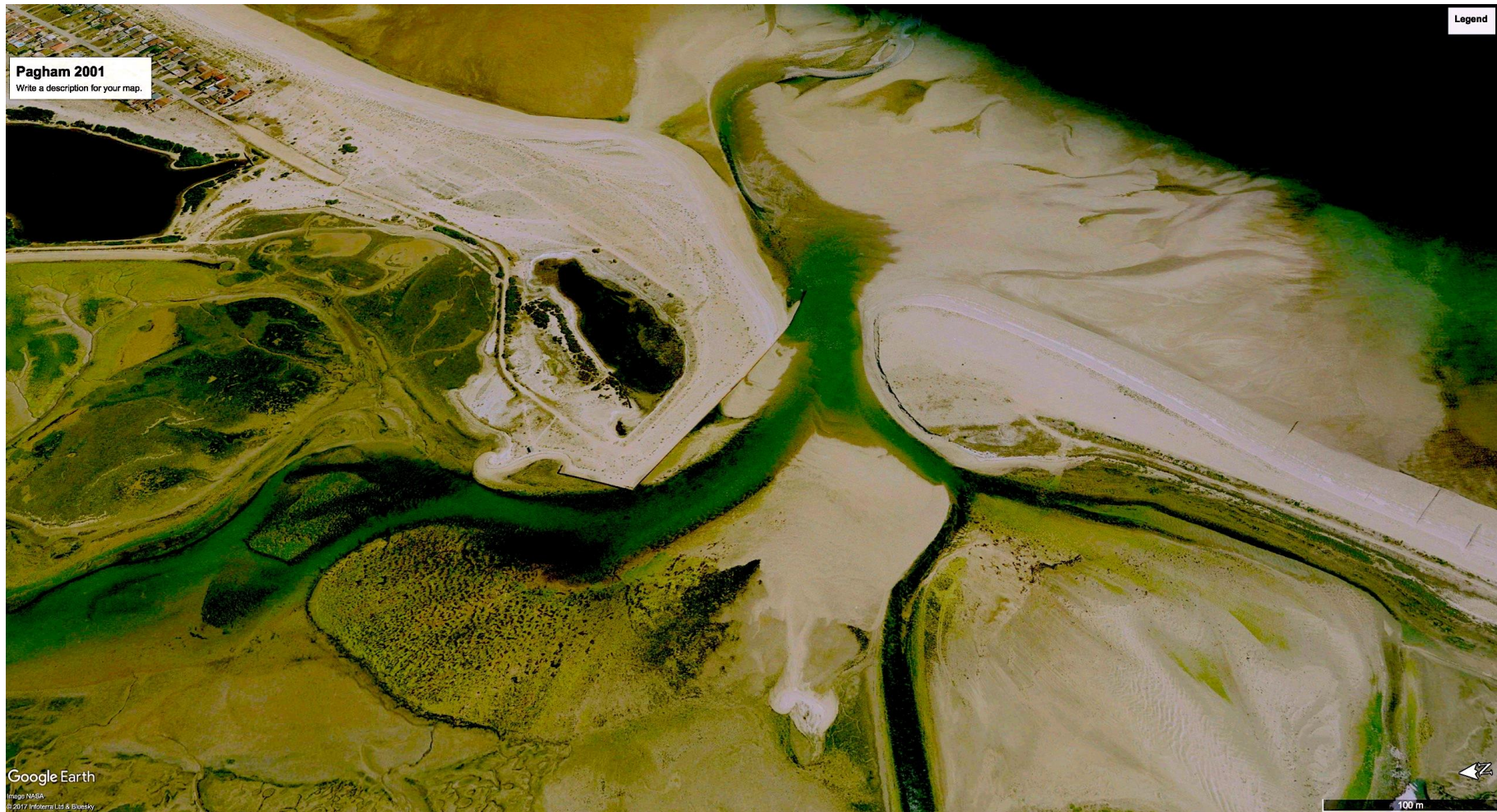


Appendix - (for general location details shown in the photographs, refer to Figures 1 and 3)

Pagham Harbour Photographs 2001 to 2019

(photos taken by Robin Henderson, the Save Pagham Beach Facebook page and Google Earth)

Photograph 1 – taken December 2001



Training wall actively fixing channel at each end with evidence of flood flow along the steel pile wall with ebb flow curved off the wall – CN spit pushing outlet channel to north-east with delta channels oriented to the south. Delta area significantly larger south west of main outlet channel.

