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CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 Robert West were appointed by the Jones Lang LaSalle (JLL) in May 2014 to provide transport planning advice in relation to the permanent change of use of Heathgate House, The Green, Twickenham TW2 6QF, for a new two-form entry (2FE) primary education facility, to be called Twickenham Green Primary School. The location of the site is indicated below in Figure 1.

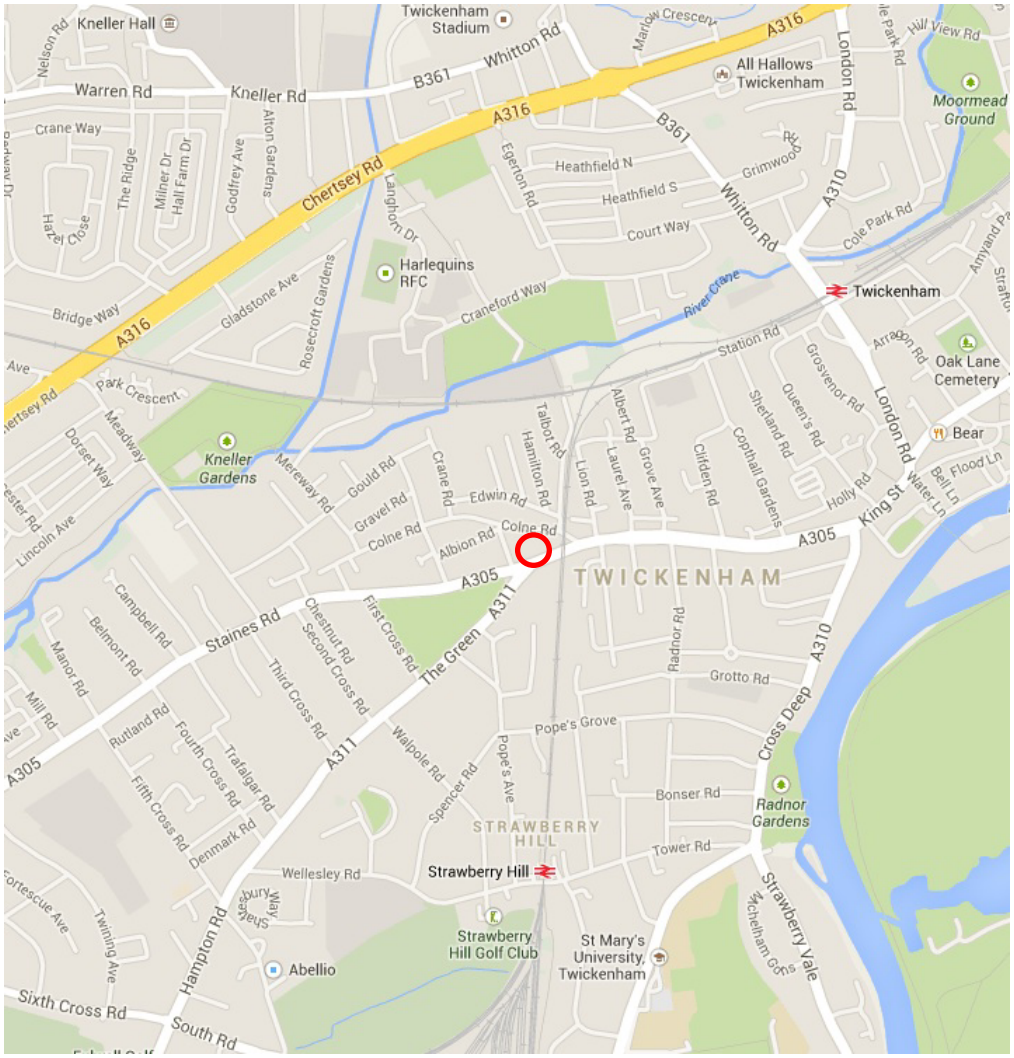

Figure 1: Site Location

Existing Site

1.2 The site consists of a single 3-storey building, Heathgate House, located on the southern part of the site, bordering The Green. The northern part of the site borders Colne Road which provides vehicle access to parking. Heathgate House has a Gross Floor Area (GFA) of 2,316sqm, and has extant planning permission to operate as commercial office space under use class B1. However, it is understood that the building is currently vacant.

1.3 The site has a car park located to the rear of the site which can be accessed via Colne Road. There is provision for approximately 25 cars to park within marked bays, two of which are for disabled users.

Proposed Development

1.4 A change of use application is being submitted to London Borough of Richmond Upon Thames (LBRuT) in order to provide a 2FE Primary School with an associated Nursery. The proposed Primary School would provide up to 420 pupil places, and 60 part time Nursery places in two 30 pupil sessions in the morning and afternoon. Therefore, the proposed Primary School, inclusive of the associated Nursery, will cater for 450 full time equivalent (FTE) pupils.

1.5 The existing car parking area to the north of the site, adjacent Colne Road, will be adapted for use as a segregated outdoor play space for the Primary School and Nursery. Cycle, scooter, and a single disabled space will in this area, to be accessed from Colne Road.

1.6 The primary school will be occupied on an incremental basis, expanding with two new classes in reception each year, for a period of seven years, September 2016 to September 2022.

Scope of Work

1.7 This Transport Assessment (TA) has been prepared in line with guidance set out in the Department for Transport (DfT) *Guidance on Transport Assessment* and takes national, regional and local government policies into account. It is intended to support the planning application for the proposed change of use.

1.8 The report is intended to review the existing transport and highways conditions in the wider area surrounding the site, identify the transport and highways implications of the development, determine whether the development will have a material impact on the local highway network and identify appropriate mitigation measures.

1.9 The scope of the Transport Assessment, including the specification for supporting parking and traffic surveys, has been defined by the Transport Scoping Report (5217/001/R02) produced by Robert West and submitted to the Highway Officer at LBRuT. The scope was discussed and agreed upon in a pre-application meeting held 21st July 2014. However, written feedback from this meeting has not yet been received.

Report Structure

1.10 Following this introduction, the remainder of this TA report is structured as follows:

i. Relevant transport planning policy at Government, Regional and Local levels are reviewed in Section 2.0;

ii. The existing site, it's operation and conditions in the wider area, including the accessibility of the site by non-car modes are outlined in Section 3.0;

iii. The local highway network and road conditions in the surrounding area, including analysis of personal injury accident data, is described in Section 4.0;

iv. The existing site operations and travel behaviour of users are examined in Section 5.0;

v. The development proposals subject of the planning application are described in Section 6.0;

vi. The increase in parking demand and vehicular movement expected to occur as a result of the development is identified in Section 7.0;

vii. The transport and highways related impact of the development is outlined in Section 8.0;

viii. The mitigation strategy for the development proposals are outlined in Section 9.0; and

ix. This report is concluded in Section 10.0.

2.0 POLICY CONTEXT

2.1 This TA is submitted as part of a Class K application under the general permitted development order, and as such legislation advises that the Local Authority should give regard to the National Planning Policy Framework (NPPF) as if the application were a planning application.

2.2 Therefore, Section 38(6) of the Planning and Compensation Act 2004 is not engaged and the scheme is not required to be determined in accordance with the development plan. Regardless, this section of the TA demonstrates the context of local policy has been reviewed, and that the development proposals are considered to be in accordance with the development plan.

2.3 This section considers transport and planning policy as follows:

i. NPPF;

i. DCLG Policy Statement – Planning for Schools Development

ii. Regional policy, namely the London Plan and Mayor's Transport Strategy;

iii. LDF, Core Strategy, April 2009

iv. Local Development Framework (LDF), Development Management Plan (DMP), Adopted November 2011; and

v. Local Implementation Plan 2 (LIP2), December 2011

NPPF

2.4 The NPPF was published by the Department for Communities and Local Government (DCLG) on 27th March 2012. The NPPF replaces and consolidates a number of Planning Policy Guidance notes (PPGs), Planning Policy Statements (PPSs), Minerals Planning Guidance notes (MPGs), Circulars and Letters to Chief Planning Officers. This includes PPG13: Transport.

2.5 The aim of the NPPF is to make the planning system less complex and more accessible, to protect the environment, and to promote sustainable growth.

> *"At the heart of the National Planning Policy Framework is a* ***presumption in favour of sustainable development****, which should be seen as a golden thread running through both plan-making and decision taking."*

2.6 The NPPF has a set of 12 core planning principles that underpin both plan-making and decision-taking. This includes a principle that should:

"…actively manage the patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable…"

2.7 Section 4 of the NPPF, covering paragraphs 29 through 41, sets out the Government's guidance on promoting sustainable transport. It recognises that the smarter use of technologies can reduce the need to travel.

2.8 Paragraph 32 states that development that generate a significant amount of movement should be supported by a Transport Statement or Transport Assessment and should take into account whether:

"the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;

Safe and suitable access to the site can be achieved for all people; and

Improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where residual cumulative impacts of development are severe."

2.9 Paragraph 35 states that, where practical, developments should be located and designed to:

"Accommodate the efficient delivery of goods and supplies;

Give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;

Create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones;

Incorporate facilities for charging plug-in and other ultra-low emission vehicles; and

Consider the needs of people with disabilities by all modes of transport."

2.10 It is recognised that a key tool to delivering sustainable travel, and the principles set out in the NPPF, will be the implementation of Travel Plans. Paragraph 36 states;

"All developments which generate significant amounts of movements should be required to provide a Travel Plan."

2.11 The NPPF does not provide guidance on vehicle or cycle parking; however, it does provide guidance on what local authorities should take into account when setting their local parking standards. This includes:

"The accessibility of the development;

The type, mix and use of development;

The availability of and opportunities for public transport;

Local car ownership levels; and

An overall need to reduce the use of high-emission vehicles."

DCLG Policy Statement - Planning for Schools Development

2.12 This Policy Statement confirms the Government's commitment to ensuring that there is sufficient provision to meet demand for state funded school places (including Academies, Free Schools and local authority maintained schools. It is expected that new schools will need to be opened, and existing schools will be expanded and/or provided with improved facilities.

2.13 The Policy Statement highlights that the creation and development of schools is in the national interest and that this should be supported by planning decision makers. It is stated that the Government expect

"…all parties to work together proactively from an early stage to help plan for state-School development and to shape strong planning applications…to ensure that the answer to proposals for the development of state-funded Schools should be, wherever possible "yes"…'

2.14 The following principles should apply to school developments and planning decisions:

i. Presumption in favour of development of state funded schools;

ii. Full and thorough consideration to the importance of enabling development of state funded schools in making planning decisions;

iii. Use of planning powers to support state funded school applications;

iv. Conditions only to be imposed where they clearly and demonstrably meet the tests set out in Circular 11/95;

v. The process for submitting and determining state-funded school applications should be as streamlined as possible;

vi. A refusal of any application for a school development will have to be clearly justifiable by the local planning authority;

vii. Appeals against refusals for planning permission for schools should be treated with priority; and

viii. The Secretary of State will consider whether to recover for his own determination appeals against the refusal of planning permission for a school.

Draft Further Alterations to the London Plan 2014

2.15 Draft alterations to the London Plan were published in January 2014 for consultation between January and April 2014. On 7th July 2014 the Mayor published a schedule of 'suggested changes' to the draft further Alterations to the London Plan to help inform the Examination in Public. These were prepared following a review of consultation responses, and consist of minor clarifications, corrections and factual updates.

