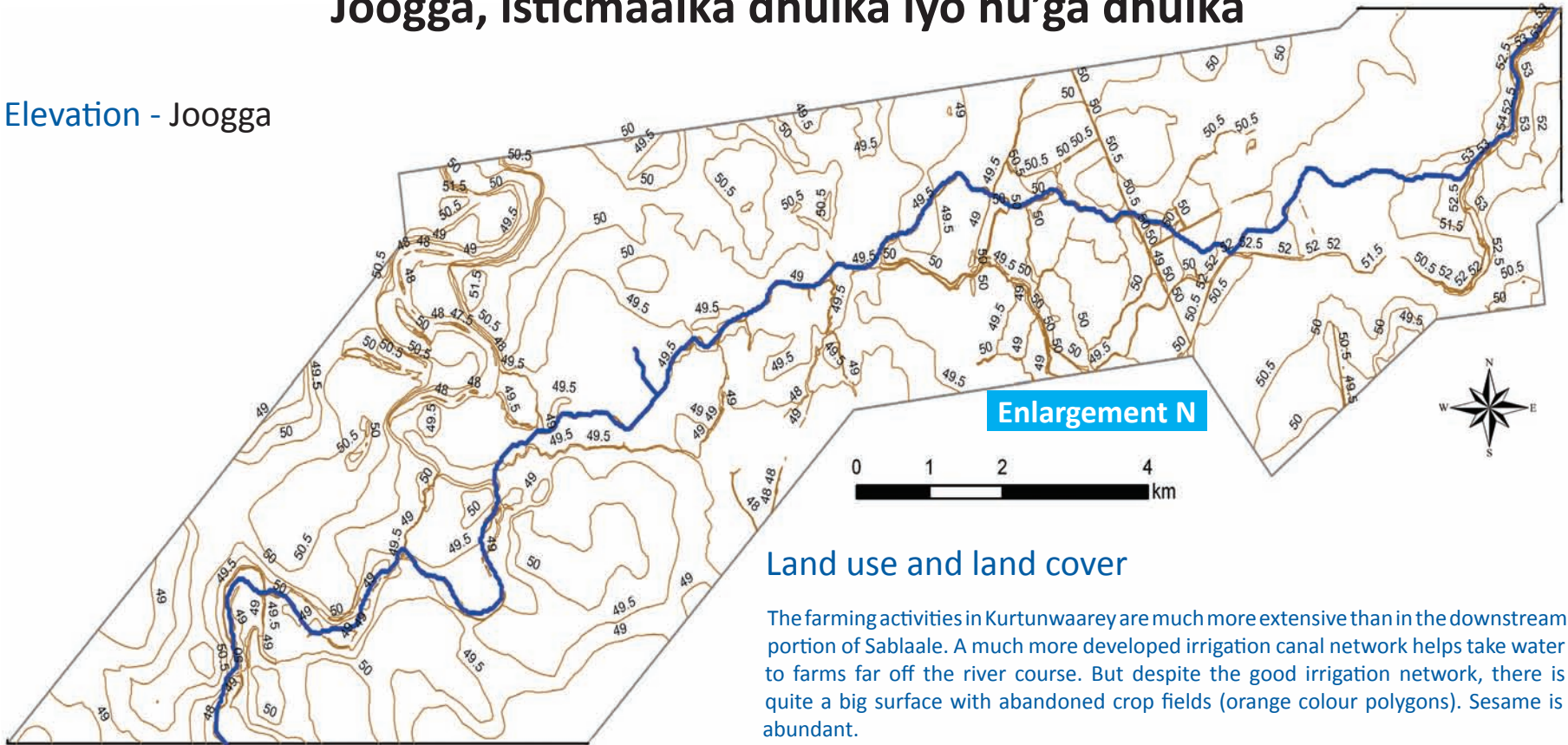


Enlargement M

Crops					
	Cereals		Mango		Settlement
	Mixed crops		Banana		Bare soil
	Sesame		Mixed tree crops		River
	Rice		Abandoned fields		Main canals
	Coconut		Natural vegetation		Minor canals

## Elevation, land use and land cover Joogga, isticmaalka dhulka iyo hu'ga dhulka

### Elevation - Joogga



### Land use and land cover

The farming activities in Kurtunwaarey are much more extensive than in the downstream portion of Sablaale. A much more developed irrigation canal network helps take water to farms far off the river course. But despite the good irrigation network, there is quite a big surface with abandoned crop fields (orange colour polygons). Sesame is abundant.

