Introduction

Following the meeting in September 2018, this note summarises the facts and figures associated with the proposed works to Chalker's Corner and Chertsey Court.

Why are works to Chalker's Corner required?

The works to Chalker's Corner are required to mitigate the transport impacts of the new Stag Brewery development. The works to Chalker's Corner would be necessary even in the event that only the school came forward. This is because the junction is already operating at capacity and even with no development proposed, traffic conditions are expected to worsen due to increased background traffic flow. The Council have specified that it is a requirement that the developer (Reselton) incorporate the provision for a secondary school within the proposed development.

Reselton's highway consultants, PBA, have worked closely with officers of both the Council and TfL to identify suitable improvement works at Chalker's Corner. TfL have recently written to the Council to confirm that they are satisfied that the proposed Chalker's Corner scheme mitigates the impact of the anticipated vehicle generation arising from the proposed development and are approved for the purposes of determining the planning application.

A detailed analysis has been undertaken to examine the current and predicted traffic flows both with and without the proposed development. The analysis has involved traffic modelling using both detailed and strategic models in collaboration with both the London Borough of Richmond and TfL. The conclusion of this work has identified that by 2031 the proposed development would result in an average increase of traffic of approximately 12% on the Lower Richmond Road arm of the junction at the busiest time i.e. the AM peak.

Even if no development were to come forward congestion would become significantly worse over time if left unchecked.

In considering the appropriate solution to mitigate the development, Reselton's consultants have been careful to ensure that only the works necessary to mitigate the development are proposed. This is because providing more mitigation than is required would only cause to attract more traffic from further afield creating greater congestion. In this respect, the principal challenge has been to provide a solution which prevents the increase of queuing traffic in particular along Lower Richmond Road taking place during peak times by allowing a greater volume of traffic to flow through the junction at these peak times.

Reselton's consultant team thoroughly assessed a range of options for mitigating the transport impacts but it was clear that the only realistic solution for providing effective mitigation is to improve the flow of traffic along Lower Richmond Road by improving that arm of the Chalker's Corner junction. This will in turn help to reduce the level of queuing towards Chalker's Corner. This necessitates the need for additional land for highways purposes.

What works are actually proposed?

The following image demonstrates the existing and proposed changes to the highway network including amended dimensions.

