

Seasonal Occupancy Restrictions on the Lincolnshire Coast

Analysis of Historic Tide Data

Background

Seasonal occupancy restrictions have been an effective tool to managing residual flood risk to the caravan and camping sites (classed as highly vulnerable units) for some years.

The 'closed season' has varied over the years as our knowledge of the likelihood and impact of flooding has improved. The local planning authority and Environment Agency have taken a risk based approach to balance local economic drivers with flood risk.

The current occupancy restriction is between 1 November and 15 March (shown by red box on graphs below).

Immingham Tide Gauge

Tidal analysis in respect of recorded information at Immingham has been undertaken for the period 1963 to 2010. Immingham is a Class A gauging station and forms part of the national tide gauge network.

Recorded Tide Levels

Analysis shows that the majority (66%) of tide levels above 4.2mODN were recorded in the period November to March. This is the level where a flood warning would start to be considered (subject to wind speed and direction).

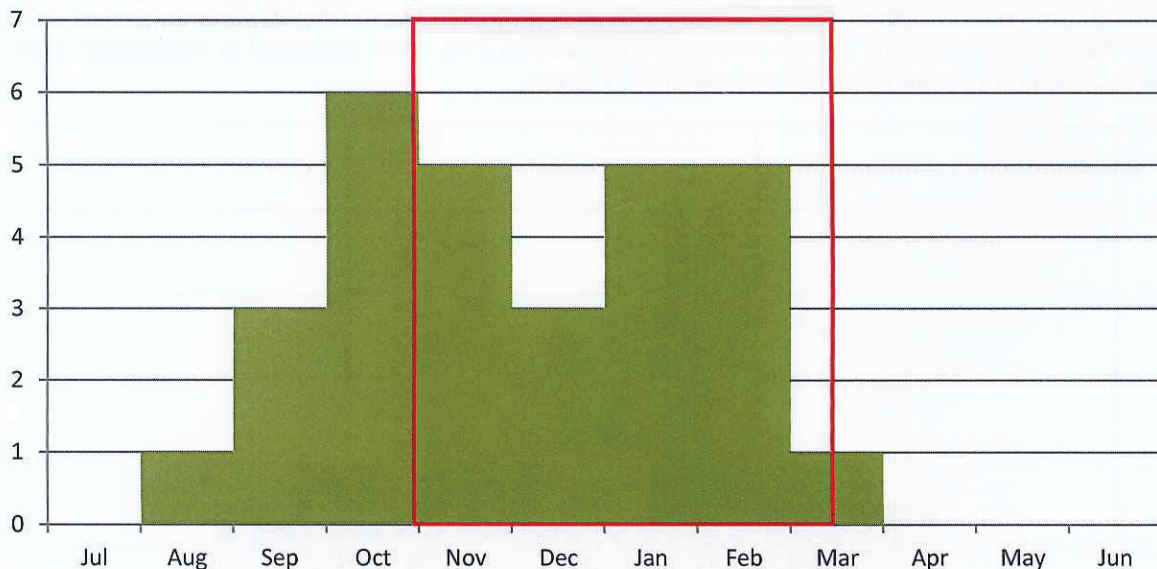


Fig 1: Number of tides above 4.2mODN per month 1963-2010

Surges (residuals)

Met Office classification of a tidal surge is where the residual (the difference between predicted astronomical and actual tide level) is more than +0.6m. Analysis of residuals recorded at Immingham shows the majority (79%) large enough to be classed as surges were recorded in the period November to March.

There were twice as many surges recorded in November than October.