2.16 The draft alterations have been prepared primarily to address key housing and employment issues emerging from an analysis of census data released since the publication of the London Plan in July 2011, and which indicate a substantial increase in the capital's population, and also the need to:

i. develop the concept of the London Plan as the 'London expression of the National Planning Policy Framework';

ii. provide a robust, short to medium term planning framework to provide a clear 'direction of travel' for the longer term, recognising that this may well have to be reviewed;

iii. deal with minor changes in terms of fact;

iv. respond to changes in national policy;

v. provide support for the Mayor's Housing and other strategies; and

vi. where relevant address other advice to the Mayor e.g. from the Outer London Commission.

2.17 Section C of Policy 1.1 (delivery of the strategic vision and objectives for London) states that the vision and objectives of the London Plan should be reflected in other Mayoral plans and strategies, decisions on development proposals and investment priorities, Borough DPDs and development decisions.

2.18 Chapter 2 of the London Plan contains strategic policy for the sub-areas of London. Policy 2.1 states that the vision and strategy for outer London should be to enhance the quality of life of current and future residents.

2.19 Chapter 3 of the London Plan contains policy for London's people. These will be realised by ensuring that people living in London have the homes, opportunities, facilities and social infrastructure required to support a good and improving quality of life.

2.20 Chapter 6 of the London Plan provides transport policy. Policy 6.3 makes recommendations in relation to the effects of development on transport capacity. It is stated that the impacts of development on transport capacity should be fully assessed. Where insufficient transport capacity exists to accommodate demand generated from new development and there are no proposals to increase capacity, development proposals should be phased or refused. Transport Assessments in accordance with Transport for London (TfL) guidance should be produced to support planning applications for new development.

2.21 Policy 6.9 provides policy on cycling and it is recommended that planning decisions should ensure that new developments have secure, integrated and accessible cycle parking facilities in line with the minimum standards outlined in the plan and that on-site changing and showering facilities should be provided for cyclists. Policy 6.10 provides policy on walking and recommends that planning decisions should ensure that developments have a high quality pedestrian environment and emphasise the quality of pedestrian and street space.

2.22 Although the London Plan does not provide specific requirements for general car or disabled parking provision for education facilities paragraph 6A.2 notes that developments should provide an minimum of one accessible space for Blue Badge Holders either as an on- or off- street parking bay. Disabled parking bays should be provided even when general parking is not included within the development scheme.

2.23 The draft alterations revise cycle parking standards for developments, this includes a shift to providing spaces for short-term and long-term users. It is considered that a member of staff would require long-term cycle parking while short term parking should be provided for any visitors to the development site.

2.24 Alterations to Table 6.3 Cycle parking minimum standards include alterations to existing Schools and development of new Schools (Primary and Secondary) (Use Class D1) as follows;

i. Long-Stay Cycle Parking; 1 space per 8 staff + 1 space per 8 pupils; and

ii. Short-Stay Cycle Parking; first 5,000sqm: 1 space per 100 pupils.

Mayor's Transport Strategy

2.25 Final consultation on the Mayor's Transport Strategy was completed in January 2010. The Strategy was published in May 2010 and sets out the Mayor's transport policies for the period up until 2031. The main goals of the strategy include supporting economic and population growth, and enhancing the quality of life and transport opportunities for Londoners. A modal shift away from private motorised transport to more sustainable modes, including public transport, walking and cycling, is sought.

2.26 The importance of 'local travel' is highlighted in section 3.1.5 of the Strategy. 'Local travel' represents 70% of trips made by London's residents and constitutes trips made on a daily basis to local facilities within 5km from home, including schools. It is highlighted that the majority of trips for 'International' or 'Sub-regional' travel also begin as trips on the local level. Walking and cycling are the most important modes for local trips up to 500m or 1km and thereafter private car and bus are important modes for trips between 1km and 5km.

2.27 The Mayor's Transport Strategy includes proposals that will be brought about by the Mayor through working with TfL, the London Boroughs, developers and stakeholders. Proposal 60 supports walking to local facilities and includes the following:

"Development of a 'key walking route' approach, to encourage walking and improve corridors between local destinations where people want to travel…"

"Providing direct and convenient pedestrian access…"

"Enhancing pavement space for pedestrians and removing guardrails and other obstacles…"

"Supporting developments that emphasise the quality and permeability of the pedestrian environment…"

2.28 Proposal 62 outlines how the benefits of walking will be promoted through information campaigns, events to raise the profile of walking, and smarter travel initiatives including School and Workplace Travel Plans.

2.29 The Transport Strategy places emphasis on the increased use of Travel Plans as a means of achieving modal shift at workplaces and Schools.

LDF, Core Strategy, Adopted April 2009

2.30 The Core Strategy, which is part of the LDF, is the strategic policy document and was adopted in April 2009. It outlines the Vision, Spatial Strategy and 20 Core Planning Policies on topics such as climate change, housing, employment and retailing.

2.31 There are a number of issues which have been identified in the Borough, which the LDF will seek to address. These issues have been grouped into three areas identified as Core Strategy Issues.

2.32 Core Policies 13 to 20 all aim to meet the needs of the borough's local communities. The Core Policies deal with areas of deprivation, housing, services, infrastructure, education, health, business visitors and tourism.

> *"We aim to meet the needs of the community over the plan period by ensuring that opportunities are provided for all, particularly those who may be disadvantaged by age, ability or income. Sufficient suitable, affordable housing will be provided and the health and wellbeing of the population planned for as well as needs for community facilities. Local employment opportunities will be protected and encouraged and provision made for sustainable tourism".*

2.33 Core Policy 18, Education and Training, confirms the need of LBRuT to provide additional educational places and that the use of existing educational sites should be maximised. It is stated that rising birth rates and the continued success of schools within LBRuT are placing an increased demand on primary school places in the borough.

> *"The Council will ensure that the provision of schools, pre-schools and other education and training facilities are sufficient in quality and quantity to meet the needs of residents. Demand for primary places is currently particularly high in Richmond/ East Sheen, St Margaret's/ East Twickenham and Teddington.*
>
> *Developers will have to take into account the potential need to contribute to the provision (Planning Obligations Strategy) of primary and secondary school places in the Borough, and training opportunities for residents.*

Demand for primary school places in the borough is growing, and continues to be especially high in three areas of the borough: Richmond / East Sheen; St Margaret's / East Twickenham; and Teddington. It is therefore anticipated that in the short term three additional temporary classes will be required for the 2008/2009 intake. The forecasts for longer-term demand show that by 2010/2011, up to seven additional reception classes, and resultant space within schools, will be required to meet demand. The principal reasons for this increased demand are rising birth rates, which have been experienced throughout outer London, and the success of Richmond upon Thames schools".

2.34 Of those issues identified under the heading "For a Sustainable Future", the following Objective has been identified as one that needs to be achieved in order to deliver the Local Development Framework vision.

"Reducing the need to travel but to make all areas of the Borough and particularly areas of relative deprivation (Castlenau, Ham, Hampton Nurserylands, Heathfield and Mortlake) accessible by safe, convenient and sustainable transport for all people, including those with disabilities".

2.35 In particular, Core Policy 5 (CP5): Sustainable Travel describes how the Core Strategy Objectives are to be delivered in Transport terms. It states:

"The major developments required to produce Transport Assessments are defined as those which exceed the thresholds set out in Appendix B of Department of Transport Circular 02/2007 (Guidance on Transport Assessment). Developments smaller than this level should submit a Transport Statement. All travel plans should be produced in line with TfL Guidance on Workplace Travel Planning and Residential Travel Planning".

2.36 Additionally, Policy CP5 seeks to encourage major employers and schools to develop Green Travel Plans and require these where appropriate with planning applications.

LDF, DMP

2.37 The DMP is a Development Plan Document (DPD) and one of the documents that make up the LDF. Other documents include the Core Strategy, adopted in April 2009 and the Twickenham Area Action Plan which was adopted in July 2013.

2.38 The DMP takes forward the Core Strategy's three inter-related themes of 'A Sustainable Future', 'Protecting Local Character' and 'Meeting People's Needs', with more detailed policies for the control of development.

2.39 The Development Management policies for Transport and Parking are designed to take forward Core Policy 5 and to complement the Borough's Local Implementation Plan.

2.40 In transport terms, The Development Management policies for Transport and Parking will be used when taking decisions on new developments and schemes – policies seek to match development to transport capacity, require a TA or TS for new development, improve links, interchanges and provision for walking and cycling and to provide or retain off street parking.

2.41 Policy DM TP2 Transport and New Development, states that

"All planning applications for major developments should be accompanied by a Transport Assessment and for smaller developments should be accompanied by a Transport Statement".

2.42 Policy DM TP6 Walking and the Pedestrian Environment states that to protect, maintain and improve the pedestrian environment, the Council will ensure that;

"New development does not adversely impact on the pedestrian environment and provides appropriate pedestrian access; [and that]

New development and schemes improve the safety and security of the pedestrian environment where appropriate".

2.43 Similarly Policy DM TP7 seeks to maintain and improve conditions for cyclists. The Council will ensure that new developments or schemes do not adversely impact on the cycling network.

2.44 Policy DMTP8 Off Street Parking – Retention and New Provision, notes the importance of developments, redevelopments and extensions demonstrating that the new scheme provides an appropriate level of off street parking to avoid an unacceptable impact of on-street parking conditions and local traffic conditions.

2.45 This policy also covers the parking standards for new developments of all types. The parking standards for the Borough are contained in Appendix 4.

i. It states that within Controlled Parking Zone (CPZ) as well as the remainder of the Borough 1 space need be available per 2 staff.

ii. Arrangements must also be made for adequate setting down areas and visitor parking spaces. Adequate facilities for the setting down of coaches shall also be considered.

iii. In terms of cycle parking it is stated that 5 spaces are required per classroom depending on the nature of the school.

iv. There is no mention of provision of parking for disabled drivers, so it is assumed the London Plan standards would apply.

LIP2, December 2011

2.46 The LIP is a statutory document that is a borough wide and local area transport strategy that details how the Council's transport objectives contribute towards the implementation of key priorities set within the second Mayor's Transport Strategy.

2.47 The Council has adopted the following objectives that will guide the way it will deliver transport improvements across the Borough over the lifetime of the second LIP;

i. To support and maintain the economic vitality of local shops and the Borough's thriving town and local centres.

ii. To improve the local environment and quality of life for all residents of the Borough.

iii. Improving safety for all road users.

iv. Enhancing transport choice and reducing congestion.

v. Developing a transport system that is resilient and reflective of local needs and aspirations.

vi. Deliver the 'Uplift Strategy' for the regeneration of five particular areas of relative deprivation across the Borough.

vii. Improve the accessibility, efficiency and attractiveness of transport Borough wide, thus increasing social inclusion.

2.48 There are six goals with the Mayor's Transport Strategy that provide the overarching framework for the five Sub-Regional Transport Plans. With the formulation of the sub-regions and subsequent sub-regional plans, Richmond Borough has been placed within the South sub-regional plan area. These plans address the specific challenges facing each region and the options for addressing them based on analysis of current and future demand, travel patterns.