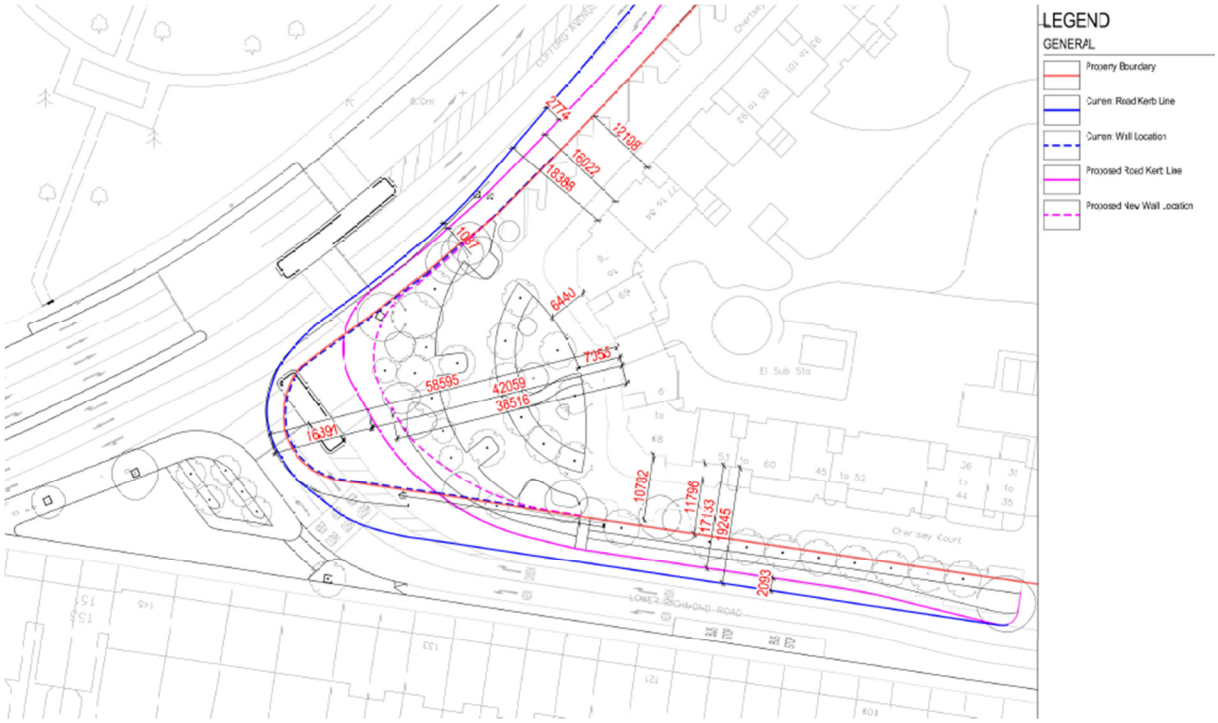

Figure 1: Existing and proposed junction measurements to Chalker's Corner perimeter boundary and façade

In summary, it can be seen that:

- The kerb line is proposed to move 2m closer to those residents fronting directly on to Lower Richmond Road. However, the existing perimeter wall of the property will be maintained.
- The corner junction of Lower Richmond Road and Clifford Avenue will provide a new radius which is just over 16m closer to those properties facing onto this corner. Nevertheless, the new perimeter wall at this location will still maintain a minimum distance of at least 38m between the face of the properties in this location.
- For those residents fronting onto Clifford Avenue, the road will move approximately 2.7m closer to the boundary line of the property but there is no proposed change to the perimeter wall. As a result, the distance between the facing elevation of these properties to the perimeter boundary at Chertsey Court will be maintained at 12m.

In addition to the realignment of the existing roads, there will be improved connectivity through new pedestrian crossings and also relocated bus stops, as shown on Figure 2 below:

Figure 2: Proposed landscaping measures at Chertsey Court

Importantly, the proposed works will provide for a programme of high quality landscaping including a new 2m high solid brick wall which will improve upon the current effect of the existing landscaping to act as a buffer to noise and pollution resulting from the traffic at Chalker's Corner. An image of the existing and the proposed landscaping measures is shown at Figures 4 and 5.

What is the proposed impact of the works on air quality for residents in Chertsey Court?

Air quality has been a significant area of analysis for the consultant team. Detailed studies have been undertaken to assess the existing air quality and predict new air quality levels in the future both with and without the development for comparison purposes.

In accordance with the Government's Air Quality Strategy Objectives, an air quality level of 40µg/m^3 is considered to be the highest acceptable level for a living environment. This level is to be measured at the building façade of residential properties, where people are regularly exposed.

With reference to Figure 3, it can be seen that the air quality study has utilised a number of the Council's own existing "receptor" tubes (shown in green) which capture air quality at specific points.

Figure 3: LBRuT Air Quality Monitoring Data at Chalker's Corner

Figure 3 shows air quality levels are highest at the roadside of Lower Richmond Road and Clifford Avenue directly next to vehicle emissions. However, behind the existing landscape air quality levels (as 37.9µg/m3) are below the threshold level for human health (as 40µg/m3).

The Council's data has been used when modelling the air quality impact of the development across 140 receptors around Chalker's Corner (including properties at each floor above ground within Chertsey Court). This modelling looks to predict the quality of air that would be experienced at the relevant elevation of Chertsey Court.