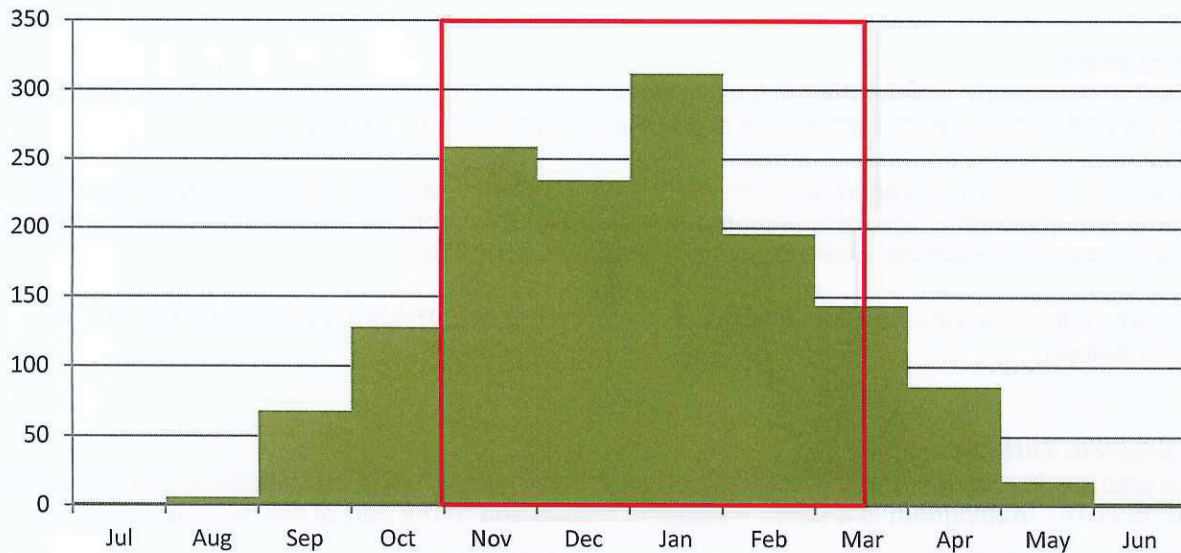


Fig 2: Number of surges (residual > 0.6m) per month 1963-2010

Offshore Waves

Offshore wave records at the Inner Dowsing tide gauge, off the Lincolnshire coast, for the period 2003-2012 show the majority (78%) of large waves (more than 4m in height) were recorded in the period November to March. Of the recorded large waves 21% were recorded in November (joint top with January) compared to 6% recorded in October.