2.49 In terms of transport connectivity, the LIP2 proposes a package measures to improve access to Richmond including;

i. Improving the borough's strategic walking, cycling and highway network.

ii. Working with TfL and Surrey County Council to improve bus services.

iii. Increase secure/unsecured cycle parking provision across the borough.

3.0 SITE CONDITIONS AND ACCESSIBILITY

3.1 This section describes the existing conditions associated with the area surrounding site and the accessibility of the site by non-car modes, including walking, cycling and public transport.

Existing Site

3.2 The site is located on The Green, Twickenham, TW2 6QF. The site consists of a single 3-storey building, Heathgate House, located on the southern part of the site. Heathgate House has a GFA of 2,316sqm, and has extant planning permission to operate as commercial office space under use class B1. It is understood that the building is currently.

3.3 The main pedestrian entrance is situated on The Green, the building line and entrance is set back from the footpath, and are separated from the back of the highway boundary by planters. The site can also be accessed from north of the site, off of Colne Road, where a further access to the building exists. Vehicle and pedestrian access to the site can be gained from Colne Road via an existing gated entrance.

3.4 Car parking is accessible from the access on Colne Road, where an open tarmac area 25 marked parking bays is located, inclusive of two disabled parking bays which are located in close proximity to the rear entrance of the building. There are currently no cycle spaces provided on-site for the use by staff.

3.5 It is understood that deliveries to the site occur at the rear of the building within the existing car park. Due to the site currently being vacant observations of the nature of its operation cannot be made but it is assumed that waste collection would occur either be undertaken within the car park, or from the highway on Colne Road.

3.6 The surrounding area has a mix of both commercial uses and residential properties. The Green and Heath Road to the east have a number of commercial properties fronting the highway. However, the other surrounding streets are predominantly residential in nature.

Wider Area

3.7 The site is located on the western edge of the Twickenham High Street, on Heath Road, a road which is a continuation of The Green. It provides access to a wide number of shops, facilities and services typical of a High Street, and owing to its employment uses attracts people from the wider area. Links to public transport are good, with multiple points of access to bus services, which are described in more detail later in this Section of the TA.

3.8 Due to the attraction of Twickenham High Street a CPZ exists to the east of the site. This area of the CPZ is designated as Zone D (Central Twickenham), and as such is controlled under a variation of controlling the wider CPZ. Zone D parking controls are operational from Monday-Saturday 08.30-18.30. Zone E (South Twickenham) of the CPZ is situated to the south east of the site and is operational Monday-Friday 08.30-10.30 and 10.30-14.30.

3.9 Within the vicinity of the site there are three primary educational facilities. Archdeacon Cambridge's C of E Primary School is located approximately 330m south of the site on The Green. The School caters for 420 pupils two-form entry. Trafalgar Infant and Junior School is located approximately 650m south west of the site on Third Cross Road. The school three form-entry, and provides places for up to 630 pupils. Stanley Primary School is a four form-entry school which caters for up to 840 pupils, located approximately 1.2km south of the site on Stanley Road.

Site Accessibility

3.10 The following paragraphs describe the accessibility of the site by walking, cycling and public transport.

Walking

3.11 The standard of footways to the south of the site on The Green are considered to be good, with constant surfacing and frequent street lighting. Approximately 30m west of the pedestrian entrance to the site on The Green there is a signal controlled junction which has several pedestrian crossing points and associated phases within its timings.

3.12 A zebra crossing is also present on a free flowing branch of the junction which is not subject to signal control, where a large refuge island for pedestrians exists with significant storage for pedestrians seeking to cross in multiple directions. The proximity of Twickenham Green recreational ground space provides good walking connections from the south / south-west.

3.13 To the east of the site on Heath Road the footway is raised and separated from the carriageway by guard railings while the carriageway levels fall away to provide adequate vertical clearance for vehicles as it passes beneath a railway bridge. Continuing east the footway is wide and uncontrolled crossings with dropped kerbs and tactile paving are present priority junctions formed with side roads. Further east on Heath Road, signalised crossings points connecting the northern and southern footpaths of the high street are present, with appropriate dropped kerbs, refuge islands and tactile paving.

3.14 To the north of the site on Colne Road, the pavement is separated from the existing sites secure boundary by raised planting which extends to the back of the existing footway. Observations of parking in the area have shown that parking occurs on both sides of the road with vehicles straddling the footway, half on, half-off the carriageway. This limits the amount of footway space available for pedestrians, but space is available such that the footway can be maintained as a walking route.

Cycling

3.15 The TfL Local Cycle Guide (Volume 9) indicates there are a number of cycle routes in the area surrounding the site. Edwin Road, Lion Road, Station Road and a number of other streets which lie to the north of the site are marked as routes for cyclists and are on a mixture of quieter and busy roads. First Cross Road, Vicarage Road, Pope's Avenue and several other streets to the south of the site are marked routes which are quieter routes recommended by other cyclists.

London Underground / National Rail

3.16 There are not any London Underground stations in the immediate area, Richmond is the nearest underground station (3.8km) approximately 48 minutes' walk away. This station is on the District Line and also has rail and London Overground facilities.

3.17 The site is also accessible by train from Strawberry Hill approximately 900m south of the site. The services which stop at this station provide links to larger stations such as London Waterloo which provide interchange facilities with the wider National Rail and London Underground Network.

London Buses

3.18 There are seven bus routes which serve the site and are accessible within less than a 2 minute walk. The frequencies of these routes are provided below in Table 3.1.

Route	Direction	AM Peak Frequency	PM Peak Frequency
H22	The Bell -Manor Road	10-12 minutes	10-12 minutes
R70	Nurserylands Shopping Centre –Richmond / Manner Road	9-11 minutes	9-11 minutes
110	Arragon Road- West Middlesex Hospital	20-25 minutes	20 minutes
267	Hammersmith Bus Station- Fulwell Bus Garage	8-12 minutes	8-12 minutes
281	Tolworth Tower- Hounslow Bus Station	6-10 minutes	6-10 minutes
290	Staines Bus Station- Arragon	20 minutes	20 minutes
490	Pools on the Park- Heathrow Terminal 5	10-12 minutes	10-12 minutes

Table 3.1 Accessible Bus Services

Public transport Accessibility Level (PTAL)

3.19 A site specific PTAL assessment of the site has been undertaken using the TfL database (www.webptals.org.uk). The output can be found in **Appendix A** of this report. It demonstrates that the site has a PTAL of 4, which is classified as being good accessibility and would be a reasonable justification for low parking provision at the school for staff.

Summary

3.20 The site consists of a single 3-storey building, Heathgate House, located on the southern part of the site. Heathgate House has a Gross Floor Area (GFA) of 2,316sqm, and has extant planning permission to operate as commercial office space under use class B1.

3.21 The site is located on the western edge of the Twickenham High Street in an area of good accessibility to public transport, which should provide opportunities for both staff and pupils to travel to the site by non-car modes.

4.0 LOCAL HIGHWAY NETWORK AND ROAD CONDITIONS

4.1 This section reviews the local highway network and road conditions in the area surrounding the site, including a review of the existing capacity of the junctions of Heath Road with The Green / Knowle Road and Colne Road, and review of existing residual on-street parking capacity the roads surrounding the site. Further consideration of the existing highway conditions is given by an analysis of personal injury accident data.

4.2 Site visits were undertaken between 0800-0900 on 3rd February and 1500-1600 on 27th January 2014 to observe the existing highway conditions during the periods a primary school might be expected to generate its peak trip and parking demand.

4.3 Further to these site visits, video recorded traffic surveys on 24th September 2014, and an Automatic Traffic Counter (ATC) between 24th September and 10th October 2014, were deployed to observe the highway conditions in more detail. The observations made from both site visit and surveys have been used to inform the description of the highway conditions within this section.

Local Highway Network

The Green

4.4 The site is located within a parcel of land bound by The Green to the south, Knowle Road to the west, and Colne Road to the north and east. Knowle Road is a one-way road with traffic able to travel northbound from its junction with The Green at its southern end. All roads in the vicinity of the area are subject to a 30mph speed limit.

4.5 There are double yellow line waiting restrictions present immediately outside the site on The Green which prevents parking and waiting at the site frontage. The Green forms a signalised junction with Knowle Road and a southern branch of The Green which runs south of Twickenham Green recreation ground. At the junction traffic continuing on the southern branch of The Green (left turners) are not subject to signal control. A triangular island is formed at this point of the junction which provides a large refuge for crossing pedestrians.

4.6 Pedestrian crossing facilities are present on all arms of the junction. Pedestrians crossing traffic on both the eastbound and westbound approaches of The Green are controlled by signals, as is the northbound approach on the southern branch of The Green. Pedestrians crossing the southbound traffic on the southern branch of The Green do so via a zebra crossing, and those crossing Knowle Road via an uncontrolled crossing point with tactile paving and dropped kerbs.

4.7 The footways in the vicinity of the site were observed to be in generally good condition and of a width of greater than or equal to 2m. The footway in front of Heathgate House is significantly wider due to the building being set back further from the highway than adjacent properties.

Knowle Road & Colne Road

4.8 The footways on Knowle Road and Colne Road are narrower in nature and are further narrowed by the presence of vehicles parked half on the footway in some locations. The northern footway of Colne Road becomes grade separated from the carriageway east of the site on its approach to the junction with Edwin Road. At this point stairs provide access back to an at-grade uncontrolled crossing point.

4.9 Knowle Road has a relatively narrow carriageway, and parking is therefore restricted along its western side to maintain a free flow of traffic. With the exception of a disabled bay and a limited waiting bay, parking is unrestricted on its eastern side.

4.10 Colne Road outside the rear entrance to the site is not subject to waiting restrictions although parking restrictions do exist to the east of the site where the road narrows. Double yellow lines are present on the northern side of the road, as are some single yellow lines under the railway bridge and up to the junction with The Heath which restrict parking Monday–Friday 8.30am–6.30pm.

4.11 It is noted that both roads are predominantly residential in nature, but do not form part of the CPZ that controls a wide area to the east (Zone D).

AM Peak Specific Observations (0800-0900)

4.12 During the morning site visit it was noted that road works were taking place east of the site on the A311 Heath Road which caused some delay in traffic back to the junction of Knowle Road and The Green. It was not clear the level of impact the road works had on the observed operation of the junction at that time, which appeared congested. However, video placed at the junction to record traffic flows in the AM peak at a later date showed that the junction operated without congestion when road works were not present.

4.13 During the site visits, traffic speeds along the frontage of the site were observed to be relatively low in both directions. This was assumed to be due to the proximity of the junction and the level of congestion associated to the road works on the network at the time.

4.14 The subsequent speed survey undertaken between 24th September and 10th October 2014 showed that the 85th percentile speeds during the 0800-0900 period were 20.73mph and 25.93mph in an eastbound and westbound direction respectively. This demonstrates that vehicles at the location outside of the proposed development site generally maintain a speed which falls well within the speed limit on the route. The full details of survey are contained in **Appendix B**.

4.15 Knowle Road and Colne Road were observed to have very limited pedestrian and vehicle activity, and both roads were heavily parked. Parking was observed to occur on both sides of Colne Road with vehicles half on the footway and half on the carriageway.