The results from the modelling assessment are presented in the following table:

Modelled NO_2 Concentration (µg/m^3) at the façade of Chertsey Court **excluding landscaping**				
Air Quality Scenarios				
Chertsey Court Residential Blocks[(a)]	Existing air quality conditions at Chalker's Corner (2016)	No Stag Brewery development and no Chalker's Corner highway works (2027 baseline)	Stag Brewery development goes ahead but with no Chalker's Corner highway works (2027)	**Works to Chalkers Corner and development at Stag Brewery goes ahead (i.e. proposed approach) (2027)**
1 to 8	34.8	35.8 (+1.0)[(b)]	39.0 (+3.2)[(c)]	36.3 (+0.5)[(d)]
36 to 44	36.9	38.1 (+1.2)[(b)]	40.1 (+2.0)[(c)]	38.7 (+0.6)[(d)]
61 to 68	40.1	41.6 (+1.5)[(b)]	42.3 (+0.7)[(c)]	42.6 (+1.0)[(d)(e)]
85 to 92	40.7	42.3 (+1.6)[(b)]	42.7 (+0.4)[(c)]	42.7 (+0.4)[(d)]
107 to 116	40.1	41.7 (+1.6)[(b)]	42.1 (+0.4)[(c)]	42.0 (+0.3)[(d)]

Table 1: Air Quality Impacts at Chertsey Court assuming no landscaping / wall

Table 1 Notes:
Where: Green = good – below the threshold of health (as 40µg/m^3)
Red = poor - above the threshold of health (as 40µg/m^3)
In accordance with Air Quality Guidance, the assessment has been undertaken for the first year the Development is fully operational (as 2027)
(a) All residential blocks have been modelled. Table 3 presents a selection representative with facades on Lower Richmond Road and Clifford Avenue
(b) Change against the 2016 Existing Air Quality Conditions (assumes vehicle emissions remain static between 2016 and 2027)
(c) Change against the 2027 No Stag Brewery development scenario
(d) All properties in Chertsey Court have an increase (100% of modelled locations) from the 2027 No Stag Brewery development scenario. The results also show an improvement against the no Chalker's Corner highway works
(e) This maximum is located at Block 61 to 68 Chertsey Court. These results do not consider the benefits from the landscape proposals (discussed below)

The results in Table 1, and the methodology for modelling air quality, **does not account for the positive effect that a landscape or physical buffer may have on mitigating air quality by acting as a barrier to the dispersion of vehicle tailpipe emissions.**

As can be seen in Figure 3 from the Council data, the existing landscaping at Chertsey Court reduces the emission levels by some 17µg/m^3 (the difference between 54.9µg/m^3 – 37.9µg/m^3). This is consistent with recent research which has been undertaken on this particular subject by Kings College.

Reselton's consultant team have therefore looked to model the air quality at the façade of Chertsey Court taking into account this positive barrier effect (i.e. the reduction in emission levels of some 17µg/m^3), which has been demonstrated through the Council's own air quality monitoring data. The results of including this landscaping effect are shown in the following table:

Modelled NO_2 Concentration (µg/m^3) at the façade of Chertsey Court **including landscaping**				
Air Quality Scenarios				
Chertsey Court Residential Blocks[(a)]	Existing air quality conditions at Chalker's Corner (2016)	No Stag Brewery development and no Chalker's Corner highway works (2027 baseline)	Stag Brewery development goes ahead but with no Chalker's Corner highway works (2027)	**Works to Chalker's Corner and development at Stag Brewery goes ahead (i.e. proposed approach) (2027)**
1 to 8	17.8	18.8 (+1.0)[(b)]	22.0 (+3.2)[(c)]	19.3 (+0.5)[(d)]
36 to 44	19.9	21.1 (+1.2)[(b)]	23.1 (+2.0)[(c)]	21.7 (+0.6)[(d)]
61 to 68	23.1	24.6 (+1.5)[(b)]	25.3 (+0.7)[(c)]	25.6 (+1.0)[(d)(e)]
85 to 92	23.7	25.3 (+1.6)[(b)]	25.7 (+0.4)[(c)]	25.7 (+0.4)[(d)]
107 to 116	23.1	24.7 (+1.6)[(b)]	25.1 (+0.4)[(c)]	25.0 (+0.3)[(d)]

Table 2: Air Quality Impacts at Chertsey Court assuming with landscaping / wall

Table 3 Notes:
Where: Green = good – below the threshold of health (as 40µg/m^3)
Modelling assumes a reduction of 17µg/m^3 at all Chertsey Court properties due to the existing landscape proposals.

