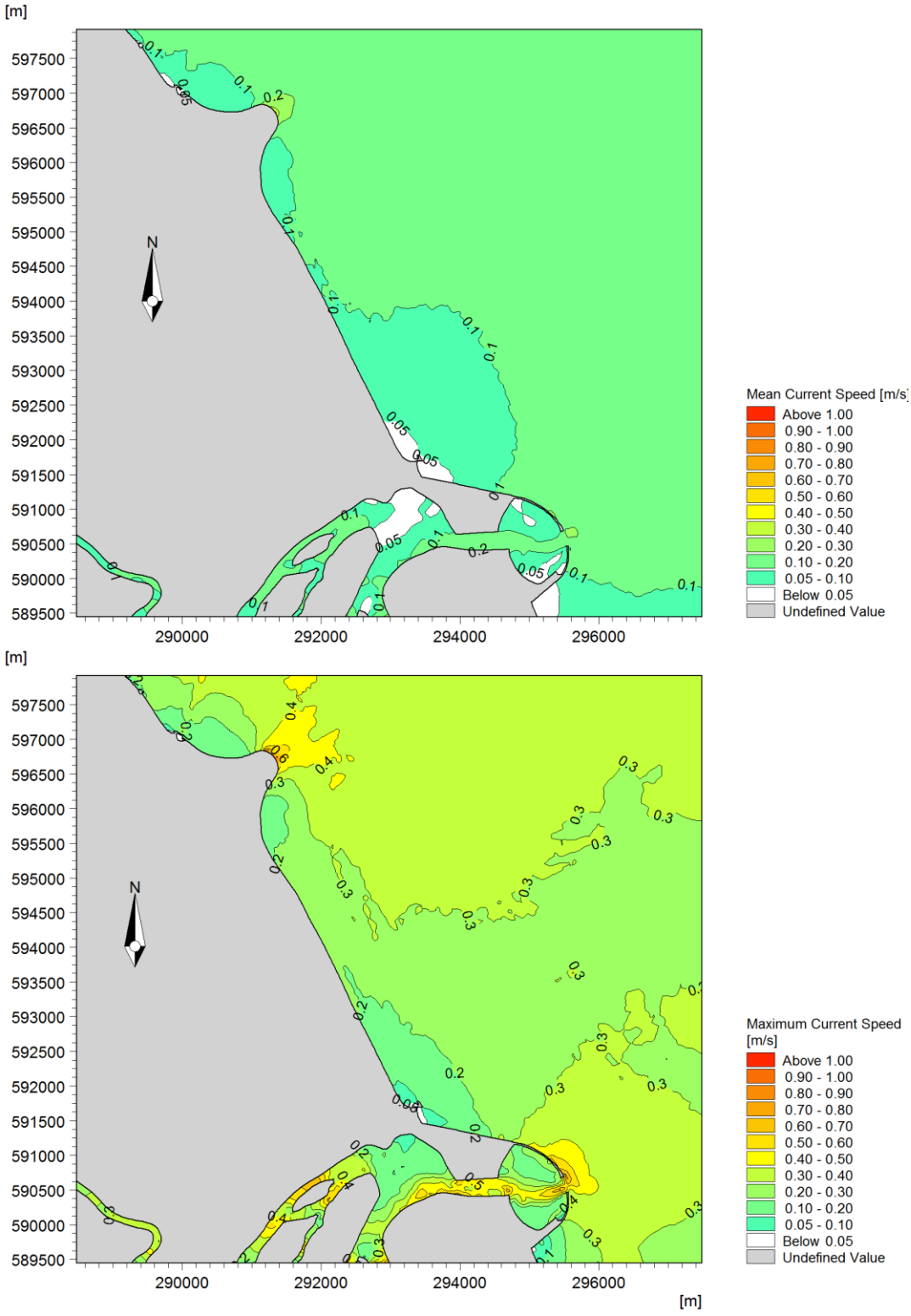

Figure 2.3 Mean (top) and maximum (bottom) tidal current for existing condition

2.2 Layout 1

Typical flood and ebb tide current patterns for Layout 1 are shown in Figure 2.4 and Figure 2.5, with mean and maximum currents being shown in Figure 2.6. These show that there are

no significant issues for navigation, however is a small eddy in the vicinity of the Cruise Terminal. Overall there is no major impact on the regional currents.

