

Objects that are vertical or are present above the riverbed, such as a vertical pile in Figure 41, cast an acoustic shadow. This is where the area behind the vertical object cannot be recorded as there is an object blocking the sound path. Once all of the survey transects are completed, the data is processed and each transect, or swathe, is stitched together to create a mosaic of the study area. The data collected will overlap with each transect, and the image is pieced together. Through this process individual areas of pixels may be lost, and appear as solid white areas (See Figure 42).

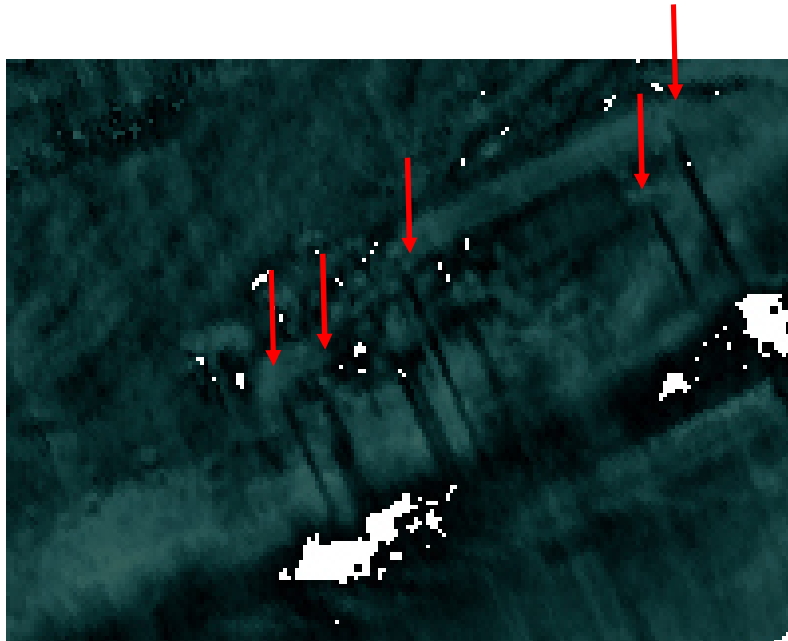


Figure 41: Example of where vertical objects, in this case piles, cause what is known as an acoustic shadow – shown but the dark shadow – that blocks the sound wave from collecting data behind it.

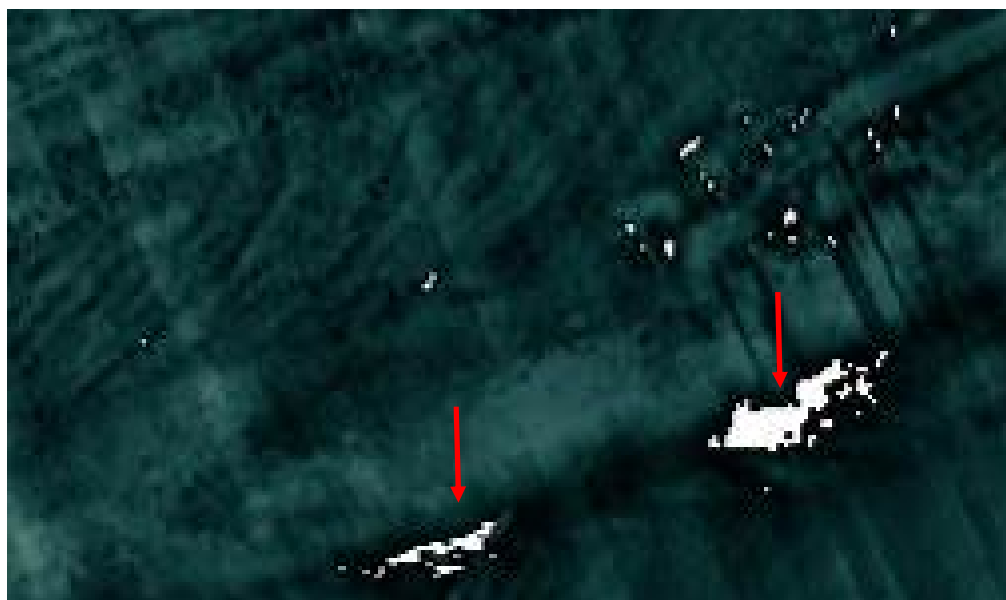


Figure 42: Example of white pixilation where data has not been captured and processed.

