ED031.1C.

URS

Technical Note

Date: 26th September 2014

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Gary Purnell (Natural Resources Wales)

From: Mark Crussell / Richard Moore

cc: Andrew Woodliffe

Subject: **Additional Housing Allocation H1 (63) – Site Assessment**

In August 2014 Newport City Council (NCC) commissioned URS Infrastructure & Environment UK Limited (URS) to undertake a Stage 3 Strategic Flood Consequence Assessment (SFCA) for an additional housing allocation (H1 (63)) (Figure 1). The same approach was adopted as within the Stage 3 SFCA undertaken in March 2014.

In September 2014, Natural Resources Wales (NRW) reviewed the SFCA for the additional site, and indicated that further assessment was required. Tidal flooding from the River Usk Estuary is the predominant source of flood risk posed to the site. To meet the requirement of A1.14 of TAN 15 (designed flood free), the existing site would need to be raised with floor levels located above the 1 in 200 year plus climate change event (year 2111) (Scenario 3). This would potentially result in a loss of flood storage volume and/or displacement, which could convey floodwaters elsewhere. NRW therefore stated that land raising of the existing site would need to be assessed further to ensure that flooding is not increased elsewhere.

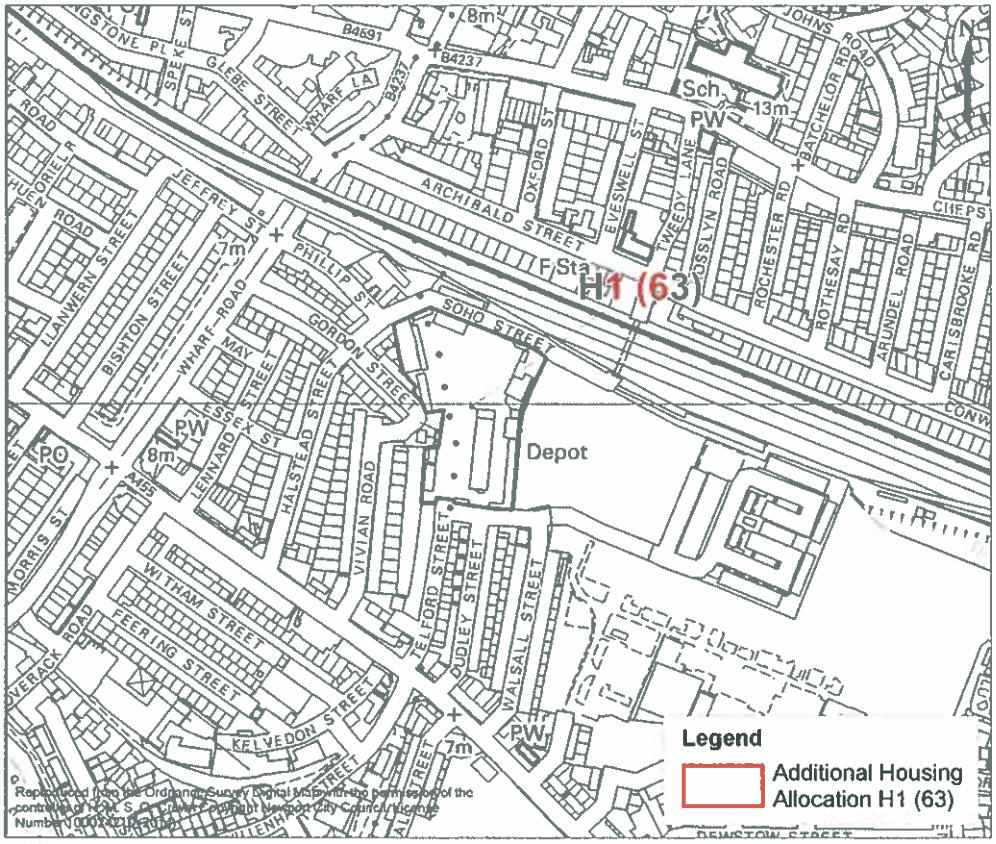

Figure 1: Site Location

Methodology and Results

To determine whether flooding to third parties within the vicinity of the site is increased following the proposed land raising, the volume of water displaced within the site (based on Scenario 3) has been calculated using the GIS software MapInfo and then distributed across the area of the flood cell as identified in Figure 2.