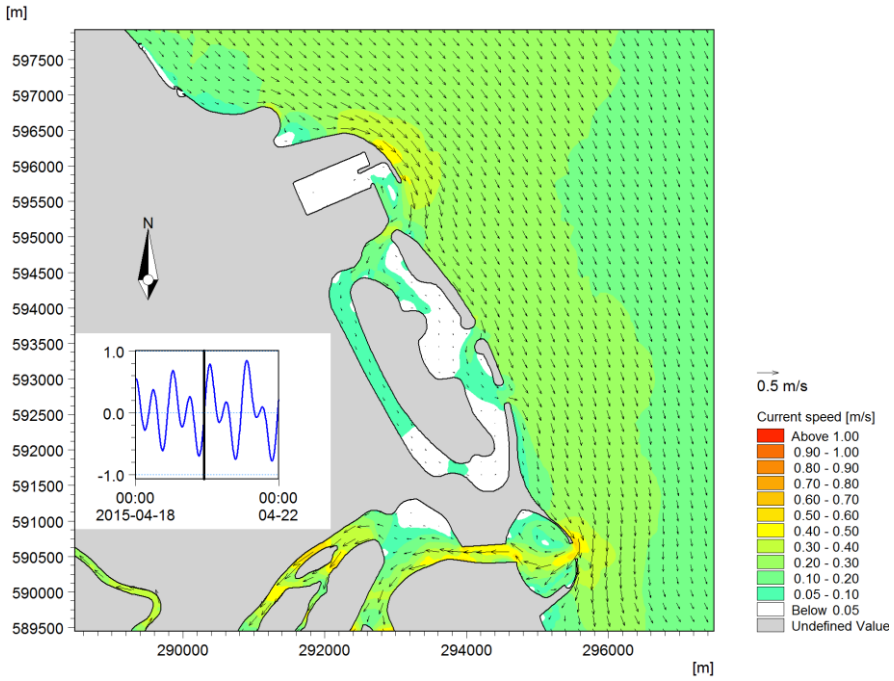

Figure 2.4 Modelled tidal current condition during flood tide for Layout 1

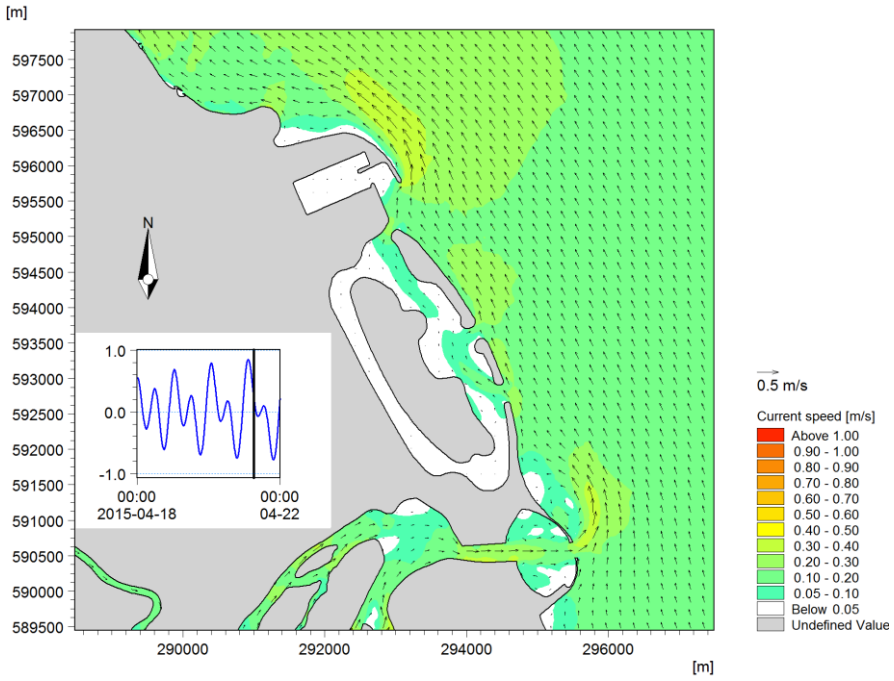

Figure 2.5 Modelled tidal current condition during ebb tide for Layout 1

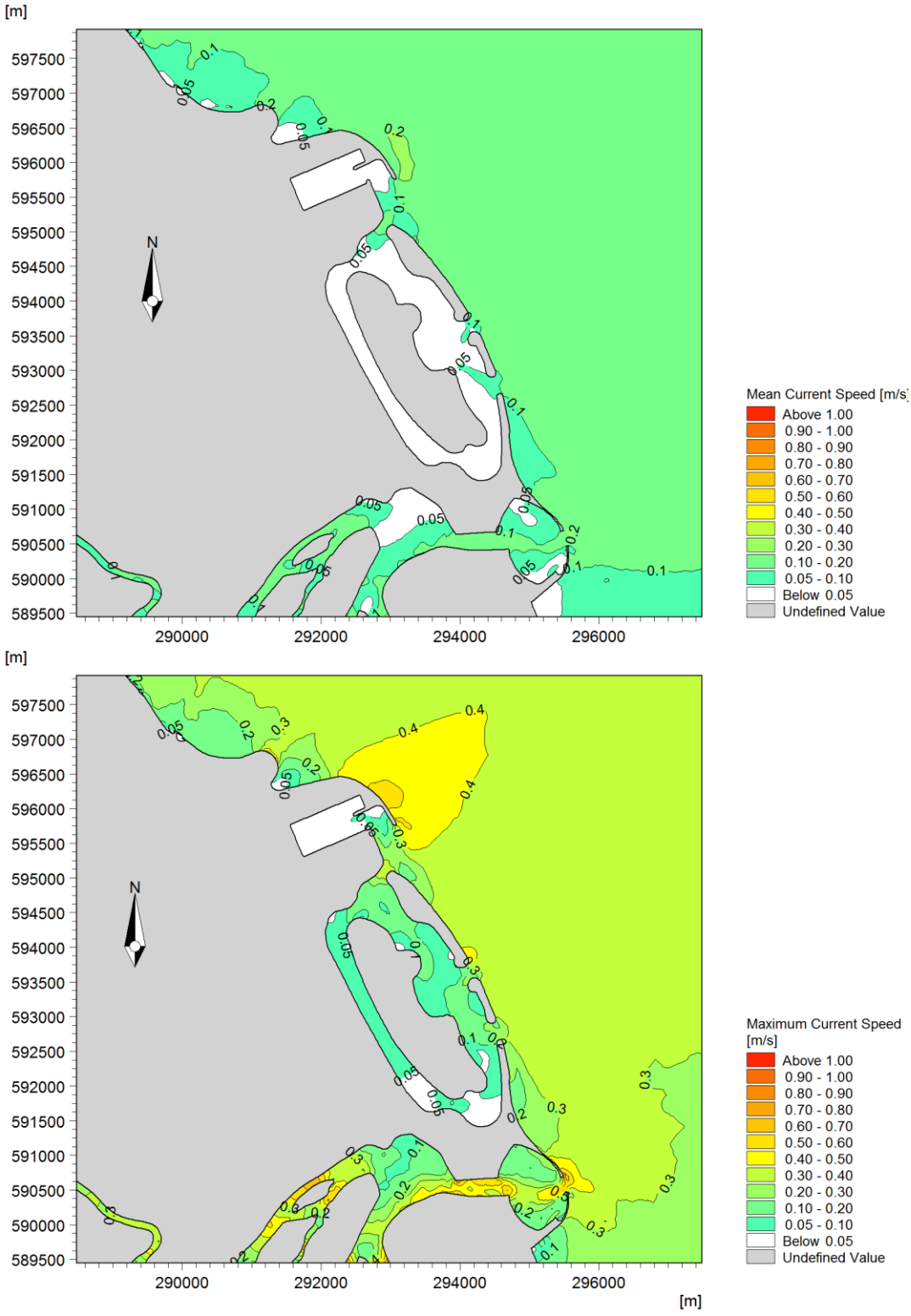

Figure 2.6 Mean (top) and maximum (bottom) tidal current for Layout 1

2.3 Layout 2

Typical flood and ebb tide current patterns for Layout 2 are shown in Figure 2.7 and Figure 2.8, with mean and maximum currents being shown in Figure 2.9.