Photograph 2 – taken December 2001



Training wall actively fixing channel at each end with evidence of flood flow along the steel pile wall with ebb flow curved off the wall – CN spit pushing outlet channel to north-east with delta channels oriented to the south. Delta area significantly larger south west of main outlet channel.

Photograph 3 – taken August 2002



Training wall actively fixing channel at each end with evidence of flood flow along the steel pile wall with ebb flow curved off the wall – CN spit pushing outlet channel to north-east with delta channels oriented to the south. Delta area significantly larger south west of main outlet channel.

Photograph 4 – taken August 2002



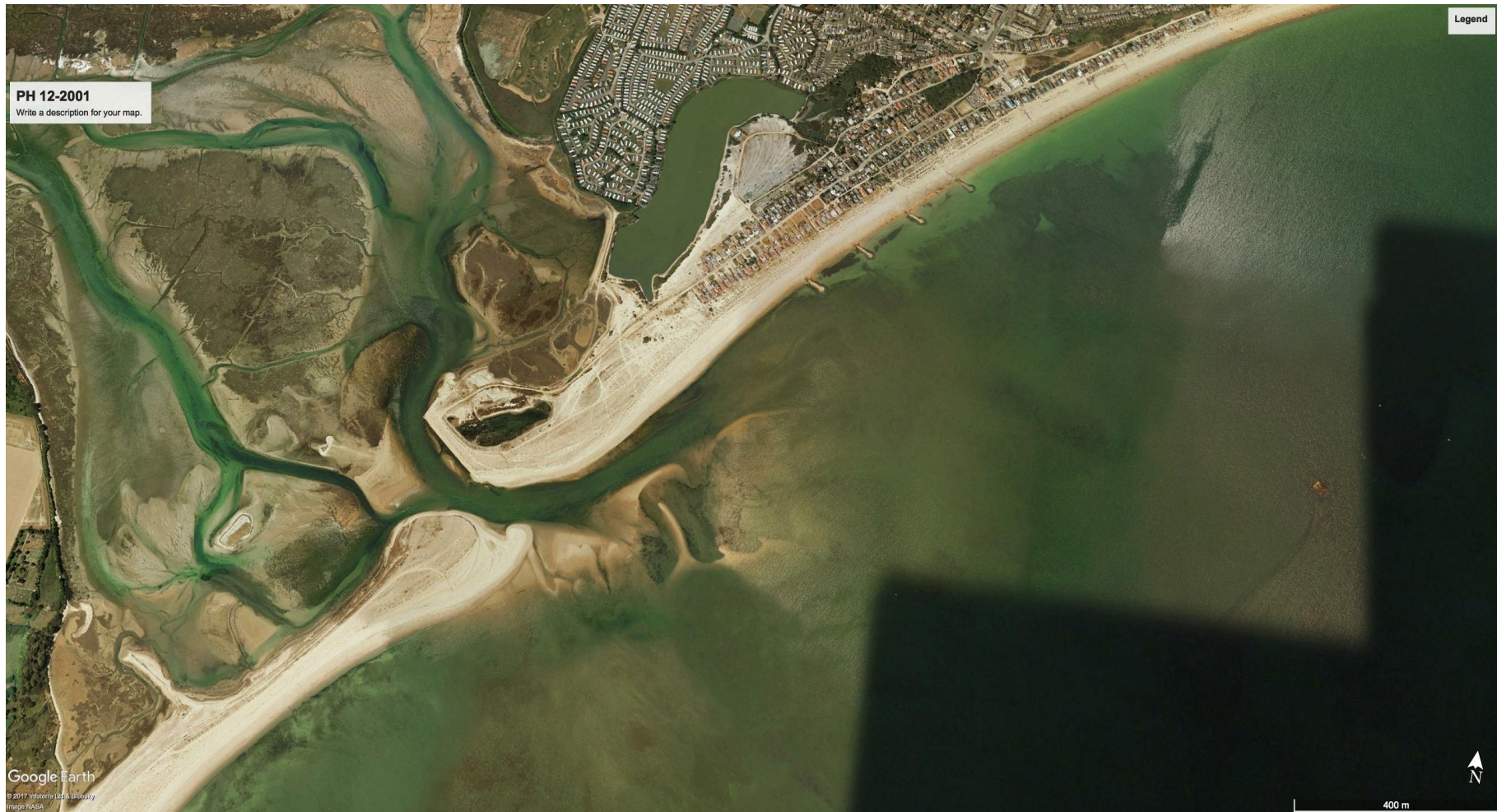
Training wall actively fixing channel at each end with evidence of flood flow along the steel pile wall with ebb flow curved off the wall – CN spit pushing outlet channel to north-east with delta channels oriented to the south. Delta area significantly larger south west of main outlet channel.