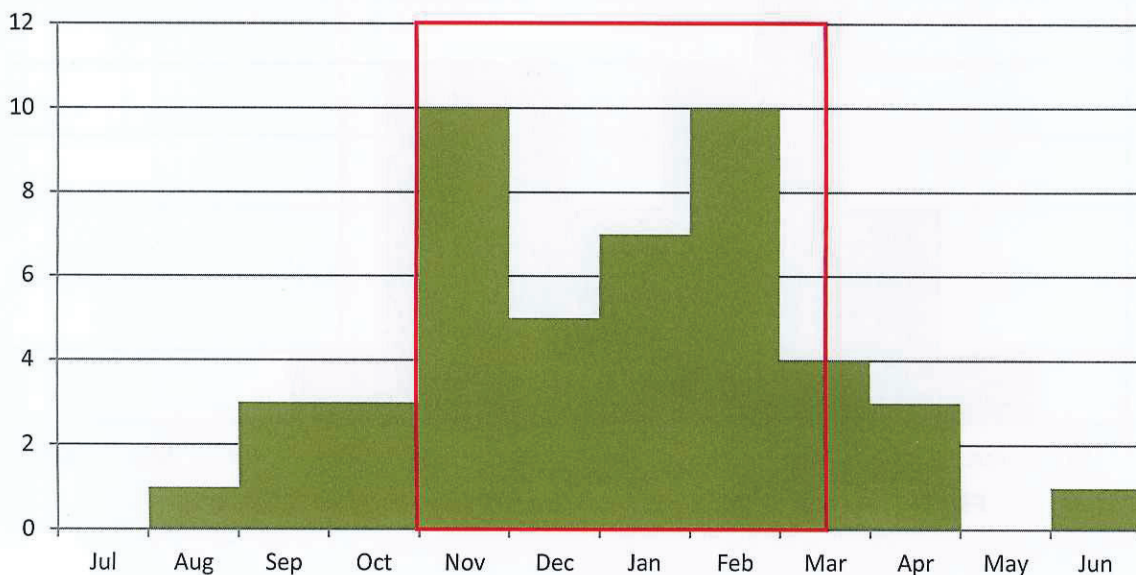


Fig 3: Number of large offshore waves (> 4m) per month 2003-2012

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Nearshore Waves

This picture is similar for recorded near shore wave heights (from the period 2006-2009) where 75% of large waves were recorded for the period November to March. Again 21% of large waves recorded were in November compared to 5% in October.

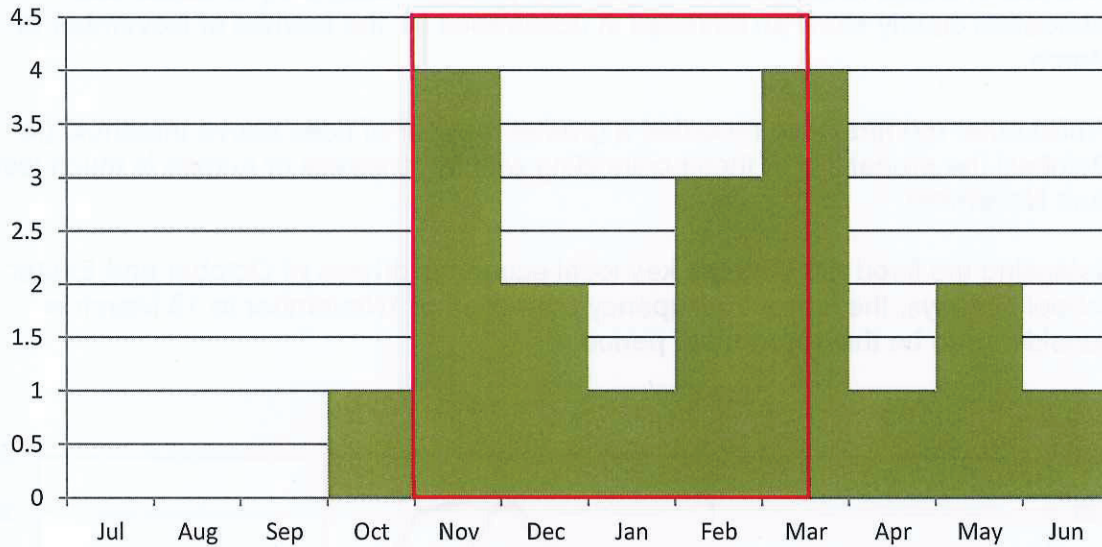


Fig 4: Number of large inshore waves (> 4m) per month 2006-2009

Thames Barrier Operation

The above recorded tidal information is also supported by records on the operation of the Thames Barrier, where 90% of the recorded closures of the barrier have been during the period November to March.