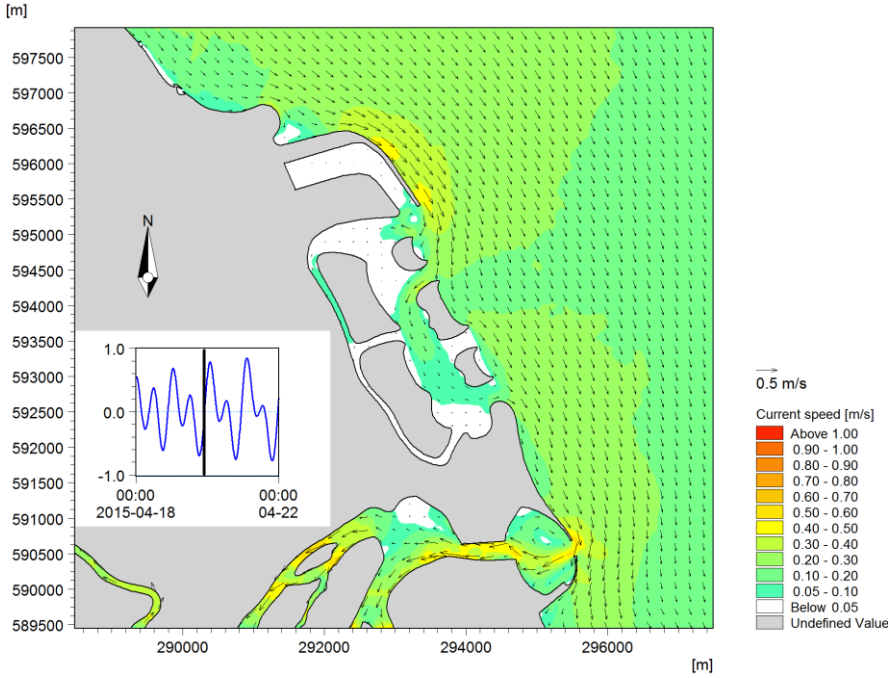

Figure 2.7 Modelled tidal current condition during flood tide for Layout 2

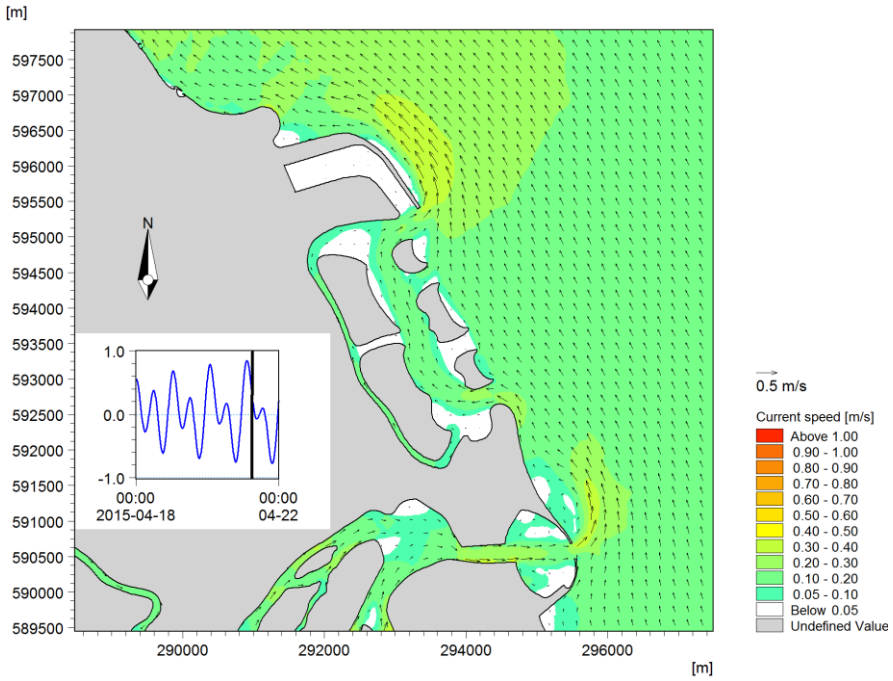

Figure 2.8 Modelled tidal current condition during ebb tide for Layout 2

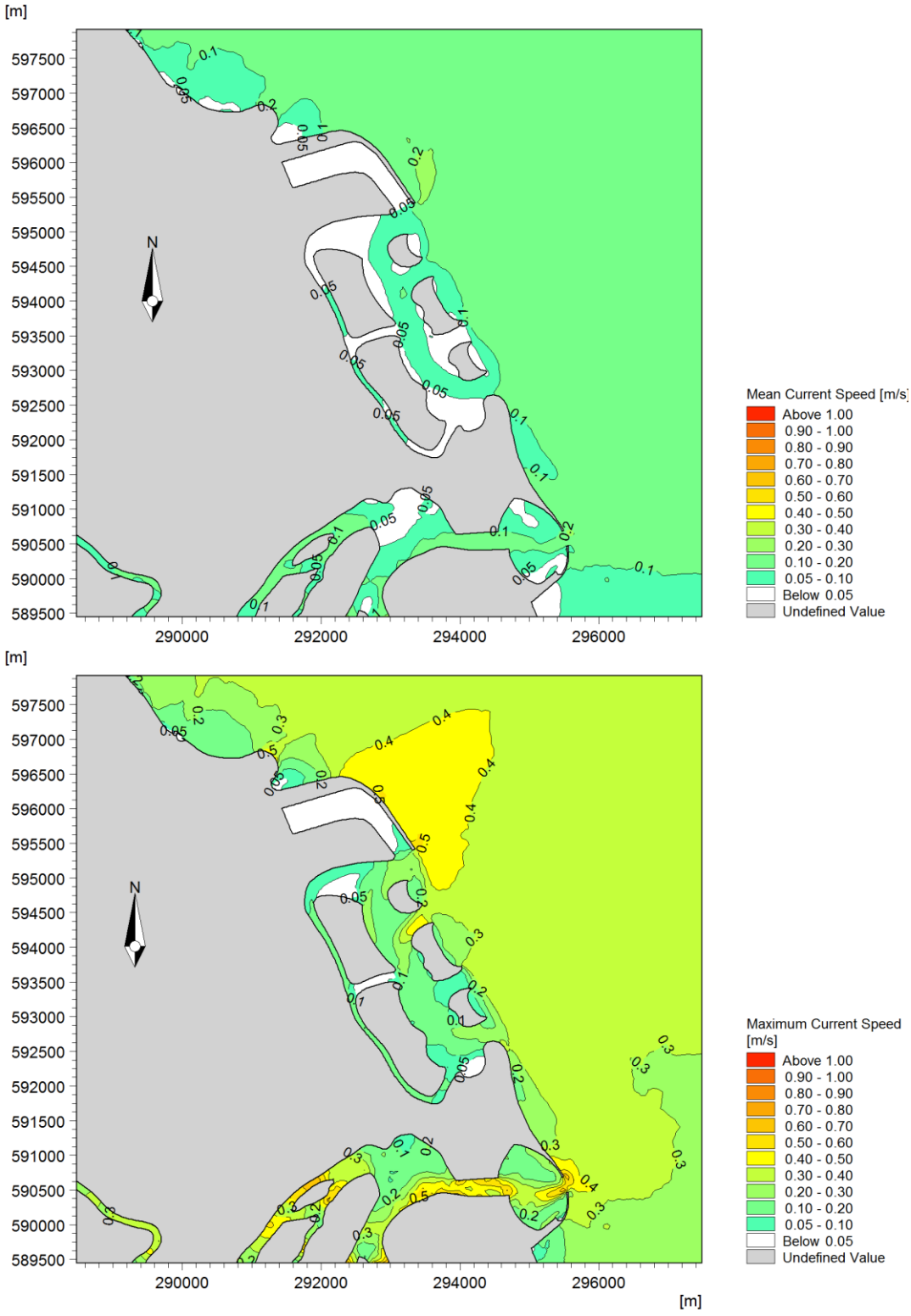

Figure 2.9 Mean (top) and maximum (bottom) tidal current for Layout 2

2.4 Layout 8

Typical flood and ebb tide current patterns for Layout 8 are shown in Figure 2.10 and Figure 2.11, with mean and maximum currents being shown in Figure 2.12. In this layout the breakwater is aligned with the eastern limits of the reclamation and the two outer islands, this

gives a smooth flow past the project and reduces the eddy in the vicinity of the breakwater entrance. There is a flow in the channel between the main reclamation area and the mainland, however current speeds are low in this channel.