Photograph 5 – taken December 2005



Shingle recycling from south-western side of outlet channel ceased in 2004 – note embryonic development of CN Spit to seaward of previous location due to mature delta area.

Photograph 6 – taken December 2005



Shingle recycling from south-western side of outlet channel ceased in 2004 – note embryonic development of CN Spit to seaward of previous location due to mature delta area.

Photograph 7 – taken May 2007



Further spit development in evidence since 2005

Photograph 8 – taken May 2007



Further spit development in evidence since 2005

Photograph 9 – taken January 2012



Further spit development since 2007 – note recurved remnants of spit historical development (9) and the altered behaviour (alignment) of the distal end of the spit in 2012. Upto this point of altered alignment the spit development had been generally linear and parallel to the Pagham Spit, (9, 10). The altered alignment is observed to occur around 2009 and is shown from different perspectives in (11, 12, 13, 14). Wave interaction with the shoreline (14, 15, 16) shows how the angle between the spit beach contours and the wave crests alters – the movement of shingle alongshore on the spit will alter with this angle alteration.

Photograph 10 – taken January 2012



Further spit development since 2007 – note recurved remnants of spit historical development (9) and the altered behaviour (alignment) of the distal end of the spit in 2012. Upto this point of altered alignment the spit development had been generally linear and parallel to the Pagham Spit, (9, 10). The altered alignment is observed to occur around 2009 and is shown from different perspectives in (11, 12, 13, 14). Wave interaction with the shoreline (14, 15, 16) shows how the angle between the spit beach contours and the wave crests alters – the movement of shingle alongshore on the spit will alter with this angle alteration.

Photograph 11 – taken 25.11.2012



Further spit development since 2007 – note recurved remnants of spit historical development (9) and the altered behaviour (alignment) of the distal end of the spit in 2012. Upto this point of altered alignment the spit development had been generally linear and parallel to the Pagham Spit, (9, 10). The altered alignment is observed to occur around 2009 and is shown from different perspectives in (11, 12, 13, 14). Wave interaction with the shoreline (14, 15, 16) shows how the angle between the spit beach contours and the wave crests alters – the movement of shingle alongshore on the spit will alter with this angle alteration.

Photograph 12 – taken 25.11.2012



Further spit development since 2007 – note recurved remnants of spit historical development (9) and the altered behaviour (alignment) of the distal end of the spit in 2012. Up to this point of altered alignment the spit development had been generally linear and parallel to the Pagham Spit, (9, 10). The altered alignment is observed to occur around 2009 and is shown from different perspectives in (11, 12, 13, 14). Wave interaction with the shoreline (14, 15, 16) shows how the angle between the spit beach contours and the wave crests alters – the movement of shingle alongshore on the spit will alter with this angle alteration.

Photograph 13 – taken 25.11.2012



Further spit development since 2007 – note recurved remnants of spit historical development (9) and the altered behaviour (alignment) of the distal end of the spit in 2012. Upto this point of altered alignment the spit development had been generally linear and parallel to the Pagham Spit, (9, 10). The altered alignment is observed to occur around 2009 and is shown from different perspectives in (11, 12, 13, 14). Wave interaction with the shoreline (14, 15, 16) shows how the angle between the spit beach contours and the wave crests alters – the movement of shingle alongshore on the spit will alter with this angle alteration.