PM Peak Specific Observations (1500-1600)

4.16 During the afternoon site visit it was noted that traffic levels travelling along The Green were not significant and its signalised junction with Knowle Road operated with significant amounts of spare capacity. Very few traffic movements into Knowle Road were observed occur and the majority of traffic was noted to either travel straight on, or turn right out of the southern branch of The Green to head eastbound.

4.17 During the site visit traffic speeds along frontage of the site were observed to be relatively low in both directions, this was assumed to be due to the proximity of the junction. The subsequent speed survey undertaken between 24th September and 10th October 2014 showed that the 85th percentile speeds during the 1500-1600 period were 23.39mph and 25.18mph in an eastbound and westbound direction respectively. This demonstrates that vehicles at the location outside of the proposed development site generally maintain a speed which falls well within the speed limit on the route.

4.18 It was noted that in areas where parking was unrestricted on both branches of The Green, south and west of the site vehicles were observed to be parked, with limited capacity for additional vehicle parking.

4.19 Knowle Road and Colne Road were observed to have very limited pedestrian and vehicle activity, and parking conditions were observed to be similar to that observed in the AM peak period.

Junction of Heath Road/ The Green/ Knowle Road

4.20 Manually classified turning counts were undertaken from video survey footage at the junction of Heath Road, The Green and Knowle Road on Wednesday 24th September 2014 in the peak periods 0800-0900 and 1500-1600. The count data is contained in **Appendix C**.

4.21 Using the LinSig assessment software for signalised junctions, the data has been used to produce 2014 assessment of the junction. A Degree of Saturation (DoS) of 100% indicates that the junction arm has reached capacity, although links which operate at or greater than 90% would likely be subject to unsatisfactory queuing and delay.

4.22 A traffic flow diagram illustrating the traffic flows observed on the network used as input data for the LinSig model are contained in **Appendix D** of this report. The output data of the model is contained in **Appendix E**. A summary of the results of the model is presented in Table 4.1 below.

Arm	Lane	AM 0800-0900		PM 1500-1600	
		DoS	Max Queue (PCU)	DoS	Max Queue (PCU)
2014 Existing					
Heath Road	1	59.6%	5	50.2%	5
A311 The Green	1	14.8%	1	18.6%	1
	2	72.4%	6	64.4%	5
A305 The Green	1	73.0%	6	45.8%	4

Table 4.1: Heath Road / The Green / Knowle Road 2014 Existing Operation

4.23 The results indicate that the junction currently operates efficiently, with a residual capacity and minimal amounts of queuing which do not impact on any other junctions.

Junction of Heath Road / Colne Road

4.24 Manually classified turning counts were undertaken from video footage at the junction of Heath Road and Colne Road on Wednesday 24th September 2014 in the peak periods 0800-0900 and 1500-1600. The count data is contained in **Appendix F**

4.25 Using the PICADY assessment software for priority junctions, the data has been used to produce 2014 existing assessment of the junction. A Ratio of Flow to Capacity (RFC) of 1.0 indicates that the junction arm has reached capacity, although approaches which operate at or greater than an RFC of 0.85 would likely be subject to unsatisfactory queuing and delay.

4.26 Traffic flow diagrams illustrating the traffic flows observed on the network and used as input data for the PICADY model are contained in **Appendix D** of this report. The output data of the model is contained in **Appendix G**. A summary of the results of the model is presented in Table 4.2 below.

Arm	Morning Peak Hour		Afternoon School Peak Hour	
	RFC	Average Max Queue (Veh)	RFC	Average Max Queue (Veh)
2014 Existing				
Heath Road (west)	-	-	-	-
Colne Road	0.411	1	0.364	1
Heath Road (east)	0.133	0	0.172	0

Table 4.2: Heath Road / Colne Road 2014 Existing Operation

4.27 The results indicate that the junction currently operates efficiently, with a residual capacity and minimal amounts of queuing which do not impact on any other junctions.

Parking Capacity and Availability

4.28 Parking beat surveys were undertaken in accordance with the scope agreed with the LBRuT Highway Officer (Transport Scoping Report 5217/001/R02). It was identified that parking beat surveys were required to identify the theoretical capacity for on-street parking in the area and demand from existing users (during the morning and afternoon peak periods associated with drop-off and collection of pupils).

4.29 A study area was chosen in the local highway network surrounding the site and was determined on the basis of site visit observations. The study area is shown on **Appendix H**.

4.30 A street inventory was undertaken to count the number of marked bays and determine the theoretical capacity for car parking elsewhere in the study area, based on a standard 5m parking bay length. The results of the street inventory are included within **Appendix I**.

4.31 Parking spaces within the 'Parking permitted', 'Shared Use' and 'Unrestricted Bay' categories have been considered to constitute unrestricted, and therefore theoretical, parking space capacity in the morning peak period. In the afternoon peak period, some restrictions became non-operational, and have therefore been included as the available parking.

4.32 Car parking beats, which counted the number of cars parked on sections of kerbside, were undertaken at 15 minute intervals between 0745–0900 and 1445–1600 on Wednesday 24th September 2014. Results of the car parking beats are included as **Appendix I**.

4.33 The parking demand and percentage occupancy observed is summarised in Table 4.3 against the theoretical capacity calculated from the street inventory.

Time	Theoretical Capacity	Parking Demand	% Occupancy	Residual Capacity	% Residual Capacity
AM Period 0745-0900					
07:45	763	705	92%	58	8%
08:00		709	93%	54	7%
08:15		723	95%	40	5%
08:30		722	95%	41	5%
08:45		731	96%	32	4%
09:00		731	96%	32	4%
PM Period 1445-1600					
14:45	868	797	92%	71	8%
15:00		803	93%	65	7%
15:15		794	91%	74	9%
15:30		789	91%	79	9%
15:45		781	90%	87	10%
16:00		777	90%	91	10%

Table 4.3: Parking Beat Survey Results (Morning & Afternoon)

4.34 Table 4.3 indicates that the peak parking demand during the morning period occurs between 08:45-09:00 and in the afternoon period between 15:45-16:00. It is noted that there is minimal fluctuation in parking demand throughout the survey period with demand ranging between 90% and 96%.

4.35 It is evident from the analysis that there is limited residual capacity for additional parking on the roads surrounding the site in both the morning and afternoon periods.

Personal Injury Accident Data

4.36 Personal injury accident data was collected from TfL for the most recent five year period available (to end January 2014) for an area comprising 400m radius from the School site. The raw data supplied by TfL is contained in **Appendix J** of this report.

4.37 A total of 22 collisions were recorded in the past three years. This is summarised in Table 4.4.

Year (to End)	Severity			Total
	Fatal	Serious	Slight	
January 2012	0	1	8	9
January 2013	0	1	6	7
January 2014	0	0	6	**6**
Total	**0**	**2**	**20**	**22**

Table 4.4: Accident Data Summary (By Severity)

4.38 A total of 25 casualties were recorded in the collisions. The types of road users injured is summarised in Table 4.5 below.

Road User Type	Number of casualties
Pedestrian	5
Cyclist	4
Motorcycle Rider	7
Car Driver	5
Goods Vehicle Driver	2
Bus Passenger	2
Total	**25**

Table 4.5: Casualty Summary (by Road User Type)

4.39 The results show that casualties were reasonably well spread by road user type. There were five pedestrians injured during the three year survey period, the incidents all occurred when the pedestrians chose to cross the road without using a crossing facility.

4.40 These incidents have been summarised below;

i. The first incident occurred at the junction between Heath Road and London Road on Saturday the 28th of January 2012 at 1330. A pedestrian crossed between moving vehicles and was hit by a car;

ii. The following incident occurred on Wednesday the 24th of October 2012 at 0801. A pedestrian crossed the road into the path of a motorcycle. This caused the motorcycle to then crash into a car. The incident occurred on The Green, 75 metres west of the junction with Knowle Road;

iii. A pedestrian ran out of an alley way into the path of a passing goods vehicle, the pedestrian was seriously injured. The incident occurred on Thursday the 10th of January 2013 at 1215 on the Marsh Farm Road junction with Albot Road;

iv. The fourth incident occurred on Saturday the 15th of June 2013 at 1608. A pedestrian crossed the road into the path of a car on The Green, 60m west of the junction with May Road; and

v. The fifth incident in which a pedestrian casualty crossed at a non-designated crossing point on Heath Road at the junction with Grove Avenue. The pedestrian was hit by a car while crossing. This incident was on Monday the 1st of July 2013 at 1040.

4.41 The analysis of these incidents has revealed that the causes of the pedestrian accidents examined which occurred in close proximity to the site were as a result of poor behaviour and not due to road conditions or layout. It is concluded that users of the development would be at limited risk of being involved in an injury accident on their journey to or from the site.

Summary

4.42 The speed survey undertaken outside of the proposed development site on Heath Road demonstrates that vehicles at the location generally maintain a speed which falls well within the speed limit on the route.

4.43 The junction assessments indicate that both the Heath Road/ The Green/ Knowle Road signalised junction and the Heath Road/ Colne Road priority junction operate within capacity and without significant amounts of queueing.

4.44 The parking beat survey shows that there is currently limited residual capacity for additional parking on the roads near to the proposed development site, although this is higher in the afternoon peak period.

4.45 The analysis accidents in close proximity to the site demonstrates a reasonable number of casualties were vulnerable road users, yet the causes were influenced by behaviour rather than network conditions.

5.0 EXISTING USE AND TRAVEL PATTERNS

5.1 The existing operation of Heathgate House as B1 Office space and its associated travel patterns are described in this Section.

Existing Site Use

5.2 Heathgate House is a single 3-storey building with a GFA of 2,316sqm located to the south of the site, and fronting Heath Road. It is understood that the building is currently vacant but has an extant permission to operate as office space under use class B1.

5.3 The site has a car park located to the rear of the site which can be accessed via Colne Road. There is provision for approximately 25 cars to park within marked bays, two of which are for disabled users.

Travel Patterns

5.4 Although Heathgate House is currently vacant, it is understood that it has an extant permission to operate as commercial office space under use class B1. As such a trip generation exercise has been undertaken using data from comparable sites available within the TRAVL database.

5.5 The full TRAVL output detailing the selected comparable office sites is contained within **Appendix K** of this report. Sites of similar levels of access to public transport, within outer London areas and of similar size and car parking provision have been selected as these would be expected to generate a comparable pattern of trips.

Highway Network Peak Period

5.6 Table 5.1 (overleaf) sets out the extant use trip rates per 100sqm for the highway network peak periods 0700-1000 in the morning, and 1600-1900 in the evening.

5.7 Given the nature of an office use it is expected that trips generated during the morning highway network peak period would be inbound, and trips generated in the evening, outbound.

AM Peak Period (0700-1000)		PM Peak Period (1600-1900)	
Time Period	**Trip Rate per 100sqm**	**Time Period**	**Trip Rate per 100sqm**
0700-0730	0.039	**1600-1630**	0.685
0730-0800	0.176	**1630-1700**	0.548
0800-0830	1.252	**1700-1730**	1.135
0830-0900	2.818	**1730-1800**	6.497
0900-0930	4.853	**1800-1830**	0.333
0930-1000	0.352	**1830-1900**	0.098
Total	**9.491**	**Total**	**9.295**

Table 5.1: Extant B1 Office Highway Network Peak Period Trip Rates per 100sqm

5.8 Table 5.2 below applies the trip rates to the quantum of existing office (2,316sqm) to provide the extant level of trip generation in the highway network peak periods for the site.