### Isticmaalka dhulka iyo hu'ga dhulka

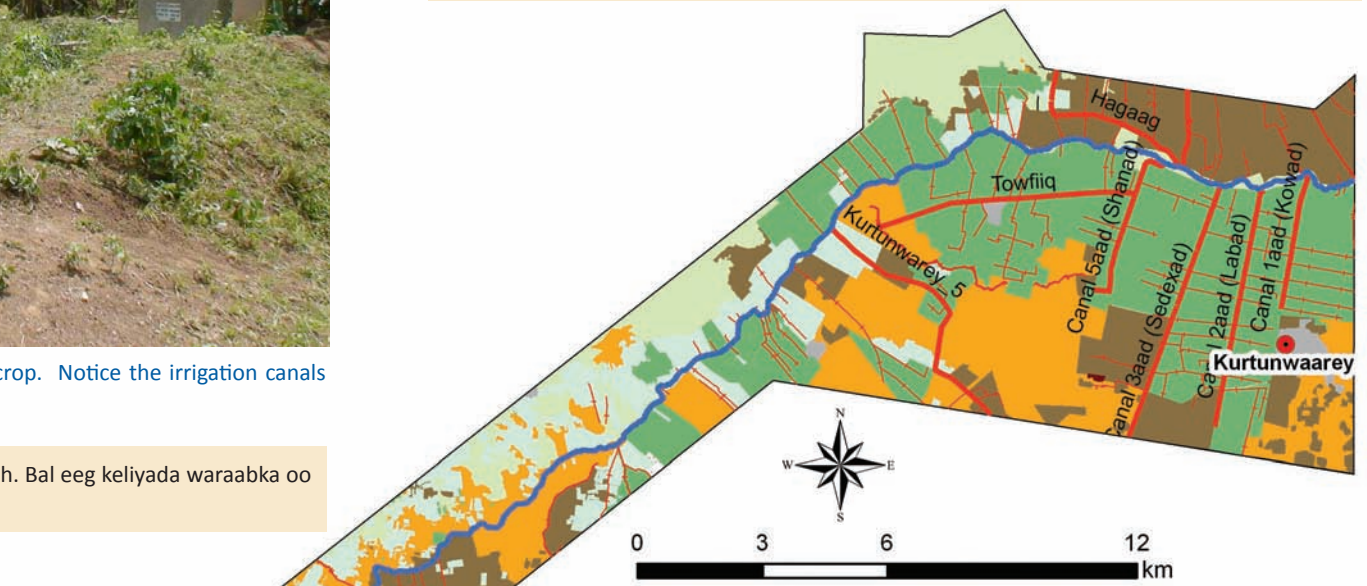
Hawlaha beeraha Kurtunwaarey aad ayey uga baaxad weyn yihiin kuwa xagga qaybta biyoshubka hoos jira ee Sablaale. Keliyo waraab oo isku xiran aadna u habaysan ayaa gacan ka geysta beeraha waraabintooda oo gaara meelo ka durugsan dooxa wabiga. Inkasta oo uu jiro isku xirka keliyo waraab oo wanaagsan, hadana waxaa jira bed ballaaran oo beero laga tagay ah (meegaarada midabka casuurka ah). Sisintu waa ku badan tahay halkaan.



Banana crop remains an important irrigated crop. Notice the irrigation canals that appear silted.

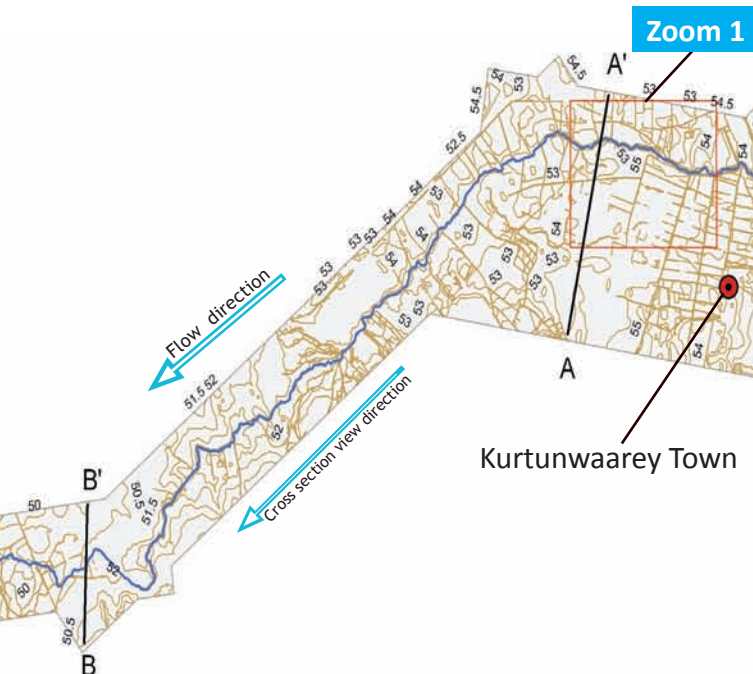
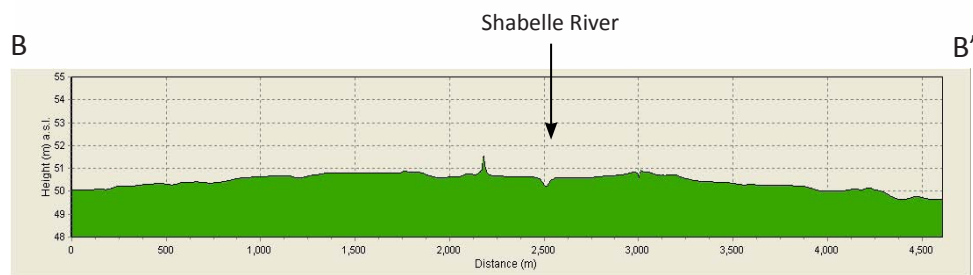
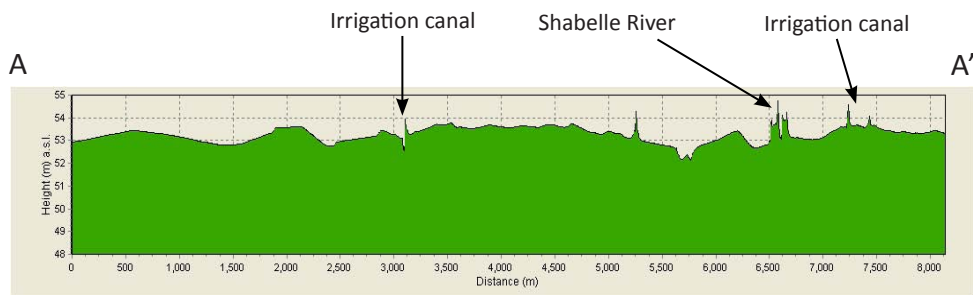
Moosku weli waa dalag waraab oo muhiim ah. Bal eeg keliyada waraabka oo ay ku muuqanayso in ciid ay ka buuxsantay.