Photograph 14 – taken 25.11.2012



Further spit development since 2007 – note recurved remnants of spit historical development (9) and the altered behaviour (alignment) of the distal end of the spit in 2012. Upto this point of altered alignment the spit development had been generally linear and parallel to the Pagham Spit, (9, 10). The altered alignment is observed to occur around 2009 and is shown from different perspectives in (11, 12, 13, 14). Wave interaction with the shoreline (14, 15, 16) shows how the angle between the spit beach contours and the wave crests alters – the movement of shingle alongshore on the spit will alter with this angle alteration.

Photograph 15 – taken 25.11.2012



Further spit development since 2007 – note recurved remnants of spit historical development (9) and the altered behaviour (alignment) of the distal end of the spit in 2012. Upto this point of altered alignment the spit development had been generally linear and parallel to the Pagham Spit, (9, 10). The altered alignment is observed to occur around 2009 and is shown from different perspectives in (11, 12, 13, 14). Wave interaction with the shoreline (14, 15, 16) shows how the angle between the spit beach contours and the wave crests alters – the movement of shingle alongshore on the spit will alter with this angle alteration.

Photograph 16 – taken June 2013



Evidence of Pagham Spit accretion presenting a more parallel orientation to the inside face of CN Spit.

Photograph 17 – taken June 2013



Evidence of Pagham Spit accretion presenting a more parallel orientation to the inside face of CN Spit.

Photograph 18 – taken January 2014



Further accretion along Pagham Spit. Delta sea bed shaping similar to early 2000's. In this prolonged condition there will be increased tidal energy losses compared to channel outlet conditions in early 2000's affecting tidal exchange with the harbour.

Photograph 19 – taken 15.03.2014



Further accretion along Pagham Spit. Delta sea bed shaping similar to early 2000's. In this prolonged condition there will be increased tidal energy losses compared to channel outlet conditions in early 2000's affecting tidal exchange with the harbour.

Photograph 20 – taken 22.08.2014



Further accretion along Pagham Spit. Delta sea bed shaping similar to early 2000's. In this prolonged condition there will be increased tidal energy losses compared to channel outlet conditions in early 2000's affecting tidal exchange with the harbour.

Photograph 21 – taken 22.08.2014



Further accretion along Pagham Spit. Delta sea bed shaping similar to early 2000's. In this prolonged condition there will be increased tidal energy losses compared to channel outlet conditions in early 2000's affecting tidal exchange with the harbour.

Photograph 22 – taken September 2014



Further accretion along Pagham Spit. Delta sea bed shaping similar to early 2000's. In this prolonged condition there will be increased tidal energy losses compared to channel outlet conditions in early 2000's affecting tidal exchange with the harbour.

Photograph 23 – taken April 2015



Harbour outlet channel conditions persist in 2015. Some evidence of a twin channel developing north-east of where CN Spit changes alignment indicating a separation of tidal flood and ebb energies. Delta sea bed shape continues to exhibit similarities with the early 2000's.

Photograph 24 – taken April 2015



Harbour outlet channel conditions persist in 2015. Some evidence of a twin channel developing north-east of where CN Spit changes alignment indicating a separation of tidal flood and ebb energies. Delta sea bed shape continues to exhibit similarities with the early 2000's.

Photograph 25 – taken 10.03.2016



Immediately prior to the breach of CN Spit (25, 26). Early configuration of breach (27 to 35).

Photograph 26 – taken 31.01.2016



Immediately prior to the breach of CN Spit (25, 26). Early configuration of breach (27 to 35).

Photograph 27 – taken April 2016



Immediately prior to the breach of CN Spit (25, 26). Early configuration of breach (27 to 35).

Photograph 28 – taken April 2016



Immediately prior to the breach of CN Spit (25, 26). Early configuration of breach (27 to 35).

Photograph 29 – taken April 2016



Immediately prior to the breach of CN Spit (25, 26). Early configuration of breach (27 to 35).

