Summary Report for Wormley Parkland, Broxbourne

This is a summary report for highway capacity and vehicular access arrangements associated with a proposed 8 Form of Entry (FE) secondary school at Wormley Parkland, Broxbourne.

The vehicular access under consideration will be taken from the north side of the link road between the A10 and the A1170, known as the Turnford Junction.

1.1 Means of Access

The proposed access arrangement to the site lies within a national speed limit zone. It is proposed that the speed limit is reduced to 40mph along the link road. The proposed access arrangements are shown on a Means of Access Plan, Drawing ST-2462-10, which includes the following:

i. Visibility splay of 9m x 120m.

ii. Proposed 3.45m wide and 30m long deceleration lane, with associated 10m long taper.

iii. Radii of 20m.

iv. Proposed 6.1m wide access road link to the school site, to cater for bus/coach movements.

v. Proposed signage across the new access junction, reminding drivers to give way and that there is a mandatory left turn only direction on the dual carriageway.

vi. Road gradient of 1:40 from the existing carriageway, increasing to 1:20 within the site.

There is a significant level difference between the site and the link road. Therefore, in order to provide an access into the site, which meets the standards as specified within *Roads in Hertfordshire – Highway Design Guide*, a combination of retaining walls and embankments would be required to achieve the specified vertical gradients into the site.

The Means of Access Plan was forwarded to the Local Highway Authority (LHA) for their comments and approval. In their response, dated 20th June 2016, the LHA identified that an access from the link road would go against their policy, which states that "New access to primary and main distributor routes will only be considered where special circumstances can be demonstrated in favour of the proposals". Therefore, there would need to be a strong case for setting this policy aside.

The access location would generate U-turns on the interchange roundabout, particularly at peak times, and could have a detrimental effect on the operation of the A10 interchange. A detailed study will need to be carried out to ascertain the likely scale and impact and whether there is a solution to this problem. In addition, a Safety Audit will need to be undertaken.

The feasibility of proposed access to the site from alternative locations has been assessed previously, with the access from the link road being the most suitable location. This was discussed with the LHA in a meeting held on 17th November 2015, who confirmed that an access from the link road would appear to be the only feasible option considering Church Lane would not be suitable for buses/coaches. It was suggested that cars could potentially enter the site from Church Lane and buses/coaches could utilise an access from the link road.

We have undertaken a preliminary impact assessment on the link road and the roundabout junctions it connects to. This is described in more detail later in this report.

1.2 Swept Path Analysis

Swept path analysis has been undertaken for a 12m long and 2.55m wide coach, with a lock to lock time of 6 seconds. The analysis is shown on Drawing ST-2462-11, Swept Path Analysis, and identifies that the coach can enter the proposed deceleration lane and manoeuvre around the proposed access without any issues. The coach could also exit the proposed access with no problems.

A refuse vehicle and fire appliance have also been analysed and can perform the same manoeuvres without any issues. However, the coach dimensions and turning capabilities represent the most onerous of the likely vehicles accessing the site.

1.3 Analysis of Impact on Flood Zone

The proposed access arrangements involve crossing through an Environment Agency (EA) identified Flood Zone 2 (1 in 1000 year flood extent) and Flood Zone 3 (1 in 100 year flood extent). Flood compensation is required where existing ground levels are raised within the flood plain extent associated with the 1 in 100 year event plus an allowance for climate change.

Inspection of the EA website identifies that the site lies within the Thames basin catchment. As the main development area of the school will be situated outside the flood zones, it may be interpolated that a lower climate change allowance percentage could be used. However, for robustness, we have assumed the highest climate change allowance of 70%.

Using the obtained EA flood level data, it is expected that the 1 in 100 year plus climate change storm event would reach a level of 32.20m AOD. Analysis of this flood level with the LIDAR data and proposed ground levels associated with the new road and embankments, identifies that flood compensation will be required for a volume of 6143m^3.

It is recommended that the area to the north west of the access, within Flood Zone 3, is utilised to provide this compensation. The compensation could be provided over a large area which would minimise the depth of excavation.

The total build-up required for the proposed access arrangements equates to approximately 13,000m^3. Therefore, provided the material is taken from the area within Flood Zone 3, there is potential for additional betterment over the required compensation by 6857m^3.

1.4 Lighting Review

A lighting Environmental Impact Assessment and Lighting Design Category Selection Process have been undertaken by MMA Lighting Consultancy, which has been submitted alongside this summary report.

The review proposed a total of 3 new Urbis Ampera Midi Neutral White LED 10.81klm luminairies installed on 10m galvanised steel lighting columns with a 0 degree tilt to provide suitable illumination of the proposed access arrangements.

1.5 Junction Analysis

Junctions 9 analysis has been undertaken, assessing the existing conditions, the conditions in the horizon year (2022) and conditions during the horizon year with school generated traffic. The following junctions have been assessed:

i. A10 Turnford interchange junction

ii. A1170 double roundabout

iii. Site access

The assessment identified that the stated junctions operated within their theoretical capacity during the existing scenario and the horizon year scenario. During the horizon year plus school development scenario, the majority of the junctions operate within their theoretical capacity, apart from the northern arm of the A1170 roundabout during the AM peak period. The ratio to flow capacity is identified as 0.924 which, although still operational, would be reaching a level which would be detrimental to the operation of the roundabout.

Therefore, it is anticipated that some minor highway improvements would be required to mitigate the potential issues across this roundabout, resulting in a nil-detriment scenario in traffic terms. This may be in the form of signalisation of the junction or widening of the approach.

Further analysis of this junction will need to be undertaken as part of a Transport Assessment, which will have a more detailed understanding of the traffic generation and distribution associated with the school.

1.6 High Level Preliminary Cost Estimate

A Feasibility Budget Estimate associated with the proposed access arrangements has been undertaken by Robinson Low Francis (RLF), which will be submitted alongside this summary report.

The report identified a budget estimate of £550,000.00 for the works associated with the proposed access arrangements.

RLF subsequently identified that a project contingency of around 5% would also be worth including to provide some cover, particularly for works to the existing carriageway and existing drainage. The

5% contingency would equate to £27,500.00. Therefore, RLF have proposed a budget of £580,000.00 for the works associated with the proposed access arrangements.