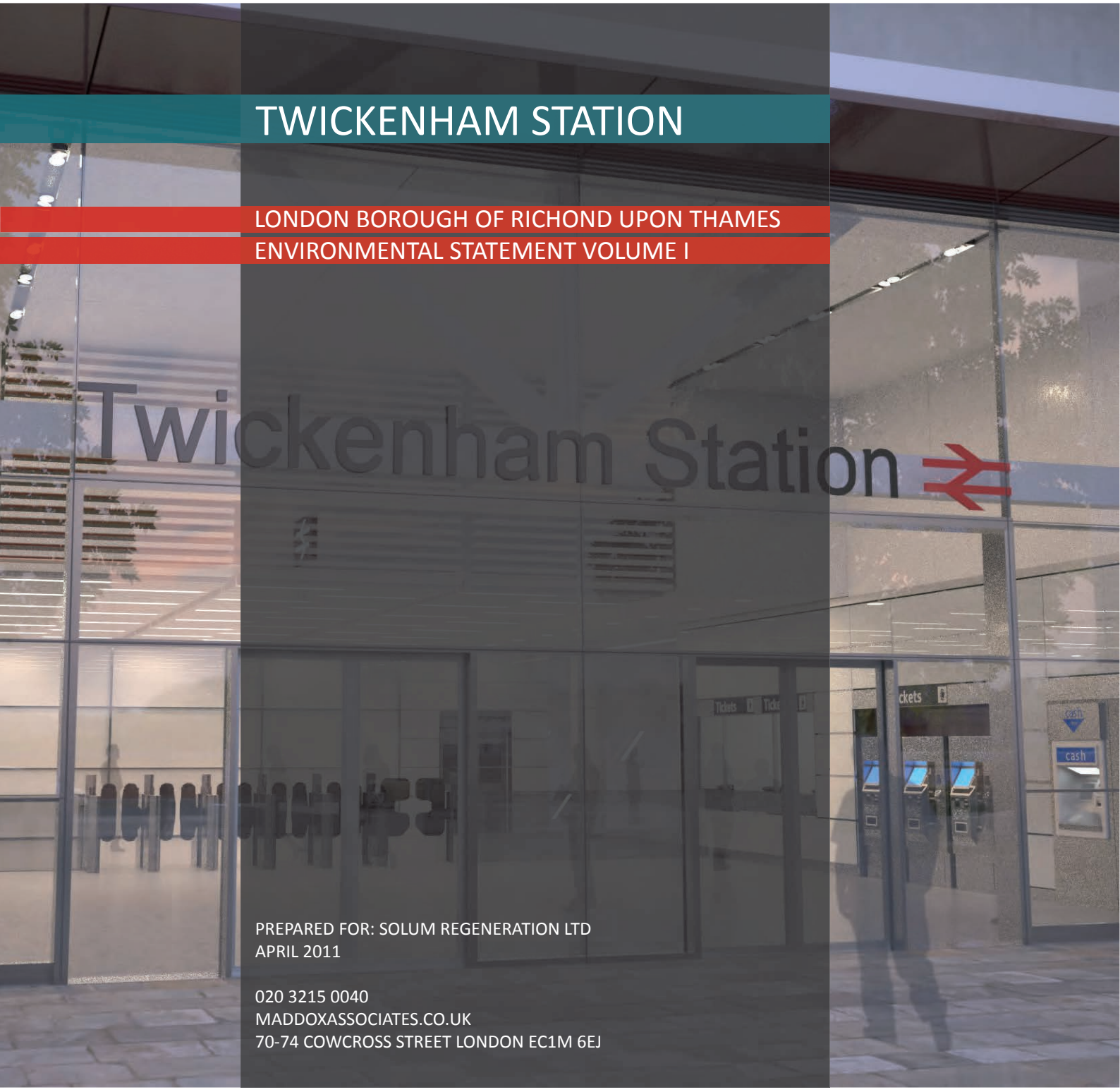
MADDOX & ASSOCIATES



TWICKENHAM STATION

LONDON BOROUGH OF RICHOND UPON THAMES
ENVIRONMENTAL STATEMENT VOLUME I

PREPARED FOR: SOLUM REGENERATION LTD
APRIL 2011

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CHAPTER 10: NOISE AND VIBRATION

CHAPTER 11: GROUND CONDITIONS

CHAPTER 12: WATER RESOURCES

CHAPTER 13: ECOLOGY

CHAPTER 14: DAYLIGHT SUNLIGHT OVERSHADOWING AND SOLAR GLARE

CHAPTER 15: WIND

CHAPTER 16: ELECTRONIC INTERFERENCE

CHAPTER 17: CUMULATIVE AND RESIDUAL IMPACT

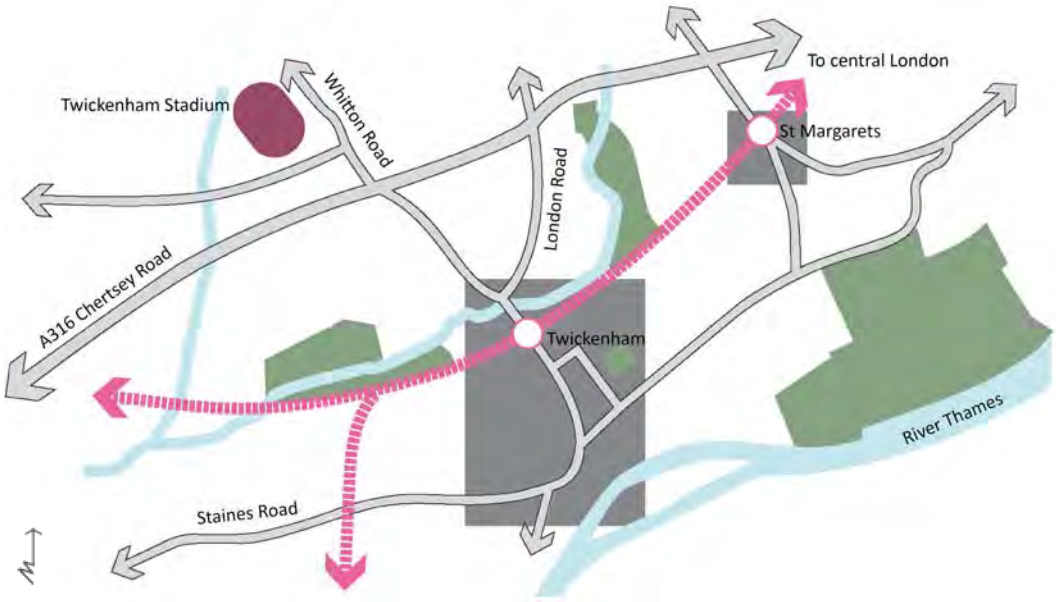
1.1 Introduction

1.1.1 Solum Regeneration (hereafter referred to as the Applicant) are seeking planning permission for the redevelopment of the Twickenham Railway Station site (hereafter referred to as the Site).

1.1.2 The site area is approximately 0.96 hectares (ha) and is located to the north of Twickenham Town Centre at National Grid Reference TQ 161 738. The site location is shown in Figure 1-1 and the application redline boundary shown in Figure 1-2. The site is occupied by Twickenham Railway Station, with the ticket office located to the north west of the site and car parking occupying the northern part. The ticket office fronts onto London Road to the west and is single storey at road level. There are approximately 44 car parking spaces. Twickenham Station occupies an important location in the town, strategically situated to serve the town centre and Stadium.

1.1.3 The site is bounded by the River Crane to the north, railway tracks to the east, an office building to the south and London Road to the west. The site lies approximately 1km to the south of Twickenham Rugby Football Union Stadium and experiences high footfall on match days.

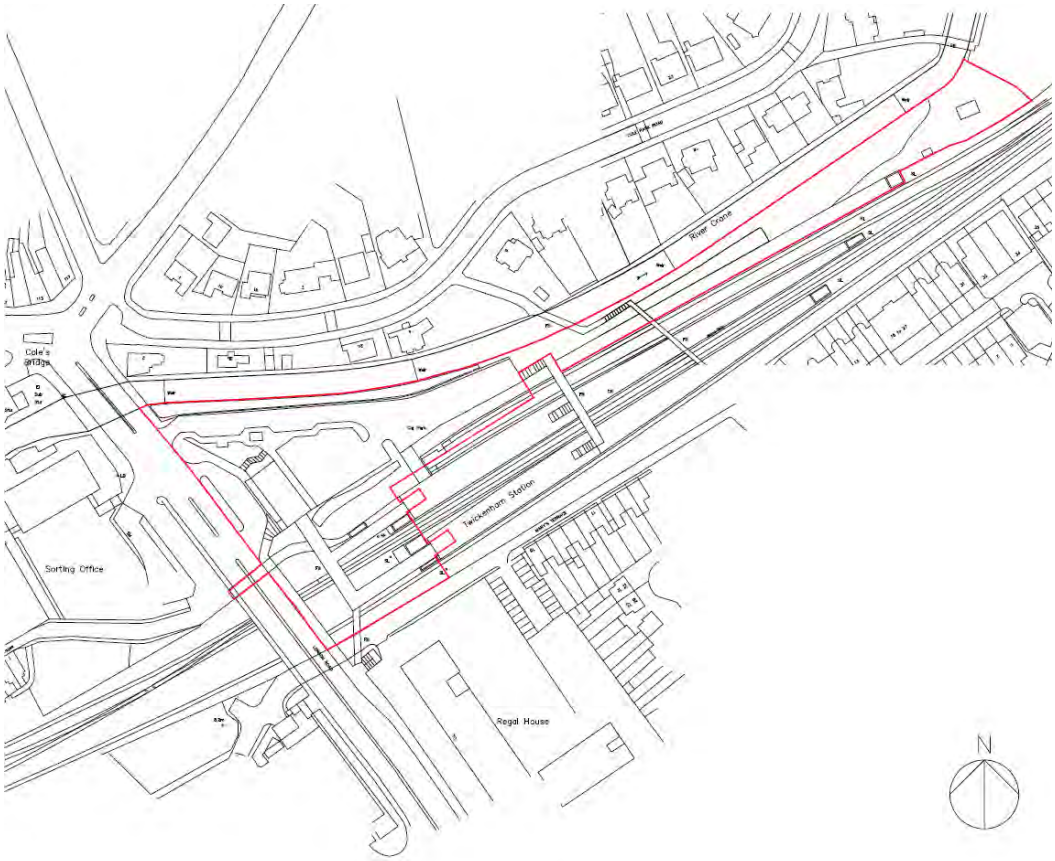
Figure 1-1 Site Location



1.1.4 The effects of the proposed development have been studied systematically, through the Environmental Impact Assessment (EIA) process in accordance with the Town and Country (EIA) (England and Wales) Regulations 1999 (Ref. 1-1). This has been an iterative process, running alongside design development. The EIA has considered the environmental effects of the development during demolition, site preparation, construction and operational phases, and proposes ways to eliminate, reduce or mitigate any significant adverse effects on the environment. The results of the EIA are presented in this Environmental Statement (ES), which is submitted to accompany the planning application.

1.1.5 The ES also describes the consultation process undertaken, and is detailed further within *Chapter 2: EIA Methodology*. This process is critical to the development of a comprehensive and balanced ES. The views of key statutory and non-statutory consultees serve to focus the environmental studies and to identify specific issues, which require further investigation. Consultation is also an ongoing process, which enables mitigation measures to be incorporated as the design of the development evolves, thereby limiting adverse effects and enhancing project benefits.

Figure 1-2 Proposed Development Area with Red Line Boundary



1.2 Brief Description of Proposed Development

1.2.1 The proposed development has been designed for the Applicant by Rolfe Judd Architects. The proposed development is for a new station ticket office and concourse, 115 residential units with elements of retail at the ground floor, improved public realm and riverside walk link to Moormead Park.

1.2.2 The development comprises three elements and ranges in height from 2 to 7 storeys, with the highest element to the south west of the site on London Road. Full details of the proposed development are set out in *Chapter 4: Proposed Development*. The proportions of the buildings aim to respond to the large bulk of Regal House, pin-point the station at the centre of the site and step-down in height to the residential scale of Cole Park Road.

1.2.3 Access to the station will be improved with the inclusion of a staircase and lift link from the interchange and car parking facilities to the podium level station ticket hall.

1.2.4 The station ticket hall will be relocated directly above the railway tracks to provide a simple and more direct access to the platforms for all passengers including the mobility impaired. The ticket hall is located within Block B, and adjacent to the entrance are two retail units. The location of the station will be prominently identified by signposting on London Road.

1.2.5 Vehicular access to the site will be from the existing access point along London Road. There will be a 'Kiss and Ride' facility located within the area of shared open space alongside a taxi rank. The car park will provide 44 replacement car parking spaces (including 3 disabled spaces) for station users and staff together with equivalent motorcycle provision.

1.2.6 A total of 250 cycle parking spaces will be provided for station passengers and visitors.

1.2.7 In summary the proposed development will include the following:

- New station facility - repositioning and enlarging of the station building including a new concourse and ticket office;
- 115 residential units;
- The existing car parking is being re-provided (44 spaces) with the inclusion of 3 car club spaces and 3 disabled bays for residents.
- 734m^2 of commercial space (A1/A3);
- A new pedestrian route along the River Crane, linking the town and station to Moormead Park.

1.2.8 A full description of the development is provided in *Chapter 4: The Proposed Development*. *Chapter 3: Alternatives and Design Evolution* contains details of the evolution of the design and alternatives considered.

1.3 Planning Policy Context

1.3.1 At the national level, planning policy and guidance is contained within Planning Policy Guidance Notes (PPGs) and Planning Policy Statements (PPSs), and a number of other current and emerging documents. The most relevant documents include:

- PPS1 – Delivering Sustainable Development (2005);
- PPS – Planning and Climate Change (2007);
- PPS3 – Housing (2010);
- PPG4 – Planning for Sustainable and Economic Growth (2009);
- PPS9 – Biodiversity and Geological Conservation (2005);
- PPS10 – Waste Management (1999);
- PPG13 – Transport (2001);
- PPS22 – Renewable Energy (2004);
- PPS23 – Planning and Pollution Control (2004);
- PPG24 – Planning and Noise (1994); and
- PPS25 – Development and Flood Risk (2006).

1.3.2 The Adopted Development Plan comprises the:

- The London Plan Consolidated with Alterations since 2004 (2008) (Ref 1-1);
- London Borough of Richmond Upon Thames Core Strategy (2009) (Ref: 1-2); and
- London Borough of Richmond Upon Thames Unitary Development Plan (2005) (Ref. 1-3).

1.3.3 An assessment of the development against relevant local, regional and national planning policy is set out within the Planning Statement, which is submitted as a supporting document to the planning application and is summarised in *Chapter 5: Planning Policy Context*. Planning policy with relevance to environmental effects has also been considered in each of the assessment Chapters of this document.

1.3.4 The following documents have also been reviewed and considered in preparation of the Environmental Statement:

- The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (Ref. 1-4);
- 'Environmental Impact Assessment a Guide to Procedures', Thomas Telford (Ref. 1-5);
- DETR Circular 02/99 Environmental impact Assessment (Ref. 1-6);
- Department for Communities and Local Government (DCLG), Amended Circular on Environmental Impact Assessment Consultation Paper (2006) (Ref: 1-7);
- Department for Communities and Local Government (DCLG), Environmental Impact Assessment: A guide to good practice and procedures consultation paper 2006 (Ref. 1-8); and
- The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Draft Regulations 2010 (Ref. 1-10).

1.4 ES Structure

1.4.1 This document is the main volume of the ES. It is divided into a number of background and technical chapters supported with figures and tabular information for clarity of reading. A complete set of appendices is provided for reference. These comprise background data, tables, figures and summary. This ES consists of:

- Volume I – Environmental Statement. This document presents the findings of the EIA and is divided into a number of background and technical chapters supported by figures and tabular information for clarity of reading.
- Volume II – Townscape and Visual Assessment. A separate Townscape and Visual Impact Assessment document has also been produced and submitted as part of this ES. This document assesses the impact on key views of the site.
- Volume III – ES Technical Appendices. Appendices are provided for:
  - Appendix A – Scoping Report, Design Details and Construction Programme
  - Appendix B – Socio-Economics
  - Appendix C – Transport
  - Appendix D – Air Quality
  - Appendix E – Noise and Vibration
  - Appendix F – Ground Conditions
  - Appendix G – Water Resources
  - Appendix H – Ecology
  - Appendix I – Daylight, Sunlight, Overshadowing and Solar Glare
- Non-Technical Summary (NTS): A separate summary is presented, providing a concise summary of the development proposal, alternatives, environmental impacts and mitigation measures.

1.5 Location of Information within the ES

1.5.1 The EIA Regulations (Schedule 4, Part 1) identify information that is 'reasonably required to assess the environmental effects of the development and which the applicant can, having regard in particular to current knowledge and methods of assessment, reasonably be required to compile' (Ref. 1-1). This information, and its location within the ES, is presented in Table 1-1.