Photograph 30 – taken April 2016



Immediately prior to the breach of CN Spit (25, 26). Early configuration of breach (27 to 35).

Photograph 31 – taken April 2016



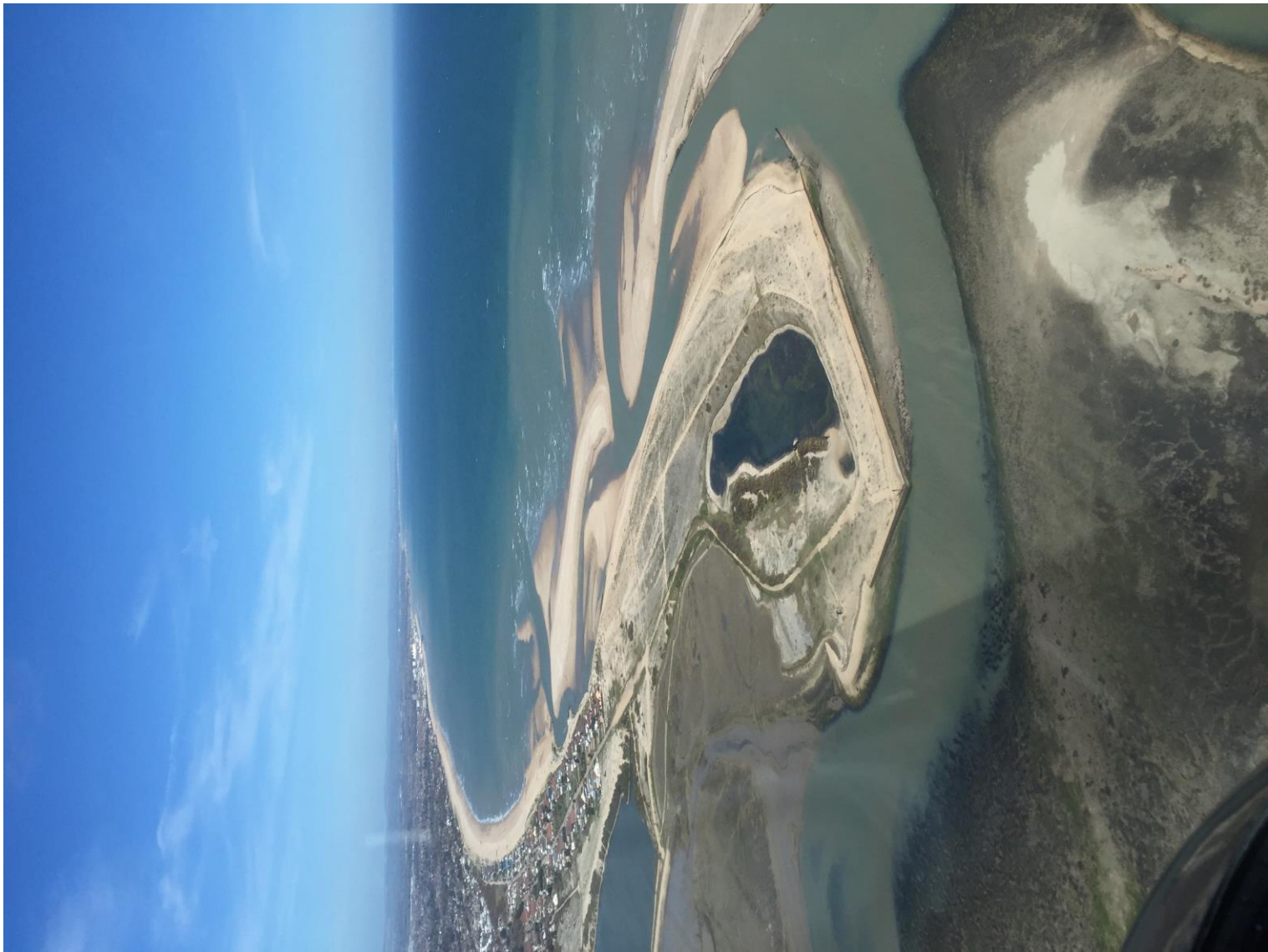
Immediately prior to the breach of CN Spit (25, 26). Early configuration of breach (27 to 35).