### Enlargement O



Crops		
Cereals	Mango	Settlement
Mixed crops	Banana	Bare soil
Sesame	Mixed tree crops	River
Rice	Abandoned fields	Main canals
Coconut	Natural vegetation	Minor canals

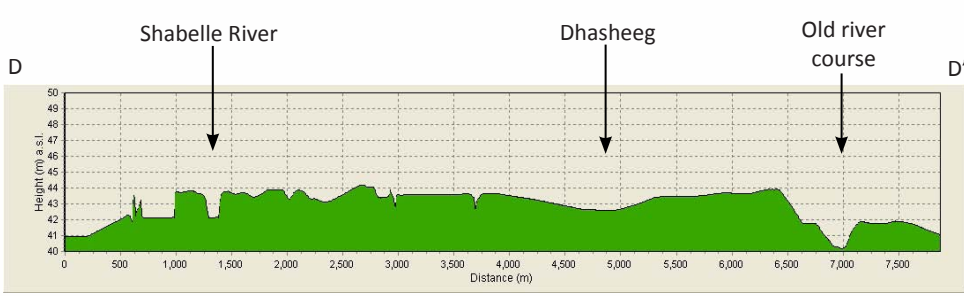
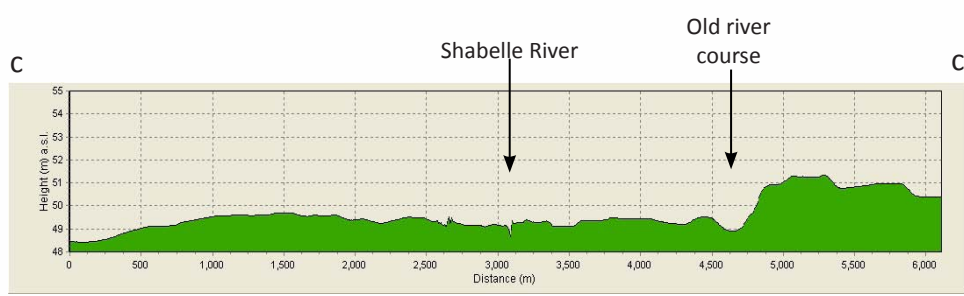
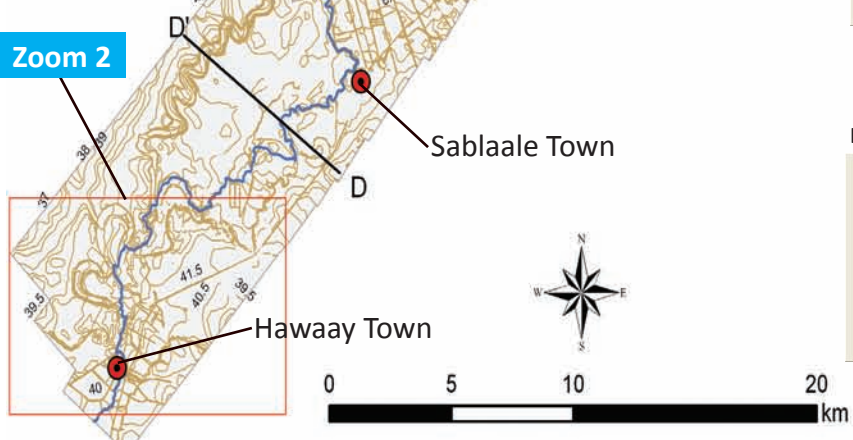
## Morphology Qaab-dhismaha



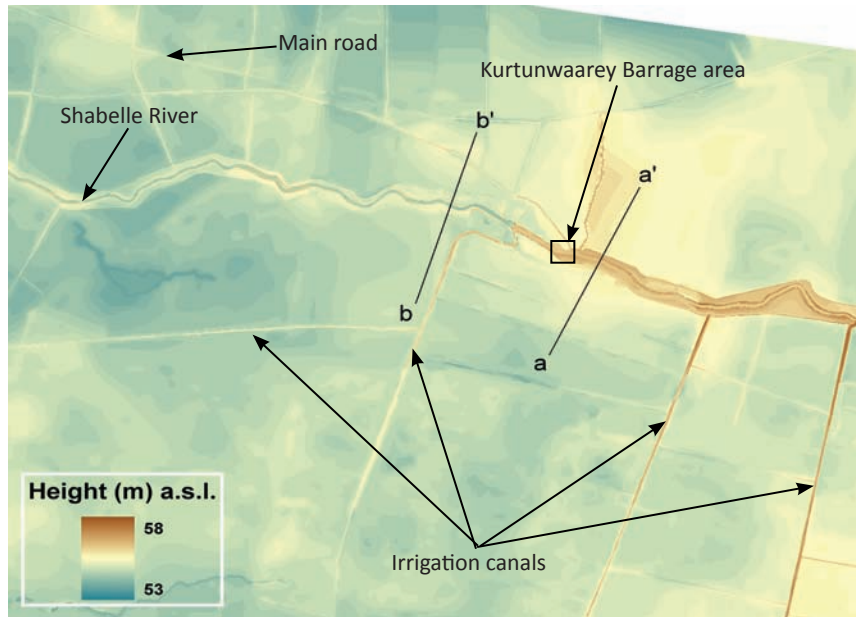
These areas have little elevation variation as can be seen from the contour map and cross sections. Due to the flat terrain, water floods easily during the high flows and it is one of the most flood prone areas of Lower Shabelle.

Degaannadaan waxay leeyihiin joog isbadel yar leh sida lagu arki karo khariidadda joogyada isle'eg iyo jeexyada gudubka ah. Sidaas darteed biyuhu si fudud ayey ugu fathi karaan marka biyosocodku sarreeyo waxayna ka mid yihiin degaannada ay badnaa fatahaaddu soo gaarto.

