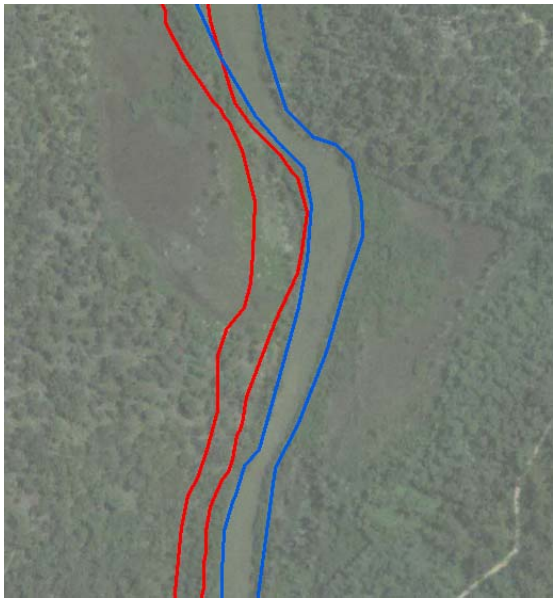
APPENDIX 7 GIS DATA: ASSUMPTIONS AND LIMITATIONS

In order to carry out the study, a review of provided spatial data was carried out in order to assess its quality for purpose. Where data gaps were identified, additional data was requested (where avliable) through the appropriate LGAs, and/or suplimented from SMEC own internal data holdings.

Assumptions

The data review highlighted various issues with the supplied data, that needed to be addressed prior to desktop analysis, to ensure that results produced would be valid. Of highlight:

- The waterline from the DECC provided (sourced from the DTDB) Hydrographic dataset is the did not accurately correspond to the HWM in some areas, and in a small amount of areas, was outside of the watercourse as viewed on current aerial imagery. This is seen below with the supposed DTDB waterline in red, and the SMEC-adjusted waterline, matching the existing feature, in blue.



If not adjusted, this issue would have led to error in vegetation and inundation calculation. SMEC reviewed the entire waterline for the study area to the provided aerial imagery, and amended it where required, and used this as the basis for the HWM for the study.

- Differences in LGA boundaries were evident between different sets from different sources. All define the relevant boundaries, but the issue is relevenat in this study as each source set of LGA boundaries from different agencys (LGAs, Dept. Lands, ABS, etc), has a different definition of how far into the Georges River Estuary the LGA boundary extends; this is visualised below. Here, the DTDB-sourced LGA boundaries as provided by DECC are shown in blue, and extend to the centre of the watercourse. The ABS LGA boundaries on the other hand (in red), do not extend into the watercourse. There also minor differences in boundary, as seen in the image. These differences would lead to differences in calculations for vegetation coverage of an LGA, and especially for Seagrass calculations, within the main water channel.

SMEC made the decision to go with the provided DTDB boundaries, to ensure consistency. As the boundary is represented as the centre of the watercourse, this obviously needs to be considered as somewhat arbitrary when considering channel-based vegetation as Seagrass divided by this line.

Sea Level Rise

Contours for the estimation of impact due to sea level change were calculated using elevation data as provided by the various councils. There was no uniform-scale elevation data provided by all authorities, with intervals ranging from 50cm to 10m between contours. This level of difference meant that creation of an elevation model across the whole study area would be subject to varying accuracies, but still suitable for indicative estimation of areas of potential future inundation.

To generate the elevation model for the whole study area, the following methodology was used. All provided elevation data was combined (with additional elevation data from SMEC's internal holdings, where authorities were unable to provide any coverage), into a single set. This data was then used as the input to create a Digital Elevation Model (DEM) of the study area using FME (Safe Software 2009). By combining all available elevation data into the modelling process rather than producing one DEM per authority, it was possible to use neighbouring authorities data to allow the DEM creation process to create a more accurate

model. Once the DEM was created, contours were taken from this at 50cm and 90cm, the estimated sea level rise for 2050 and 2100 respectively. It should be noted that in areas where available contour data was limited (i.e. only 10m intervals), anomalies can appear due to fine scale of the required contours in the output vs the inputs. In this instance, such areas noted as subject to inundation should be treated as indicative only, and further study on sea level change for the Georges River estuary should be conducted using high resolution elevation data set that covers the whole of catchment, such as LiDAR. It should also be noted that sea level changes are also subject to flood protection works, urban development etc, which is not captured in the provided contour data, which provides a 'bare-earth' model of the ground. Using LiDAR for future study would avoid this issue, as it would capture all above ground infrastructure in the study area, allowing for more accurate inundation area modelling and offsetting.

Seagrass calculations for unincorporated data

Boundaries of LGAs- Rockdale boundary doesn't extend into Botany Bay whereas Sutherland does. Therefore 'Unincorporated' seagrass area in North Botany Bay is the area of Botany Bay adjacent to Rockdale council but not including Sutherland's area.