Flood Cell A (see Figure 2) was defined based on major infrastructure (i.e. railway line) and the direction in which floodwater propagated following overtopping of the River Usk.

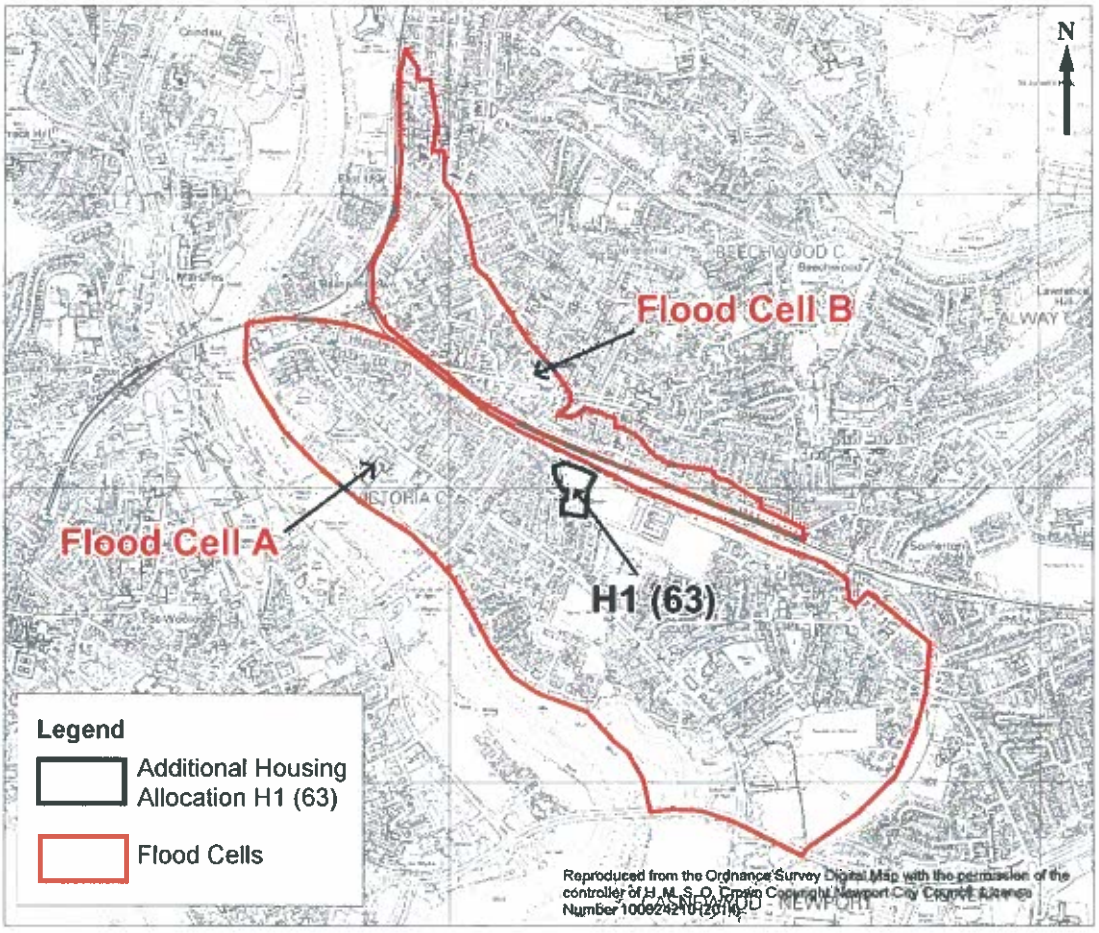

Figure 2: Flood Cells

When considering Flood Cell A (see Figure 2) it has been calculated that flood depths across the cell would increase by approximately 0.005 m.

However, the area of Flood Cell A is considered conservative as water can propagate through tunnels beneath the railway to the north and north-west and water is also able to propagate across the road network to the south. When considering the larger flood cell (Flood Cells A & B) the increase in flood depth across the cell would be approximately 0.004 m.