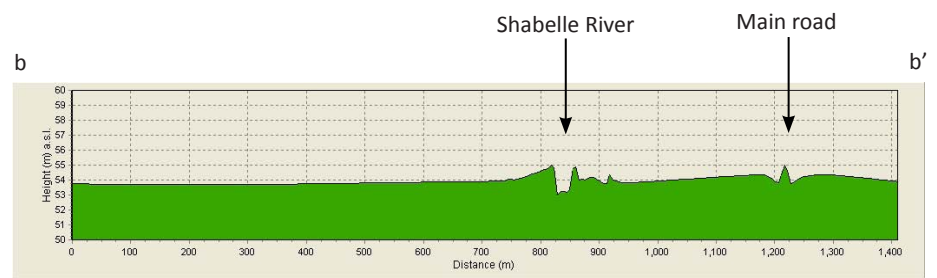
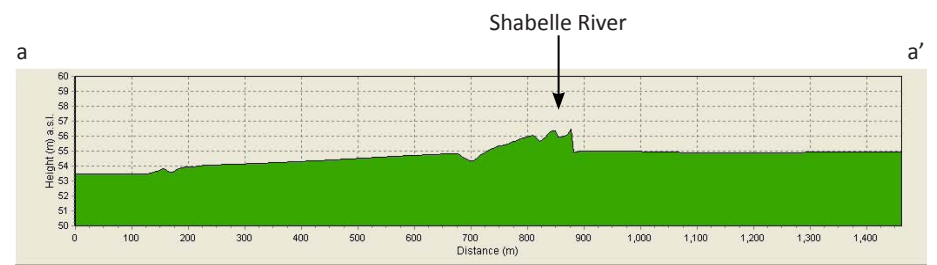
Zoom 2



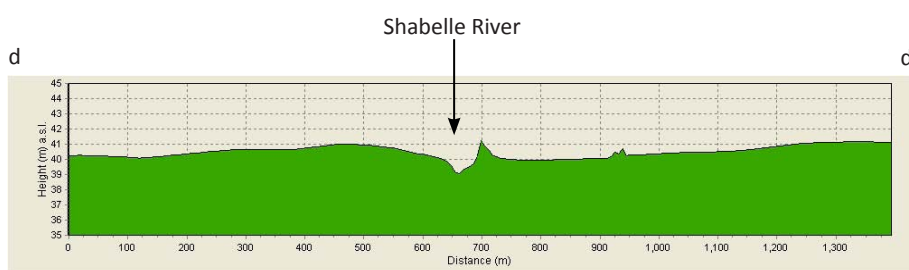
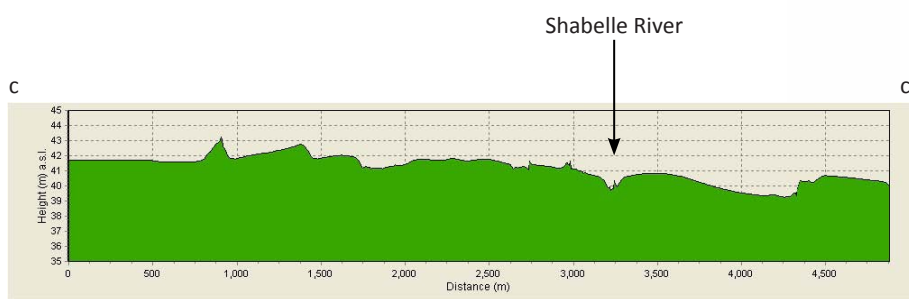
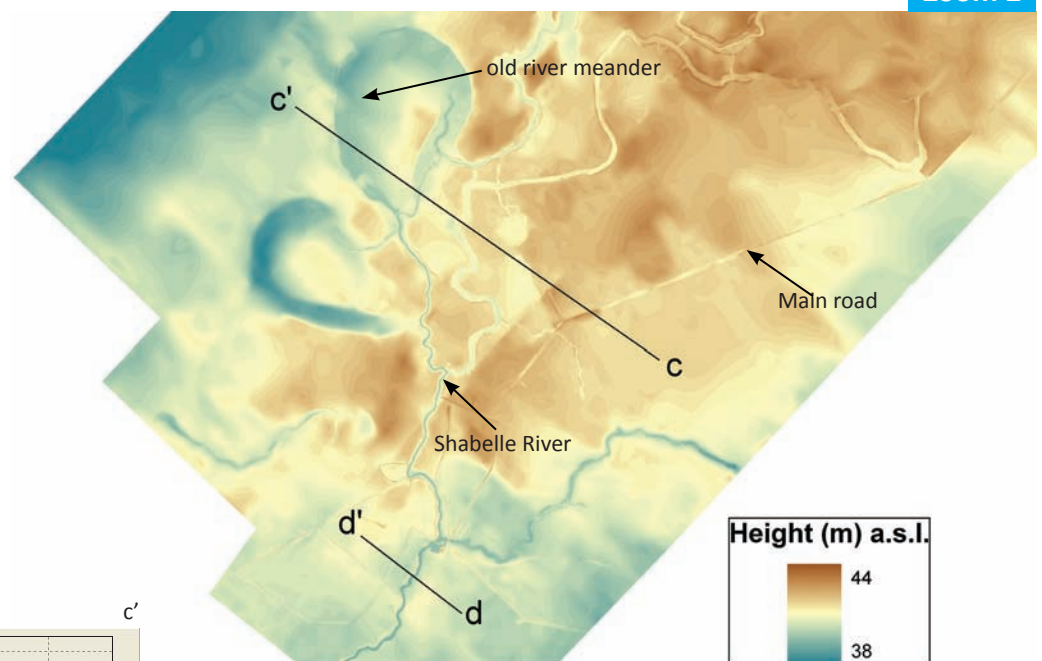
# Morphology Qaab-dhismaha