AM Peak Period (0700-1000)		PM Peak Period (1600-1900)	
Time Period	**Total Trips (Inbound)**	**Time Period**	**Total Trips (Outbound)**
0700-0730	1	**1600-1630**	16
0730-0800	5	**1630-1700**	13
0800-0830	30	**1700-1730**	27
0830-0900	66	**1730-1800**	151
0900-0930	113	**1800-1830**	8
0930-1000	9	**1830-1900**	3
Total	**224**	**Total**	**218**

Table 5.2: Extant B1 Office Highway Network Peak Period Trips

5.9 Table 5.2 demonstrates that the existing site could generate up to 224 inbound trips during the morning highway network peak period, and up to 218 outbound trips during the evening highway network peak period.

5.10 TRAVL provides total trips by mode, although it is noted that no breakdown is provided between trips which are made by public transport and by walking. Given the nature of the sites extant use it has been assumed that of those travelling either by public transport or walking, 80% do so by public transport. The remaining 20% of trips in this category are therefore considered to walk.

5.11 The sites accessibility by rail and bus services has been identified in Section 4.0. Given the greater level of access to bus services and the sites outer London location it is assumed that 70% of those travelling by public transport do so by bus. The remaining 30% of public transport trips are assumed to take place by rail.

5.12 Applying the travel assumptions described above, Table 5.3 below sets out the mode splits and the level of trip generation for the extant use in the network peak periods.

	AM Network Peak Period (0700-1000)		**PM Network Peak Period (1600-1900)**	
Mode	**Mode Share**	**Inbound Trips**	**Mode Share**	**Outbound Trips**
Car	31%	69	31%	70
Car Passenger	6%	13	7%	16
Taxi	0%	1	0%	0
Rail / Underground	15%	34	15%	33
Bus	35%	80	35%	77
Pedestrian	13%	29	12%	27
Total	**100%**	**226**	**100%**	**223**

Table 5.3: Extant B1 Office Highway Network Peak Period Trips by Mode

5.13 It is noted that the total number of trips calculated in Table 5.3 is greater than Table 5.2 as a result of rounding within the calculations of each mode. The results have been rounded up to ensure that those presented are considered robust.

5.14 Table 5.3 demonstrates that the existing site could generate 70 vehicle trips (car and taxi) in the morning network peak period, and 70 in the evening peak period. It is assumed that all car passengers travelled within vehicles recorded as a car trips.

Highway Network Peak Hours

5.15 Table 5.4 below sets out the extant use trip rates per 100sqm for the highway network peak hours 0800-0900 in the morning, and 1700-1800 in the evening.

AM Peak Hour (0800-0900)		PM Peak Hour (1700-1800)	
Time Period	**Trip Rate per 100sqm**	**Time Period**	**Trip Rate per 100sqm**
0800-0830	1.252	**1700-1730**	1.135
0830-0900	2.818	**1730-1800**	6.497
Total	**4.070**	**Total**	**7.632**

Table 5.4: Extant B1 Office Highway Network Peak Hour Trip Rates per 100sqm

5.16 Table 5.5 below applies the trip rates calculated to the quantum of existing office (2,316sqm) to give the extant level of trip generation in the highway network peak hours for the site.

AM Network Peak Hour (0800-0900)		PM Network Peak Hour (1700-1800)	
Time Period	**Total Trips (Inbound)**	**Time Period**	**Total Trips (Outbound)**
0800-0830	30	**1700-1730**	27
0830-0900	66	**1730-1800**	151
Total	**96**	**Total**	**178**

Table 5.5: Extant B1 Office Highway Network Peak Hour Trips

5.17 Table 5.5 demonstrates that the existing site could generate up to 96 inbound trips during the morning highway network peak hour, and up to 178 outbound trips during the evening highway network peak hour.

5.18 Applying the travel assumptions previously described in this Section, Table 5.6 below sets out the mode splits and the level of trip generation for the extant use in the highway network peak hours.

	AM Network Peak Hour (0800-0900)		PM Network Peak Hour (1700-1800)	
Mode	**Mode Share**	**Inbound Trips**	**Mode Share**	**Outbound Trips**
Car	31%	30	29%	52
Car Passenger	8%	8	6%	11
Taxi	0%	0	0%	0
Rail / Underground	14%	14	16%	28
Bus	34%	33	36%	66
Pedestrian	12%	12	13%	24
Total	**100%**	**97**	**100%**	**181**

Table 5.6: Extant B1 Office Highway Network Peak Period Trips by Mode

5.19 It is noted that the total number of trips calculated in Table 5.5 than Table 5.6 as a result of rounding within the calculations of each mode. The results have been rounded up to ensure that those presented are considered robust.

5.20 Table 5.6 demonstrates that the existing site could generate 30 vehicle trips (car and taxi) in the morning network peak hour, and 52 in the evening peak hour. It is assumed that all car passengers travelled within vehicles recorded as a car trips.

Proposed School Peak Hours

5.21 It is considered relevant to the application to understand the level of trips that could be generated by the extant office use during the hours in which the proposed school would be expected to generate trips, anticipated to be 0800-0900 in the morning and 1500-1600 in the afternoon.

5.22 Table 5.7 below sets out the extant use trip rates per 100sqm for the school peak hours 0800-0900 in the morning, and 1500-1600 in the evening.

AM School Peak Hour (0800-0900)		PM School Peak Hour (1500-1600)	
Time Period	**Trip Rate per 100sqm**	**Time Period**	**Trip Rate per 100sqm**
0800-0830	1.252	**1500-1530**	1.174
0830-0900	2.818	**1530-1600**	0.959
Total	**4.070**	**Total**	**2.133**

Table 5.7: Extant B1 Office School Peak Hour Trip Rates per 100sqm

5.23 Table 5.8 below applies the trip rates calculated to the quantum of existing office (2,316sqm) to give the extant level of trip generation in the school peak hours for the site.

AM School Peak Hour (0800-0900)		PM School Peak Hour (1500-1600)	
Time Period	**Total Trips (Inbound)**	**Time Period**	**Total Trips (Outbound)**
0800-0830	30	**1500-1530**	28
0830-0900	66	**1530-1600**	23
Total	**96**	**Total**	**51**

Table 5.8: Extant B1 Office School Peak Hour Trips

5.24 Table 5.8 demonstrates that the existing site could generate up to 96 inbound trips during the morning school peak hour, and up to 51 outbound trips during the evening school peak hour.

5.25 Applying the travel assumptions previously described in this Section, Table 5.9 below sets out the mode splits and the level of trip generation for the extant use in the school peak hours.

	AM School Peak Hour (0800-0900)		PM School Peak Hour (1500-1600)	
Mode	**Mode Share**	**Inbound Trips**	**Mode Share**	**Outbound Trips**
Car	31%	30	19%	10
Car Passenger	8%	8	6%	3
Taxi	0%	0	0%	0
Rail / Underground	14%	14	23%	9
Bus	34%	33	52%	22
Pedestrian	12%	12	15%	8
Total	**100%**	**97**	**100%**	**52**

Table 5.9: Extant B1 Office School Peak Hour Trips by Mode

5.26 It is noted that the total number of trips calculated in Table 5.8 than Table 5.9 as a result of rounding within the calculations of each mode. The results have been rounded up to ensure that those presented are considered robust.

5.27 Table 5.9 demonstrates that the existing site could generate 30 vehicle trips (car and taxi) in the morning school peak hour, and 10 in the afternoon school peak hour. It is assumed that all car passengers travelled within vehicles recorded as a car trips.

Base Year Junction Assessment

5.28 In order to provide a comparative assessment of impact, the estimated traffic generated from the extant office use of the site in the school peak hours has been added to the 2014 existing flows at the junction of Heath Road, the Green and Knowle Road, and the junction of Colne Road and Heath Road. This provide a Base Year traffic scenario as if the Heathgate House were operational under its extant use.

5.1 It is assumed that demand will broadly be even from the east, south and west approaches. Traffic flow diagrams in **Appendix L** shows the distribution of traffic applied for the extant use.

5.2 The percentage of movements passing through the network has been applied to the number of expected vehicle trips generated by the proposed extant use to understand where additional traffic movements on the network will occur. It is assumed that trips associated with the extant office use will be inbound in the AM and outbound in the PM.

Junction of Heath Road/ The Green/ Knowle Road

5.3 Table 5.10 below summarises the results of the modelling results for the junction.

Arm	Lane	AM 0800-0900		PM 1500-1600	
		DoS	Max Queue (PCU)	DoS	Max Queue (PCU)
2014 Existing					
Heath Road	1	59.6%	5	50.2%	5
A311 The Green	1	15.8%	1	18.6%	1
	2	72.4%	6	64.4%	5
A305 The Green	1	74.9%	6	45.8%	4
Knowle Road (exit only)	-	-	-	-	-

Table 5.10: Heath Road / The Green / Knowle Road 2014 Base Year Assessment

5.4 The results indicate that the junction currently operates efficiently, with a residual capacity and minimal amounts of queuing which do not impact on any other junctions. The full output results are contained within **Appendix M**.

Junction of Heath Road / Colne Road

5.5 Table 5.11 below summarises the results of the modelling results for the junction.

Arm	Morning Peak Hour		Afternoon School Peak Hour	
	RFC	Average Max Queue (Veh)	RFC	Average Max Queue (Veh)
2014 Base				
Heath Road (west)	-	-	-	-
Colne Road	0.413	1	0.386	1
Heath Road (east)	0.170	0	0.172	0

Table 5.11: Heath Road / Colne Road 2014 Base Year Assessment

5.6 The results indicate that the junction currently operates efficiently, with a residual capacity and minimal amounts of queuing which do not impact on any other junctions. The full output results are contained within **Appendix N**.

Parking Demand

5.7 Table 5.3 has demonstrated that the extant office use could generate 70 inbound vehicle trips the morning network peak period, and 70 in the evening peak period. It is anticipated that dependant on the business letting the office space, demand for 70 parking spaces could be generated throughout the AM and PM school peak hours. There are 27 parking spaces available in total within the existing car park, and therefore, 43 vehicles would be expected to park on-street.

5.8 Table 5.12 summarise the base parking demand and percentage occupancy, inclusive of the demand that could be generated by the extant use.

Time	Theoretical Capacity	Parking Demand	% Occupancy	Residual Capacity	% Residual Capacity
AM Period 0745-0900					
07:45	763	750	98%	13	2%
08:00		754	99%	9	1%
08:15		768	101%	-5	-1%
08:30		767	101%	-4	-1%
08:45		776	102%	-13	-2%
09:00		776	102%	-13	-2%
PM Period 1445-1600					
14:45	868	842	97%	26	3%
15:00		848	98%	20	2%
15:15		839	96%	29	3%
15:30		834	96%	34	4%
15:45		826	95%	42	5%
16:00		822	94%	46	5%

Table 5.12: Residual parking Demand (Extant Use)

5.9 Table 5.12 indicates that the extant office could generate parking demand greater than the availability of space in the area. Given that B1 Office is an employment use, it is expected that the additional demand would spread to a wider area as employees are likely to be willing to walk a greater distance from their vehicle once parked as they will not immediately return to it.