Table 1-1 Location of Information within the ES

	Specified Information (EIA Regs)	Location Within ES
1.	A description of the development, including in particular:	Chapter 4 The Proposed Development
a)	a description of the physical characteristics of the whole development and the land use requirements during the construction and operational phases;	Chapter 4 The Proposed Development Chapter 6 Construction
b)	a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used; and	Chapter 6 Construction
c)	an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc) resulting from the operation of the Development.	Chapters 7 -16
2.	An outline of the main alternatives studies by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects.	Chapter 4 The Proposed Development
3.	A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, Townscape and the inter-relationship between the above factors.	Chapters 7-16 ES Volume II – Townscape and Visual Impact Assessment
4.	A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from:	Chapters 7-16
a)	the existence of the development;	Chapters 7-16
b)	the use of natural resources; and	Chapters 7-16
c)	the emission of pollutants, the creation of nuisances and the elimination of waste.	Chapter 6 Construction Chapters 7-16
5.	A description of the measures envisaged to prevent, reduce and where possible, off-set any significant adverse effects on the environment.	Chapters 7-16

	Specified Information (EIA Regs)	Location Within ES
6.	A non-technical summary of the information provided under paragraphs 1 to 5 of this Part.	Non-Technical Summary
7.	An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.	Chapter 2 EIA Methodology

1.6 Associated Planning Documents

1.6.1 A number of other documents have been submitted to the Local Authority as part of the Planning Application. These are set out within the Planning Application forms, and are summarised below :

- Planning Application documents including forms and drawings
- Design and Access Statement
- Planning Obligations
- Planning Statement
- Sustainability and Energy Statement
- Town Centre Uses Statement (Retail Assessment)

1.7 Project Team

1.7.1 This ES has been compiled by Maddox Associates and presents the results of an EIA carried out by a number of specialist designers and consultants appointed by the Applicant. These designers and consultants are presented in Table 1-2, along with their respective disciplines and contribution to the EIA.

Table 1-2 EIA and Design Team

Organisation	Expertise/EIA Input
Solum Regeneration Limited	Applicant
The Roger Wenn Partnership Limited	Project Management
Maddox & Associates	Planning Consultant, EIA Project Managers and Sustainability Consultants
Rolfe Judd Limited	Architect
Landolt & Brown	Station Architect
Waterman Environmental	Ground Conditions Environmental Technical Specialist Consultants
The Civil Engineering Practice Limited	Flood Risk and Water Resources Consultants
Mayer Brown Limited	Transport Consultants

Organisation	Expertise/EIA Input
Environmental Assessment Services Ltd	Noise and Vibration, Air Quality Consultants
Wardell Armstrong LLP	Ecology and Arboricultural Consultants
Behan Partnerhship Limited	Daylight, Sunlight and Overshadowing Consultants
RWDI	Microclimate (Wind) Consultants
Regeneris Consulting	Socio-Economic Consultants
Tom Paxton	Electronic Interference Consultant
Church House Building Services Limited	Energy and Services Consultants
Whitelaw Turkington Landscape Architects Limitedm	Landscape Architect
White Young Green Environment Planning Transport Limited	Townscape & Visual Impact Consultants

1.8 ES Availability

1.8.1 The ES is available for viewing at the London Borough of Richmond upon Thames during normal working hours. Representation on the content of the ES should be made in writing to:

Development Control
London Borough of Richmond upon Thames
Civic Centre
44 York Street
Twickenham
TW1 3BZ

1.8.2 Additional copies of the Non-Technical Summary are available free of charge. A CD containing the full ES - Volume I, Volume II and Volume III is available for £10 (incl p+p). A hard copy of the full ES can also be purchased. All requests for copies of the ES should be sent to:

Maddox & Associates
70-74 Cowcross Street
London
EC1M 6EJ

1.9 References

Ref. 1-1: GLA, The London Plan, Consolidated with Alterations since 2004, 2008

Ref. 1-2: London Borough of Richmond Upon Thames Core Strategy 2009

Ref. 1-3: London Borough of Richmond Upon Thames Unitary Development Plan 2005

Ref. 1-4: The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999

Ref. 1-5: DTLR, 'Environmental Impact Assessment a Guide to Procedures', Thomas Telford, 2000

Ref. 1-6: DETR Circular 02/99 Environmental impact Assessment, 1999

Ref. 1-7: Department for Communities and Local Government (DCLG), Amended Circular on Environmental Impact Assessment Consultation Paper, 2006

Ref. 1-8: Department for Communities and Local Government (DCLG), Environmental Impact Assessment: A guide to good practice and procedures consultation paper 2006

Ref. 1-9: Office of the Deputy Prime Minister (ODPM), Note on Environmental Impact Assessment Directive for Local Planning Authorities 1999 EIA Regulations, July 2002

Ref. 1-10: The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Draft Regulations 2010

2.1 Introduction

2.1.1 This Chapter sets out the approach to the Environmental Impact Assessment (EIA) and in particular, details the response to statutory requirements and best practice, the definition of impact significance, and the method of assessing environmental and social impacts.

2.1.2 The contents and conclusions of the Environmental Statement (ES) are based on the redevelopment proposals detailed in *Chapter 4: Proposed Development*, site investigation work and site baseline surveys together with the professional knowledge of the consulting team.

2.2 Approach

2.2.1 The ES has been prepared in accordance with current best practice guidance for the preparation of Environmental Statements together with applicable national and international legislation for the EIA process. In particular, the ES has been prepared with due consideration to:

- Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999(amended 2000 and 2006) (Ref. 2-1);
- DETR Circular 02/99 Environmental Impact Assessment (Ref. 2-2);
- Preparation of Environmental Statements for Planning Projects That Require Environmental Assessment: Good Practice Guide, DOE 1995 (Ref. 2-3);
- Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Impact Assessment, 2004 (Ref. 2-4);
- Office of the Deputy Prime Minister (ODPM) Environmental Impact Assessment – A Guide to Procedures, 2001 (Ref. 2-5) ; and
- The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Draft Regulations 2010 (Ref. 2-8).

2.2.2 Consideration has also been given to emerging EIA guidance consultation paper 'Environmental Impact Assessment: A guide to good practice and procedures' produced by the Communities and Local Government and published in June 2006 (Ref. 2-6).

2.2.3 The ES has considered the likely impact of the proposed redevelopment on its surroundings, neighbours, wider area and overall context. Both beneficial and adverse, short and long term impacts have been considered. Where mitigation measures have been identified to either eliminate or reduce adverse impacts, these have been incorporated into the project design. In cases where no practical mitigation measures have been identified, the ES has highlighted remaining or 'residual' impacts and classified these in accordance with a standard set of significance criteria.

2.2.4 In line with best practice, the EIA has been preceded by a scoping exercise to determine specific requirements and to offer the council an opportunity to comment on the content and scope of the EIA.

2.3 EIA Requirements

2.3.1 Applications for development, which are covered by the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, are termed 'EIA applications'. The actual requirement for an EIA is either mandatory or conditional depending on the classification of the development project. This is based, in turn, on the likelihood of significant impacts arising.

2.3.2 EIA applications are divided into Schedule 1 applications (major developments) and Schedule 2 applications (other developments) under the regulations, which govern all planning applications post March 1999.

2.3.3 Schedule 1 developments constitute those that are likely to have significant environmental effects such as major chemical or petrochemical plants, and construction of ground or air transportation facilities. For all other developments, which fall under Schedule 2, the need for an EIA is determined on the basis of set criteria as follows:

- It is within one of the classes of development stated in Schedule 2; AND
- EITHER it exceeds the size threshold for that class of development in Schedule 2;
- OR it is in a sensitive area; AND
- It is likely to have significant effects on the environment.

2.3.4 The Development falls within the description in Column 1, Paragraph 10(b) of Schedule 2, namely:

- '(b) urban development projects, including the construction of shopping centres and car parks, sports stadiums, leisure centres and multiplex cinemas'.

2.3.5 With a development area of approximately 0.96 ha the proposed development site exceeds the associated threshold of 0.5ha as defined in Schedule 2.

2.3.6 Following consideration of characteristics of the development and potential significant effects, a full assessment of the environmental effects of the proposal has been judged to be necessary.

2.3.7 Having taken into account the selection criteria in Schedule 3, the London Borough of Richmond upon Thames' screening direction (letter dated 30th March 2010) believes the development could have significant effects on the environment due to the size of development (being significantly greater in scale than the existing or previous use of the land), with regard to the following:

- Visual Impact
- Transportation impact - Rail and Bus Services, Traffic Generation
- Air Quality and Noise Pollution
- Land Contamination
- Wildlife Corridor/Habitat Impacts
- Cumulative impact with other development proposed within the surrounding area

2.4 EIA Scoping and Consultation

Scoping

2.4.1 In line with best practice, a formal scoping exercise to determine the content and methodology of the EIA, and to eliminate those areas for which no significant impacts are anticipated has been undertaken.

2.4.2 The formal Scoping Report was submitted to London Borough of Richmond upon Thames on 27th April 2010. Following on going discussions with the Council the scheme has undergone a number of changes. To identify the potential implications of the changes the project team have undertaken a full review of the previous Scoping Report and London Borough of Richmond upon Thames Scoping Opinion.

2.4.3 Through email correspondence with the Council it has been confirmed that '*the revised main application will still constitute schedule II development requiring environmental impact assessment and that the earlier scoping report will apply*'. The content of this ES is therefore based on the Council's formal Scoping Opinion received on 10th June 2010.

2.4.4 The Scoping Report and Scoping Opinion are presented in *Appendix A of ES Volume III*. The comments presented in the Scoping opinion and responses to those comments are set out in Table 2-1.

Table 2-1 Scoping Opinion Comments

Consultee - Scoping Comment	Response/Location of Information Within the ES
Natural England	
Before considering mitigation the application should consider whether adverse impacts can be avoided. Mitigation should only be considered after avoidance.	The avoidance of adverse impacts has been considered through the evolution and design of the proposed development. Chapter 3: Alternatives and design evolution details the key scheme amendments designed to avoid adverse impacts. Where impacts remain appropriate mitigation is proposed within each of the technical Chapters.
Expect the development to enhance the ecological value of the site. Opportunities to incorporate Biodiversity Action Plan habitat should be maximised.	A detailed Ecological Impact Assessment has been undertaken and is presented in *Chapter 13: Ecology* of the ES.

The River Crane SINC is located adjacent (or within) the development boundary. London Plan policy 3D.14 which states that '*where development is proposed which would affect a site of importance for nature conservation or important species, the approach should be to seek to avoid adverse impact on the species or nature conservation value of the site, and if that is not possible, to minimise such impact and seek mitigation of any residual impacts. Where, exceptionally, development is to be permitted because the reasons for it are judged to outweigh significant harm to nature conservation, appropriate compensation should be sought.'*	The River Crane SINC is located outside of the development boundary. *Chapter 13: Ecology* details the anticipated impacts of the proposed development and appropriate mitigation.
Environment Agency	
Key environmental issues and opportunities at this site are: • Impact of development on river Crane and flood defences • Maximising environmental improvements to the River Crane • Ecological impacts and habitat improvement • Managing flood risk to people and property, including surface water flood risk • Land contamination and pollution prevention • Sustainable design and construction	*Chapter 12: Water Resources* includes a full Flood Risk assessment and details the impact of the development on surface water drainage *Chapter 13: Ecology* of the ES details the ecological impacts of the proposed scheme. *Chapter 11: Ground Conditions* details pollution and contamination prevention. *Chapter 4: The Proposed Development* contains details of the sustainable design and construction principles integrated into the scheme.
Important that impacts on the river are considered within the EIA and appropriately mitigated for.	*Chapter 13: Ecology* details the anticipated impacts of the proposed development on the River Crane.
The development should be set back from the river to avoid a negative impact on biodiversity and flood risk.	*Chapter 13: Ecology* and *Chapter 12: Water Resources* assess the potential impacts to biodiversity and flood risk respectively
Scope for improvements to the river Crane	The River Crane SINC is located outside of the development boundary. *Chapter 13: Ecology* details the anticipated impacts of the proposed development and appropriate mitigation.

Greater London Authority		
Comments raised in relation to the design including incorporation of SUDs.		Surface water discharge from the site will be restricted to 30l/s. On site attenuation provided for storms of up to a 1:100 year intensity including a 30% increase to account for the predicted effects of future climate change. Full details are presented in *Chapter 12: Water Resources.*
London Borough of Richmond upon Thames Officer Comments		
Trees	In order to fully assess the Arboricultural impact of the development, we will require the following information: 1) A full Tree Survey 2) Tree Constraints Plan 3) Arboricultural Implications Assessment.	A full arboricultural assessment has been undertaken and the results presented in *Chapter 13: Ecology.* The Tree Survey and Tree Constraints Plan are presented in *ES Volume III - Appendix H*.
Urban Design	Concern about a considerable amount of public space being in shade	*Chapter 14: Daylight, Sunlight, Overshadowing and Solar Glare* assess the proposed public open space and shading impacrs
	Key views to be agreed	*ES Volume II: TVIA* details consultation undertaken to agree the views.
	Alternatives & Design Evolution - it would be helpful to include a version with lower key massing than the current proposal	*Chapter 3: Alternatives and design evolution*
Planning Policy	The proposed mix may need to be identified to fully understand the impacts e.g. on amenity space required.	*Chapter 4: The Proposed Development* provides full details of the scheme
	Inclusive access is not mentioned and should be addressed, in terms of the station and proposed retail and residential uses including the incorporation of Lifetime Homes and Wheelchair Housing. Otherwise, it may be considered appropriate to deal with this through documentation accompanying the planning application.	*Chapter 4: The Proposed Development* provides full details of the scheme

Environmental Health	There is potential for loss of amenity to new residents and existing residents due the following pollution issues 1. Noise impact from external traffic sources such as aircraft, road traffic and rail 2. Vibration impact from rail traffic on the proposed development. 3. Noise from air handling plant serving the proposed development 4. Odour from kitchen extraction systems effecting new and existing residents in the vicinity	*Chapter 10: Noise and Vibration* details a full noise assessment
Environmental Health (Cont'd...)	5. Noise transmission between commercial and residential units in proposed development. 6. Entertainment noise from commercial use.	
	The Council has prepared draft guidance which details the acoustic design specification requirements for noise generating and noise sensitive development.	*Chapter 10: Noise and Vibration* details a full noise assessment including reference to the Draft guidance where appropriate.
Transport	Concern is the taxi rank which when busy with slowly moving traffic, i.e. basically idling, will be a source of increased traffic pollution which could impact on residential open windows and in the open space. The proposed tall buildings will create a 'canyon' concentration of pollution. A good wind will help disperse the pollution (wind assessment) but will conflict with the needs of pedestrians for less wind. The proposed emissions need to be assessed and extra taxi traffic at this vibrant transport interchange quantified.	*Chapter 8: Transport* and *Chapter 9: Air Quality* detail the anticipated traffic flows and potential air quality impacts. Consultation undertaken in relation to the scope of the assessment is contained within the Transport Assessment. *Chapter 15: Wind* details the microclimate of the proposed scheme.

Friends of the River Crane Environment	
Welcome the principle of a new pedestrian footpath proposed along the River Crane linking to the River Crane walk Need to take this unique opportunity to provide pedestrian and cycle links upstream - and under London Road – and downstream to Moormead Park FORCE should included as part of the consultation to take place with local community groups	*Chapter 4: The Proposed Development* provides full details of the scheme. Full details of the consultation process are included within the Statement of Community Involvement submitted in support of the planning application
Need to address directly local road and traffic issues	*Chapter 8: Transport* provides a full assessment of the potential transport impacts
Expect a comprehensive approach to managing the control and removal of Japanese Knotweed form the site and that there is no risk of downstream transfer along the corridor The Crane Corridor is well used by bats. FORCE are pleased to note that this was recognised in the phase 1 survey . Measures to minimise light spillage and other disturbance to bats – and potentially provide enhanced habitat – should be included as part of the project	*Chapter 13: Ecology* details the potential impacts of Japanese Knotweed and light spillage. A Japanese Knotweed removal strategy has been developed. Light spillage has been minimised though type and specification of lighting.
In relation to light issues with respect to neighbours, there are 2 issues in respect to the river corridor. Firstly that the spillage of artificial lighting into the corridor at night where we hope that opportunities are taken to reduce and minimise this spillage, for the benefit of wildlife and specifically bats. Secondly, the impact of shadowing within the corridor during the daytime by the proposed building mass and this impact on both the existing ecology within and around the river as well as its future potential. These need to be incorporated into the EIA.	*Chapter 13: Ecology* details the impacts of light spillage on ecological receptors. *Chapter 4: The Proposed Development* details proposed new links and the Landscape Strategy *Chapter 14* assesses the potential overshadowing impacts of the proposed development.
Cole Park Residents Association	
Include full details of the proposed development and. a "picture paints a thousand words"	Full details of the proposed scheme are provided in *Chapter 4: The Proposed Development* of the ES.

Details of consultations and expert advice to be included within the ES	Statutory Consultees detailed in Section 7 of the Scoping Report (Appendix A of the ES). Details of the Consultations undertaken are included within each Chapter (where appropriate) and the separate Statement of Community Involvement. Expert advice provided by specialists for each of the technical assessments
Make reference to specific PPS's or PPG's, that the EIA will need to take heed.	*Chapter 5: Planning Policy Context* details the planning policies
Is a HIA applicable? Should a significant multi-use development such as this, mention the relevant use classes that it will embrace?	*Chapter 7: Socio-economics assess the proposed development inpact on local healthcare facilities.* *Chapter 5: Planning Policy Context* details the multi-use development implications and use classes
No mention of solar glare that could have a significant impact, given the type of development proposed, with elevations containing significant amounts of glazing.	*Chapter 14: Daylight, Sunlight, Overshadowing and Solar Glare* includes an assessment of solar glare
Windsor Lines Passenger Association	
Redevelopment of Twickenham Station is strongly supported. Redevelopment should include: – new station (not just street and ticket office level) – Modern footbridges, stair and platform architecture – Full accessibility to all platforms – Retail units at platform level – Create transport hub – Include special entrances to cope with the Twickenham Stadium and the Stoop crowds – Retain potential to operate four tracks	*Chapter 4: The Proposed Development* provides full details of the scheme

London Borough of Richmond Upon Thames Scope of the EIA		
Sustainability	Sustainability, Energy & Climate Change issues which require a specific chapter with that title. Climate change and its potential impacts and adaptation measures should be considered as an overarching theme of the assessment.	In line with the Environmental Impact Assessment: A guide to good practice and procedures (A consultation paper) (which states in Paragraph 155: *there is no requirement to include a sustainability appraisal within the ES. If such an assessment is required by the LPA, it should be provided as a separate document supporting the planning application.* Ref: 2-6), a specific Sustainability, Energy & Climate Change chapter is not included within the ES. A separate 'Sustainability Statement' has been submitted in support of the planning application.
Broad Site Description	Include a comprehensive description of the existing buildings, railway track, platforms and other facilities as well as other site features, trees, landscaping and car/cycle parking facilities.	*Chapter 4: The Proposed Development* provides full details of the scheme Details of the Cumulative Schemes included within the assessment are provided in section 2.8 of this Chapter.
Broad Site Description (Cont'd...)	The EIA will be expected to pay special attention to any cumulative impacts of development in the vicinity. Discussions with the Royal Mail are encouraged to ensure any development on land in their ownership is given consideration in designing this development. This will be beneficial to the development of the site and ascertaining the likely impacts, and benefits, of this development, along with potential for other future developments, such as pedestrian and cycle links, wildlife corridors and the like. This information can be gathered with the help of council officers.	Details of the Cumulative Schemes included within the assessment are provided in section 2.8 of this Chapter.