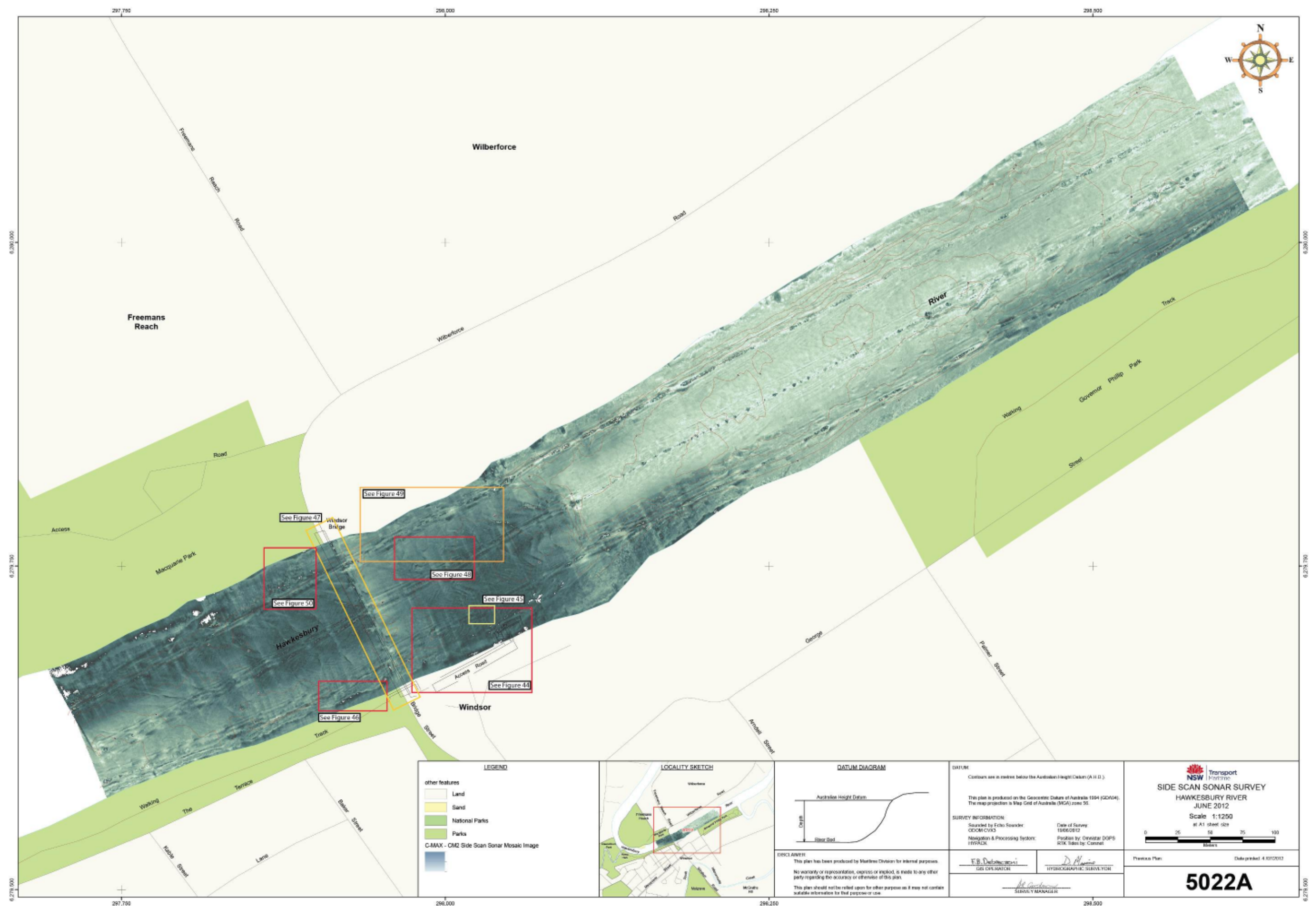


Figure 43: Side Scan Sonar results (Source: RMS Hydrographical department in June 2012).