Importantly, due to the selection of vegetation species and the maturing of the specimens that will be planted as part of the programme of landscape works and the new 2m high wall (which will replace the existing low wall with railings), it is considered that the new solid brick buffer for Chertsey Court will represent an improved and less penetrable barrier to vehicle emissions. With the future landscaping restricting the dispersion of vehicle emissions, **the new landscaping buffer will result in a clean oasis at the frontage of Chertsey Court**. Therefore, in reality, the future air quality levels are likely to be better than those shown in Tables 2 and 3 and Figure 3.

Notwithstanding this, and simply taking the levels of reduction from the existing landscaping boundary (i.e. the reduction of 17µg/m^3), it can be seen in Figure 3 that the **air quality will be maintained at a figure of significantly below the threshold level for human health (as 40µg/m^3) at the frontage of Chertsey Court**.

Figure 4: Existing Chalker's Corner junction (autumn/winter)

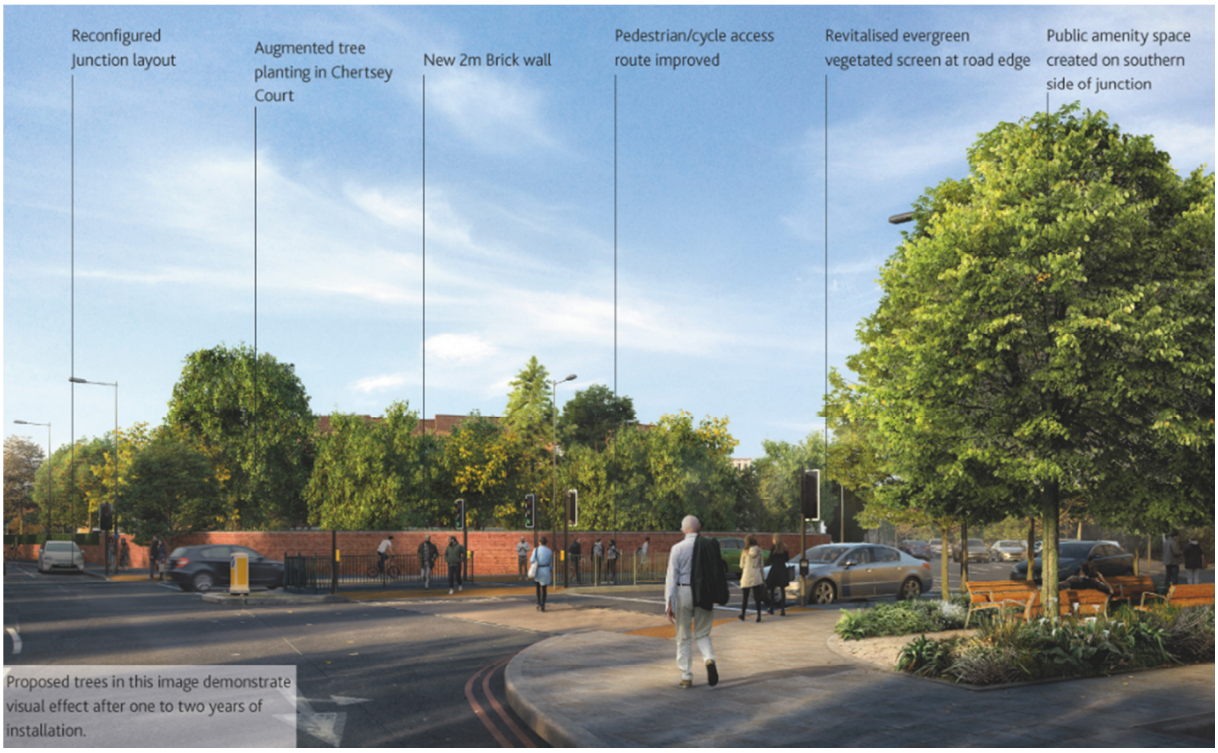

Figure 5: Proposed Chalker's Corner junction (spring/summer)