Zoom 1



Zoom 2



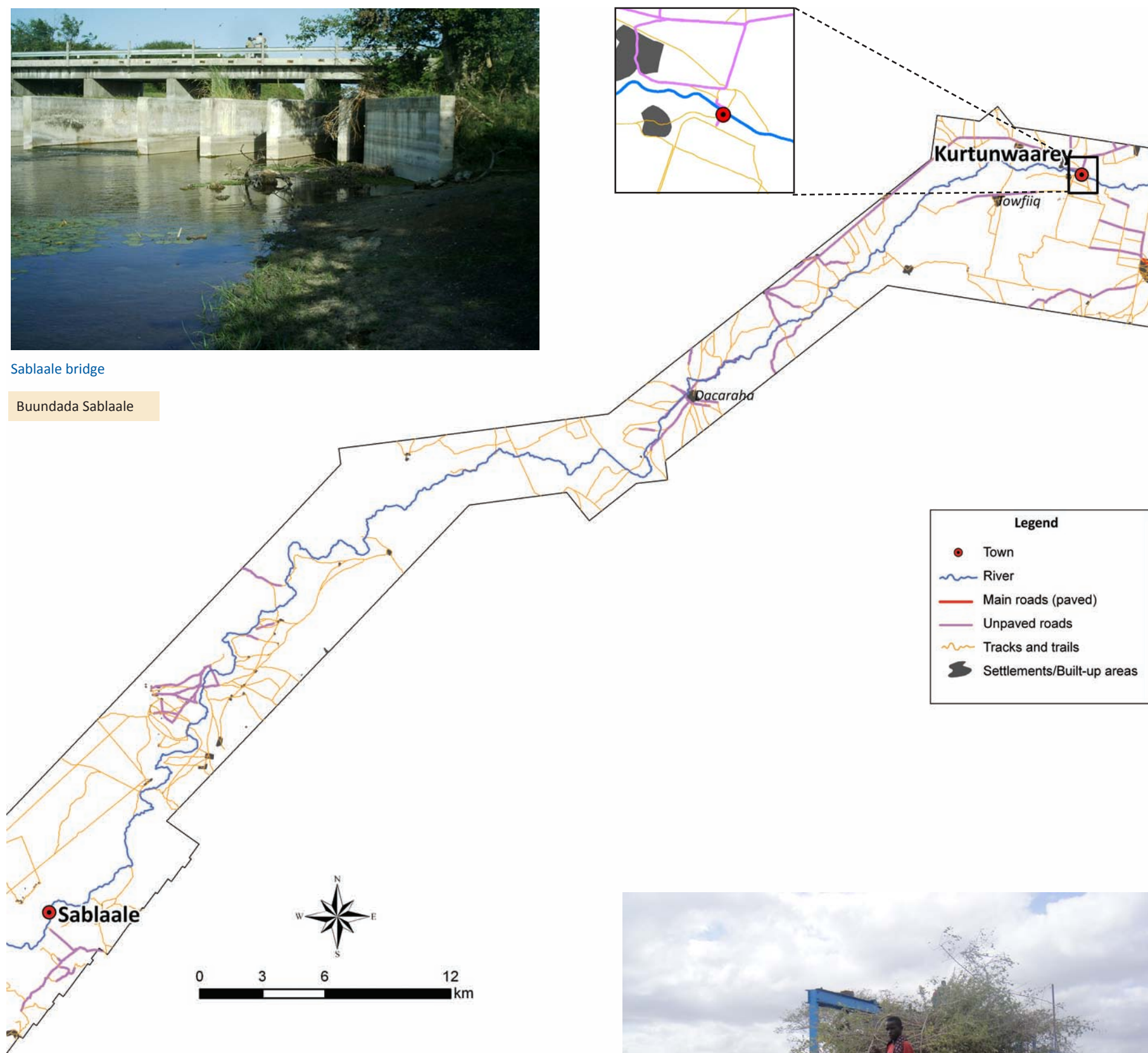


## Roads and settlements Waddooyinka iyo degmooyinka



Sablaale bridge

Buundada Sablaale



**Legend**

- Town
- ~ River
- Main roads (paved)
- Unpaved roads
- Tracks and trails
- Settlements/Built-up areas



Kurtunwaarey bridge

Buundada Kurtunwaarey

The road network is more dense in the major settlement areas with extensive farming activities. The common means of transport includes trucks, donkey carts, oxen carts and pack camels.