Development Proposals	A comprehensive description of the proposed buildings, uses, station improvements, public spaces, landscaping, parking, taxi rank and servicing facilities will be expected to be provided in the ES. It is noted that no mention has been made of the café and bar facilities which had been understood to comprise part of the development.	*Chapter 4: The Proposed Development* provides full details of the scheme
	A description of temporary station buildings, parking and access facilities to be provided during the construction stage need to be outlined. Changes to the station facilities, passenger handling capacity and secondary impacts on the public transport service need to be clearly outlined.	*Chapter 4: The Proposed Development* provides full details of the scheme
	The evolution of the development and layout needs to be explained in the ES, along with the design and access statement and other documents.	*Chapter 3: Alternatives and Design Evolution* provides details of the scheme evolution
Potential Sensitive Receptors	Sensitive receptorsvshould include: - Queens Road Conservation Area - Amyand Park Road Conservation Area - Heatham House, grade II listed - Protected views from Richmond Hill - Biodiversity and habitat - Twickenham Town Centre - RFU and Harlequins Stadiums	These potential sensitive receptors haves been included within the EIA as identified in Section 2.5 of the Chapter.
Socio-Economic Issues	Particular attention should be paid to the potential individual and cumulative impacts on local services and amenities, such as healthcare, school places and community facilities as these issues have been raised as of particular concern to borough residents.	*Chapter 7: Socio – Economic Assessment* details potential impacts on healthcare, education and community facilities

Transport	The Transport Assessment needs to undertake surveys (subject to agreement with the highway authority as to their scope), of parking in surrounding streets, usage of the train station and pedestrian and traffic flows on roads, including the A316, on event days, match days and non-match days at either stadium, unless it can be demonstrated that they are not needed. A full explanation of the impacts on the surrounding highways during demolition, construction and operation of the proposed development needs to be provided through the EIA.	*Chapter 8: Transport* provides a full assessment of the potential transport impacts
	Substantial improvements to the pedestrian environment are expected from the redevelopment of the site along with improving pedestrian/cycle access to the station from the Harlequins Stadium, Richmond Tertiary College and any future development of the Royal Mail site. To ensure that this is achieved, the scheme needs to provide pedestrian/cycle links into the Royal Mail site.	*Chapter 8: Transport* provides a full assessment of the potential transport impacts
	The Council encourages early discussions with the Metropolitan Police and Transport for London to identify concerns regarding pedestrian movement and crowd control (including pedestrian safety and security) at the station, on London Road, A316 and streets leading to the RFU Stadium on match days during the demolition, construction and post development stages of the project.	*Chapter 8: Transport* provides a full assessment of the potential transport impacts

Transport (Cont'd...)	Consideration of the potential impacts for the A316 and local parking from the disruption of public transport services on event/match days at either the RFU or Harlequins need to by properly reviewed through the Transport Assessment and included in the EIA.	*Chapter 8: Transport* provides a full assessment of the potential transport impacts
	Pedestrian access and egress from the 'residential' elements of the scheme on match days needs full consideration.	*Chapter 8: Transport* provides a full assessment of the potential transport impacts
	The safety and security of users of the proposed riverside route to and along the River Crane needs to be assessed.	*Chapter 8: Transport* provides a full assessment of the potential transport impacts
Air Quality	Site within an Air Quality Management Area (AQMA) - development should not further reduce air quality in the area	*Chapter 9: Air Quality* provides a full assessment of the potential Air Quality impacts
	The potential for the generation of dust (and therefore particulates) is noted but details of how these issues will be considered and the actions that will be taken in the event that the required level of air quality improvements cannot be achieved should be noted in the ES.	*Chapter 9: Air Quality* provides a full assessment of the potential Air Quality impacts
	Details provided should outline all measures (such as site management activities and the use of low–emission plant) that will be undertaken over the course of the development to reduce the environmental impacts of the development. Reference should be made to all relevant guidance and legislation and should include potential for inclusion of measures to comply with new EU limit values as they are likely to be finalised prior to the implementation of the development.	*Chapter 9: Air Quality* provides a full assessment of the potential Air Quality impacts *Chapter 6: Site Preparation and Construction* provides details of the construction mitigation and Demolition and Construction Method Statement proposed for the development.
	The Environmental Statement should provide details of the potential mitigation measures that will be required to safeguard the health and amenity of residents and workers in the area, pre-, post- and during the development.	*Chapter 9: Air Quality* provides a full assessment of the potential Air Quality impacts

Air Quality (Cont'd...)	Any mitigation measures or consideration of particulates should also include the impacts of CHP and biomass on air quality if these technologies are proposed. I would note that biomass boilers are generally not encouraged in AQMAs.	*Chapter 9: Air Quality* provides a full assessment of the potential Air Quality impacts
	The impact of railway emissions must be assessed in relation to future owners/occupiers of the new flats.	*Chapter 9: Air Quality* provides a full assessment of the potential Air Quality impacts
Noise	Key concerns is the potential for increases in background noise levels and vibration during demolition, construction and post development. This would not only result from the processes involved in developing the area but also from the additional residents in the area. The commitment to undertake a baseline noise survey is supported by the council but this must be continually updated. This will allow the continual assessment of the impact of the development on existing residents and the River Crane NICS, in particular bat and birdlife	*Chapter 10: Noise and Vibration* provides a full assessment of the potential noise and vibration impacts
	The Council is particularly concerned with the potential impact of rail noise and vibration on future residents of the development and would expect any assessment of noise associated with the development to include appropriate consideration of this and how it might be addressed as well as noise impacts from discrete sources.	*Chapter 10: Noise and Vibration* provides a full assessment of the potential noise and vibration impacts
	It should be noted that the council will seek the level of noise transmission between units to exceed part E of the building regulations. The impact of railway noise must be assessed in relation to future owners/occupiers of the new residential units.	*Chapter 10: Noise and Vibration* provides a full assessment of the potential noise and vibration impacts

Noise (Cont'd...)	To assist in good management of construction noise, vibration, dust and other emissions, we suggest that a construction method statement is developed. Guidance on control measures for dust and other emissions is given in 'The Control of dust and emissions from construction and demolition: Best Practice Guidelines', Greater London Authority, November 2006. A low vibration method of piling must be employed with visual alarms set at vibration levels detailed with the new Bs5288 guidance. If the piling is due to be carried out for some time, the amount of hours per day may be restricted. The ES needs to clarify piling methods and times. The types of piling most suitable will be hydraulic piling methods, auger piling methods and diaphragm walling.	*Chapter 10: Noise and Vibration* provides a full assessment of the potential noise and vibration impacts
Ground Conditions (including Soil Contamination and Geology Report)	The approach to the investigation of contaminated land is considered to be appropriate utilising a desktop study to assess this element. It should be noted that the council will be assessing and approving all stages of the on-site investigation. In assessing potential impact and consideration of potential mitigation measures the Council would encourage the use of techniques that minimise environment impact. While it is noted that ground investigations will be undertaken to investigate the site and an appropriate risk assessment will be carried out for land contamination. These documents would be required to be submitted to satisfy any contaminated land condition. The Environmental statement will need to give consideration to these issues, but it is likely that alone would not be sufficient. There is a Land Contamination Supplementary Planning Guidance document available.	*Chapter 11: Ground Conditions* provides a full assessment of the contamination and pollution impacts

Water Resources Including Flood Risk Assessment	The Council has completed a Strategic Flood Risk Assessment (SFRA) for the borough; this should be considered when undertaking the Flood Risk Assessment. The surface water run-off should be controlled as near to its source as possible through a sustainable drainage (SUDS) approach to surface water management. Therefore consideration of appropriate SUDS techniques should be included in the assessment and a surface water strategy prepared. In terms of water resources the scoping report does not mention the potential impact of the proposals upon the water supply in the area. The Council would encourage early discussions with Thames Water to ensure that infrastructure is adequate. If concerns are expressed regarding water supply then this should be factored into the assessment.	*Chapter 12: water Resources* provides a full assessment of the surface water and flood risk impacts
Ecology	The project site appears to have limited ecological or habitat potential, with the exception of bat roosts, therefore the approach outlined in the scoping report is thought to be appropriate. Special consideration of the potential for improving the ecological value of the site, such as new habitat creation, green walls and landscaping should form part of the proposals. The Council is pleased to note the inclusion of a new pedestrian footpath proposed along the River Crane linking to the River Crane walk. It is encouraging to see the spatial scope for the EIA will incorporate the surrounding areas. Ecological impacts are expected to focus on the adjacent River Crane NICS which is a known bat and bird corridor. Undertake consultation with a range of stakeholders in addition to Natural England to obtain useful information on the River Crane.	*Chapter 13: Ecology* provides a full assessment of the potential biodiversity and habitat impacts

Rights of Light, Daylight and Sunlight and Overshadowing	The light assessment methodology is largely acceptable in terms of impact on local residents but makes no reference to the potential overshadowing effect on the adjacent River Crane NICS, in particular with regard to flora and fauna. This also needs to be part of the EIA. The amenities of the future occupants of the flats also needs assessment and in this regard the quality of the residential accommodation e.g. entrances, corridors, single aspect flats, outlooks towards the hotel extension, overshadowing needs full assessment.	*Chapter 14: Daylight, Sunlight, Overshadowing and Solar Glare* provides a full assessment of the potential overshadowing effects on the proposed amenity areas. *Chapter 13: Ecology* details the potential overshadowing impacts on biodiversity and habitat receptors
Wind Analysis	This section should also address the potential impacts of the new development on the dispersal of pollutants in the AQMA as well as impact on the local microclimate – there is the issue of winds between and around the blocks.	*Chapter 15: Wind* provides a full assessment of the potential wind impacts
Landscape and Visual Impact	The visual impact of the development upon some of the long distance views of the site should be analysed, in particular the view from the Richmond Hill and nearby conservation areas. Other key views should be agreed with Council officers. The proposals map to the UDP: First Review should be consulted when considering which views to include in the visual assessment. Site topography and survey of levels of surrounding streets, river and other adjacent sites to be included in the baseline study. The historical analysis of the site and surroundings should include the grade II listed Heatham House, locally listed buildings (Buildings of Townscape Merit) and the identified conservation areas. An urban context analysis and landscape strategy are required as part of EIA process.	*ES Volume II: Townscape and Visual Impact assessment* provides a full assessment of the potential visual impacts from the views agreed with the Council.

Other Elements of the ES	The assessment of planning context, demolition and construction and cumulative impact are considered appropriate. No reference to an assessment of the environmental impact of the proposals on electrical interference and solar glare are mentioned. These issues need to form part of the EIA.	*Chapter 16: Electronic Interference* provides a full assessment of the development impacts on TV and radio reception *Chapter 14: Daylight, Sunlight, Overshadowing and Solar Glare* provides a full assessment of the potential solar glare impacts of the proposed development
Alternatives	Versions with lower key massing than the current proposal and/or alternative massing arrangements should be illustrated and discussed as part of the EIA process. There will also be a need to demonstrate the relationship between developments on the Twickenham Station and Royal Mail sites as part of any planning submission for Twickenham Station.	*Chapter 3: Alternatives and Design Evolution* provides details of the scheme evolution The cumulative impact of the proposed development and other consented schemes is detailed in each of the technical assessment chapters.
Summary of Key Issues	Whilst the role of the EIA is to examine the 'main' or 'significant' effects of a development, the council would like to ensure that all impacts, both positive and negative, are fully considered, to ensure the best possible form of development. In addition to the summary in 4.0 of the scoping report, it is considered that this should be expanded to incorporate sections on 'Cumulative Impact', 'Sustainability, Energy & Climate Change' (including issues of solar glare and waste), 'Electro Magnetic Force – TV Reception', Public Participation including input from key stakeholders	In line with the Environmental Impact Assessment: A guide to good practice and procedures (A consultation paper) (which states in Paragraph 155 : *there is no requirement to include a sustainability appraisal within the ES. If such an assessment is required by the LPA, it should be provided as a separate document supporting the planning application.* Ref: 2-6), a specific Sustainability, Energy & Climate Change chapter is not included within the ES. A separate 'Sustainability Statement' has been submitted in support of the planning application.

Consultation

2.4.5 The process of consultation is critical to the development of a comprehensive and balanced ES. Views of the interested parties serve to focus the environmental studies and to identify specific issues, which require further investigation. Consultation is an ongoing process, which enables mitigation measures to be incorporated into the project design thereby limiting adverse effects and enhancing benefits.

2.4.6 The proposed redevelopment has been consulted upon with Senior Council Officers at the London Borough of Richmond Upon Thames, the Greater London Authority and the Commission for Architecture and the Built Environment as follows:

- Greater London Authority (GLA) in May 2010 and August 2010
- CABE in May 2010
- Richmond Design Panel (RDP) in July 2010 and October 2010

2.4.7 A Public Consultation exercise was undertaken throughout June and July 2010 including a residents newsletter, stakeholder letters, a newspaper advert and a public exhibition (held on the 16th – 17th July 2010) to gather community comments on the proposals and ensure considerations on local needs are incorporated into the scheme.

2.4.8 The comment themes from these consultations and where they are addressed within the ES are presented in Table 2-2. Full details of the project consultation exercise and comments made are provided in the Statement of Community Involvement submitted in support of the planning application.

2.4.9 The technical consultants have also undertaken consultation with Local Authority Officers in relation to their specific environmental topic where necessary. All consultations undertaken are detailed within the relevant technical chapters (Chapters 7 to 16).

2.4.10 A number of design related comments have also been received and these are addressed within the Design and Access Statement, Transportation Assessment and Sustainability Statement, which have been submitted in support of the planning application.

Table 2-2 Consultation Comments

Comment	Document Location
The quality of the proposed walkway alongside the River Crane	*ES Chapter 4: The Proposed Development* *ES Chapter 13: Ecology*
The impact of the proposal on short and long distance views incl. Richmond Hill (Height Impact)	*ES Volume II – Townscape and Visual Impact Assessment*
The proposed landscaping arrangements	*ES Chapter 4: The Proposed Development* *ES Volume II – Townscape and Visual Impact Assessment*
The prominence of the station entrance and its relationship with the town centre	*ES Chapter 4: The Proposed Development* *Design and Access Statement*
The impact of the development upon properties in Mary's Terrace and Cole Park Road	*ES Volume II – Townscape and Visual Impact Assessment*
The location of cycle parking	*ES Chapter 4: The Proposed Development* *ES Chapter 8: Transport*
Ensuring adequate access into the residential part of the development for disabled users	*ES Chapter 4: The Proposed Development* *Design and Access Statement*
The inclusion of single aspect flats	*ES Chapter 4: The Proposed Development* *Design and Access Statement*
The impact of noise from the railway upon the amenity of future residents	*Chapter 10: Noise and Vibration*
Insufficient provision of Car parking	
Increased traffic generation	*ES Chapter 8: Transport*
Pressure on train capacity	*ES Chapter 8: Transport*
Impact on retailers	*ES Chapter 7: Socio-Economics*
Over provision of housing	*ES Chapter 7: Socio-Economics*
Pressure on educational facilities	*ES Chapter 7: Socio-Economics*
Construction activities impacts	*Construction activities outlined in Chapter 6: Construction* *Impacts assessed in all Chapters 7-16*
Development will result in the creation of a wind tunnel	*ES Chapter 15: Wind*
Co-ordinate with the post office scheme	There are currently no details available of potential development on the Post Office Sorting Office Site. Details of the cumulative assessment are provided in Section 2.9 of this Chapter.

2.5 Sensitive Receptors

2.5.1 The EIA process has included the identification and assessment of all impacts to potentially sensitive receptors, resulting from the construction and operational phases of the redevelopment. The following potential sensitive receptors to the redevelopment were identified throughout the scoping phase:

- Residents of the surrounding area including Cole Park Road and Mary's Terrace;
- Biodiversity and habitat currently found on-site;
- River Crane Corridor Site of Important Nature Conservation;
- Current users of the transport interchange;
- Future occupants, residents and users of the proposed development;
- Users of the surrounding highway network;
- Occupants of Regal House (70 London Road);
- Surrounding infrastructure including schools, health care facilities and community facilities;
- Queens Road Conservation Area;
- Amyand Park Road Conservation Area;
- Heatham House, grade II listed;
- Protected views from Richmond Hill;
- Twickenham Town Centre; and
- RFU and Harlequins Stadiums.

2.6 Assessment Methodology

2.6.1 The EIA and formation of the ES is based on the following related activities:

- Consideration of relevant local, regional and national planning policies, guidelines and legislation relevant to EIA;
- Consultation with statutory and non-statutory bodies;
- Consideration of technical standards for the development of significance criteria;
- Design review;
- Review of secondary information, previous environmental studies and publicly-available information and databases;
- Expert opinion;
- Desk-top studies, physical surveys and monitoring; and
- Modelling.

2.6.2 The EIA has addressed the direct effects of the redevelopment in addition to the indirect, cumulative, short, medium and long term, permanent, temporary, beneficial and adverse effects.