Summary

5.10 Heathgate House is a single 3-storey building with a Gross Floor Area (GFA) of 2,316sqm that is currently vacant, with extant permission to operate as office space under use class B1. The site has a car park located to the rear of the site with provision for approximately 25 cars to park within marked bays, two of which are for disabled users.

5.11 It has been identified that the extant use would generate additional vehicle movements on the local highway network. Assessment of the junctions of Heath Road, the Green and Knowle Road, and the junction of Colne Road and Heath Road, have shown that the extant development would not significantly impact the operation of local highway network during the school peak hours.

5.12 The extant office use could generate additional parking demand for 70 vehicles throughout the morning and afternoon. The demand generated is greater than the amount of available parking, and therefore, it is assumed that the demand would spread further than the area surveyed.

6.0 DEVELOPMENT PROPOSALS

6.1 This section describes the development proposals for the Heathgate House site in terms of operation and layout of the scheme with consideration given to appropriate access, car and cycle parking, servicing and emergency vehicle access. The proposed site layout is illustrated on drawings contained in **Appendix O** of this report.

Proposed Development

6.2 A change of use application is being submitted to LBRuT in order to provide a 2FE primary education facility with Nursery, to be called Twickenham Green Primary School. The proposed Primary School would provide up to 420 pupil places, and 60 part time Nursery places in two 30 pupil sessions in the morning and afternoon. Therefore, the proposed Primary School, inclusive of the Nursery, will cater for 450FTE pupils.

6.3 It is anticipated that proposed Primary School and Nursery would require approximately 33FTE members of staff, based on two per class plus some additional administration staff. It is recognised that some staff will be employed on a part-time basis.

6.4 The Primary School will be occupied on an incremental basis, expanding with two new classes in reception each year, for a period of seven years, September 2016 to September 2022, as shown in Table 6.1 below.

Date of Admission	Intake of Nursery Pupils (FTE)	Intake of Primary Pupils	Total Pupils (FTE)
Sept 2016	30	60	90
Sept 2017	30	60	150
Sept 2018	30	60	210
Sept 2019	30	60	270
Sept 2020	30	60	330
Sept 2021	30	60	390
Sept 2022	30	60	450

Table 6.1: Proposed intake of pupils to the proposed Primary and Nursery Schools

6.5 The existing car parking area to the north of the site, adjacent Colne Road, will be adapted for use as a segregated outdoor play space for the Nursery/Reception classes, and the remaining Primary School pupils.

School Operational Times

6.6 It is proposed to stagger the start time of various stages of the school to provide a suitable spread of demand of arrivals and departures. Key Stage 2 (KS2) students, being the older pupils will start at 0815, Key Stage 1 (KS1) pupils at 0830 and Nursery pupils at 0845.

6.7 The school also proposes to operate a daily Breakfast Club which would run from 07:45 and enable up to 60 pupils to be accommodated for early arrival at the school.

6.8 It is proposed that KS2 pupils finish school at 1500, KS1 and 1515, and the Nursery at 1530. The school will also run after school activities and clubs that could accommodate up to 60 pupils. The exact finish times may vary due to the nature of the activities, although it is anticipated that all activities and clubs would not finish prior to 1615. The clubs and activities a expected to assist parents with working commitments and also provide reduce the peak impact of the school during the main school finishing times.

6.9 Table 6.2 below summarises the proposed school operation times:

Event	Time	Nursery	KS1	KS2
Breakfast Club Start	0745			
Breakfast Club Finish	0815-0845			
KS2 Start Time	0815			
KS1 Start Time	0830			
Nursery Session 1 Start	0845			
KS2 Finish Time	1500			
KS1 Finish Time	1515			
Nursery Session 2 Finish	1530			
After School Clubs/Activities Start	1500-1530			
After School Clubs/Activities Finish	1615 onwards			

Table 6.2: Proposed School Operation Times

Pupil and Staff Access Arrangements

Pedestrian Access

6.10 It is proposed that the Primary School would operate from the existing building, and that access to the building be gained by five separate accesses:

i. Main Visitor Entrance – Is proposed at the existing building access from The Green, on the southern boundary of the site.

ii. Nursery Entrance – Entrance to the on-site Nursery is proposed via a separate gated access on Colne Road for Nursery and Reception only, set back from the existing boundary of the site. Nursery pupils will be able to enter the building via a dedicated entrance on the west wall of the building within their segregated outdoor play space.

iii. Reception Entrance x 2 – The two reception classes gain access from Colne Road via the separate gated access described above. Direct access to the two Reception classes is proposed via entrances to each classroom on the west wall of the building within their segregated outdoor play space.

iv. Pupil and Staff Entrance – Is proposed via a new pedestrian gate on the northern boundary of the site, with access gained via the footpath on Colne Road. The gate is proposed to be located to the eastern extents of the boundary, away from the current site vehicle access that will be retained. Pupils / Staff will then enter the building via the existing access at the rear of the building, within the main Primary outdoor play space. Ramped access is provided in this location for those arriving in a wheelchair.

6.11 It is proposed that all primary pupils will access and egress the site via the northern boundary onto Colne Road. Improvements to the boundary of the site in this location are proposed to provide a much wider area of hard-standing adjacent the footpath. Existing planters in this location are proposed to be removed to provide additional waiting space for parents when the school gates are closed.

6.12 When the gates to the school are open, pupils and parents will be permitted to wait within the outdoor play spaces to provide a safe are of refuge away for the carriageway, and so as not to disrupt pedestrian flow passing the site.

Vehicular Access

6.13 It is not proposed to provide any vehicle access to the site for pupils or staff, other than where special arrangements are required for the mobility impaired. The existing gated vehicle access from Colne Road will be maintained, which will provide access to the primary outdoor play space. By special arrangement, mobility impaired accessed will be managed via this entrance with drop-off occurring in the outdoor play space.

On-Site Parking

Car Parking

6.14 No on-site car parking is proposed for staff or pupils / parents. It is proposed that any disabled parking requirement will be met by temporary use of the primary playground area outside of its times of use as a play space.

Cycle Parking

6.15 Cycle parking will be provided in the primary play space on the basis of the first primary years of intake (2016 – 2017) at a ratio of 1:20 pupils, with a further six spaces for staff. Therefore, 12 cycle spaces by Sheffield stands are proposed on site. Additional space for future install cycle parking will be retained, and cycle usage monitored by the school's annual travel plan.

6.16 A further four Sheffield cycle stands are proposed elsewhere on the site. Two, providing cycle parking for four bicycles are proposed to the front of the building adjacent the footpath of The Green. The remaining two, providing a further four spaces, are proposed adjacent the footpath of Colne Road on the northern boundary of the site. It is anticipated that these could be used by staff, pupils, parents or visitors.

Refuse, Deliveries, Servicing and Emergency Vehicle Access

Emergency Access

6.17 Emergency access to the site will be maintained via the existing retained gated vehicle access on Colne Road.

Deliveries

6.18 It is proposed that where required, deliveries will be scheduled, and managed by the school such that they can take place off-highway in the first instance. These will be scheduled such that they do not coincide with any outdoor activities of the pupils.

Refuse

6.19 Refuse storage is proposed to be located in the north western corner of the site, accessible from the footpath of Colne Road. Refuse collection is therefore proposed to take place from the street.

Summary

6.20 The proposed primary school would provide up to 420 pupil places, and 60 part time Nursery places in two 30 pupil sessions in the morning and afternoon (450FTE pupils). It is anticipated that proposed school would require approximately 33 members of staff, and will be occupied on an incremental basis, expanding with two new classes in reception from September 2016 to September 2022.

6.21 It is proposed to stagger the start time of various stages of the school to provide a suitable spread of demand of arrivals and departures. Access by pupils will be gained via two pedestrian gates on Colne Road, where improvements are proposed to widen the existing footpath.

6.22 The existing car parking area to the north of the site, adjacent Colne Road, will be adapted for use as a segregated outdoor play space. When the gates to the school are open, pupils and parents will be permitted to wait within the outdoor play spaces to provide a safe are of refuge.

6.23 It is not proposed to provide any vehicle access to the site for pupils or staff, other than where special arrangements are required for the mobility impaired.

7.0 PREDICTED TRAVEL PATTERNS

7.1 The development proposals would be expected to generate demand for travel from both pupils and staff. As the school is proposed to be a new educational facility the expected generation of trips is predicted on the basis of travel behaviour extracted from comparable schools in the 2011 School Census and available survey data from within the borough.

Pupil Travel Demand

7.2 Mode share information for three primary schools within LBRuT, local to the proposed development site, have been selected to inform the pupil trip profile based on 2011 School Census Data:

i. Archdeacon Cambridge's CoE Primary School –

- No. of Pupils - 420 pupils
- Catchment Area – 456m
- Distance from Heathgate House - 330m

ii. Trafalgar Infant and Junior School –

- No. of Pupils - 630 pupils
- Catchment Area – 1.12km
- Distance from Heathgate House - 650m

iii. Stanley Primary School –

- No. of Pupils - 840 pupils
- Catchment Area – 1.22km
- Distance from Heathgate House – 1.2km

7.3 Table 7.1, indicates the proposed mode share based on the current travel patterns of the local primary schools described above. Full information of the 2011 Census from which the data is derived is included within **Appendix P**.

Mode of Travel	Mode Share	Pupil Person Trips
Walk	70.7%	318
Cycle	5.1%	23
Car	20.6 %	93
Bus	3.8%	17
Train	0.3%	1
Other	0.4%	0
Total	**100.8%**	**450**

Table 7.1: Proposed Pupil Travel Demand

7.4 It is noted that the total mode share presented in Table 7.1 is greater than 100% due to rounding errors present within the School Census Data calculations. Given that the values applied are greater than 100%, the application of this data is considered to be robust.

7.5 Table 7.1 indicates that the majority of pupils are likely to travel to the school on foot, and that there is the potential for 93 trips to be made by car.

7.6 It is anticipated that a proportion of pupil person car trips will be made within the same vehicle, either as a result of car sharing between different families, and or due to siblings arriving within the same vehicle. This would reduce the number of vehicle trips made to the School.

7.7 It is considered reasonable to suggest that each vehicle trip made in the morning and afternoon by parents/ guardians bringing pupils to School would be occupied by an average of at least 1.2 pupils per car. It is therefore anticipated that the proposed school would generate 93 pupil person car trips, and 78 vehicle trips.

7.8 On the basis that vehicle trips generated by pupils / parents are bi-directional i.e. an inbound and outbound movement is generated, it is anticipated that the pupils could generate up to 156 movements on the highway network, and demand for up to 78 parking spaces in the vicinity of the School.

Staff Travel Demand

7.9 The 2011 School Census Data does not cover staff travel patterns, therefore in order to inform the trip profile of staff, comparable data has been extracted from 2012 survey data available for Orleans Infant School, in LBRuT. It is anticipated that travel pattern demands are likely to similar to that of the proposed school and have therefore been used to inform the staff trip profile in Table 7.2.