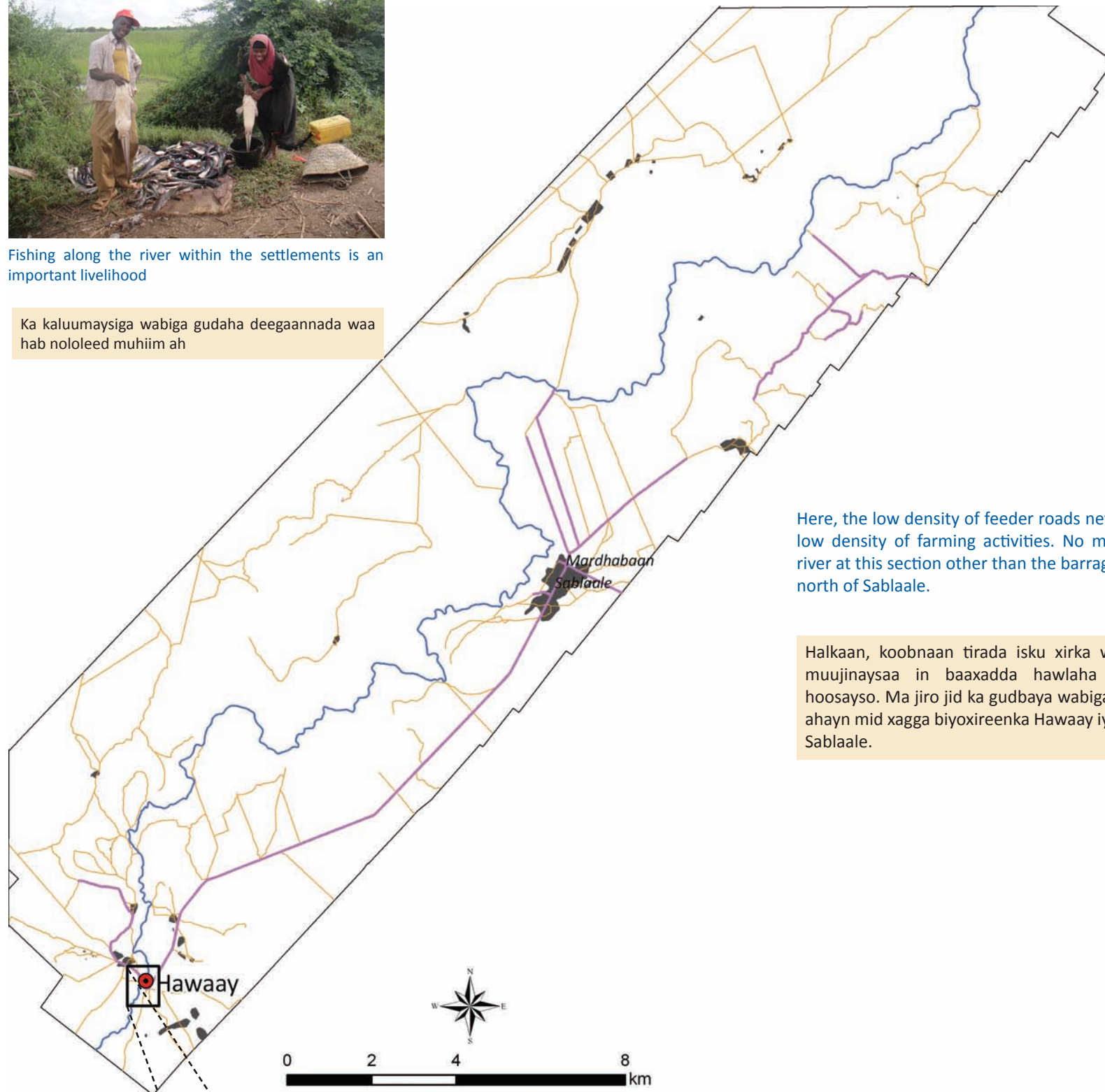
Isku xirka waddooyiku aad ugu badan yihiin meelaha degmooyinka muhiimka ah oo ay jiraan hawlo beereed baaxad leh. Gaadiidka si caadi ah loo adeegsado waxay isugu jiraan baabuur, gaari dameero, gaari dibiyo iyo awrta la rarto.

## Roads and settlements Waddooyinka iyo degmooyinka



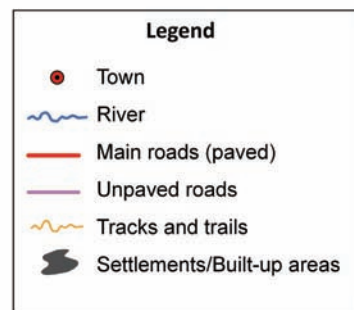
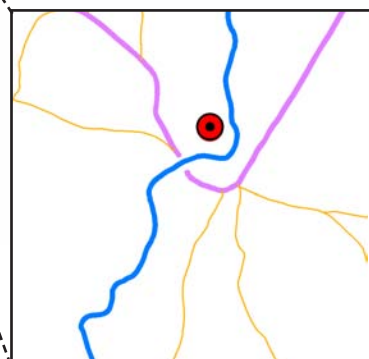
Fishing along the river within the settlements is an important livelihood

Ka kaluumsiga wabiga gudaha deegaannada waa hab nololeed muhiim ah

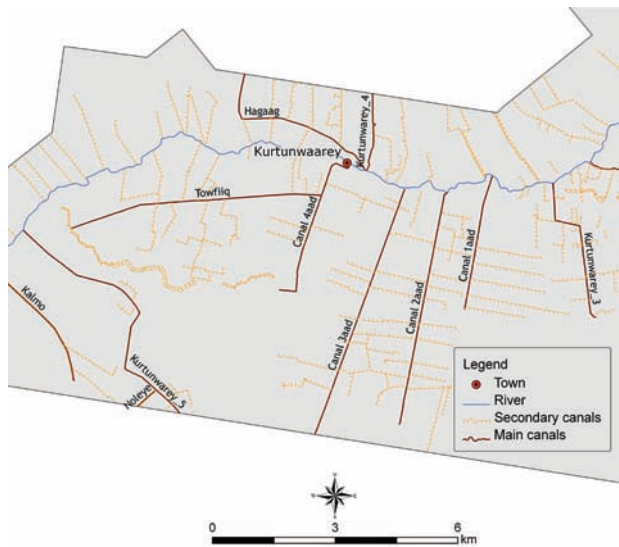


Here, the low density of feeder roads network also reflects the low density of farming activities. No major road crosses the river at this section other than the barrages at Hawaay and just north of Sablaale.

Halkaan, koobnaan tirada isku xirka wadiiqooyika waxay muujinaysaa in baaxadda hawlaha waxbeerashado ay hoosayso. Ma jiro jid ka gudbaya wabiga qaybtaan oo aan ka ahayn mid xagga biyoxireenka Hawaay iyo waqooyiga u dhaw Sablaale.