2.6.3 The mitigation measures envisaged in order to avoid, reduce or remedy significant adverse effects are described. The concluding Chapters provide a summary of the cumulative and residual impacts.

2.7 ES Structure

2.7.1 This ES consists of:

- Volume I – Environmental Statement. This document presents the findings of the EIA and is divided into a number of background and technical chapters supported by figures and tabular information for clarity of reading.
- Volume II – Townscape and Visual Impact
- Volume III – ES Technical Appendices. Appendices are provided for:
  - Appendix A – Scoping Report, Design Details and Construction Programme
  - Appendix B – Socio-Economics
  - Appendix C – Transport
  - Appendix D – Air Quality
  - Appendix E – Noise and Vibration
  - Appendix F – Ground Conditions
  - Appendix G – Water Resources
  - Appendix H – Ecology
  - Appendix I – Daylight, Sunlight, Overshadowing and Solar Glare
- Non-Technical Summary (NTS) – A separate document providing a concise summary of the ES in non-technical language appropriate for the general public.

2.8 Structure of Technical Chapters

2.8.1 For ease of reading, a standard approach has been taken to the structure of each technical Chapter in the ES. Technical Chapters are provided for each environmental and social issue detailing the baseline characteristics of the site, likely impacts and proposed mitigation. The structure of the chapters is presented in Table 2-3.

Table 2-3 Chapter Structure

Heading	Content
Introduction	The introduction details the authorship of the technical study, provides a brief summary of what is considered in the Chapter and provides any relevant background information.
Planning Policy Context	This section includes a short summary of applicable legislation and plans (whether formalised or draft) at the local, regional and national level.
Assessment Methodology and Significance Criteria	The methods used in undertaking the technical study are outlined and the significance of impacts is evaluated with reference to definitive standards, accepted criteria and legislation. Where it has not been possible to quantify impacts, qualitative assessments have been carried out, based on professional judgement. Where uncertainty exists, this has been noted in the relevant assessment Chapter The significance of potential and residual impacts has been determined by reference to impact criteria for each assessment topic as follows: Extreme, Major, Moderate, Minor, Negligible
Baseline Conditions	For all issues, the EIA baseline has been taken as the current conditions on-site.
Impact Assessment and Mitigation	Consideration of potential impacts during the construction and operational phase once the Development is completed. The proposed mitigation measures that are designed to off set or reduce any significant adverse effects are described. These measures can relate to any phase of the project: design, construction or operation.
Residual Impacts and Conclusions	Impacts of the Development remaining following the implementation of available mitigation measures are known as 'residual impacts'. These are discussed for each of the potential impacts and their significance level is identified. The section describes each identified potential impact and discusses its significance, prior to and following implementation of mitigation measures. Quantitative definition of significance criteria are included as far as possible
Cumulative Impact Assessment	For the cumulative assessment, two types of impact have been considered: • The combined effect of individual impacts, for example noise, airborne dust or traffic on a single receptor; and • The combined impacts of several development schemes that may, on an individual basis be insignificant but, cumulatively, have a significant effect.

Significance Criteria

2.8.2 The significance of potential and residual impacts has been determined by reference to impact criteria within each assessment topic. Specific criteria for each issue have been developed, giving due regard to the following:

- Extent and magnitude of the impact;
- Impact duration (whether short, medium or long term);
- Impact nature (whether direct or indirect, reversible or irreversible);
- Whether the impact occurs in isolation, is cumulative or interactive;
- Performance against environmental quality standards;
- Sensitivity of the receptor; and
- Compatibility with environmental policies.

2.8.3 For issues where definitive quality standards do not exist, significance has been based on the:

- Local, district, regional or national scale, or value of the resource affected;
- Number of receptors affected;
- Sensitivity of these receptors; and
- Duration of the impact.

2.8.4 To ensure a common EIA approach of classifying impacts the following terminology has been followed:

Extreme These effects represent key factors in the decision-making process. They are generally, but not exclusively associated with sites and features of national importance and resources/features which are unique and which, if lost, cannot be replaced or relocated.

Major These effects are likely to be important considerations at a regional or district scale but, if adverse, are potential concerns to the project, depending upon the relative importance attached to the issue during the decision making process.

Moderate These effects, if adverse, while important at a local scale, are not likely to be key decision making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.

Minor These effects may be raised as local issues but are unlikely to be of importance in the decision making process. Nevertheless, they are of relevance in the detailed design of the project.

Negligible Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

2.8.5 For consistency, in expressing the outcomes of the various studies undertaken as part of the EIA, and thereby to enable comparison between impacts upon different environmental components, the following terminology has been used in the ES to define impacts:

Beneficial: Advantageous or positive impact to an environmental resource or receptor.

Negligible: Imperceptible impacts to an environmental resource or receptor.

Adverse: Detrimental or negative impacts to an environmental resource or receptor.

2.8.6 Where adverse or beneficial impacts have been identified these should be defined against the **Extreme, Major, Moderate** and **Minor** scale.

2.8.7 Each technical Chapter should provide the criteria, including sources and justifications, for quantifying the different levels of residual impact (i.e. provide a definition of minor, moderate, major and extreme for their respective technical area). Where possible, this should be based upon quantitative and accepted criteria (e.g., National Air Quality Standards (NAQS) or noise assessment guidelines). In this context, any perceived residual impact should be categorised as:

Short term: considered those associated with the construction phase;

Medium term: considered those associated with the construction phase;

Long term: considered those associated with the completed, operational development.

2.8.8 **Local** impacts are those affecting neighbouring receptors, while impacts upon receptors in London Borough of Richmond Upon Thames are considered to be at a **district** level.

2.8.9 Impacts affecting London are considered to be at a regional level, whilst impacts that affect different parts of the country, or England as a whole, are considered to be at a **national** level.

2.9 Cumulative Impact Assessment

2.9.1 In accordance with EIA regulations, the ES has given consideration to 'cumulative impacts'. By definition these are impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the Development.

2.9.2 For the cumulative assessment, two types of impact have been considered:

- The combined effect of individual impacts, for example noise, airborne dust or traffic on a single receptor; and
- The combined impacts of several development schemes that may, on an individual basis be insignificant but, cumulatively, have a significant effect.

2.9.3 The cumulative impact assessment for each technical aspect covered by the EIA is presented within each technical chapter of the ES and summarised in *Chapter 17: Cumulative and Residual Impacts and Conclusions.* Where no cumulative impacts have been identified, this is also stated.

2.9.4 The London Borough of Richmond upon Thames have requested that the following schemes be included within the cumulative assessment (location shown in Figure 2-1):

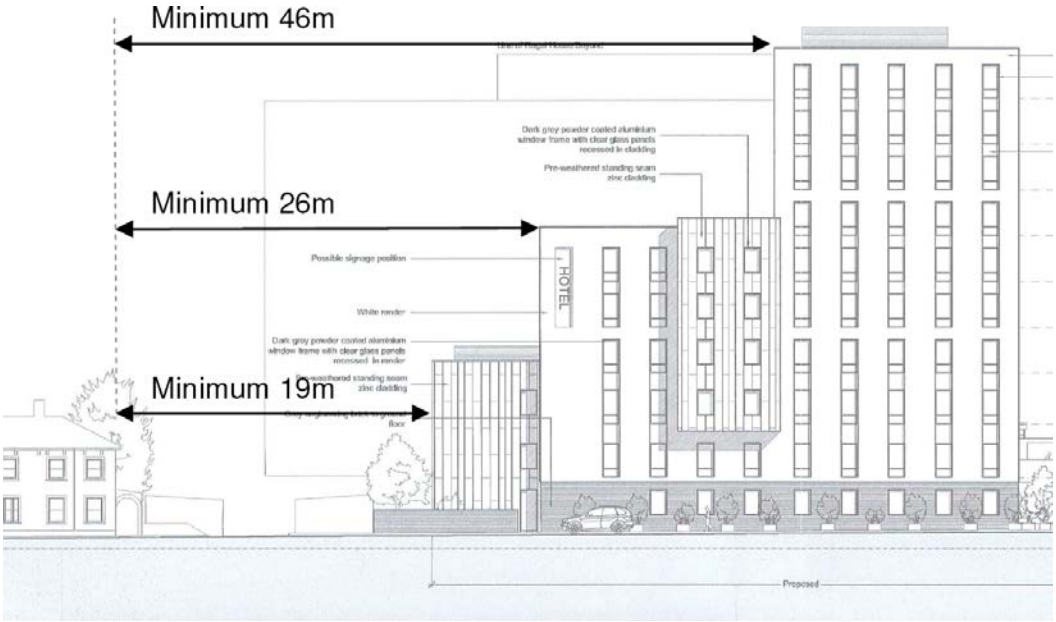
- Regal House Extension; and
- Royal Mail Sorting Office.

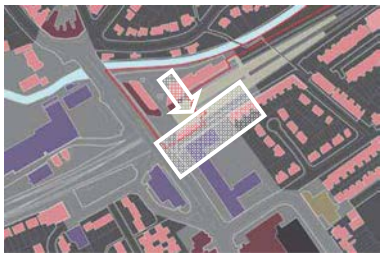
Figure 2-1 Cumulative Scheme Location

Regal House Extension

2.9.5 The consented development of Regal House, Planning Application reference: 08/3063/FUL, is for the partial demolition of the first floor of Regal House, erection of a part two, part three, part six and part ten storey building at the northern end of the site. The building would accommodate a 111 bedroom hotel with associated bar and restaurant. The building has been designed stepped in height to achieve height levels at Mary's Terrace to the east, whilst having a ten-storey frontage onto London Road (See Figure 2-2).

Figure 2-2: Regal House Scale





Royal Mail Sorting Office (T3)

2.9.6 Details relating to the redevelopment of the Royal Mail Sorting Office Site are extremely limited at present. No planning application has been submitted to the site to the London Borough of Richmond Upon Thames. The Council's Unitary Development has a site specific policy, T3 Post Office Sorting Office, London Road. The policy states:

"To provide either education use (post 16) or a mix of uses to take advantage of public transport accessibility and to maximise benefits to the town centre. The established use of the site is for public service, including substantial employment, this means that priority should be given to public service/ employment uses particularly the need for facilities for post 16 education needs in the Borough or any uses that could be serviced by rail. The site has potential for a mixture of town centre uses and consideration could also be given to the potential for hotel, leisure and residential uses. Forty per cent of any residential element should be affordable housing; other housing should be developed at a high density with small units and without on-site parking. The site is not appropriate for retail uses which would draw trade from the designated frontages and lead to the elongation of the centre. Only where fairly and reasonably related to the proposed development, the proposals will allow for the provision of a riverside walk along the River Crane, to link to the existing River Crane Walk, and a link along the railway to the rugby stadia (see Proposal T17). Features of nature conservation importance should be preserved and enhanced.

Proposals should take a comprehensive approach, taking into account related town centre sites particularly Twickenham Railway Station (T17) and the Station Yard (T23), and the contribution of the proposal towards the area as a whole."

2.9.7 Further guidance for developing the Royal Mail Sorting Office Site has been set out in the Twickenham Station and Surroundings Supplementary Planning Document dated October 2010 (SPD) and outlined in the Crane Valley Planning Guidelines dated April 2005.

2.9.8 In the SPD the following guidance for the site is provided:

Riverside walk and open space should be retained alongside River Crane, however, there is scope for flexibility in MOL boundary; The riverside walk should be sensitively designed to incorporate areas of natural or semi-natural bank where there is sufficient space and ecological enhancements to protect and enhance the river corridor and in-channel habitat (see also para 4.5).

- Link to be provided under railway line to riverside walk and to existing North/South pedestrian routes on the west side of London Road.
- Retain treed appearance around site.
- Built development - scale should increase towards East of site, and from North to South.

Buildings should incorporate a lower section fronting London Road to avoid a "tunnel" effect.
The Council's vision for the area is that the maximum height should not exceed 4/5 storeys and include a variety of roof forms. Taller buildings or features will only be acceptable subject to a full design justification based on a comprehensive townscape appraisal and there being significant local community support.

Re-development should take account of the area designated as "other site of nature importance"

Eastern section
Building not to step further towards London Road than Bridge House to avoid "canyon" effect.
Buildings beside River Crane should not exceed 2-3 storeys to relate well to River Crane walk and avoid adverse impact on Heatham House.
Buildings to South should be no higher than Bridge House (4/5 storeys from ground level).

Western section
Up to 3 storeys, more domestic scale to relate to existing cottages,

Buildings of Townscape Merit in Station Road and MOL.
Allow views through between buildings.
Consider reuse/ retention of railway/ warehouse building.

2.9.9 The Crane Valley Planning Guidelines are for a 'public service/ mixed use' development. Reference is made to educational uses to allow Richmond upon Thames College to expand. We understand that since the publication of the guidelines in 2005 a decision has been taken for the college to expand within their own site and therefore the educational use on the Post Office Sorting Site is redundant.

2.9.10 Royal Mail has confirmed that at present there are no proposals sufficiently advanced to enable parameters of development to be set and a full quantitative cumulative assessment undertaken.

2.9.11 In order to carry out a cumulative assessment for the purposes of this application, the Twickenham Station architects, Rolfe Judd has prepared a block model broadly based on current planning policy and guidance. There is no certainty on the type of development that will come forward within the project construction timeframe.

2.9.12 A block model of the potential development has been produced for assessment purposes and is shown in Figures 2-3 and 2-4. To confirm, this block model has been created purely to allow an assessment to be undertaken. It has been based on the professional judgement of Rolfe Judd Architects and project team, instructed by Solum Regeneration to give an indicative view of the scale of development that the site could accommodate. No input has been provided by Royal Mail.

2.9.13 As the use of the site, construction practices or timeframes for development are not available. The cumulative assessment has focused on environmental topics principally influenced by height and massing such as daylight, sunlight and overshadowing, wind microclimate, electronic interference and visual impact when considering the Royal Mail Sorting Office Site.

Figure 2-3 Royal Mail Block Model (Rolfe Judd Interpretation)

Figure 2-4 View North Along London Road

Development Time Frames

2.9.14 At the time of writing the Regal House extension is scheduled for completion in late 2011. The anticipated timeline for the scheduled commencement of works for the Twickenham Station development is the first quarter of 2011 for the initial podium works, with the construction works are anticipated to take approximately 33 months and will comprise the following key stages:

- Mobilisation;
- Site Clearance;
- Foundations;
- Podium Slab
- Superstructure to Podium;
- New Station
- Superstructure to Residential and Commercial
- Fitting Out
- External Works, Services and Drains and Landscaping
- Handover

2.9.15 As previously noted no timeframes are available for the potential development of the Royal Mail Sorting Office Site.

2.10 Assumptions and Limitations

2.10.1 Assumptions and limitations specific to certain environmental aspects are clearly stated in the relevant Chapters of the ES.

2.10.2 A number of assumptions have been made during development of the EIA, which are set out below:

- The principal land uses adjacent to the Site remain as they are at the time of the ES submission;
- Information provided by third parties, including publicly available information and databases is correct at the time of publication; and
- The phased construction programme will take approximately 33 months from start to completion and will commence following completion of the Regal House development.

2.10.3 The EIA has been subject to the following limitations:

- Baseline conditions are accurate at the time of the physical surveys but, perhaps due to the dynamic nature of the environment, conditions may change during the construction and operational phases;
- More detailed works are required to finalise the demolition and construction methods. For construction effects the ES has adopted reasonable assumptions and placed reliance on the expertise of the EIA project team; and
- The assessment of cumulative impacts has been reliant on the availability of information on pending and consented developments.

2.11 References

Ref. 2-1: DETR, 1999. Town and Country Planning (Environmental Impact Assessment)(England and Wales) Regulations 1999 (amended 2000 and 2006).

Ref. 2-2: DETR, 1999. Circular 02/99 Environmental Impact Assessment.

Ref. 2-4: Institute of Environmental Management and Assessment (IEMA), 2004, Guidelines for Environmental Impact Assessment.

Ref. 2-5: ODPM, 2001. Environmental Impact Assessment – A Guide to Procedures.

Ref. 2-6: Department for Communities and Local Government (DCLG), 2006. Environmental Impact Assessment: A guide to good practice and procedures consultation paper.

Ref. 2-7: DCLG, 2006. Amended Circular on Environmental Impact Assessment Consultation Paper.

Ref. 2-8: The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Draft Regulations 2010

Ref. 2-9: London Borough of Richmond Upon Thames, Crane Valley Planning Guidelines, April 2005

3.1 Introduction

3.1.1 This chapter of the Environmental Statement (ES) provides a summary of the alternatives considered for the proposed development and details how the project has evolved as a result of careful consideration and evaluation of the alternatives. This Chapter has been written by Rolfe Judd.

3.1.2 The EIA Regulations require that the main alternatives that have been considered be outlined in the ES. The principal reasons for their rejection in favour of the chosen scheme should also be given taking into account the environmental effects.

3.1.3 The proposals presented in this ES are those which respond best to this process of evaluation, environmental constraints and the vision for the Site. Additional details regarding the design evolution can be found in the Design and Access Statement submitted in support of the planning application.

3.2 Development Brief

3.2.1 The intention of the development is to provide Twickenham town centre with a much needed improvement to the local transport network through the redevelopment of the currently inadequate and unsightly station facility, a vastly improved public amenity space & facility, increased public secure links through the site, an attractive & successful arrival point for the crowds of international visitors to the home of English Rugby and a necessary scaling / massing across the length of the site, providing a suitable edge to the town centre domain.

3.2.2 The key Objectives for the proposed development are:

- To deliver a landmark contemporary interchange building that is in planning terms appropriate in scale, use and density.
- To develop and improve the public realm areas that currently surround the station, giving greater definition and improved access to car parking and cycling facilities.
- To deliver a mixed use development that creates sufficient financial return to make the redevelopment of the station viable.
- To improve access and ingress to and through the station for all users. This includes pedestrians, disabled users, cyclists and bus users.
- To design and deliver a building that is sustainably conscious.
- To design a building that clearly articulates uses and entrances through its architecture.