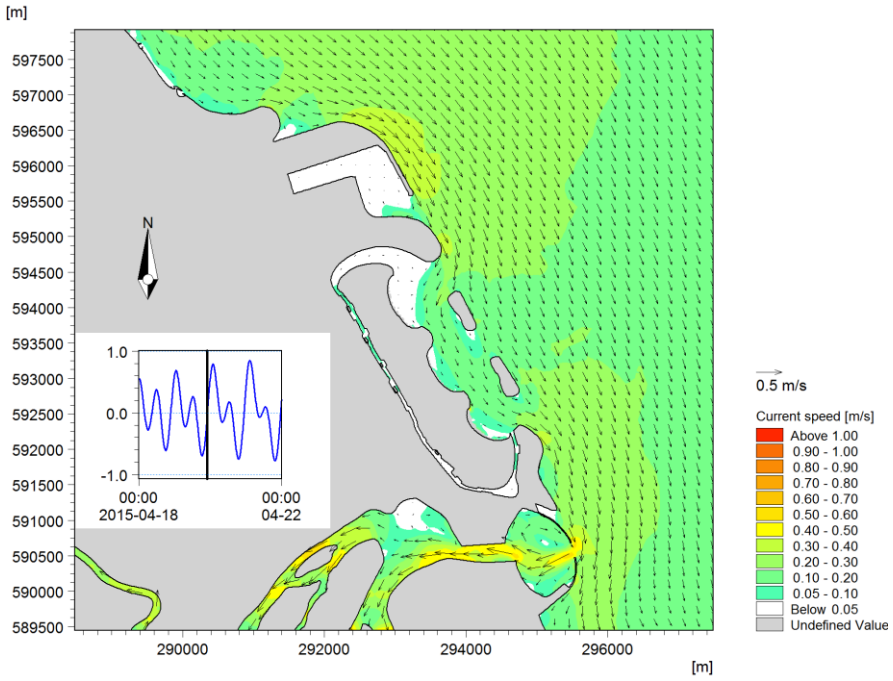

Figure 2.10 Modelled tidal current condition during flood tide for Layout 8

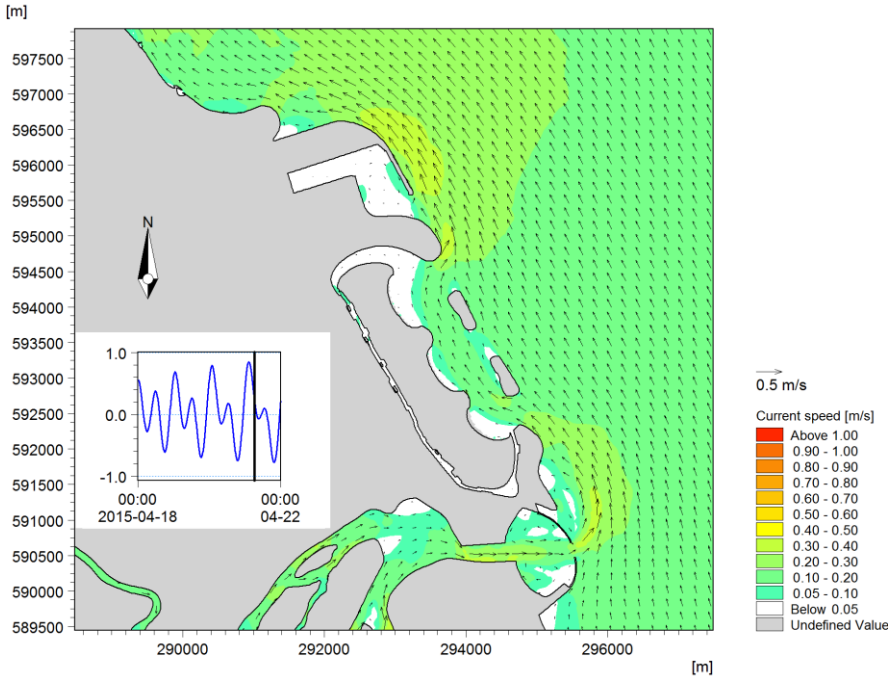

Figure 2.11 Modelled tidal current condition during ebb tide for Layout 8

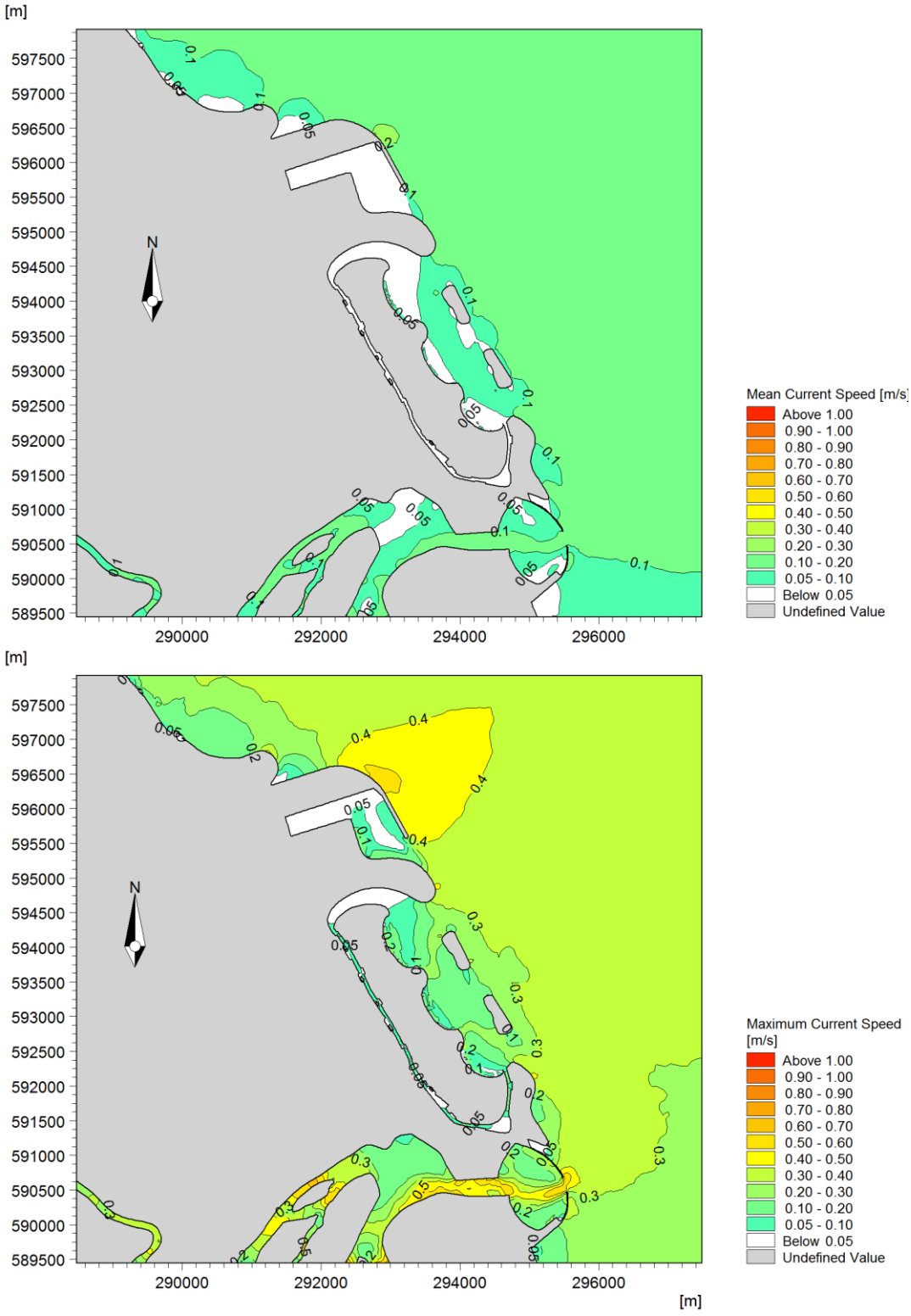

Figure 2.12 Mean (top) and maximum (bottom) tidal current for Layout 8

2.5 Layout 9

Typical flood and ebb tide current patterns for Layout 9 are shown in Figure 2.13 and Figure 2.14, with mean and maximum currents being shown in Figure 2.15. This layout shows a

small increase in current speeds in the channel between the main reclamation island and the mainland, all other areas are the same as Layout 8.