Several known and potential cultural anomalies have been identified in the SSS data. On the southern side of the river, the location of the known ballast wharf can be seen. This site was identified during the archaeological survey in 2008-9. The dark features located on the western side of the known location of the former wharf are unknown; however recent flooding events on the river may have deposited debris in the area, including tree branches or similar.

Current standing piles associated with the current landing and pontoon location to the east of the bridge can clearly be seen by the dark “shadow” that is created (Figure 44 and Figure 45). These appear as long shadows due to the height of the pile above the riverbed.



Figure 44: Remains of the known location of the former ca.1814 wharf and current pontoon wharf on the southern bank of the Hawkesbury River.

Also located within this area to the northwest of the current pontoon wharf is an anomaly that is similar to an exposed ballast mound. The concentration of rock in this area cannot be described from the general geomorphology of the sediments that are present on the site, and may be an introduced feature (Figure 45).

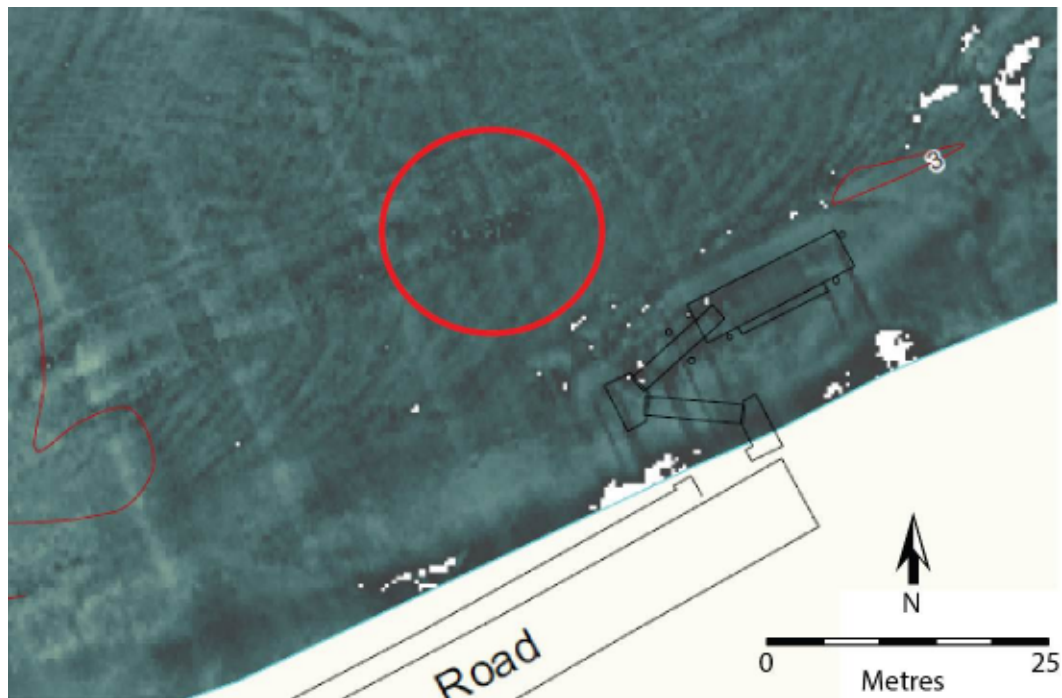


Figure 45: Anomaly located to the northwest of the current pontoon wharf in the vicinity of the former ca.1814 wharf.

Approximately 30 m upstream of the current bridge a large almost linear anomaly can be seen. This feature is in the location of the former post 1835 punt crossing, however, it is difficult to determine from the anomaly if this is a natural or cultural feature (Figure 46).