## Irrigation network Isku xirka waddooyinka

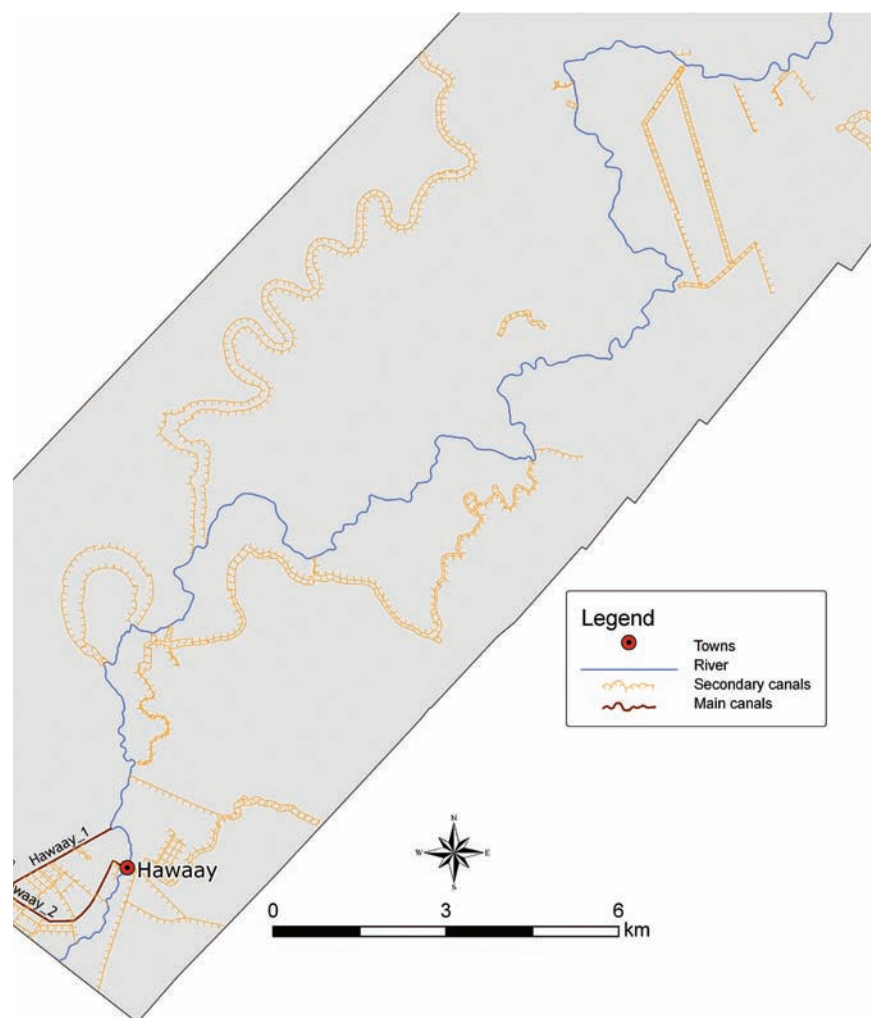


Canal intake at Hawaay. The canal needs rehabilitation

Meel kanaal uu biyo ka qaato oo Hawaay ku taal. Kanaalku wuxuu u baahan yahay dayactir

These two maps show the irrigation network of the areas of Kurtunwaarey (above) and Sablaale/Hawaay (below). The difference in density of irrigation infrastructure is clear. This can be attributed to the larger agricultural settlements that were developed in the 1970s and 1980s. There also appears to be an absence of main canals in the tract between south of Kurtunwaarey and Hawaay.

Labadaan khariidadood waxay tusinayaan isku xirka keliyada waraabka ee degaanka Kurtunwaarey (kor) iyo Sablaale/Hawaay (hoos). Waxaa si cad u muuqanaya farqiga kaabayaasha ka jira meesha. Tanna waxaa loo saarin karaa beeraha baaxadda weyn ee dib u dejinta loo sameeyey oo aad loo hormariyey muddadii u dhaxaysay 1970-aadkii iyo 1980-aadkii. Waxaa kale oo muuqda in inta u dhaxaysa koonfurta Kurtunwaarey iyo Hawaay oo ay ka maqan yihiin keliyo muhimad leh.



Kurtunwaarey barrage after SWALIM rehabilitation in 2009

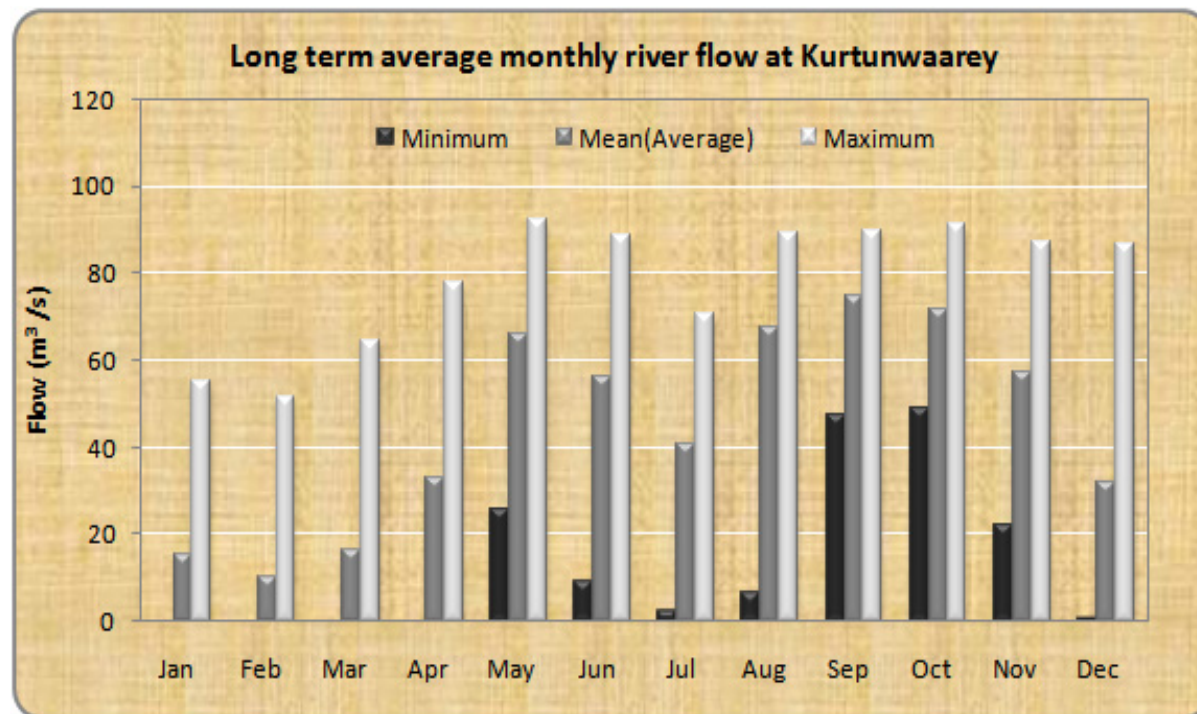
Biyoxireenka Kurtunwaarey ka dib markii ay dayactirtay SWALIM sanadkii 2009

## Climate and water resources Cimilad iyo khayraadka biyaha

*Gu* rains are more pronounced in the area of Kurtunwaarey than the *Dayr* rains. The wet months in *Gu* season are April and May, both of which have mean monthly rainfall of 124 mm. October records 65 mm on average. Temperatures are high throughout the year.