3.3 Analysis of Site Context

Site Description and Site Usage

3.3.1 The site occupies the current location of Twickenham Station on London Road, Twickenham. The site boundary borders the edge of the River Crane (to the North of the site) and the existing wall alongside the railways tracks adjacent to Mary's Terrace, (to the South). The Western edge of the site borders the existing bridge to London Road, the Eastern borders represent the extent of ownership for development agreed after negotiation with the JV partner Network Rail. Additional land includes a strip of disused platform alongside the river crane extending to provide a connection with the existing Moormead Park.

3.4 Site Opportunities, Considerations and Constraints

Existing Urban Context

3.4.1 The site occupies a very important position for the town centre of Twickenham, not just because it contains the main transportation hub for the town and Rugby stadium but also being the current undeveloped section between the large scale of adjacent building regal house and the more modest suburban residential scale of Cole Park Rd. The station currently represents an outdated, undersized, poorly built inefficient facility which adds little to the public realm or desirability of the area. This site is designated in the local development plan as being suitable for high buildings, an issue recently held up as relevant for a winning appeal on the site immediately adjacent for a new hotel to be built on the side of Regal house. Height, however, needs to work for the site in accordance with other elements of the local planning policy which calls for variations in height and avoidance of plateau roofscapes – a direct result of the dislike locally of the uniform mass appearance of Regal House.

Proposed Urban Context

3.4.2 The primary purpose for development of the Site is to provide improvements to the current Twickenham Station facilities. The repositioning of the station facilities creates the opportunity to create a new public plaza and amenity space stretching from the high street to the river crane. Around the plaza mixed use facilities are proposed to include retail, above which is a residential development, in 3 distinct building elements. The building forms are a series of elements that terrace up from the low scale against the river crane to the higher scale against Regal House creating a definitive point of focus for the public square and the new station location below. The building plan form is derived after extensive studies into the daylight and sunlight affecting the residential neighbours. The resulting form thus minimises the impact and allows retention of key views and sunshine throughout the day whilst opening up the river frontage as a public space. A second public space is created at the lower level of the development which has a shared use for vehicles and pedestrians. Landscaping is used here as traffic calming measures and pedestrian priority.

3.4.3 The design also reduces the significance of the reduction in scale from one side of the site, Regal House, to the other, Cole Park Road, and is intended to create an attractive environment to benefit the town centre.

Local Urban Character

3.4.4 The site occupies a vast expanse between two distinct character styles of Twickenham town.

3.4.5 To the south of the site the adjacent town centre has a mix of 1960's concrete & glass structures rising 9 to 10 storeys (Regal House beside the site and Queens house further down the high street.) The most recent buildings have a dark red brick appearance and are generally of 4 to 5 storeys in a bland box style fairly common to 1980's architecture. In between these units are mixtures of retail frontages and 20th century styles.

3.4.6 To the north of the site past the River Crane the local character is predominantly 2-3 storey residential housing with some 3-4 storey street fronts above retail units on the corner of Whitton Road and London Road. Many are early 20th century in style. Further north and clearly visible from the station is the vast scale of Twickenham Rugby Stadium a concrete and steel structure rising to 16 storeys (50m) in height.

3.4.7 To the west of the site is a redundant Post Office depot. This is a series of warehouse style buildings.

3.4.8 Generally Twickenham town centre contains a wide variety of architectural styles and heights. It is considered that there are few buildings located within the town centre that have any architectural merit.

3.5 Alternatives Analysis

3.5.1 Under the Environmental Impact Assessment (EIA) Regulations an Environmental Statement (ES) is required to provide "*an outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice taking into account the environmental effects*."

3.5.2 In accordance with Best practice this chapter presents those alternatives to the proposed development which have been considered by the applicant including:

- The No development Alternative;
- Alternative Sites; and
- Alternative Designs.

The No Development Alternative

3.5.3 The No development Alternative refers to the option of leaving the site in its current state. It is considered that this option would result in a range of adverse impacts including:

- Loss of opportunity to provide public transport infrastructure improvements;
- Loss of opportunity to improve the street frontage along London Road;
- Loss of provision of housing (private and affordable);
- Loss of positive public realm and biodiversity benefits of the scheme;
- Loss of opportunity to redevelop the site and create a prominent access point to Twickenham;
- Loss of opportunity to open the riverside to public access.
- Loss of significant arrival point for an international sporting venue.

Alternative Sites

3.5.4 The proposed development is based around the redevelopment of Twickenham Train station to provide improved public transport facilities. As such no alternative sites have been considered.

Design Evolution

3.5.5 This section of the chapter details the evolution of the proposed development design and sets out the rationale for scheme changes. A sample of images is presented within the ES Chapter and further images are presented in *Appendix J of ES Volume III*.

Initial Design Concept November 2008 (Scheme 1)

3.5.6 Initial feasibility studies were designed in late 2008 and the original concept was for the creation of a new raft structure to be built over the railway to facilitate the repositioning of the station to a more logical and accessible location to provide direct access for passengers to the platforms from a new ticket hall concourse. There was no fix of use types at this initial stage of concept design with demand for commercial and hotel uses being explored as well as retail, healthcare and residential options. A mixture of residential, commercial and Hotel uses was

explored building over the railway tracks and along side the river, maximising use on an awkward shaped site.

3.5.7 The designs showed a continuation from regal house along the London Road dropping in scale towards the river to the North (Figure 3-1 and 3-2). The building was shown raised up on an elegant structural grid allowing for public space beneath and through to the rear of the site. A series of residential blocks were considered alongside the River Crane.

Figure 3-1 November 2008 Scheme

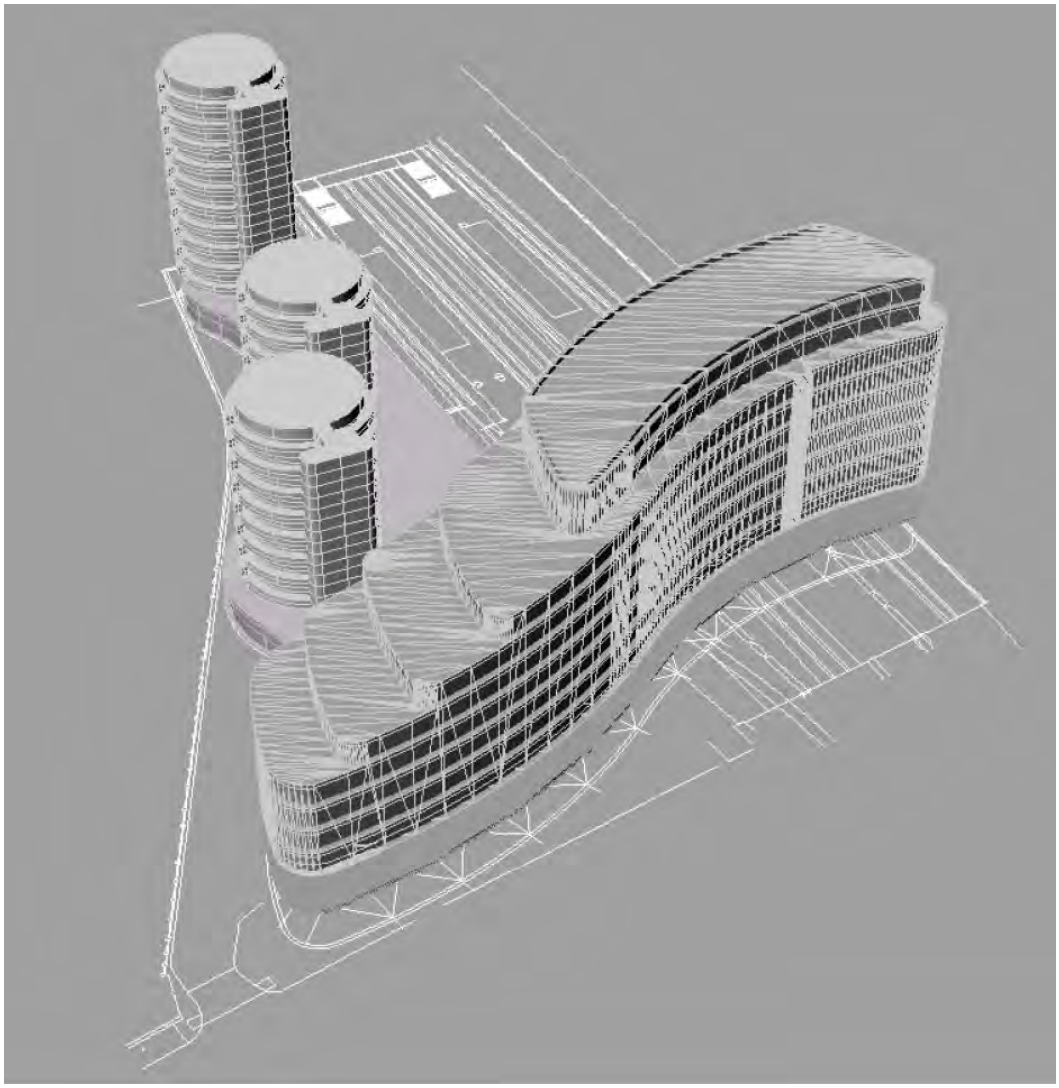
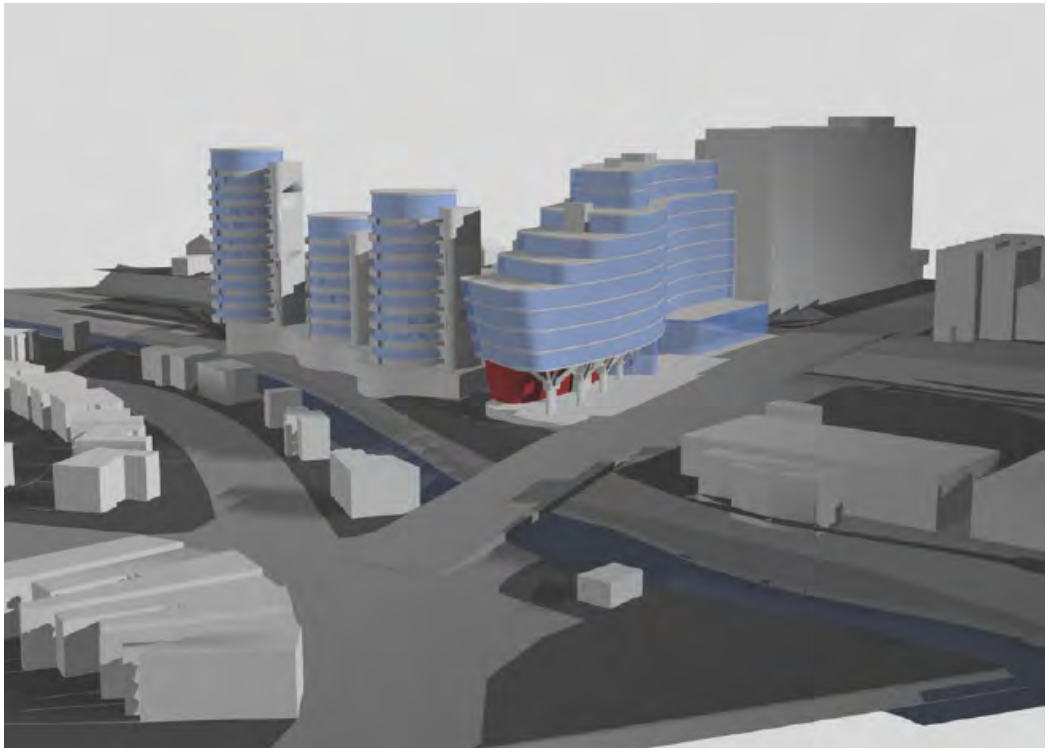


Figure 3-2 November 2008 Initial Concept



3.5.8 The November 2008 scheme was reviewed and as it was considered the proposals were not appropriate for a number of reasons, including:

- Massing too similar to Regal House
- Little variety in roof height along London Road
- No sitelines or permeability through the development
- Overshadowing impacts to surrounding residential properties
- Medium sized tower to the rear have the potential for significant visual impact

June 2009 (Scheme 2)

3.5.9 Further studies were created following from the initial feasibility and the scheme evolved with a departure from the provision of residential towers a cluster of buildings with varying massing.

3.5.10 The building forms were re-arranged to create a more open public plaza with no overhanging buildings. The station was set back from the road to create a distinct public plaza. Building forms rearranged in linear strips to address the site shape and meet at the central location as the heart of the site. A large public space was shown beside the river connecting to the rear of the main building cluster.

3.5.11 The revised scheme allowed for a bigger amenity space to be provided and minimised the overshadowing impacts. However, a number of the issues identified in the November 2008 remained including:

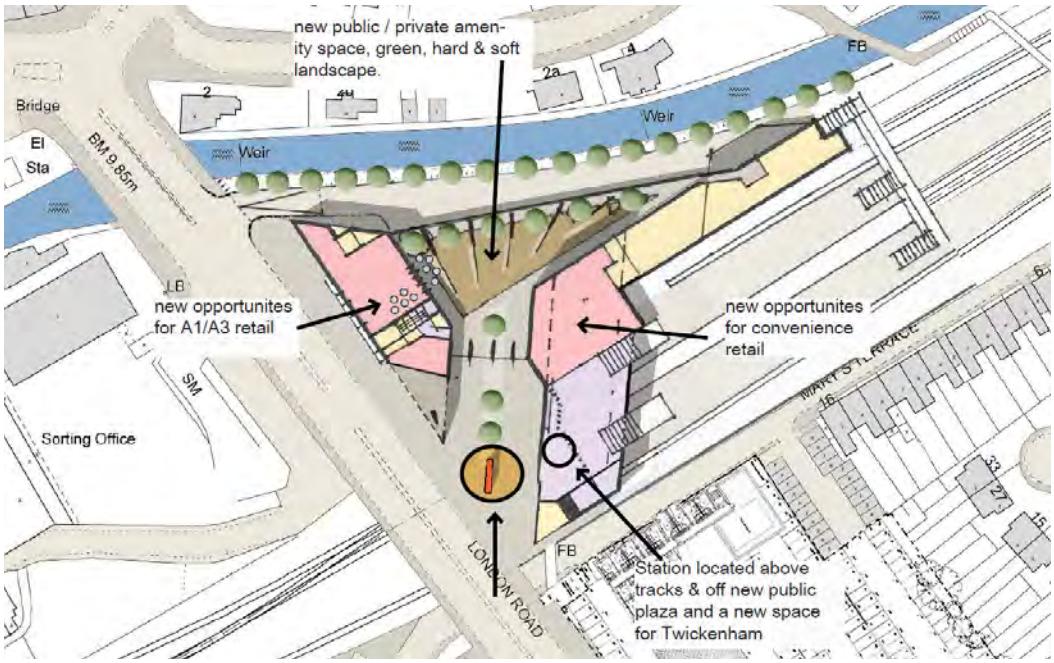
- No sitelines or permeability through the development
- Massing quite heavy an too similar to Regal House
- Central linking of building does not open up the site to public use

3.5.12 At this stage a clearer idea had been formed by the client as to the potential mix of uses that would work the viability of the scheme. It was evident from early reports into the cost of providing the raft over the track to secure the benefits of the relocated station concourse that high value uses above and on other parts of the site would be necessary. The demand for offices in Twickenham was poor due to a perceived over supply and consequently a mix of uses was tested including a hotel, residential and retail. The provision of a hotel was discarded owing primarily to the significantly lower value generation in comparison with a residential alternative. It was determined that the most viable option to bring forward the site was to combine the station on the raft at road level with a series of suitably sized retail units that would complement the station use and provide a facility for passengers and local residents while not detracting from the town centre offer. This would provide a platform for a flatted residential scheme above and over the car park. It was clear from initial appraisal analysis that substantial massing would be necessary.

November/December 2009

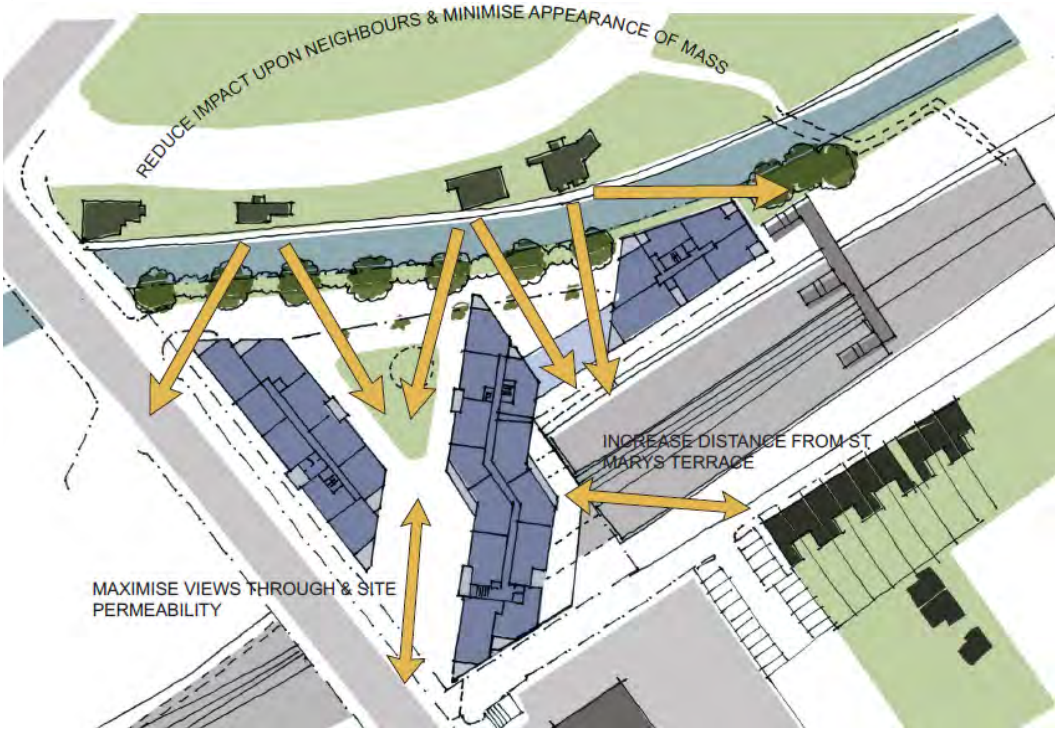
3.5.13 The scheme was redesigned with elements of the previous scheme retained as positives for the context, including public spaces kept and opened up to allow for clear access route across the site linking the north & south spaces. The November 2009 scheme introduced a riverside walkway to allow for further connections to parts of the town centre. The layout of the scheme is shown in Figure 3-3.