Photograph 32 – taken April 2016



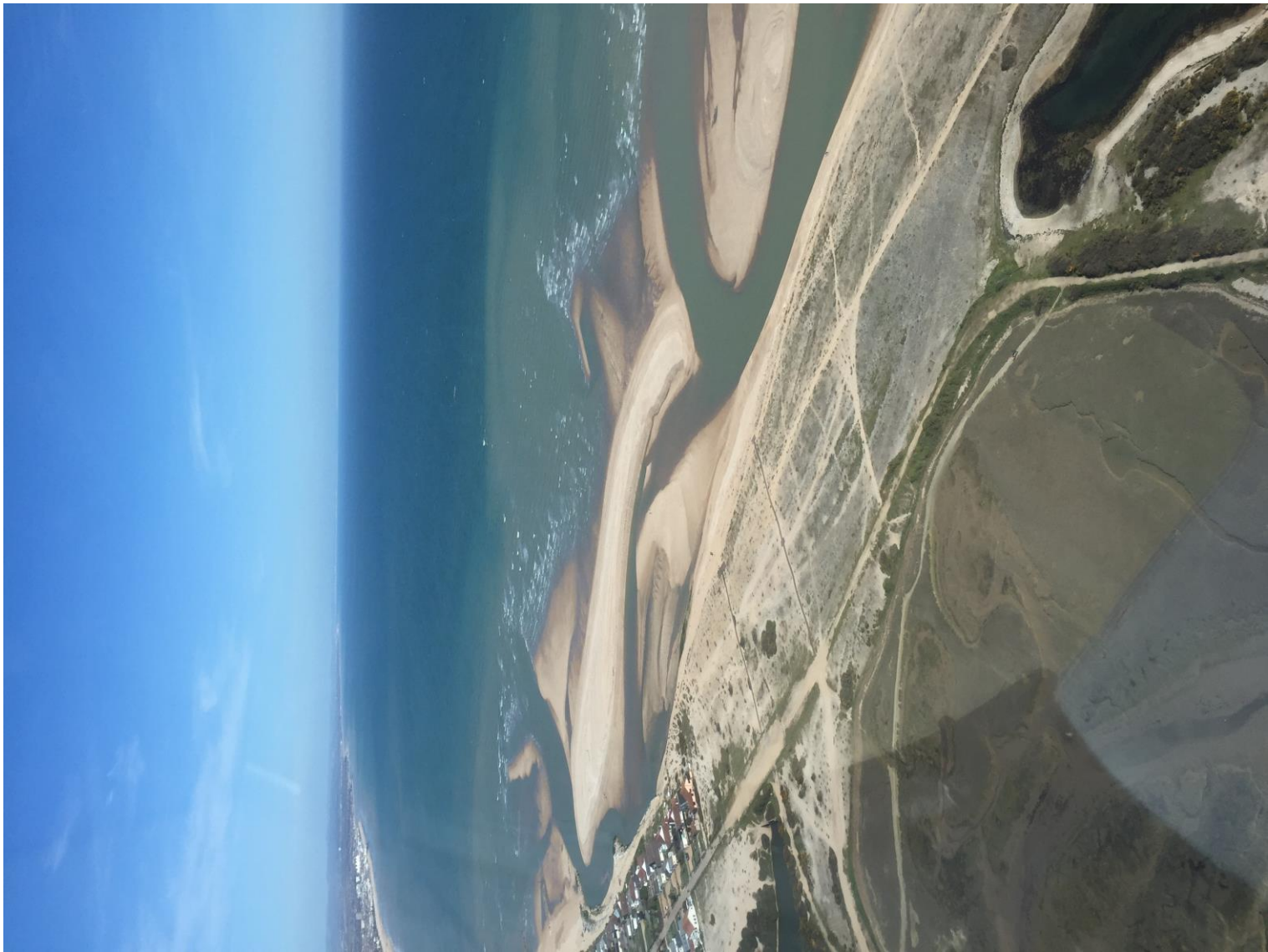
Immediately prior to the breach of CN Spit (25, 26).
Early configuration of breach (27 to 35).