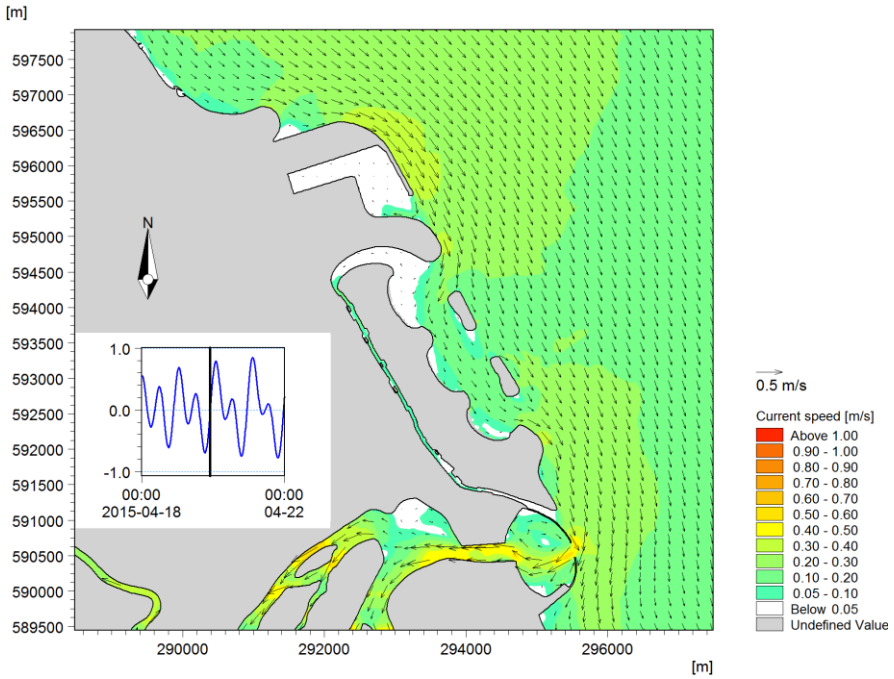

Figure 2.13 Modelled tidal current condition during flood tide for Layout 9

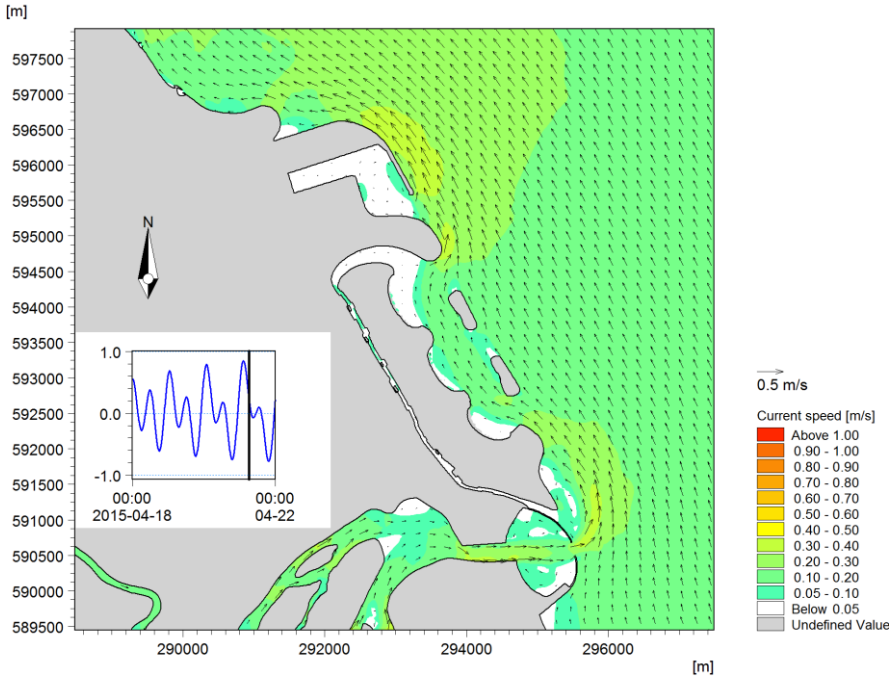

Figure 2.14 Modelled tidal current condition during ebb tide for Layout 9

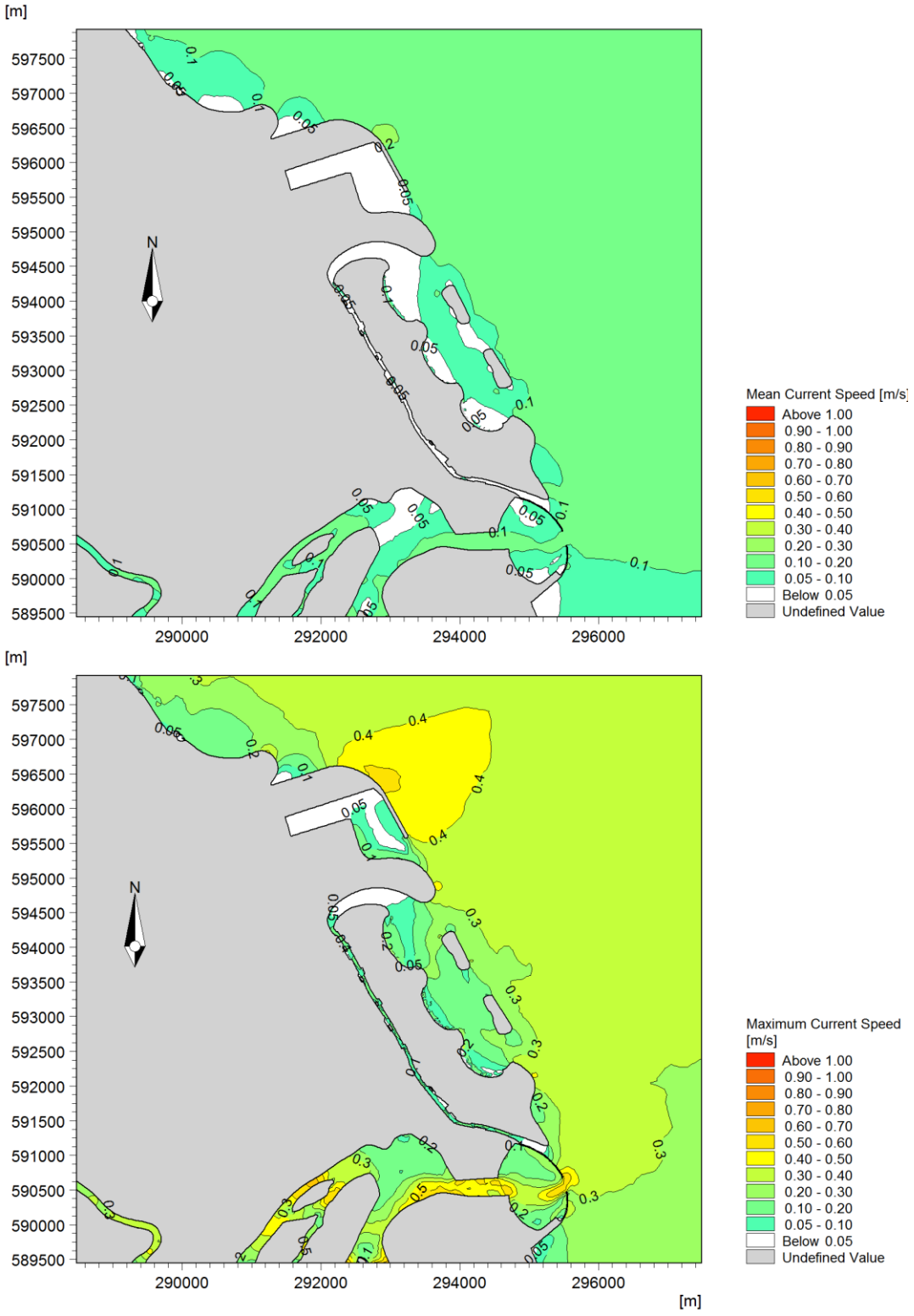

Figure 2.15 Mean (top) and maximum (bottom) tidal current for Layout 9

3 Modelling of Flushing Capacity

A key issue with the development is the water quality around the reclaimed areas, in particular in the channels around the areas proposed for housing and mixed development. Water quality in the basin for the Cruise Terminal and ship repair facility is also a potential issue although a slightly lower quality can be accepted here as it is a predominantly industrial area.

To make an initial assessment of whether there are likely to be any water quality issues the time taken to flush a conservative tracer from specific areas within the development has been modelled using MIKE 21 AD.

Water quality is assessed to be good when the concentration of the tracer reduces to 50% of the initial value within 2 3 days. If the time taken to reduce to 50% of the initial concentration is longer that this there is potential for deterioration of the water quality.

3.1 Layout 1

A conservative tracer was placed in four locations in the inner channel between the reclaimed areas for Layout 1 as shown in Figure 3.1, with the concentrations after 1, 2 and 3 days being shown in Figure 3.2 to Figure 3.4.

These results indicate that flushing is adequate in the channels between the reclamation areas for this initial layout and that no water quality issues would be expected in these areas.