Figure 3-3 November 2009 Site Layout



3.5.14 Clear paths of sunlight and sight lines were marked on the plan and massing was broken down to further address the impact on neighbouring properties. The blocks were split further apart to increase site permeability and improve movement through as shown in Figure 3-4. The building heights were explored as a measure against the large mass of Regal House.

Figure 3-4 December 2009 15-Storey Scheme



3.5.15 The main block above the station was extended up to 15 storeys to be seen against the 10 storeys of Regal House as shown in Figure 3-5. All other parts of the site were lowered to bring down the scale. The single tall tower was a clear marker point for the new station.

3.5.16 These initial proposals we then discussed with the London Borough of Richmond upon Thames and the height of the development was the main point of discussion. This early consultation highlighted the potential visual impact of a scheme significantly taller than Regal House.

Figure 3-5 December 2009 15-Storey Scheme

3.5.17 The proposed scheme underwent a revision process and the height was reduced to ground + 9 storeys, equivalent at the highest point to Regal House. Other parts of the site were also reduced to account for views through and station operation. Materials were shown to reflect local colours but retain a contemporary design. The residential layouts were detailed to gain the best aspects from the site opportunities and the station layout was revised to show a more efficient transport layout and connecting transport links.

Figure 3-6 December 2009 10 Storey Scheme

3.5.18 A key aspect of the re-design was the inclusion of a new pedestrian link beside the River Crane to occupy a disused railway platform and connect the site to the existing open space facilities at Moormead Park to the West. The proposed public spaces within the site are designed to link directly to the walk and encourage safe movement of pedestrians. The design of the Riverside walk has evolved following the ecology assessment and requirement to minimise light spillage along an identified bat route.

February 2010

3.5.19 A revised scheme was produced in February 2010 to be used as the basis for a series of public and private consultations. This is shown in Figures 3-7 and 3-8.

Figure 3-7 February 2010 Scheme Station Entrance

Figure 3-8 February 2010 Scheme View across Cole Park Road

3.5.20 The comments from the consultation process included:

- **Local & British Transport Police:** viewed as providing a positive boost for the town centre. The issues raised included the need to develop a security and transport operations strategy.
- **Rugby Football Union:** supportive of the scheme and the delivery of improved station facilities and the match day crowd control arrangements.
- **Greater London Authority:** Positive response especially on the links through the site and riverside walk. Height accepted as shown if backed by supporting statements. Further details to be shown to improve way marking and clarify residential layouts.
- **CABE:** A formal CABE design review was held in may 2010. The new position of the station was seen as a positive and the additional provision of public space. Comments were made on the over provision of public space, too much reliance on site geometry, overhanging of riverside blocks and general materials choice.
- **Twickenham Design Review Panel:** Height and massing were a discussion point alongside material choices. Station, public spaces and riverside walk were all seen as positives. Residential mix also seen as acceptable. Key views from Richmond hill were would require assessment. Site context was a subject of debate and the nature of the appropriate scale divided the panel. All agreed the proposals should be contemporary in nature and not pastiche however materials appropriate for a local context were encouraged.
- **Public consultation:** Over 600 guests attended and comments raised included (Full details submitted in the Statement of Community Involvement):
  - The impact of the proposal on short and long distance views incl. Richmond Hill (Height Impact)
  - The impact of the development upon properties in Mary's Terrace and Cole Park Road
  - The impact of noise from the railway upon the amenity of future residents
  - Insufficient provision of car parking and location of cycle parking
  - Increased traffic generation
  - Pressure on train capacity
  - Impact on retailers
  - Over provision of housing
  - Pressure on educational facilities
  - Construction activity impacts
  - Creation of a wind tunnel
  - Co-ordinate with the post office scheme

September 2010

3.5.21 Changes included a reduction in height to remove the podium at River level and provide residential dwellings along the riverside walk. The building terraces up to a maximum of 8 storeys over the new station location. The geometry of the station plaza was altered to make the station entrance face London Road and be the main focus of movement. The car parking was altered to allow for more public open space at a lower level with a shared use landscaping arrangement added for traffic calming measures and improved connection to the river walk. This will also assist improving match day crowd management. Residential entrances were redesigned to provide cluster arrangement units with reduced number of dwellings per stair core and reduce corridor length. Geometry changes also benefitted overlooking issues with the adjacent proposed hotel development and residential housing.

3.5.22 Materials were changed, introducing more brick, reduced metal cladding with added dramatic emphasis over the station entrance.

Figure 3-9 September 2010 Station Entrance Amendments

3.5.23 The revised scheme was presented to the GLA who accepted it as a positive benefit to Twickenham Town centre. The scheme was also presented to the EA who commended the design for its use of the riverside and integration with public routes and residential uses.

3.5.24 A further Richmond Council Design Panel Review was also undertaken. Generally the panel were very supportive and given further details accepted it as a positive benefit to Twickenham Town centre, however the massing needed further clarification and the long views required to ascertain the environmental impact.

February 2011

3.5.25 All comments from consultations have been collated and the proposals redesigned. The scheme design has retained the essential purpose of the design, the location of the new station & the provision of a new public plaza. Full details of the scheme are set out in *Chapter 4: Proposed Development*.

3.6 Conclusion

3.6.1 Throughout the design process the scheme has evolved with consideration to numerous factors including environmental issues, consultation responses, planning policy constraints, Network Rail requirements and financial viability.

3.6.2 The current scheme is detailed in *Chapter 4: Proposed Development* and has responded to key impacts including:

- Overshadowing impacts to surrounding residential properties and River Crane
- Visual impact
- Connectivity of the site to the town centre and open space (Moormead Park)
- Desire to create an improved transport interchange
- Objective to enhance the urban context with an architectural response of appropriate scale and design.

4.1 Introduction

4.1.1 This Chapter of the Environmental Statement (ES) describes the proposed development and has been written by the architect Rolfe Judd. This chapter provides a summary of all elements of the proposed scheme, with full details included within the Design and Access Statement submitted with the planning application.

4.1.2 The images contained within this document have been replicated for illustration purposes and may not be to scale. For Scale drawings please refer to the drawing pack submitted with the planning application. *Appendix A-4 of ES Volume III* provides further illustrations of the proposed development.

4.1.3 Verified images of the scheme, where the viewpoints have been agreed in consultation with the London Borough of Richmond Upon Thames, are presented in *ES Volume II – Townscape and Visual Impact Assessment*.

4.2 Development Overview

4.2.1 Twickenham station is on the Wessex Route with three lines running through the station. The site is defined by London Road (A310) to the west, Mary's Terrace to the south and the River Crane to the north. London Road bridges over the tracks and also over Mary's Terrace, which runs roughly parallel with the tracks. There is a change in level from the existing station entrance from London Road, to the car parking at the rear of approximately -3m.

4.2.2 The existing site comprises of:

- A 2 storey building housing the ticket office/ concourse area with passenger footbridge access to the southern end
- Paved pedestrian way, bike sheds and bus stop in front of the station entrance
- Car parking and bike racks to the rear via ramped access, with retaining wall and bike sheds to the station side
- Refuse store and access to additional passenger footbridge at the far eastern corner of the car park
- A zone of rough ground lying between the car park, platform 3 and the end of platform 1.

4.2.3 The site boundary adjacent to the river is defined by a brick wall / fence on the other side of which are a series of trees running along the river bank for the length of the site and beyond. On the north side, overlooking the river are a number of private residential detached houses.

4.2.4 To the south along Mary's Terrace are private residential terraced houses with access off Mary's Terrace. A concrete/brick wall separates Mary's Terrace and the site, Mary's Terrace is approximately +1m above rail level.

4.2.5 Further west along Mary's Terrace is the northern end of Regal House, a 30m, 10 storey high commercial office building with car parking at its base. On the opposite side of London Road to Regal House is Bridge House, a 20m high commercial office building. There are stepped pedestrian routes down from London Road level to both these sites.

4.2.6 To the west of Regal House on the opposite side of London Road is a small car park off Station Yard road, which sits between Station Yard road and the track boundary concrete wall. This car park is detached from the main site but is under the ownership of Network Rail.

4.3 Scheme Description

4.3.1 The proposed development aspires to provide a contemporary gateway to Twickenham. The following objectives have driven the design concept:

- To deliver a landmark contemporary interchange building that is in planning terms appropriate in scale, use and density.
- To develop and improve the public realm areas that currently surround the station, giving greater definition and improved access to car parking and cycling facilities.
- To deliver a mixed use development that creates sufficient financial return to make the redevelopment of the station viable.
- To improve access and ingress to and through the station for all users. This includes pedestrians, disabled users, cyclists and bus users.
- To design and deliver a building that is sustainably conscious.
- To design a building that clearly articulates uses and entrances through its architecture.

4.3.2 In response to the design objectives the design has incorporated the following characteristics:

- Level pedestrian access and clearly defined public realm extending across the site from London Road in the form of hard and soft landscaping with the appropriate use of directly accessible ground floor retail units.
- Clearly visible and recognizable station entrance integrated into the development facing London Road and fronting onto the landscaped public realm.
- Integrated vertical circulation between the parking level and the public realm at station entrance level, allowing coherent pedestrian access to the taxi rank, vehicle drop off zone and cycle storage.
- Suitable station car parking and secure cycle storage incorporated within the development at lower ground level assisting with the appearance of the public realm above, enabling the site to be developed over these areas to create a mix of residential units and development value.
- With reference to planning policy, the size, mix and density of units has been optimized, to create a balanced scheme that is of the lowest possible density whilst being financially capable of delivering the new station. All units supported by appropriate ancillary facilities and services located at lower ground level.
- Retention of the ramped vehicle access position off London Road as the simplest service vehicle access solution and as a means of maintaining a clear zone between the proposed buildings and the site boundary adjacent to the River Crane.
- A framed station entrance, creating a recognizable contemporary landmark of suitable scale that is integral with the double height soffit of the inside of the station concourse.
- Extended and enhanced public realm and accessibility via a riverside walk, promoting direct connection of the site with existing local public amenity.

Form, Height and Massing

4.3.3 The development layout and massing has been influenced by the many complicated factors affecting the site location. These include the following:

4.3.4 Technical restrictions imposed by building over live railway tracks which creates structural zones and bridging requirements in key areas which the building mass must develop around.

4.3.5 The local context to which the buildings must respond - The site sits at the edge of the town centre and straddles the threshold between the high rise town centre neighbours down to the residential scale of the southern neighbours.

4.3.6 Future developments in local areas - Although little information has been received, the massing of buildings against the western boundary has been designed to create a gateway to Twickenham when allied to a likely sized development in the area of the Royal Mail site.

4.3.7 The River Crane - All blocks reduce in scale and open up public areas against the river for a re-introduction of the river into the Twickenham townscape. The riverside treatment has also been designed to link in to similar schemes along the rivers edge and create new connected public access way networks.

4.3.8 The architecture is split into three blocks: A, B and C, shown in Figure 4-1. Each has been positioned to allow for dispersed density across the site, maximum separation to the interior of the site for maximum site permeability. Each also responds to its immediate context of height, use and location. Tables 4-1 and 4-2 detail the proposed split of residential units and area use.

4.3.9 Block A forms a street frontage to London Road, continuing the high street and dropping in height towards the residential North end of the site (Cole Park Road).

4.3.10 Block B sits above the new station location and forms a boundary against the railway creating a civic station plaza.

4.3.11 Block C sits to the east of the site which is lower and beside the River Crane, to which it is oriented and forms a barrier to the railway tracks from a proposed riverside walk.

Figure 4-1 Proposed Development

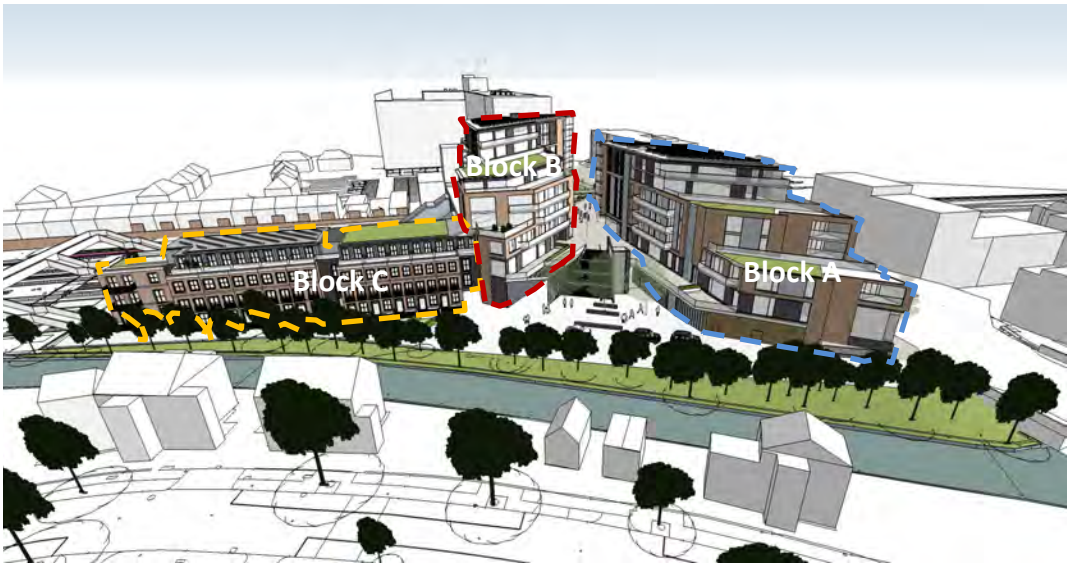


Table 4-1 Schedule of Accommodation

Description	Block A	Block B	Block C
1 Bed	**17**	**13**	**7**
2 Bed	**21**	**28**	**17**
3 Bed	**2**	**10**	-
Total	**40**	**51**	**24**

Table 4-2 Area Schedule per Use (m^2)

Description	Block A	Block B	Block C
Residential	**3150.1**	**4956**	**2536.9**
Commercial	**435.0**	**299.0**	-
Station Facilities	-	**439.2**	-
Landscaping	**6585.8**		
Green Roofs	**179.1**	**228.9**	**186.3**
Photovoltaics	**326.6**	**407.7**	**210.6**
Plant Room	**66.1**	**75.3**	**126.0**

Block A

4.3.12 The geometry of Block A is predominantly a rectangle with tapered ends designed to create a street frontage to London Road and to direct the eye and pedestrians straight towards the station frontage adjacent. The rear of the building facing northwest also tapers back and down to create a defined corner at the entrance to the site facilities at a scale comparable to that of the nearest high street shops to the north, over the river bridge.

4.3.13 Block A begins at London Road level and is 6 storeys including the retail level at ground level. The residential building is set back at 2nd 4th 5th and 6th levels to reduce the impression of height and allows for defined green roof areas at high levels.

4.3.14 Block A contains 40 private residential dwellings; 17 x 1 bed and 21 x 2 bedroom units & 2 x 3 bedroom units.

4.3.15 The ground floor level of Block A has been organised so that there are 3 commercial units to the London Road elevation, with the southern most unit returning around the end of Block A so that the larger part of its frontage engages with the public plaza. All of these spaces will have the ability to connect to the centralised plant. Level access will be provided at each entrance via London Road and the public plaza.

Block B

4.3.16 The geometry of Block B is dictated by the site and the railway. Block B sits above the new station which determines its position. The design allows for a new station frontage (Figure 4-2) which dominates the appearance of the block and works residential elements into the façade to continue the appearance.

Figure 4-2 Station Entrance Block B

4.3.17 Block B begins at London Road level and is 7 storeys at its highest point. To the south of the site, Block B terminates with a glazed screen, etched with patterned artwork, visible to the high street further south, to demarcate the location of the station development against the end of its neighbour, Regal House and the consented hotel scheme, 70 London Road. At the same point the building is at its highest, to emphasize the station location and create a focal point for the development. The highest point of Block B remains 2 storeys below that of Regal House, dropping to 3 storeys above river level at the north end. The building is set back at 2nd, 5th & 6th levels to reduce the impression of height and allow for defined green roof areas at high level.

4.3.18 Block B contains 51 private residential dwellings of 1, 2 & 3 bedroom units above the station and retail level. To the railway elevations the residential units are given glazed winter gardens to allow for year round use of external amenity space, whilst offering an acoustic buffer against railway activity.

4.3.19 Block B is approached from both the new station plaza at bridge level and at the north of the site by the public amenity space beside the River Crane.

4.3.20 To the south, Block B faces the end of Regal House, which will be the end elevation of the consented hotel scheme, 70 London Road. Here, the 'V' form setback of Block B provides a landscaped courtyard, minimizing overlooking from Block B and offering a dynamic elevation treatment for the hotel users to view (Figure 4-3). The base of the courtyard (roof over ground floor level) provides opportunity for a green terrace, and a platform from which climbing plants will be rooted to allow a part of the southern elevation to become a green façade.

Figure 4-3 Diagonal Set Back, Block B

Block C

4.3.21 The geometry of Block C follows the constraints of the River Crane and the railway. Block C is created as a series of town houses along the newly opened up river frontage, backing on to the railway, offering dual aspect residential units.