In the midsection of the river, localised scouring and deposition can be seen immediately along the downstream, eastern, side of the current bridge (Figure 47)

Three anomalies are present on the downstream side of the bridge closer to the northern side of the river. Two of these anomalies are close to each other with the third located further to the east. These may be associated with floating debris deposited in the river since the last flood event. This cannot be determined accurately from the images in the survey results; however, it is possible these anomalies may be close to the location of one of the in-water piers (Figure 48).



Figure 46: Anomaly located on the southern bank of the Hawkesbury River upstream of the current bridge. This anomaly is in the general location of the southern landing of the post ca.1835 punt crossing.

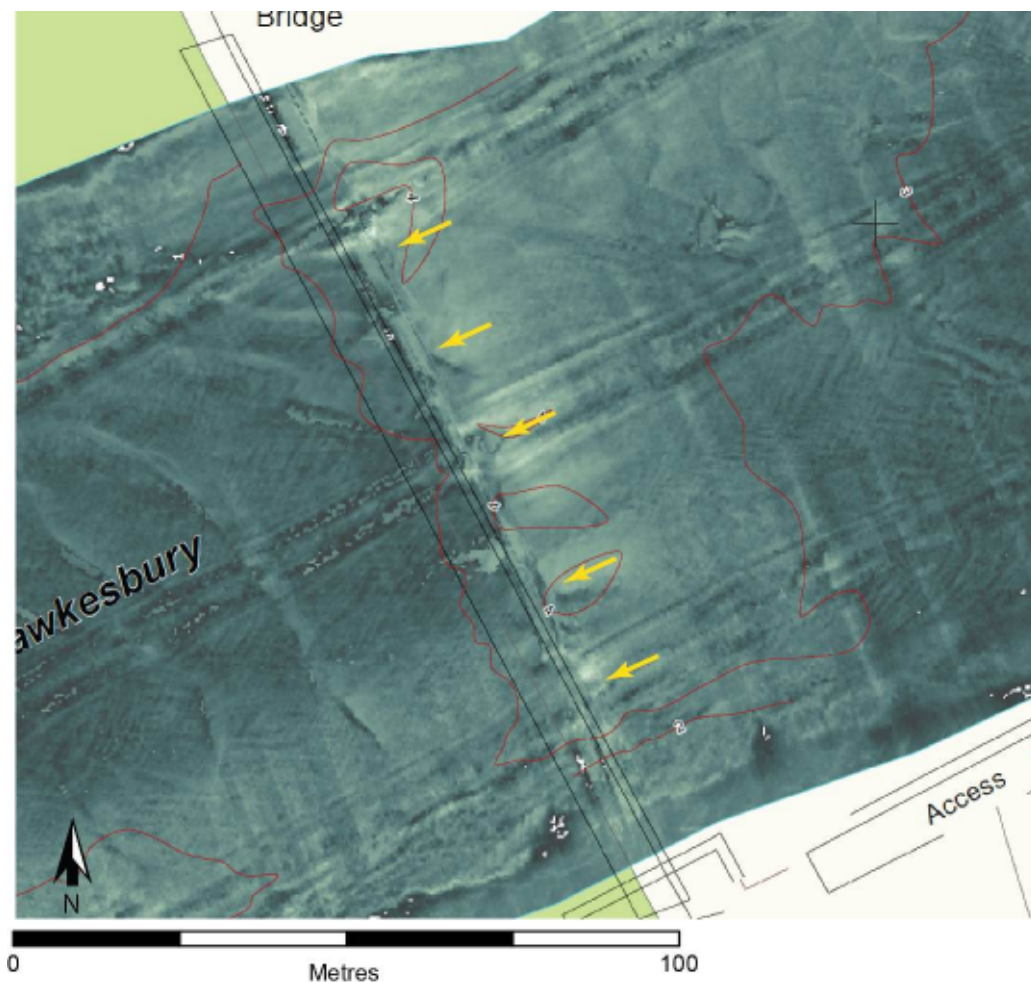


Figure 47: Deposition within the river immediately downstream of the current bridge (*yellow arrows*). These are likely to be deposition caused by the location of the piers of the current bridge.