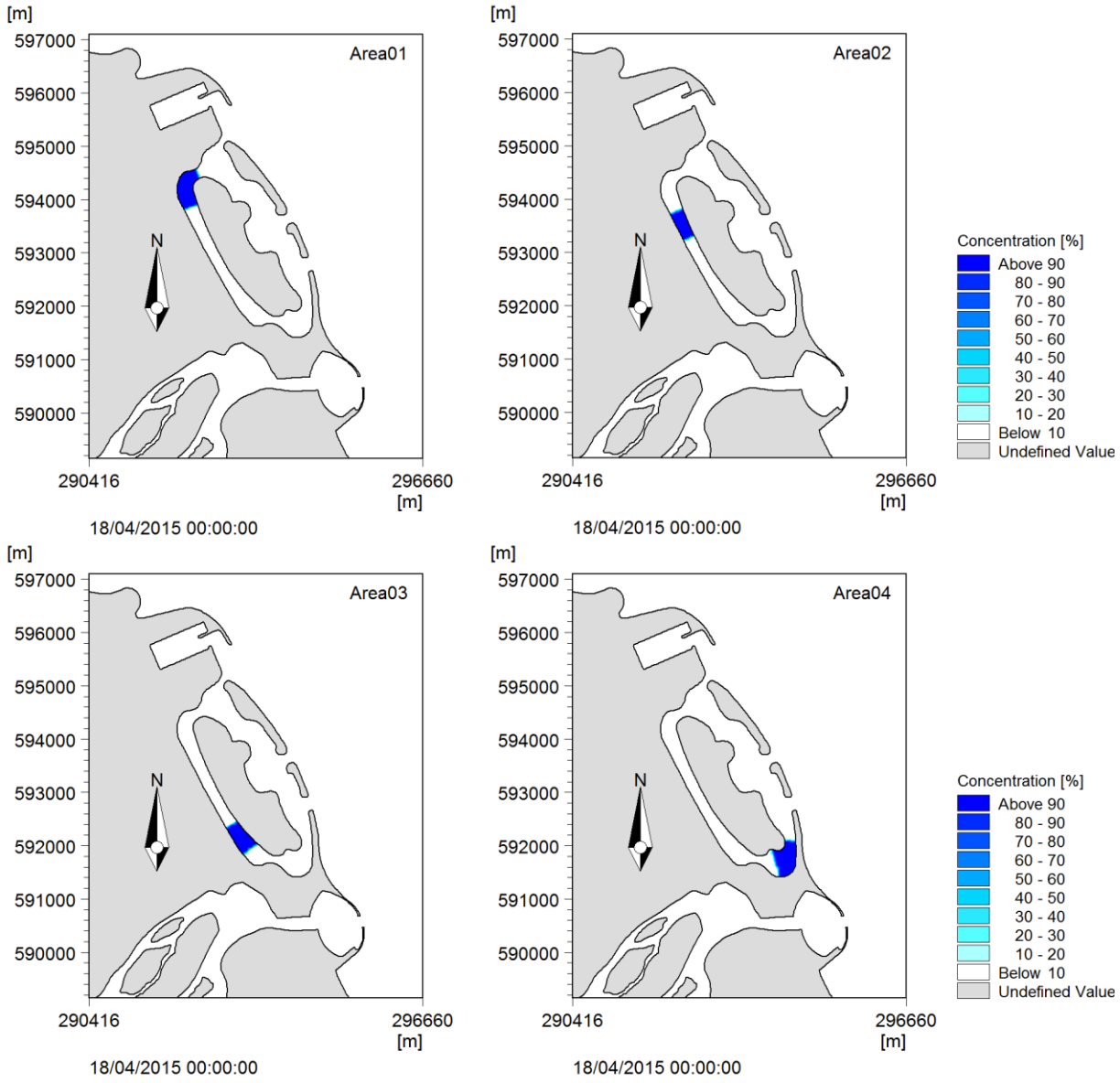

Figure 3.1 Layout 1 flushing – Day 0

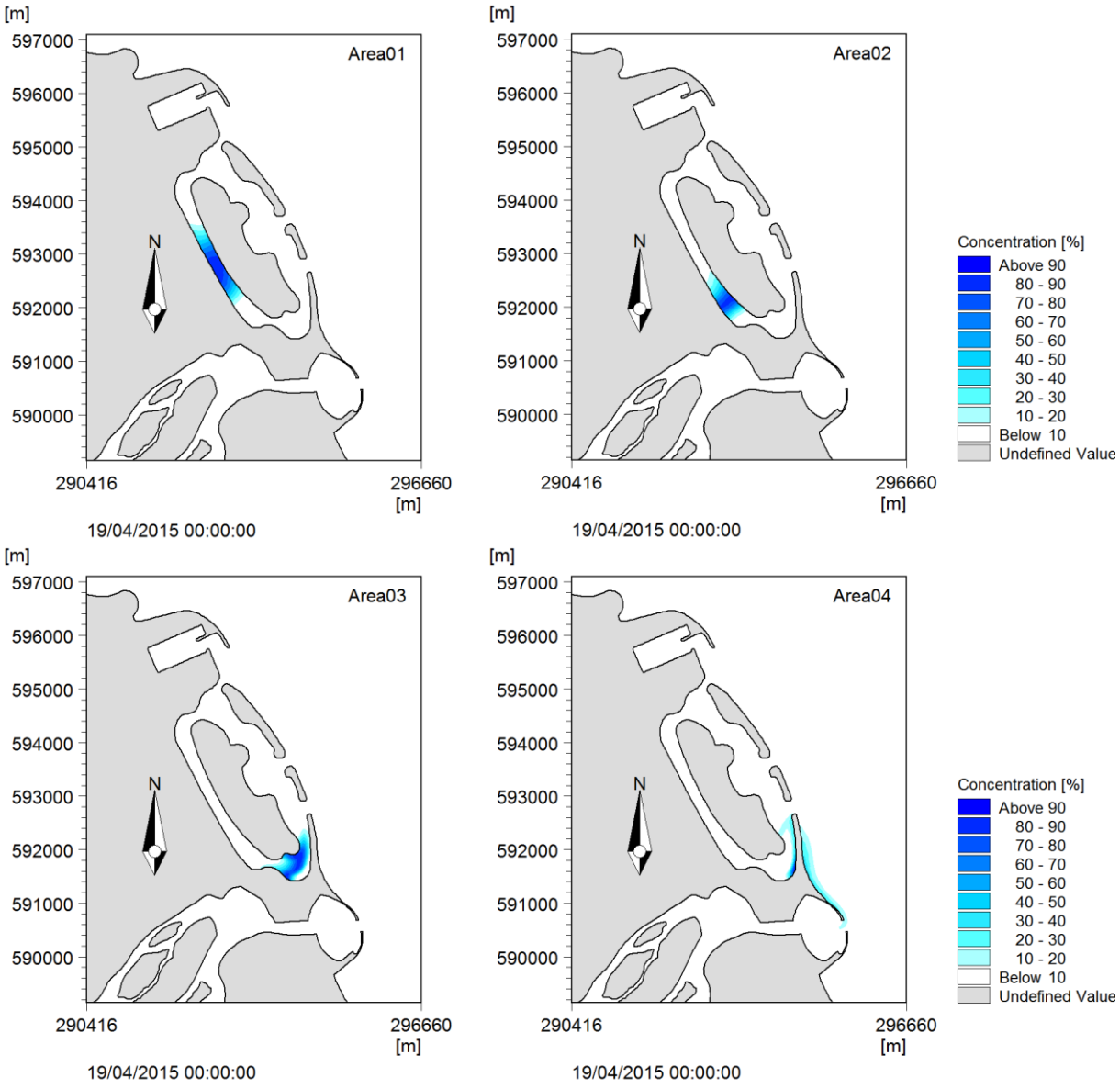

Figure 3.2 Layout 1 flushing – Day 1