

Table 1 - Definition of flood risk impact magnitude extracted from Annex IV, Table A4.4 of the DMRB guidance

Magnitude	Criteria	Typical example
Major adverse	Results in effect on attribute, but of insufficient magnitude to affect the use or integrity.	Flood Risk: Increase in peak flood level (1% annual probability) >100mm. (Hydrological Assessment of Design Floods and Hydraulic Assessment, Methods E and F, Annex I).
Moderate Adverse	Results in effect on integrity of attribute, or loss of part of attribute.	Flood Risk: Increase in peak flood level (1% annual probability) >50mm
Minor adverse	Results in some measurable change in attributes quality or vulnerability.	Flood Risk: Increase in peak flood level (1% annual probability) >10mm.
Negligible	Results in effect on attribute, but of insufficient magnitude to affect the use or integrity.	Flood Risk: Negligible change in peak flood level (1% annual probability) <+/- 10mm
Minor Beneficial	Results in some beneficial effect on attribute or a reduced risk of negative effect occurring.	Flood Risk: Reduction in peak flood level (1% annual probability) >10mm
Moderate beneficial	Results in moderate improvement of attribute quality.	Flood Risk: Reduction in peak flood level (1% annual probability) >50mm.
Major beneficial	Results in major improvement of attribute quality.	Flood Risk: Reduction in peak flood level (1% annual probability) >100mm.

Table 2 ES Volume 1, Chapter 11 Table 11.18 Summary of magnitude of peak impact from selected sources and scenarios from the FRA (revised)

Flooding source and Flood Risk Assessment figure reference	Scenario	Areas of adverse impact / magnitude	Areas of beneficial impact / magnitude
Pluvial (Figure 14.3)	A 1 in 100-year return period event with 30% increase in rainfall intensity for climate change impacts	Negligible change in flood depths across Scheme and study area - Neutral	Negligible change in flood depths across Scheme and study area - Neutral
Tidal – Humber Wave Overtopping (Figure 14.18)	A 1 in 200-year return period event	<p>Kingston Retail Park – increase of maximum flood depth of up to 0.2m – major adverse</p> <p>Princes Quay – increase of maximum flood depth of up to 0.2m – major adverse</p> <p>Blanket Row, Blackfriargate and surrounding streets – increase of maximum flood depth of up to 0.7m – major adverse</p> <p>Market Place and surrounding streets north of the A63 – increase of maximum depth of up to 0.1m – moderate adverse</p> <p>Queens Gardens – increase in maximum depth of up to 0.3m – major adverse</p> <p>Wassand Street and Neptune Street – increase of maximum flood depth of up to 0.20m – major adverse</p>	<p>Commercial Road south of underpass and A63 carriageway east of underpass – reduction of maximum flood depths of up to 0.5m – major beneficial</p> <p>Myton Street and Osborne Street – reduction in maximum flood depth of up to 0.3m – major beneficial</p>
Tidal – Humber Wave Overtopping (Figure 14.21)	A 1 in 1000-year return period event	<p>Kingston Retail Park – increase of maximum flood depth of up to 0.4m – major adverse</p> <p>Princes Quay – increase of maximum flood depths of up to 0.2m – major adverse</p>	<p>Commercial Road south of underpass and A63 carriageway east of underpass – reduction of maximum flood depth of up to 0.6m – major beneficial</p> <p>A1079 Ferensway north of underpass – reduction of</p>

		<p>Underpass – increase of maximum flood depth of up to 5.8m – major adverse</p> <p>Blanket Row, Blackfriargate and surrounding streets – increase of maximum flood depth of up to 0.74m – major adverse</p> <p>Market Place and surrounding streets – increase of maximum flood depth of up to 0.1m – moderate adverse</p> <p>Queens Gardens – increase of maximum flood depth of up to 0.2m – major adverse</p> <p>Land east of Dock Office Row – increase of maximum flood depth of up to 1m – major adverse</p> <p>Waverley Street – increase of maximum flood depth of up to 0.3m – major adverse</p>	<p>maximum flood depth of up to 0.66m – major beneficial</p> <p>A1079 Ferensway and surrounding streets north of A63 – reduction of maximum flood depths of up to 0.3m – major beneficial</p> <p>A1105 Anlaby Road, St Luke’s Street, Osborne Street, Porter Street and surrounding roads – reduction in maximum flood depth of up to 0.1m – moderate beneficial</p> <p>Area to the north-west of St-Stephens shopping centre – reduction of maximum flood depths of up to 0.05m – minor beneficial</p>
Tidal – Humber Wave Overtopping (Figure 14.28)	A 1 in 200-year return period event with a consideration of climate change	<p>North end of Kingston Retail Park and Waverley Street – increase of maximum flood depth of up to 0.6m – major adverse</p> <p>Underpass – increase of maximum flood depth of up to 6.2m – major adverse</p>	<p>Commercial Road south of underpass and A63 carriageway east of underpass – reduction of maximum flood depth of up to 0.5m – major beneficial</p> <p>A1079 Ferensway – reduction of maximum flood depth of up to 0.3m – major beneficial</p> <p>Osborne Street, Adelaide Street and surrounding roads – reduction of maximum flood depth of up to 0.1m – moderate beneficial</p>
Tidal – Humber Wave Overtopping (Figure 14.34)	A 1 in 200 year return period event without existing flood defences	<p>Kingston Retail Park – Increase of maximum flood depth of up to 0.20m - major adverse</p> <p>Blanket Row, Blackfriargate and surrounding streets – increase of maximum flood depth of up to</p>	<p>Commercial Road south of underpass and A63 carriageway east of underpass – Reduction of maximum flood depth of up to 0.6m – major beneficial</p> <p>A1079 Ferensway north of underpass – Reduction of maximum flood depth of greater than 0.5m – major beneficial</p>