Mode of Travel	Mode Share	Staff Person Trips
Walk	30.3%	10
Cycle	18.2%	6
Car	42.4%	14
Bus	3.0%	1
Train	6.1%	2
Other	0.0%	0
Total	**100.0%**	**33**

Table 7.2: Staff Travel Demand

7.10 Table 7.2 indicates the staff could generate up to 14 additional vehicle trips. Whilst it is noted that the lack of on-site parking facilities may reduce the number of trips made by car at the proposed school, it is anticipated that the proposed school could generate demand for some long term parking in the area in relation to staff, particularly as the local streets are not restricted.

7.11 As a worst-case scenario the development could generate demand for 14 on-street spaces; it is however noted that not all staff will be full-time, and as such the level of demand for parking is likely to fluctuate across the day.

Future On-Street Parking Demand Profile

7.12 It is anticipated that the proposed school could generate demand for parking of up to 92 vehicles from parents and staff in the morning and afternoon school peak hours.

7.13 Pupil demand for car parking has been profiled based on estimated start and finish times for the nursery, Key Stage 1 (KS1) and Key Stage 2 (KS2) pupils. These are staggered to ensure that the parking profile is spread over each time period.

AM Demand

7.14 KS2 pupils will start school at 08:15, KS1 pupils at 08:30 and Nursery pupils at 08:45. It is assumed that 75% arrivals and departures occur in the 15 minute period prior to the relevant start time of each group, and 25% in the 15 minutes prior to that.

7.15 Of the 78 vehicle trips generated by pupils / parents in the AM period, it is anticipated that ten will be made by car in relation to the Breakfast Club based on the mode split and car share assumption in Section 5.0. Therefore, pupils and parents would generate 68 vehicle trips between 0800-0900, and subsequently generate the same level of demand for short term parking.

7.16 On the basis of the methodology above, Table 7.3 summarises the overall profile of parking demand generated by pupils of the proposed school.

Time Period	Percentage Arrival Profile AM	AM Pupil Parking Demand
Before 0800	0.0%	10
0800-0815	8.7%	7
0815-0830	37.8%	29
0830-0845	36.3%	28
0845-0900	4.4%	3
Total	**100.0%**	**78**

Table 7.3: AM Pupil Parking Demand

PM Demand

7.17 KS2 pupils will finish school at 15:00, KS1 pupils at 15:15 and Nursery pupils at 15:30. It is assumed that 100% of demand occurs in the 15 minute period prior to the relevant finish time of each group.

7.18 Of the 78 vehicle trips generated by pupils / parents in the PM period, it is anticipated that ten will be made by car to the after school activities / clubs on the based mode split and car share assumption in Section 5.0. Therefore, pupils and parents would generate 68 vehicle trips between 1500-1600, and subsequently generate the same level of demand for short term parking.

7.19 On the basis of the methodology above, Table 7.4 summarises the overall profile of parking demand generated by pupils of the proposed school.

Time Period	Percentage Arrival Profile AM	AM Pupil Parking Demand
1500-1515	34.9%	27
1515-1530	46.5%	36
1530-1600	5.8%	5
After 1600	0.0%	10
Total	**100.0%**	**78**

Table 7.4: PM Pupil Parking Demand

7.20 An assessment of the impact of the additional parking estimated to arise from the proposed development in relation to the existing residual capacity on the local highway network has been undertaken in Section 8.0.

Future Distribution of Traffic Movements

7.21 As the School is proposed as a new educational facility, existing postcode data is not available to inform the direction in which vehicle trips might be generated. Following a review of the residential density in the vicinity of the site, and in consideration of the junctions that require more detailed assessment, as agreed with LBRuT Highways Officer, it is assumed that demand will broadly be even from the east, south and west approaches. Traffic flow diagrams in **Appendix Q** show the distribution of development traffic.

7.22 The percentage of development movements passing through the network has been applied to the number of expected vehicle trips expected to be generated by the proposed School to understand where additional traffic movements on the network will occur.

7.23 It is assumed that trips associated with pupils will create both an inbound and outbound movement within the AM and PM associated with drop-off and pick-up. It is anticipated that staff will travel outside of the school peak hours, and will generate a single inbound movement in the early morning and single outbound movement in the afternoon.

7.24 The impact of this traffic on the operation of the junctions of The Green / Heath Road / Knowle Road and Heath Road / Colne Road is assessed in Section 8.0 of this report.

Summary

7.25 It is anticipated that the pupils could generate up to 156 movements on the highway network, and demand for up to 78 parking spaces in the vicinity of the School. It is anticipated that staff could generate up to 14 additional car trips, and demand for 14 parking on-street parking spaces.

7.26 As a result of Breakfast Club, after school activities, and the proposals to stagger start / finish times, parking demand is spread outside and across the school peak hours such that a maximum demand from pupils of up to 29 and 36 spaces occur at any given time.

8.0 TRANSPORT IMPACT

8.1 This section considers the impact of the proposed School on the local highway network, in relation to junction capacity and parking capacity.

Net Change in Vehicle Movements

Network Peak Period

8.2 Table 8.1 shows the net change in two-way trips generated from the proposed development by comparison to the extant B1 office use, in the network peak period. It is anticipated that all pupil and staff vehicle movements (158 and 14 respectively) occur within the AM network peak period. Pupil vehicle movements associated with the after school activities / clubs (20) and all staff movements occur in the PM network peak period (14).

Use	AM Peak Period (0700-1000)		PM Peak Period (1600-1900)	
	Trips	Movements	Trips	Movements
Extant B1 Office	70	70	70	70
Proposed 2FE Primary School	92	170	24	34
Net Change	**+22**	**+100**	**-46**	**-36**

Table 8.1: Net Change in Network Peak Period Vehicle Movements

8.3 Table 8.1 shows that the proposed development would generate a higher number of movements than the extant use during the AM network peak period. However, the proposed school generates less vehicle movements through the PM network peak period than the extant use. This is a result of the proposed school generating its peak PM demand outside of the time period.

Network Peak Hour

8.4 Table 8.2 shows the net change in two-way trips generated from the proposed development by comparison to the extant B1 office use, in the network peak hours. It is anticipated that all pupil movements other than those associated with the Breakfast Club occur in the AM network peak hour. No trips or associated movements are expected to be generated by the proposed school in the PM network peak hour.

Use	AM Network Peak Hour (0800-0900)		PM Network Peak Hour (1700-1800)	
	Trips	Movements	Trips	Movements
Extant B1 Office	30	30	52	52
Proposed 2FE Primary School	68	136	0	0
Net Change	**+38**	**+106**	**-52**	**-52**

Table 8.2: Net Change in Highway Network Vehicle Movements

8.5 Table 8.2 shows that the proposed development would generate a higher number of movements than the extant use during the AM network peak hour. However, the proposed school would generate no movements in the PM network peak hour, reducing the level of traffic on the network by comparison to the extant use. This is a result of the proposed school generating its peak PM demand outside of the time period.

School Peak Hour

8.6 Table 8.2 (overleaf) shows the net change in two-way trips generated from the proposed development by comparison to the extant B1 office use, in the school peak hours. It is anticipated that all pupil movements other than those associated with the Breakfast Club occur in the AM school peak hour. All movements other than those associated with the after school activities / clubs are expected to be generated by the proposed school in the PM school peak hour.

Use	AM School Peak Hour (0800-0900)		PM School Peak Hour (1500-1600)	
	Trips	Movements	Trips	Movements
Extant B1 Office	30	30	10	10
Proposed 2FE Primary School	68	136	68	136
Net Change	**+38**	**+106**	**+58**	**+126**

Table 8.1: Net Change in Highway Network Vehicle Movements

8.7 The above table shows that the proposed development would generate a higher number of movements than the extant use during the school peak hours. This is largely a result of the proposed school generating two-way trips associated with pupil drop-off and pick-up, as opposed to the extant office use which is expected to generate predominantly single direction movements within the same hour.

Junction Capacity Assessment

8.8 The following scenarios within the school peak hours have been used to assess the junctions identified as requiring detailed analysis:

i. Future Year 2022 – based on future background traffic growth and inclusive of the extant B1 Office trips; and

ii. Future Year 2022 + Development – based on future background traffic growth and inclusive of the net increase in trips as a result of the school.

8.9 Growth factors were calculated using TEMPRO version 6.2 to enable the existing traffic flow data to be factored to the year of development completion. This resulted in the following growth factors:

Growth Year	Morning	Afternoon
2012 - 2022	1.0972	1.1081

Table 8.4: Growth Factors

8.10 The growth factors have been applied to the 2014 surveyed traffic flows for the junction and the resulting forecast flows are illustrated on traffic flow diagrams contained in **Appendix Q** of this report.

8.11 The extant traffic generation volumes have been combined with the future traffic flows for 2022 to derive a future year base scenario. The net change in flows resulting from the development have then been added to the 2022 future year traffic flows to understand how the network would be expected to operate in comparison to the future year base scenario.

Heath Road / The Green / Knowle Road

8.12 The full output data from the LINSIG model is contained in **Appendix R** of this report. The results for both Future year and Future Year + Development are summarised in Table 8.4 below.

Arm	Morning School Peak Hour		Afternoon School Peak Hour	
	DoS	Max Queue (PCU)	DoS	Max Queue (PCU)
Future Year 2022				
Heath Road	65.3%	5	55.6%	6
A311 The Green (Lane 1)	17.2%	1	20.6%	1
A311 The Green (Lane 2)	79.4%	8	71.2%	6
A305 The Green	81.9%	8	50.6%	5
Knowle Road (exit only)	-	-	-	-
Future Year 2022 + Development				
Heath Road	73.6%	6	61.5%	6
A311 The Green (Lane 1)	21.4%	1	29.0%	2
A311 The Green (Lane 2)	79.4%	8	71.2%	6
A305 The Green	88.6%	9	56.7%	6
Knowle Road (exit only)	-	-	-	-

Table 8.4: Heath Road/ The Green/ Knowle Road (Future Year 2022)

8.13 Table 8.4 demonstrates that the estimated additional traffic from the proposed development would not result in the capacity of the junction being exceeded, with residual capacity available on the approaches in all traffic flow scenarios.

Heath Road / Colne Road

8.14 The full output data from the PICADY model is contained in **Appendix S** of this report. The results for both Future year and Future Year + Development are summarised in Table 8.5 below.

Arm	Morning Peak Hour		Afternoon School Peak Hour	
	RFC	Average Max Queue (Veh)	RFC	Average Max Queue (Veh)
2022 Future Year + Extant Use				
Heath Road (west)	-	-	-	-
Colne Road	0.483	1	0.449	1
Heath Road (east)	0.197	1	0.214	1
2022 Future Year + Proposed Development				
Heath Road (west)	-	-	-	-
Colne Road	0.770	3	0.657	2
Heath Road (east)	0.215	1	0.257	1

Table 8.5: Heath Road/ Colne Road (Future Year 2022)

8.15 Table 8.5 demonstrates that the development would not result in the capacity of the junction being exceeded, with residual capacity available on the approaches in all traffic flow scenarios.