Discussion

To provide further context and to communicate the impact of land raising at the site on surrounding areas the existing flood depth and hazard rating for selected streets have been identified for Scenario 3 (see Table 1 and Figure 3).

Table 1: Maximum Flood Depth and Hazard Rating during Scenario 3 (no land raising)

Street Name	Distance from Site (m)	Maximum Depth (m) (no land rising)	Maximum Hazard
Vivian Road	40 m (East)	0.86	Significant
Wharf Road	227 m (East)	1.10	Significant
Eton Road	515 m (East)	1.25	Extreme
Telford Street	Adjacent (South)	0.79	Significant
Kelvedon Street	156 m (South)	1.07	Significant

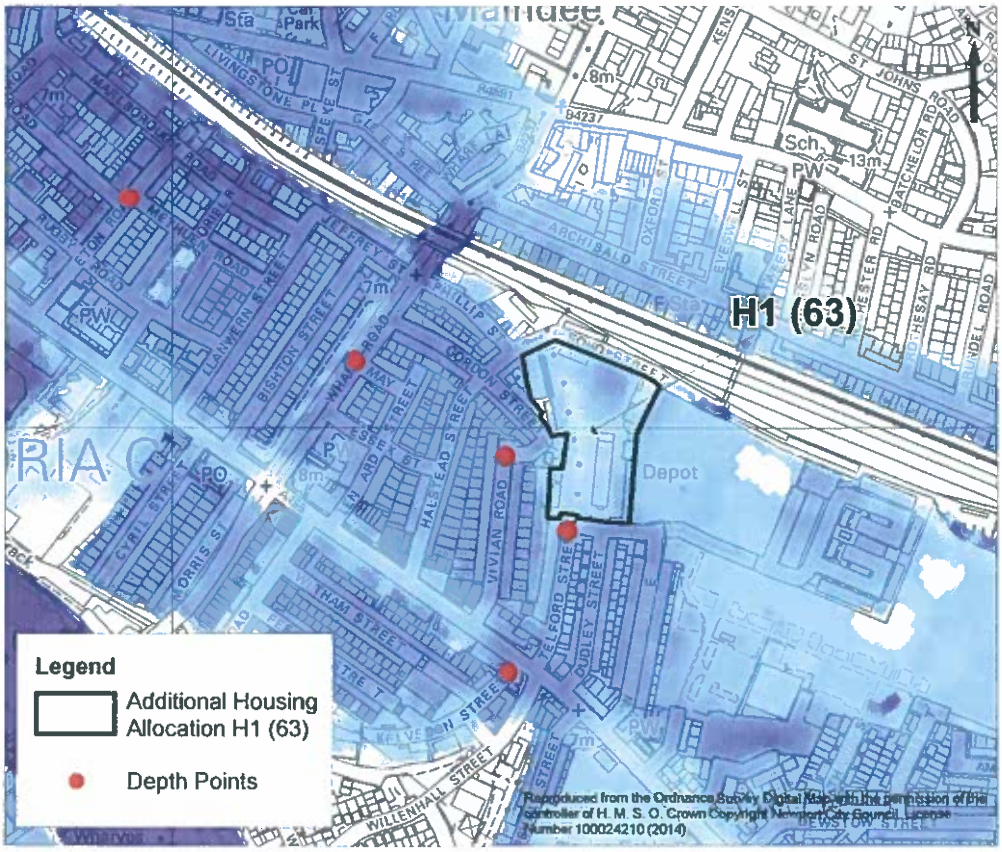

Figure 3: Location of Flood Depth Points

The predominant hazard rating in the vicinity of the site during the Scenario 3 baseline (i.e. no land raising at the site) is currently Significant (see Table 1). The analysis undertaken indicates that the minimal increase in flood depth (0.005 m) would not increase the flood hazard posed to existing properties and infrastructure. Neither would the land raising increase floodplain extent, which may have potentially put additional properties at risk of flooding.

Conclusion

Based on the analysis summarised within this technical note it is considered that by raising the existing site out of the 1 in 200 year plus climate change event (Scenario 3) floodplain, there is likely to be a negligible effect on flood depths within the vicinity of the site.