4.3.22 Block C begins at the River Crane bank level and is 4 storeys in height with a 3 storey end block of a single unit per floor. The block is set back from the river as is continues downstream, allowing for private garden space adjacent to the river walk. The building is set back at 4th floor by 3metres to further reduce the impression of height.

4.3.23 Block C contains 24 private residential dwellings of 1 and 2 bedroom units arranged as dual aspect duplex maisonettes.

4.3.24 To the railway elevation, the residential units are given double glazed window bays to provide an acoustic buffer against railway activity. To the river elevation the units have private balconies, roof terraces at high level or gardens at ground level.

4.3.25 Block C is approached by the public amenity space beside the River Crane. Vehicular traffic is prevented from coming past the block except for emergency vehicle access. On match days, passengers are directed around the back of Block C away from residential doors and windows on the railway side to enable Block C to remain undisturbed during the busiest times.

4.3.26 The elevations to the River Crane aspect of block C have been designed using a traditional form of architecture with Georgian type palette. This was selected as the preferred aesthetic in consultation with Richmond Council and has many similarities to nearby Heatham House which faces the River Crane on the opposite side of London Road bridge. The Brick used throughout the development would continue along the Block C elevation. There is a clear separation from the contemporary style of Block B & A to the traditional style of the front of Block C. This is achieved by a set back dark rendered elevation panel above the 4m wide passenger tunnel used during match days and events. This is important to clearly define the riverside approach with its own identity. Figure 4-4 shows the proposed classical façade detail.

Figure 4-5 Station Layout

Station

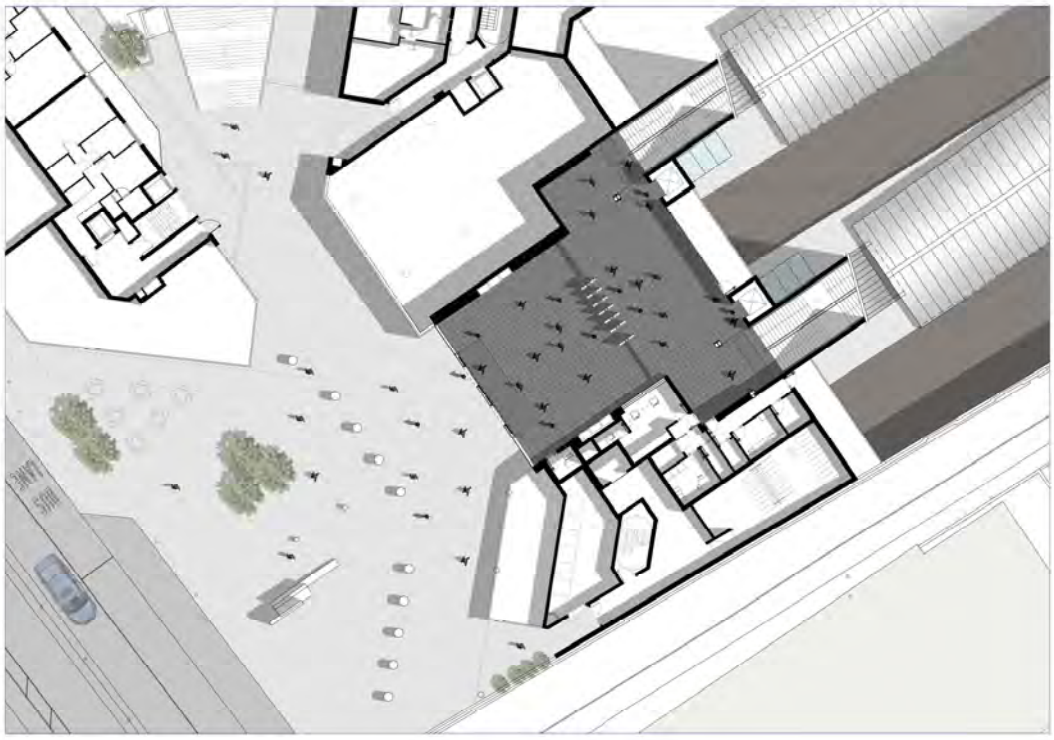
4.3.27 Situated underneath Block B the new Twickenham Station is located to be as efficient in use as possible. The station is expressed as a simple double height box consisting of rectangular concourse with immediate access to all platforms via the shortest possible route (Figure 4-5).

4.3.28 Access to the station is via a new public plaza which is bounded by Blocks A and B. The station entrance sits in the centre of the plaza and the glazed entrance screen has elements that relate to landscape and way-marking points in the plaza resulting in a homogenous environment. The station is flanked on both sides by small retail units potentially containing convenience food, retail or café facilities.

4.3.29 Simplicity defines the interior design of the station. Glazed wall panels in modular form incorporate signage, ticketing facilities lighting and security. The station has been designed to meet Network Rail requirements for the next 25 years allowing flexibility for future expansion.

4.3.30 The visual impact of the station entrance is increased by the use of the residential architecture above to emphasize and extend the entrance zone through the full height of the building elevation.

Figure 4-5 Station Layout



Key Components and External Appearance

Residential

4.3.31 The residential elevations are clad in a mixture of brick, glass and metal panel. All three are designed to work together to make interesting visual elevations with sensitivity to the Twickenham context and a fresh contemporary feel. The elevations differentiate between room uses by the proportions and treatment of the cladding and projecting balconies. Glazing is metal framed inset into the brick / cladding envelope but arranged to form elegant visual impact and contextual scale where appropriate. At high level, all the buildings are set back with a slim roof line to reduce appearance of height and allow for private amenity space. Panels of metal cladding have been chosen for a fresh appearance with traditional use of brick as a reference to the local context. The cladding elements are expressed as overlapping forms to reduce appearance of mass and to generate dynamic elevations.

Station

4.3.32 The station elevation is a single metal & ceramic framed glass screen, 7m tall incorporating automatic sliding glass doors. The intention is for transparency and clarity between the plaza and the station interior. At night the interior of the station is to be highly visible from the external surroundings, providing a welcoming approach, entrance and passenger experience. Above the station the arrangement of residential balconies continues the same aesthetic with a lightweight pattenated glazed screen with artwork applied, culminating at entrance level with a dramatic coloured glazed portal to frame the station entrance.

Commercial

4.3.33 Retail units at ground level are picked out in dark brick and metal cladding to provide an appearance of a solid base, with large, free expanses of glazing in between allowing for flexibility of retail units. A signage zone has been expressed as part of the overall elevation to control the signage extents and keep the façade minimal and contemporary. Entrances to the residential units are integrated with the commercial uses, with subtle differentiation and canopies, to provide secure overlooked spaces.

4.4 Public Realm

4.4.1 A great emphasis has been given to the public spaces and two distinct locations have been created.

4.4.2 The station is approached via a civic plaza. A new space, larger than the previous station facility with soft and hard landscaping elements, bounded by retail and café facilities and the new station entrance. The feeling here is of a bright busy thoroughfare with opportunities to stop and rest with clear connections to transport and local facilities.

4.4.3 The civic plaza is linked by a generous staircase to the lower level which is the arrival point from the new river walkway (Figure 4-6). The emphasis here is of a shared surface between pedestrian and vehicular movements incorporating taxi, drop off, car parking, residential and service vehicles. This space faces the river so seating has been provided and the staircase is designed to be a seating platform also offering glimpses of the River Crane.

Figure 4-6 Landscaping Plan with Proposed River Walkway

4.5 Pedestrian and Vehicular Access

Pedestrian Access

4.5.1 Pedestrian access is given from all three corners of the site. The main station plaza connects directly to the high street via London Road, an existing pedestrian route, and probably the most used in the life of the station. Further pedestrian access is given along the River Crane at both east and west ends connecting to north Twickenham, the Stadium, and Moormead Park facilities. All have direct connection to the station and residential entrances.

Disabled Access

4.5.2 Disabled access is provided for all residential units, station concourse and platforms, commercial units, car parking, drop off and match day traffic.

Vehicular Access

4.5.3 Vehicles use the familiar route as existing but with improved taxi rank (with covered waiting area), drop-off and servicing zones; vehicles enter from London Road and descend the access ramp to the car park level. Cycling facilities have been increased to provide station user spaces in a secure covered facility, and additional private residential facilities are located close to the relevant cores.

Parking

4.5.4 Station car parking is provided to replace the existing scenario of 44 spaces. 35 station user spaces would be provided within the station site (including 3 disabled spaces), further provision has been arranged on local Network Rail owned land for dedicated station parking to replicate the current parking provision. There is also the provision of 3 car club spaces and 3 residential disabled spaces. Electric vehicle charging points have been provided within the 3 of the parking spaces.

4.5.5 Motorcycle parking provision is in the form of two zones, one adjacent to the southern core of Block A and the other adjacent to the main core of Block B, offering a total of 6 motorcycle spaces.

4.5.6 A total of 250 covered cycle spaces will be located for station users, whilst a total of 208 covered cycle spaces will be provided for the residential element of the proposal.

Service Goods Siting

4.5.7 Service vehicles enter the site using the vehicle ramp and have a dedicated delivery space adjacent to a goods lift at car park level. Refuse vehicles have a dedicated turning circle and use a dedicated lay-by from where all refuse can be collected from centralised refuse stores that meet the storage criteria recommended by the London Borough of Richmond upon Thames.

4.6 Landscape Design

4.6.1 Landscaping is integral to the scheme design. Public spaces between the buildings have seating facilities integrated with planters and way-finding signage. A landmark sculpture with integrated seating will provide a focal point guiding visitors into the public plaza from London Road and towards the station entrance or towards the north of the site at which point glimpses of the River Crane will be possible. The lower public plaza has a shared surface with vehicular and pedestrian controlled zones depicted in the surface finish, which as a proven system will afford a traffic calming approach. Key elements to the design are the adoption of a disused platform 1 and also provision of a public riverside walkway (see Figure 4-6 and *Appendix A-4 of ES Volume III)*. The riverside walk will be planted with native species and will provide a nature walk and green link through to Moormead Park to the east of the site. The opportunity for green roofs occurs where the respective buildings step back at the upper levels. These areas will be self sustaining extensive green roofs containing native species and will be overlooked by occupants at the residential levels.

4.7 Energy and Sustainability Statement

4.7.1 The Proposed Development will provide a high quality new residential led scheme and enhance the public transport facilities and public realm to make pedestrian movement more attractive and safe around the site.

4.7.2 The Proposals will comply with all sustainability policy and guidance at national, regional and local level. Additionally the applicant has undertaken sustainability assessments and targets:

- Code for Sustainable Homes Level 4
- BREEAM Excellent for Commercial Units

4.7.3 The proposals aim to respond positively to the climate change policies as set out in the London Plan and the London Borough of Richmond upon Thames SPD on Sustainable Design and Construction to mitigate and adapt to climate change and minimise carbon dioxide emissions.

4.7.4 The London Plan Energy Hierarchy principles are embedded in the scheme and include:

Be Lean: energy efficient design including:

- Improved building fabric and glazing U values
- Improved air permeability standards
- Improved thermal bridging
- Improved equipment efficiency
- Whole house mechanical ventilation with heat recovery
- Reduced water consumption
- Energy efficient lighting

Be Clean: the development proposes decentralised energy through:

- Communal CHP (supplemented by high efficiency gas boilers)
- Single Energy Centre
- Future proofed for potential connection to district energy system

Be Green: renewable energy technologies are proposed through the integration of on site photovoltaic electricity generation.

4.7.5 The Energy Strategy proposes to reduce the site-wide total carbon dioxide emissions by a total of 29% and the Regulated emissions by a total of 42%.

4.8 Utilities and Drainage

Gas and Electricity

4.8.1 Preliminary load assessments have been submitted to the Supply Companies in order to establish the availability of supplies and to obtain indicative quotations for the supplies to the proposed development.

4.8.2 The EDF Energy record drawing indicates that there are existing high voltage electricity supplies in London Road. The locations of existing services have been discussed with EDF Energy and a quotation has been provided for diversion of their cables to the North of the site following the line of the River Crane.

4.8.3 A new electricity substation will be established within the area of Block A at lower ground floor level (Level -1). The substation shall be supplied from the local high voltage network from London Road. From the new substation, low voltage services shall be extended to supply the apartment buildings, retail units, railway station and the landlord's areas.

4.8.4 Low voltage services shall be extended to Electricity Supply Company meters to supply the apartments. The locations and configuration of the meters shall be carried out in accordance with the requirements of the Electricity Supply Company. Low voltage services shall be extended into the retail units and railway station for extension by the occupiers as part of their fit out contract works.

4.8.5 The National Grid record drawing indicates that are existing gas mains in London Road. A gas service shall be extended from the existing main in London Road to a main gas meter located within the area of Block A at lower ground floor level (Level -1) adjacent to the site entrance. A second gas supply shall be extended to supply the proposed commercial units at ground floor level (Level 0).

Water and Drainage

4.8.6 In terms of water supply, Thames Water has water mains beneath London Road immediately West of the site and beneath Mary's Terrace immediately to the South. The water main beneath Mary's Terrace is a 3" diameter distribution main and those beneath London Road comprise a 6" distribution main and a 33" trunk main.

4.8.7 It is estimated that the water demand of the development will be approximately 31,000 l/day. Thames Water will need to be consulted at the detailed design stage to confirm whether the existing infrastructure is adequate to supply the development.

4.8.8 With regards to drainage, initial investigations suggest that surface water from the site is positively drained to the 225mm diameter public sewer in Beauchamp Road to the South East of the site.

4.8.9 The proposed development will marginally increase the impermeable area of the existing site. In order to retain the current rate of discharge to the existing surface water drainage system during normal storm events, whilst providing additional protection to the site for more intense storms and a benefit to the wider area, the surface water discharge from the site will be restricted to 30l/s. On site storage will be provided to accommodate the volume of water experienced on storms of up to a 1:100 year intensity, including a 30% increase to account for the predicted effects of future climate change.

4.8.10 Foul drainage from the site is discharged to the existing 375mm diameter public foul sewer beneath the London Road at the Northwest corner of the site. The proposed development will, subject to agreement with Thames Water, discharge foul water into the public foul sewer.

Cleaning and Maintenance Strategy

4.8.11 The highest elements of Blocks A and B have a cleaning gantry provided at roof level. All other parts of the scheme are low enough with sufficient access to allow an extended pole cleaning system or an abseiling solution. Elevations facing the railways have been set back by minimum 3.5m and a maintenance access deck provided to allow complete access without disturbing the railway operation below. Materials have been chosen for the exterior envelope to allow for minimal maintenance.

Building Safety and Security

4.8.12 Overlooking and secure access are demonstrated in our safety diagram shown in the Design and Access statement. All public spaces are overlooked by the residential units above. The station plaza would provide further public security through general use. The car parking has been designed to avoid dead end situations and provide visual links wherever possible to outside spaces. The extent of overhang of podium has been minimised, walls have 30% free air movement through facing the public plaza. Access to and from the car park is unrestricted by barriers or gates and a visual link to the taxi waiting area has been maximised.

4.8.13 Entrances to residential cores are from a public overlooked space. Within the buildings the residential units facing the railway have winter gardens provided in lieu of balconies to prevent objects coming close to the railway tracks. Access to the green roof spaces are restricted to maintenance personnel only which will have mansafe systems connected close to access points.

4.9 Fire Strategy

4.9.1 The station, tracks and all associated structure are separated from the residential above by a 2-hour fire rated structure. All residential units have 1 hour separation and have been designed in accordance with review by an Approved Inspector to comply with the Building Regulations. Emergency vehicle access is given at both car park and plaza levels, with direct access to dry riser inlet valves located adjacent to residential core entrances. Each residential common corridor has a smoke venting system, either naturally or mechanically vented in accordance with the Approved Inspector's recommendation.

5.1 Introduction

5.1.1 This Chapter of the Environmental Statement (ES) provides a summary of the planning policy and other land use considerations in respect of the proposed development. It includes reference to national, regional and local policies as well as other material considerations. Where appropriate, reference is made to other sections in the ES. Specific planning policies are also dealt with in each of the technical Chapters of the ES where relevant.

Background to the Development

5.1.2 Solum Regeneration is a joint venture partnership between Network Rail and Kier Property to redevelop and regenerate station sites in and around the South East of England. Twickenham Station was identified as one of the seven initial sites for Solum Regeneration to consider.

5.1.3 Central to the proposed scheme is the improvement of the station facility and access to the platforms for all passengers including the mobility impaired. The best way to achieve this is to relocate the station building on a podium above the tracks allowing direct access from the ticket hall via stairs and lifts to the start of the platforms. The new station concourse will provide a more suitable facility befitting a town of Twickenham's status and as a venue for a major sporting facility.

5.1.4 A separate planning application was submitted in July 2010 for the introduction of a concrete podium that will span the railway lines and connect to the existing bridge on London Road. The access gantries to the platforms from the main station building will be demolished and a new temporary bridge linking the current station building to the platforms is proposed. This application is currently under consideration by the Council.

5.1.5 The reason for submitting a separate planning application for the podium is to allow Solum Regeneration to co-ordinate construction works with scheduled railway track closures in Autumn 2011. The delay in the submission of this application for the comprehensive redevelopment of the site has allowed for an extensive consultation exercise to be undertaken as explained later in this chapter.

5.1.6 The main planning application also includes the podium structure. This is to ensure that the accompanying Environmental Statement tests the development impact as a whole.

Planning History

5.1.7 There is no relevant planning history relating to the site beyond the Twickenham Station podium application submitted by Solum Regeneration in July 2010 (planning ref: 10/1972/FUL).

5.1.8 Adjacent to the site, planning permission was granted through appeal in January 2010 for the *"partial demolition of first floor of Regal House and the erection of a part 2, part 3, part 6 and part 10 storey building to provide 111 guest room hotel (Use Class C1)"* (planning ref: 08/3063/FUL). The application had an Officer's recommendation for approval but was overturned at committee. Construction on the development is due to start imminently and this development has been including in the cumulative assessment as part of the EIA.