		<p>0.1m – moderate adverse</p> <p>Queens Gardens and Dock Street – Increase of maximum flood depth of up to 0.1m – moderate adverse</p> <p>Underpass – Increase of maximum flood depth of up to 5.8m - major adverse</p>	<p>Roper Street and Myton Street – reduction of maximum flood depth of up to 0.3m – major beneficial</p> <p>Osborne Street, Carr Lane, Upper Union Street and surrounding roads – reduction in maximum flood depth of up to 0.1m – moderate beneficial</p>
Tidal – Humber Wave Overtopping (Figure 14.37)	A 1 in 200-year return period with consideration for climate change and without existing flood defences	<p>Kingston Retail Park – Increase of maximum flood depth of up to 0.2m - major adverse</p> <p>Blanket Row, Blackfriargate and surrounding streets – increase of maximum flood depth of up to 0.2m – major adverse</p> <p>Waverley Street – increase of maximum flood depth of up to 0.4m - major adverse</p> <p>Underpass – Increase of maximum flood depth of up to 5.8m - major adverse</p>	<p>Commercial Road south of underpass and A63 carriageway east of underpass – Reduction of maximum flood depth of up to 0.5m – major beneficial</p> <p>A1079 Ferensway north of underpass – Reduction of maximum flood depth of greater than 0.5m – major beneficial</p> <p>Roper Street and Myton Street – reduction of maximum flood depth of up to 0.3m – major beneficial</p> <p>Osborne Street, Carr Lane, Upper Union Street and surrounding roads – reduction in maximum flood depth of up to - 0.1m – moderate beneficial</p>
Tidal from River Hull (Figure 14.44)	A 1 in 200 year return period event (tidal barrier fails to close)	<p>Blanket Row, Blackfriargate and surrounding streets south of A63 – increase of maximum flood depth of up to 0.2m – major adverse</p> <p>Humber Dock and Railway Dock – Increase of maximum flood depth of up to 0.3m – major adverse</p> <p>Princes Quay – Increase of maximum flood depth of up to 0.6m – major adverse</p> <p>Market Place, Posterngate and surrounding streets – increase of maximum flood depth of up to 0.1m – major adverse</p>	<p>Commercial Road south of underpass and A63 carriageway east of underpass – Reduction of maximum flood depth of up to 0.50m – major beneficial</p> <p>Kingston Retail Park – Reduction of maximum flood depth of up to 0.58m – major beneficial</p> <p>A1079 Ferensway, St Luke’s Street, Osborne Street and surrounding roads – Reduction of maximum flood depth of up to 0.4m – major beneficial</p>

		<p>Dagger Lane and Fish Street – increase of maximum depth of up to 0.2m – major adverse</p> <p>Queen;s Gardens – increase of maximum flood depth of up to 0.1m – moderate adverse</p> <p>Underpass – Increase of maximum flood depth of up 5.8m - major adverse</p>	
Tidal from River Hull (Figure 14.47)	A 1 in 1000 year return period event (tidal barrier fails to close)	<p>Blanket Row, Blackfriargate and surrounding streets south of A63 – increase of maximum flood depth of up to 0.20m – major adverse</p> <p>Market Place, Posterngate, Dagger Lane, Prince’s Dock Street and surrounding roads – increase in maximum flood depth of up to 0.1m - moderate adverse</p> <p>Humber Dock and Railway Dock – Increase of maximum flood depth of up to 1.03m – major adverse</p> <p>Princes Quay – Increase of maximum flood depth of up to 0.20m – major adverse</p> <p>Underpass – Increase of maximum flood depth of up 5.80m - large adverse</p>	<p>Commercial Road south of underpass and A63 carriageway east of underpass – Reduction of maximum flood depth of up to 0.52m – major beneficial</p> <p>Kingston Retail Park – Reduction of maximum flood depth of up to 0.59m – major beneficial</p> <p>A1079 Ferensway, St Luke’s Street, Osborne Street and surrounding roads – Reduction of maximum flood depth of up to 0.66m – major beneficial</p> <p>Brook Street, North Street, Prospect Street, Wright Street and surrounding roads – reduciotn in maximum flood depth of up to 0.2m – major beneficial</p>