Photograph 33 – taken April 2016



Immediately prior to the breach of CN Spit (25, 26).
Early configuration of breach (27 to 35).

Photograph 34 – taken April 2016



Immediately prior to the breach of CN Spit (25, 26).
Early configuration of breach (27 to 35).

Photograph 35 – taken August 2016



Immediately prior to the breach of CN Spit (25, 26).
Early configuration of breach (27 to 35).

Photograph 36 – taken February 2017



Breach has expanded back to the south-west, widening to around 350m with two distinct low water channels (36) and a third (probably relic at the time of the photograph) channel (37). Note new CN Spit development (36, 37, 38) further inshore than in the early 2000's. Delta area is now much more extensive (37, 38) alongshore. Breach channels exhibit volatility (39, 40, 41, 42) during 2017.

Photograph 37 – taken February 2017



Breach has expanded back to the south-west, widening to around 350m with two distinct low water channels (36) and a third (probably relic at the time of the photograph) channel (37). Note new CN Spit development (36, 37, 38) further inshore than in the early 2000's. Delta area is now much more extensive (37, 38) alongshore. Breach channels exhibit volatility (39, 40, 41, 42) during 2017.

Photograph 38 – taken February 2017



Breach has expanded back to the south-west, widening to around 350m with two distinct low water channels (36) and a third (probably relic at the time of the photograph) channel (37). Note new CN Spit development (36, 37, 38) further inshore than in the early 2000's. Delta area is now much more extensive (37, 38) alongshore. Breach channels exhibit volatility (39, 40, 41, 42) during 2017.

Photograph 39 – taken February 2017



Breach has expanded back to the south-west, widening to around 350m with two distinct low water channels (36) and a third (probably relic at the time of the photograph) channel (37). Note new CN Spit development (36, 37, 38) further inshore than in the early 2000's. Delta area is now much more extensive (37, 38) alongshore. Breach channels exhibit volatility (39, 40, 41, 42) during 2017.

Photograph 40 – taken March 2017



Breach has expanded back to the south-west, widening to around 350m with two distinct low water channels (36) and a third (probably relic at the time of the photograph) channel (37). Note new CN Spit development (36, 37, 38) further inshore than in the early 2000's. Delta area is now much more extensive (37, 38) alongshore. Breach channels exhibit volatility (39, 40, 41, 42) during 2017.

Photograph 41 – taken September 2017



Breach has expanded back to the south-west, widening to around 350m with two distinct low water channels (36) and a third (probably relic at the time of the photograph) channel (37). Note new CN Spit development (36, 37, 38) further inshore than in the early 2000's. Delta area is now much more extensive (37, 38) alongshore. Breach channels exhibit volatility (39, 40, 41, 42) during 2017.

Photograph 42 – taken November 2017



Breach has expanded back to the south-west, widening to around 350m with two distinct low water channels (36) and a third (probably relic at the time of the photograph) channel (37). Note new CN Spit development (36, 37, 38) further inshore than in the early 2000's. Delta area is now much more extensive (37, 38) alongshore. Breach channels exhibit volatility (39, 40, 41, 42) during 2017.