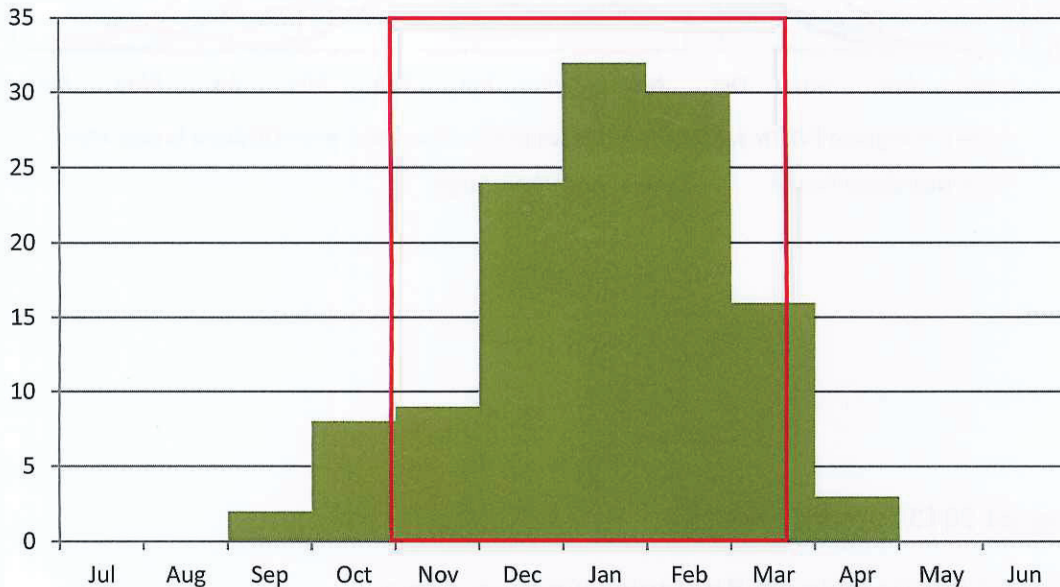


Fig 4: Thames Barrier operations per month 1983-2013

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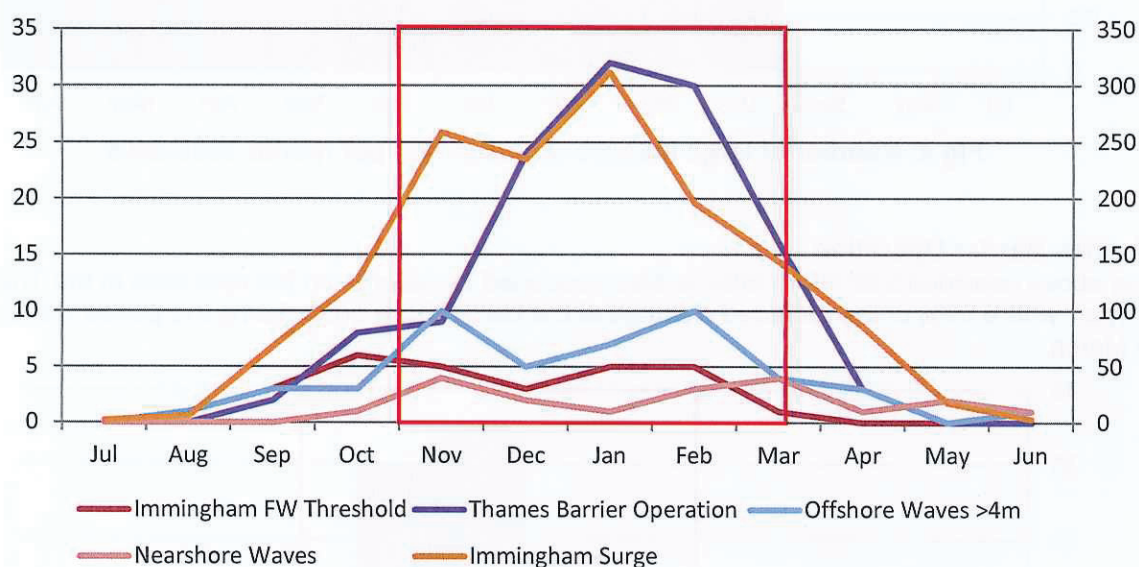
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Summary

Analysis of actual recorded data for the components most likely to cause tidal inundation clearly show an increase in occurrence for the months of November to March.

Whilst other months have recorded a greater number of tides above threshold (ie October) the probability of these coinciding with large waves or surges is much less than November.

Balancing the flood risk with the key local economic drivers of October and Easter school holidays, the current occupancy restriction of 1 November to 15 March is considered to be the appropriate period.



August 2013

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Anglian Region, Northern Area

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