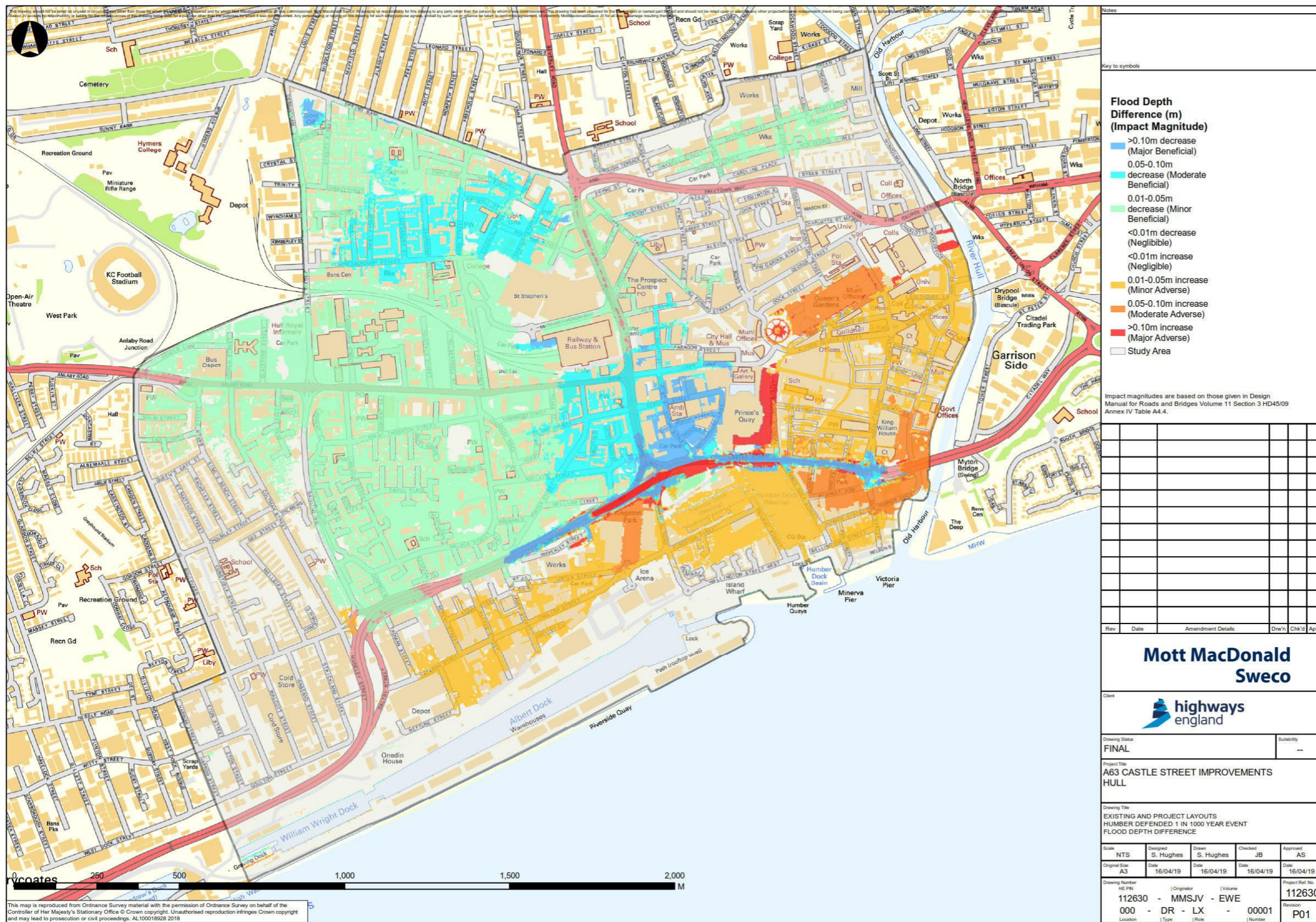


Figure 6 - Change in maximum flood depth between baseline and proposed for Humber wave overtopping flooding under a 1 in 1000 year event