Roobabka Guga ee Degaanka Kurtunwaarey waxay ka badan yihiin roobabka Deyrta. Bilaha qoyan ee xilliga Gu'ga waa Abril iyo May, labaduna waxay leeyihiin celcelis ahaan roobab dhan 124 mm. Celceliska roobka la diwaan geliyey bisha Oktoobar waa 65 mm. Kulbeegyadu waa sarreeyaan sanadka oo dhan.

Long term average monthly climatic values at Kurtunwaarey												
Climatic variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall (mm)	0.0	0.0	0.0	124.0	124.0	97.0	49.0	15.0	24.0	65.0	59.0	11.0
Mean temperature (°C)	27.5	28.0	28.8	29.0	28.0	26.7	26.0	26.2	26.8	27.0	27.0	27.3
Minimum temperature (°C)	21.6	21.8	23.0	23.5	23.1	22.6	21.5	21.5	21.7	22.0	21.8	21.6
Maximum temperature (°C)	33.5	34.1	35.0	34.3	32.8	31.2	30.5	31.1	32.0	32.2	32.3	33.0
Potential evapotranspiration (mm)	128	113	134	128	123	109	113	119	119	121	118	125
Wind speed (km/hr)	14.4	15.1	13.7	9.0	9.0	10.8	10.8	11.2	11.2	10.1	7.6	11.5



### River gauge station details

Grid reference: 1:59:10N, 44:40:00E  
 Altitude: 70.0 m a.s.l  
 Catchment area: 280 000 km<sup>2</sup>  
 Daily mean flow: 48.0 m<sup>3</sup>/s

River flow at Kurtunwaarey rises in March, during the *Gu* rainy season, and remains high for the most of the year. January and February is the only period where the levels are extremely low. The river channel is however shallow, and cannot hold a lot of water as compared to the upstream sections.

Kurtunwaarey socodka wabigu wuxuu sare u kacaa bisha Maarso, xilli roobaadka Guga wuxuuna ahaadaa mid sarreeya inta badan sanadka. Jannaayo iyo Febaraayo waa waqtiga keliya ee heerarka biyahu aad hooseeyaan. Si kastaba ha ahaatee, caloosha dooxa wabigu waa qoto gaaban tahay oo biyo badan ma hayn karto marka loo eego waaxyaha biyoshubka sare ka jira.

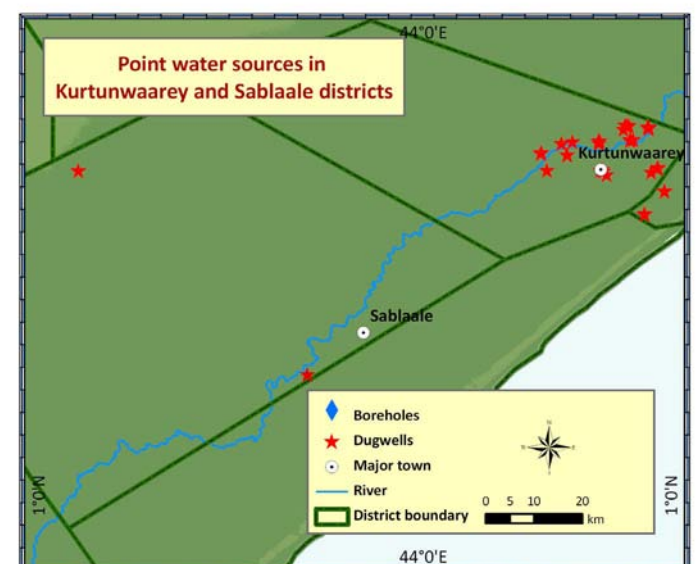


Donkeys taking water from a trough connected to a shallow well located in Kurtunwaarey district

Dameerada ayaa biyaha ka soo qaada dar ku xiran ceelka gaagaaban ee ku yaal degmooyinka Kurtunwaarey

Several wells exist in Kurtunwaarey. The majority of these wells are located near the river, where the water table is nearer the surface. Boreholes are not common in this area.

Kurtunwaarey waxa ku yaal dhawr ceelal oo gaagaaban. Badanaa ceelashaan waxay ku yaalaan meelaha wabiga u dhow, halkaas oo biyaha gunta ay u dhow yihiin ooggada. Ceelasha riiga ma aha wax caadi ahaan uga jira degaankaan.



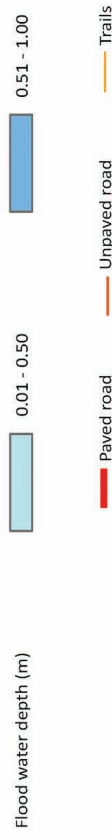
**Flood risk map for Kurtunwaarey - 5 year return period**

**Kharidadda halista fatahaadda ee Kurtunwaarey  
 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 Kurtunwaarey - 20 year return period**

**Kharidadda halista fatahaadda ee Kurtunwaarey  
 20 sanaba soo noqota mar**



**Flood risk map for Kurtunwaarey - 50 year return period**

**Kharidadda halista fatahaadda ee Kurtunwaarey  
 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 risk map for Kurtunwaarey - 100 year return period**

**Kharidadda halista fatahaadda ee Kurtunwaarey  
 100 sanaba soo noqota mar**

# *Life on the River*