Figure 48: Three potential anomalies present close to the northern bank downstream of the current bridge.

Closer to the northern bank of the river there are several potential anomalies approximately 30 m from the downstream side of the current bridge. They are spread over approximately 50 m. Being close to the bank these anomalies may be associated with trees or other recent debris, however, this area was once used for mooring of smaller boats after the completion of the first bridge crossing. Cultural material in this area may relate to former moorings. Approximately 100 m further downstream the series of features observed are most likely associated with trees growing on the river bank (Figure 49).

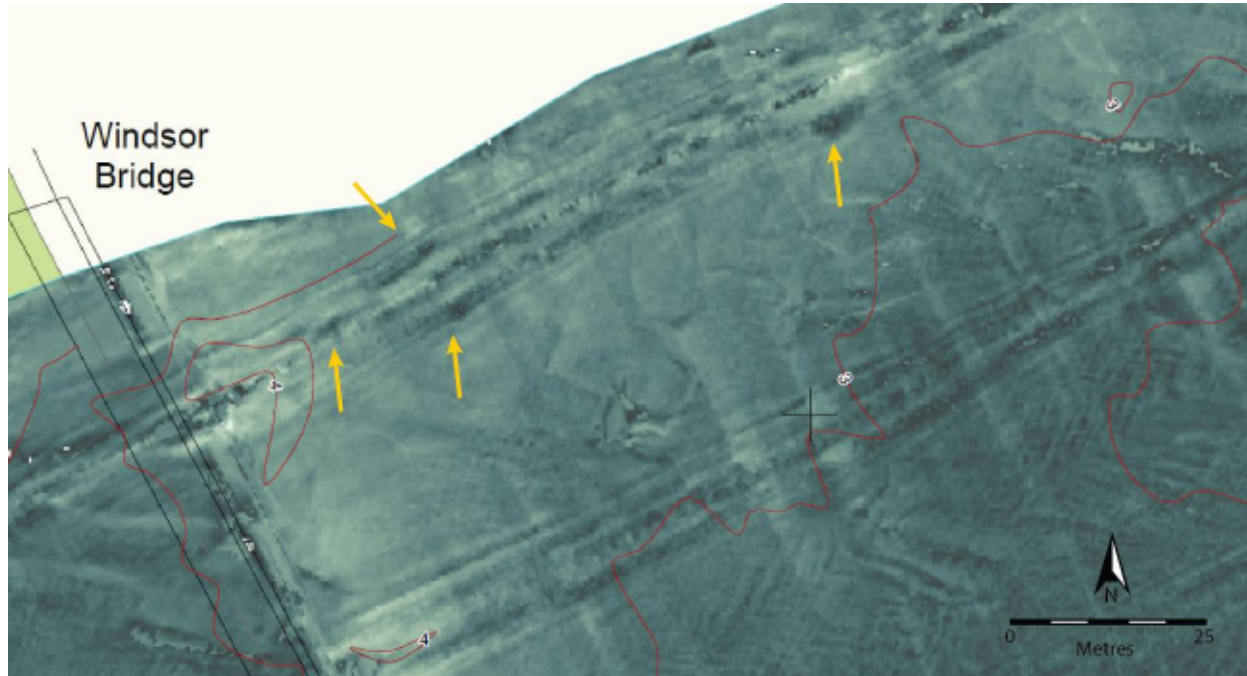


Figure 49: Anomalies located close to the northern bank of the river downstream from the current bridge.

Thirty metres upstream of the current northern side of the bridge localised scouring can be seen. This is likely from a stormwater outlet or similar concentrated runoff that is entering the river in this location (Figure 50).



Figure 50: Localised scouring caused by a stormwater drain or similar in this area.