Photograph 43 – taken March 2019



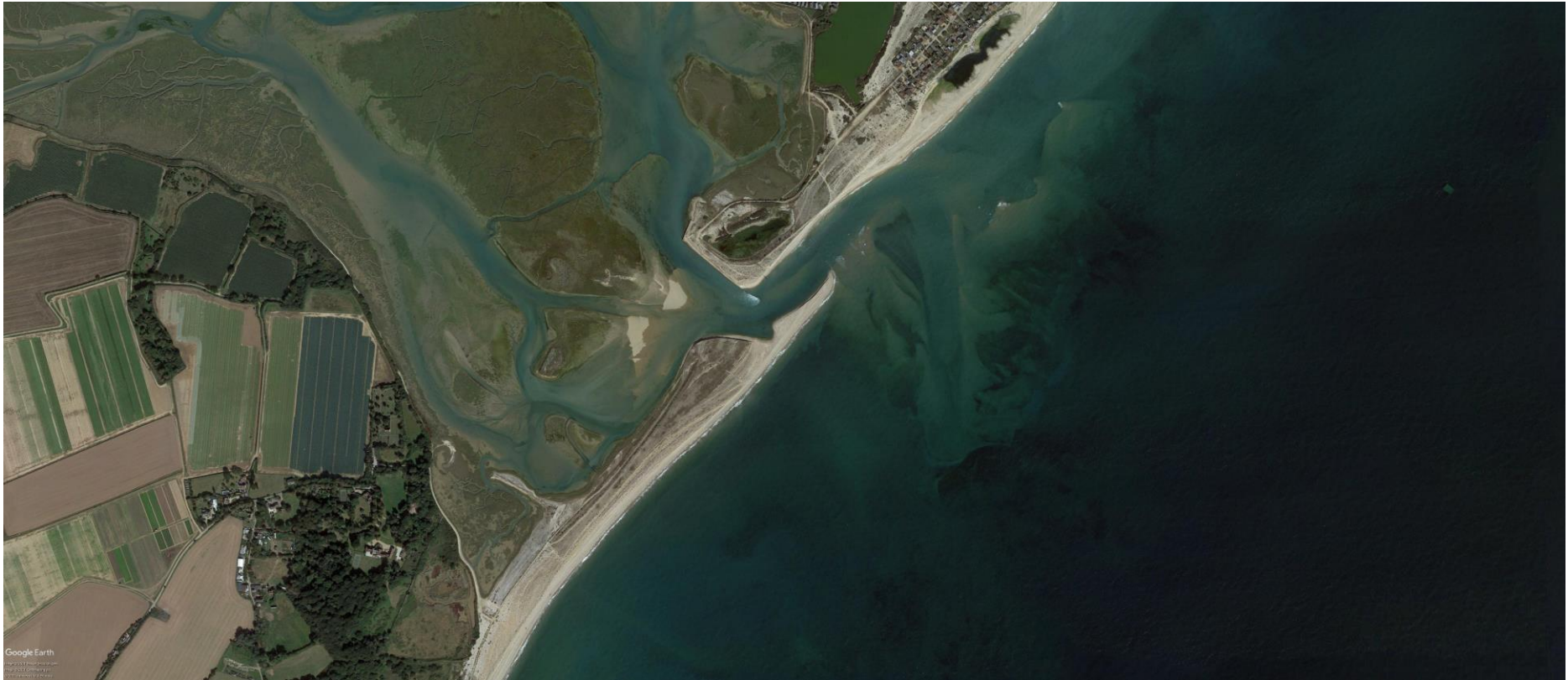
CN Spit development reaches location for realignment (43) to head towards the shoreline. Harbour outlet channel exhibits bifurcation north-east of training wall, indicating division of tidal flood and ebb flows, (43, 44). Pagham beach has eroded since 2016 as the new spit has developed closer inshore.

Photograph 44 – taken July 2019



CN Spit development reaches location for realignment (43) to head towards the shoreline. Harbour outlet channel exhibits bifurcation north-east of training wall, indicating division of tidal flood and ebb flows, (43, 44). Pagham beach has eroded since 2016 as the new spit has developed closer inshore.

Photograph 45– taken September 2019 (Google Earth)



CN Spit development reaches location for realignment (43) to head towards the shoreline. Harbour outlet channel exhibits bifurcation north-east of training wall, indicating division of tidal flood and ebb flows, (43, 44). Pagham beach has eroded since 2016 as the new spit has developed closer inshore.

Photograph 46 – taken 30.08.2020



With CN Spit developing closer inshore since 2016, the Pagham beach frontage has eroded eventually breaking into the Little Lagoon in 2020. (Compare with Pagham beach in front of Little Lagoon in the early 2000's (1 to 6)).

Photograph 47 – taken 30.08.2020



With CN Spit developing closer inshore since 2016, the Pagham beach frontage has eroded eventually breaking into the Little Lagoon in 2020. (Compare with Pagham beach in front of Little Lagoon in the early 2000's (1 to 6)).