Parking Capacity Analysis

8.16 The existing parking demand and occupancy observations have been summarised in Section 4.0. The assessment has been amended to include the impact of the proposed development. The following factors have been considered within the assessment:

i. The proposed development demand has been included in the assessment based on the profile identified within Tables 7.3 and 7.4, Section 7.0;

ii. 14 vehicles associated with staff could be parked in the area throughout the morning and afternoon, thus reducing residual capacity in the area for parking by the same quantum; and

iii. It is expected that School Keep Clear markings would be required outside of the proposed entrances on Colne Road. The requirement for a minimum 25m of waiting restriction could therefore reduce the theoretical capacity for parking in the area by 5 vehicles.

8.17 The future parking demand and occupancy inclusive of the proposed school is outlined in Table 8.6, along with the adjusted theoretical capacity from the street inventory as described above.

Time	Theoretical Capacity	Parking Demand	% Occupancy	Residual Capacity	% Residual Capacity
AM Period 0745-0900					
0745	744	705	95%	39	5%
0800		716	96%	38	4%
0815		752	101%	-8	-1%
0830		750	101%	-6	-1%
0845		734	99%	10	1%
0900		731	98%	13	2%
PM Period 1445-1600					
1445	849	797	94%	52	6%
1500		830	98%	19	2%
1515		830	98%	19	2%
1530		794	93%	55	7%
1545		781	92%	68	8%
1600		777	92%	72	8%

Table 8.6: Residual Parking Demand (Proposed)

8.18 Table 8.6 indicates that the peak parking demand during the morning peak period occurs between 08:15-08:45 and in the afternoon peak period between 15:00-15:30.

8.19 An assessment of base parking demand and percentage occupancy, inclusive of demand from the extant office use has been undertaken in Section 5.0. Table 8.7 (overleaf) compares the base parking demand against the proposed schools.

Time	Base Parking Demand (inc. B1 Office)			Proposed Parking Demand (2FE Primary School)			Net Change in Residual Capacity
	Parking Demand	Residual Capacity	% Residual Capacity	Parking Demand	Residual Capacity	% Residual Capacity	
AM Period 0745-0900							
0745	750	13	2%	705	39	5%	+24
0800	754	9	1%	716	38	4%	+27
0815	768	-5	-1%	752	-8	-1%	-5
0830	767	-4	-1%	750	-6	-1%	-4
0845	776	-13	-2%	734	10	1%	+21
0900	776	-13	-2%	731	13	2%	+24
PM Period 1445-1600							
1445	842	26	3%	797	52	6%	+24
1500	848	20	2%	830	19	2%	-3
1515	839	29	3%	830	19	2%	-12
1530	834	34	4%	794	55	7%	+19
1545	826	42	5%	781	68	8%	+24
1600	822	46	5%	777	72	8%	+24

Table 8.7: Impact of Proposed Parking Demand

8.20 Table 8.7 shows that the proposed school is expected to generate less demand for parking throughout the school peak periods as a result of turn around. The extant use would lead to a consistent level of higher demand throughout the period, and as such, the demand placed by the proposed school represents an improved level of residual capacity.

Summary

8.21 The proposed school will generate a higher number of vehicle movements than the extant use during the AM network peak period and hour, but less through the PM as result of the generating its peak PM demand outside of these time periods.

8.22 Junction modelling of the impact of the proposed movements additional to the network in future year of full occupation 2022, has shown that the school would not result in the capacity of junctions in the vicinity being exceeded.

8.23 The proposed school is expected to generate less demand for parking throughout the school peak periods than the extant use, and as such would represent a reduction in overall demand. However, it is noted that demand would still exceed the availability of parking between 0815 and 0845 as a result of the high level of existing parking.

9.0 MITIGATION STRATEGY

9.1 This Section discusses the mitigation strategy to address any issues in relation to impact on the highway, and to ensure that appropriate measures are in place to provide safe access and egress of the site.

Aim of the Mitigation Strategy

9.2 It has been identified that the proposed school would not have a significant impact on the operation of junctions in the local highway network, and that the limited duration of parking associated with drop-off and pick-up of children would result in a greater amount of residual capacity being made available than the extant use of the site.

9.3 However, it is recognised that a constraint on the availability of parking remains due to the background levels of parking that exist. Therefore, the primary aim of the mitigation strategy is to address the impact of the school immediately adjacent to the proposed gates on Colne Road, and to put measures in place to promote the use of non-motorised modes of travel.

Mitigation Measures

Demand Management

9.4 The mitigation strategy comprises the implementation of School Travel Plan (STP), a framework for which is submitted with the application. The STP will take account of the context of the expansion of the change of use and the likely impact it will have on the local highway network.

9.5 The Heads of Terms of the STP will seek to encourage a reduction in the mode share of the private car, in particular lone passenger car trips and single car driver trips, over the period until the School is fully occupied. Continued monitoring of transport impacts through the STP as the school expands will offer the opportunity to identify the most appropriate mitigation measures going forward.

9.6 The school is proposed to manage the intake of pupils by enforcing a catchment area of 500m, a similar level of which is adopted by the nearby Archdeacon CoE Primary School. This should encourage travel by non-motorised modes as well as make it easier to influence travel behaviour.

9.7 The STP will initially target a reduction in mode share of car in accordance with the level of use associated with the mode share of car at Archdeacon Cambridge's CoE Primary School, given the catchment area is similar to that of the proposed school. This would represent a mode shift of 4.9% to a mode share of 16.7%.

9.8 The STP will target further reductions in mode share of car in accordance in order to achieve the Gold accreditation of TfL's STAR Track System, an on-line system which is designed to take Schools step-by-step through the process of producing a STP, by the time the school is fully occupied (2022). This would represent a further mode shift of 6.7% to a mode share of 10.0% for car.

9.9 It has been identified in Table 8.7, Section 8.0, that the demand for parking generated by the school would only be greater than the extant use 0815-0845 in the morning, and 1500-1530 in the afternoon. On the basis of achieving the STP targets Table 9.1 below shows the parking impact of the school in these periods.

Time	Base Parking Demand (inc. B1 Office)			Proposed Parking Demand (2FE Primary School)			Net Change in Residual Capacity
	Parking Demand	Residual Capacity	% Residual Capacity	Parking Demand	Residual Capacity	% Residual Capacity	
0815	768	-5	-1%	752	7	1%	+12
0830	767	-4	-1%	750	8	1%	+12
1500	848	20	2%	830	33	4%	+13
1515	839	29	3%	830	38	4%	+9

Table 9.1: Impact of Proposed Parking Demand with Mitigation

9.10 Table 9.1 shows that by achieving mode shift through the STP would result in the proposed school generating less demand for parking on-street throughout all morning and afternoon than the extant use.

9.11 Demand management measures including breakfast and after school clubs, before and after school activities will be in place from the opening of the school in September 2016. These will minimise the impact of the School in terms of congestion outside the School entrance.

9.12 It is proposed that the school opening times are staggered for the various stages of education, such that demand is spread, minimising the impact of the School in terms of congestion outside the School entrance.

Infrastructure Improvements

9.13 Improvements to the boundary of the site, adjacent Colne Road are proposed to provide a much wider area of hard-standing adjacent the footpath. Existing planters in this location are proposed to be removed to provide additional waiting space for parents when the school gates are closed.

9.14 It is recommended that School warning signage be erected to alert drivers to the location of the School, in accordance with relevant standards.

9.15 It is recommended that School Keep Clear markings be located outside of the school accesses to reduce congestion and maintain a safe level of inter-visibility between the carriageway and footway.

Summary

9.16 The primary aim of the mitigation strategy is to address the impact of the school immediately adjacent to the proposed gates on Colne Road, and comprises the implementation of STP that will take account of the context of the expansion of the change of use and the likely impact it will have on the local highway network.

9.17 It is proposed that the school will have a limited catchment area to encourage travel by non-motorised modes as well as make it easier to influence travel behaviour. The STP will target a mode share for car of 10.0% to be achieved by the year of full occupation, 2022.

9.18 By achieving target mode shift through the STP the proposed school will generate less demand for parking on-street throughout morning and afternoon than the extant use of the site.

9.19 Further measures proposed to reduce the potential impact of the schools operation include, operating breakfast and after school clubs / activities, and staggering the start and finish times of various pupil age groups.

10.0 CONCLUSIONS

10.1 The site consists of a single 3-storey building, and has extant planning permission to operate as commercial office space under use class B1. The site has a car park located to the rear of the site with provision for approximately 25 cars to park within marked bays, two of which are for disabled users.

10.2 The site is located on the western edge of the Twickenham High Street in an area of good accessibility to public transport, which provides excellent opportunities for both staff and pupils to travel to the site by non-car modes.

10.3 A speed survey undertaken outside of the proposed development site on Heath Road demonstrates that vehicles at the location generally maintain a speed which falls well within the speed limit on the route. Junction capacity assessments indicate that both the Heath Road/ The Green/ Knowle Road signalised junction and the Heath Road/ Colne Road priority junction currently operate within capacity and without significant amounts of queueing.

10.4 A parking beat survey has shown that there is currently limited residual capacity for additional parking on the roads near to the proposed development site.

10.5 Accidents analysis in the local area has demonstrated a reasonable number of casualties were vulnerable road users, yet the causes were influenced by behaviour rather than network conditions.

10.6 It has been identified that the extant use would generate additional vehicle movements on the local highway network. Assessment of the junctions of Heath Road, the Green and Knowle Road, and the junction of Colne Road and Heath Road, have shown that the extant development would not significantly impact the operation of local highway network during the school peak hours.

10.7 The extant office use could also generate additional parking demand for 70 vehicles throughout the morning and afternoon. The demand generated is greater than the amount of available parking.

10.8 The proposed primary school would provide up to 450FTE pupils and require approximately 33 members of staff. It will be occupied on an incremental basis, expanding with two new classes in reception from September 2016 to September 2022.

10.9 It is proposed to stagger the start time of various stages of the school to provide a suitable spread of demand of arrivals and departures. Access by pupils will be gained via two pedestrian gates on Colne Road, where improvements are proposed to widen the existing footpath.

10.10 The existing car parking area to the north of the site, adjacent Colne Road, will be adapted for use as a segregated outdoor play space. When the gates to the school are open, pupils and parents will be permitted to wait within the outdoor play spaces to provide a safe are of refuge.

10.11 It is not proposed to provide any vehicle access to the site for pupils or staff, other than where special arrangements are required for the mobility impaired.

10.12 Pupils could generate up to 156 movements on the highway network. Staff could generate up to 14 additional car trips, and demand for 14 parking on-street parking spaces. As a result of Breakfast Club, after school activities, and the proposals to stagger start / finish times, parking demand is spread outside and across the school peak hours such that a maximum demand from pupils of up to 29 and 36 spaces occur at any given time.

10.13 Junction capacity assessment of the impact of the net increase in vehicle movements on the network in future year of full occupation 2022, has shown that the school would not result in the capacity of junctions in the vicinity being exceeded.

10.14 The proposed school is generally expected to generate less demand for parking throughout the school peak periods than the extant use, and as such would represent a reduction in overall demand.

10.15 The primary aim of the mitigation strategy is to address the impact of the school immediately adjacent to the proposed gates on Colne Road, and comprises the implementation of STP that will take account of the context of the expansion of the change of use and the likely impact it will have on the local highway network.

10.16 The STP will target a mode share for car of 10.0% to be achieved by the year of full occupation, 2022. By achieving target mode shift through the STP the proposed school will generate less demand for parking on-street throughout morning and afternoon than the extant use of the site.