Consultation

5.1.9 A comprehensive consultation exercise has been undertaken with the Council, statutory consultees, interested parties and members of the public prior to the submission of this application. Set out below is a summary of the consultation:

- London Borough of Richmond – CEO and Head of Environment
- London Borough of Richmond – Councillors
- London Borough of Richmond – Planning Officers
- London Borough of Richmond – Officers in relation to Environmental Impact Assessment
- Greater London Authority
- Transport for London
- Commission of Architecture and the Built Environment (CABE)
- Environment Agency
- Public Exhibition
- RFU
- Metropolitan Police
- British Transport Police
- Twickenham – South West Area Emergency Services
- South West Trains
- Richmond upon Thames College

5.2 Planning Policy Framework

5.2.1 The statutory development plan for the site comprises the following documents:

- The London Plan: Spatial Development Strategy for Greater London (consolidated with changed since 2004) adopted in February 2008.
- London Borough of Richmond Core Strategy adopted in April 2009.
- London Borough of Richmond Unitary Development Plan, First Review (saved policies) adopted in March 2005.

5.2.2 There are a number of other emerging documents which are relevant in differing degrees to the determination of this application:

- The London Plan: Spatial Development Strategy for Greater London, Consultation Draft is currently being considered at an Examination in Public. This document has limited weight until the Inspector's Report has been issued.
- London Borough of Richmond, Development Policy Development Plan Document (DPD), Pre-Submission Version was consulted on in Spring 2010. This document has limited weight as it has not been tested at Examination.

- The London Borough of Richmond, Supplementary Planning Guidance: Twickenham and Surroundings was adopted on 27 October 2010. Maddox & Associates prepared representations on behalf of Solum Regeneration to the consultation version of the SPD stating that it was not in conformity with the adopted Core Strategy (the representations can be found at Appendix 1) as required by Section 13(8) of the Town and Country (Local Development) (England) Planning Regulation 2004. The Council made minor alterations to the SPD prior to its adoption but it remains the view of Maddox & Associates that the SPD does not conform with the adopted Core Strategy. This planning statement therefore focuses on the policies set out in the Core Strategy and affords little weight to the SPD.

5.3 Site Specific Policies

5.3.1 There is a site specific policy for Twickenham Station set out in the UDP, Policy T17, which states:

"To improve interchange facilities and provide a mix of town centre uses to take advantage of the high level of public transport accessibility and to maximise benefits to the town centre. It is recognised that there is potential for both immediate and long-term interchange improvements in association with redevelopment of the site including improved pedestrian (including bus interchange opportunities) and cycle access including cycle parking, bus interchange information systems and environmental improvements to the forecourt. To improve information systems and access for people with disabilities. The site has potential for a mix of town centre uses including business, leisure and residential. Forty per cent of any residential element should be affordable housing; the remainder should be small units with no on-site parking. The site is not appropriate for significant retail uses which would draw trade from designated frontages and lead to the unacceptable elongation of the centre. Any proposal must allow for the provision of a riverside walk as part of the River Crane Walk, the reinstatement of Platform 1 and a link to the proposed pedestrian walkway to the rugby stadia. Car parking for commuters should be reduced. Proposals should take a comprehensive approach taking into account related town centre sites, particularly the Post Office Sorting Office (T3) and the Station Yard (T23), and the contribution of the proposal toward the enhancement of the area as a whole."

5.3.2 *Policy CP9 (Twickenham Station) of the Core Strategy, part D relates to the station site and states:*

"encourage higher density residential development including affordable and smaller units and car free development, in the town centre and tall buildings in the station area only."

5.4 Planning Policy Review

Land Use

5.4.1 The scheme comprises a new improved transport interchange with a predominantly residential development above, amounting to 115 residential units. In addition, retail or leisure units (Use Class A1, A2, A3 or D2) are proposed fronting London Road and the new station plaza. These uses are envisaged to be ancillary to the station use and residential development above and could include a small supermarket, kiosk, cafes, bank, gym and / or family restaurants.

5.4.2 The provision of other uses including office space, hotel and a crèche has been explored but considered either inappropriate or unviable for the site. The possible mix of uses in the commercial units does include a leisure use allowing for a gym (Use Class D2). However, it is thought the units are most likely to have an A1 or A3 use but this will be commercially led.

5.4.3 The proposed land uses are entirely consistent with the aspirations of the site specific policies UDP policy T17 and Core Strategy policy CP9 as set out above, which encourages residential development with a mix of town centre uses, without drawing trade from the designated town centre frontage.

Residential Density

5.4.4 The adopted London Plan provides appropriate densities of development depending on the location and accessibility of the site (London Plan, Table 3A.2). Twickenham Station falls into the Urban Area category with a PTAL rating of between 4 and 6. The appropriate density for the site is therefore considered to be between 200 and 700 habitable rooms per hectare, or between 70 and 260 units per hectare.

5.4.5 The emerging London Plan and Development Management DPD reflect the same density matrix. Policy CP9 of the Council's Core Strategy also refers to encouraging higher density residential development.

5.4.6 The site is 0.96 hectares giving the scheme a residential density of 120 units per hectare or 333 habitable rooms per hectare. The residential density of the scheme sits well within the density matrix. It is therefore concluded that the residential density accords with planning policy and is appropriate for the location and accessibility of the site.

Residential Mix

5.4.7 The adopted London Plan Policy 3A.5 requires new development to offer a range of housing choices in terms of the mix of sizes and types, taking into account the housing requirements of different groups. In support of this policy, the London Plan Supplementary Planning Guidance for Housing seeks to secure family accommodation within residential schemes, particularly within the social rented sector, and sets strategic guidance for Council's in assessing their local needs. The draft replacement London Plan Policy 3.8, seeks to widen housing choice.

5.4.8 The site specific policies both refer to the provision of small or smaller units. Policy T17 makes specific reference to small units in the private element of the scheme.

5.4.9 The residential mix proposed is set out in the Table 5-1.

Table 5-1 Residential Mix

	1 bedroom	2 bedrooms	3 bedrooms
Private	37	66	12

5.4.10 The residential element of the scheme is predominantly one and two bedroom units. This reflects the adopted Council policy which encourages small units. There is no affordable housing proposed in this scheme due to viability matters.

Affordable Housing

5.4.11 London Plan Policy 3A.10 requires Borough Council's to seek the maximum reasonable amount of affordable housing when negotiating on individual private residential and mix-use schemes. In doing so, each Council should have regards to its own overall target for the amount of affordable housing provision. Policy 3A.9 states that such targets should be based on an assessment of regional and local housing need and a realistic assessment of supply, and should take account of the London Plan strategic target that 35% of housing should be social and 15% intermediate provision, and of the promotion of mixed and balanced communities. In addition, Policy 3A.10 encourages Council's to have regards to the need to encourage rather than restrain residential development, and to the individual circumstances of the site. Targets should be applied flexibly taking account of individual site costs, the availability of public subsidy and other scheme requirements.

5.4.12 Policy 3A.10 is supported by paragraph 3.52, which urges Borough Council's to take account of economic viability when estimating the appropriate amount of affordable provision.

5.4.13 Site specific policy T17 in the UDP states that 40% of the residential element should be affordable. This is superseded by Core Strategy Policy CP15 which states that the Council expects 50% of all new units to be affordable, with a tenure mix of 40% housing for social rent and 10% for intermediate housing. Policy CP15 is supported by paragraph 3.3.3.7 which states that where viability is an issue in providing affordable housing, the onus will be on developers to produce a financial assessment showing the maximum amount that could be achieved on the site.

5.4.14 The scheme provides no affordable housing. This approach has been agreed with the Council and allows the overall massing of the development to be minimised as a result. The proposal includes the provision of a new station concourse which has to be funded by the development above. A comprehensive financial assessment has been prepared by HEDC which demonstrates that no affordable housing can be delivered as part of this scheme.

Height of the Development

5.4.15 Core *Strategy Policy CP9(D) relates to Twickenham Town Centre and states* "encourage higher density residential development including affordable and small units and car free development, in the town centre and tall buildings in the station area only."

5.4.16 Policy CP8 (Town and Local Centres) is consistent with this by setting out under the objectives for Twickenham *"make use of potential for tall buildings in station area*".

5.4.17 The supporting text of Policy CP7, para 8.2.1.5 defines tall buildings and states *"in general, a tall building is defined by CABE and English Heritage as one that is substantially taller than its neighbours or significantly changes the skyline. In this Borough, large scale development is defined as buildings of generally 6 or more storeys in height. A study by Turley Associates has identified those areas most suitable within the Borough for higher densities and by mapping various constraints and accessibility levels. This will be used as local guidance when determining applications*".

5.4.18 The Sustainable Urban Development Study prepared by Turley Associates para. 5.53 states "*There is an opportunity to create a cluster around the station area which would create a landmark and aid the legibility within the local area. Any future tall buildings should not exceed generally nine storeys in height in order not to break the horizon as viewed from the Arcadian view on Richmond Hill".*

5.4.19 The proposed development ranges in height from 7 storeys measured from London Road in part of Block B adjacent to Regal House with Block A fronting London Road reducing from 6 storeys at its highest near Regal House, down to 2-3 storeys nearest to Cole Park Road. The proposed height of the development is fully in accordance with adopted planning policy.

5.4.20 The proposed height of the development is considered to be fully in accordance with adopted planning policy.

Design and Appearance

5.4.21 Core Strategy policy CP7 B (Maintaining and Improving the Local Environment) states that all new development should recognise distinctive local character and contribute to creating places of high architectural and urban design quality that are well used and valued. Proposals are required to demonstrate that they:

- Are based on an analysis and understanding of the Borough's development patterns, features and views, public transport accessibility and maintaining appropriate levels of amenity.
- Connect positively with their surroundings to create safe and inclusive places through the use of good design principles including layout, form, scale, materials, natural surveillance and orientation, and sustainable construction.

5.4.22 The Council's Unitary Development Plan has a number of relevant generic policies as set out below:

- Policy BLT11 seeks to promote a high standard of design, ensuring that schemes are compatible with the scale and character of existing development.
- Policy BLT 2 outlines that the Council will only allow development which would contribute positively to the character, appearance and setting of the Conservations Areas or leave them unharmed.
- Policy BLT4 states that the Council will seek to protect and encourage the preservation and enhancement of Buildings of Townscape Merit (BTM) and will use its powers where possible to protect their character and setting.
- Policy ENV5 states that the Council will seek to protect the quality of views especially those indicated on the proposals map.

5.4.23 The stand alone nature of the site and the scale and massing of the existing Regal Housing building together with the residential area to the north, enables the transitional height and bulk of the proposed development to sit comfortably on the site. The development will provide a landmark for Twickenham Station and town centre in both close range and long views, providing a reference point for movement within the area.

5.4.24 The height of the buildings across the site steps down from the highest element adjacent to Regal House responding to the domestic properties on Cole Park Road. Block B adjacent to Regal House has a maximum height of 6 storeys sitting below Regal House by two storeys. Fronting London Road, Block A staggers down in height from 6 storeys with a two storey set back, to 3 storeys by Cole Park Road. At the rear of the site, Block C has been designed in a townhouse manner fronting the River Crane with a maximum height of 4 storeys. The top storey has also been set back to reduce the impact from ground level. Block C then reduces to 3 storeys to the rear of the site. By reason of this sympathetic step down and significant distance of 20 metres minimum between the proposed buildings and the surrounding properties, it is considered that the scheme achieves a compatible relationship with both Regal House and the domestic properties on Cole Park Road, preserving their setting as sought by Policy BLT4.

5.4.25 The elevation treatment has been developed using a traditional and simple palette of materials to reflect the surrounding area. The materials comprise a light buff coloured brick, with a contrasting dark brick. There are elements which also include aluminium cladding. The balconies have been used to provide a contemporary aspect to the building. The station has been defined by a double height glazed entrance and louvers above to celebrate and highlight the entrance from London Road. A clear way-finding marker will be introduced at the front of the station plaza, close to London Road ensuring the station is easily found my members of the public.

5.4.26 A clear way-finding marker will be introduced at the front of the station plaza, close to London Road ensuring the station is easily found by members of the public.

5.4.27 All plant is located within the building. Photovoltaic panels are proposed on the tallest roofs to contribute towards the renewable energy target. The remainder of the roof space is proposed to be sustainable green space or amenity space for individual residential units.

5.4.28 With respect to Richmond Hill, the main viewpoints are centred towards the River Thames and are framed by dense vegetation. Regal House is visible as will be the proposed scheme but it would be outside of this central view cone and would not unduly detract or compete with the focal point or reduce the predominance of the landscape character of the view. Given that the height of the proposed building would not exceed Regal House or the skyline, the skyline would not be unduly affected and the proposed building would be viewed against the backdrop of the existing scenery. Moreover, the choice of materials and colour scheme would allow the development to blend into the skyline thereby minimising visual distinction and intrusion.

5.4.29 A comprehensive landscape strategy has been prepared for the site. Fronting London Road a new hard landscaped station plaza is proposed, with trees introduced in planters to soften the area. This area provides a gathering area, enhanced by the surrounding uses including cafes and family restaurants. At the lower level there will be a shared vehicle and pedestrian area accessed by a staircase and lift, using paving to differentiate areas. This area will provide access to the car parking, kiss and ride facility and taxi rank. Fronting Block C and the River Crane there is an area of soft landscaping including a new river walkway linking to Moormead Park. Incorporated into this area is a children's play area which includes a number of landscaped element such as a maze.

5.4.30 As explained above, the entrance to the station is directly opposite London Road and will be the main focal point of the new plaza. The residential entrances to Block A and B are located off the main plaza. The entrances to Block C are focused along the river walk. All entrances are overlooked maximising the secure by design principles.

5.4.31 A comprehensive description of the development together with details on the evolution of the scheme is set out in the Design and Access Statement.

5.4.32 In summary, the proposed scheme effectively addresses the transitional nature of the site from the town centre and Regal House to the surrounding residential area through the use of scale and massing. The scheme respects the existing properties on Cole Park Road and Mary's Terrace of which there are a number of Buildings of Townscape Merit. The sympathetic palate of materials recognises the local character of Twickenham. Finally both the massing and choice of materials results in an acceptable impact from Richmond Hill. The scheme should therefore be welcomed in design terms by the Council which fulfils all the design related planning policy requirements.

Residential Amenity

5.4.33 The Mayor published an Interim Addition of a Housing Design Guide in July 2010. It recommends that a minimum of 5 sqm of private outdoor space should be provided for 1-2 person dwellings and an extra 1 sqm should be provided for each additional occupant. The minimum recommended depth or width of all balconies and other private external spaces is 1500mm.

5.4.34 The Council's SPD on Small and Medium Housing Sites adopted in February 2006 states *"where balconies are considered they should be designed for use and not purely decoration with consideration to views, aspect and sizes".*

5.4.35 All residential units, except for seven, one-bedroom units overlooking the station plaza have private amenity space in the form or either a garden, balcony or winter garden.

5.4.36 Overall, the scheme seeks to provide the vast majority of the 115 residential units with private amenity space and therefore should be supported in planning terms.

Provision of Children's Playspace

5.4.37 London Plan Policy 3D.13 sets out that *"the Mayor will and the Borough's should ensure developments that include housing make provision for play and informal recreation, based on the expected child population generated by the scheme and an assessment of future needs".* The Mayor has published an SPD *'Providing Children and Young People's Play and Informal Recreation'* in March 2008 which set out the proposed levels of children playspace required by a development based on child yield. The Council's emerging policy supports the Mayor's approach.

5.4.38 The estimated child yield is based on a population profile method and application of LBRuT ratios for pupil yield and pupil take up. The same principle is applied in the Environmental Statement Socio Economic chapter. A play strategy is included in the Design and Access Statement together with the landscape drawings. It is demonstrated how the use of innovative design and dual-use spaces along the new River Crane walk encourages play for young children. The River Crane walk links to Moormead Park providing play space provision for older children. It is therefore considered that the scheme accords with the requirement to provide sufficient playspace for children and young people.

Affect on Neighbouring Amenity

5.4.39 Policy BLT15 of the UDP seeks to protect neighbouring properties from loss of daylight and sunlight caused by new development. With respect to light, the Council is guided by the standards set out in Site Layout, Planning for Sunlight and Daylight, and in Sun on Ground Indicators (BRE 1991).

5.4.40 With respect to light, the BRE guidance recognises the importance of light in gardens and open spaces. To ensure gardens have adequate access to sunlighting, the BRE guidance states that no more than two-fifths, and preferably no more than a quarter of outdoor amenity areas should be in shadow when calculated on the equinox (21 March). Additionally, guidance states that if light to an existing garden is already obstructed, the proposed development should not further reduce light to that garden to less than 0.8 times its former area.

5.4.41 The Council's Supplementary Planning Guidance relating to Small and Medium housing sites states that in order to ensure the privacy of occupiers is respected the windows of main facing habitable rooms should be preferably no less than 20 metres apart. Furthermore, where principle windows face a wall that contains no windows, separation distances can be reduced down to 13.5 metres.

5.4.42 Policy BLT16 ensures that no unreasonable loss of privacy and visual intrusion are experienced by adjacent residents due to built schemes.

5.4.43 BLT30 and CCE18 similarly require new development to avoid unacceptable increases in noise or pollution levels.

5.4.44 A comprehensive Daylight, Sunlight and Overshadowing Study has been carried out and is presented in *Chapter 14* of this ES. It is concluded that the scheme is acceptable in terms of BRE Guidance.

5.4.45 In relation to distance between the proposed scheme and the existing surrounding properties, the closest habitable room windows between Block C and Cole Park Road are 25 metres. The nearest proximity of buildings mass is 20 metres. The minimum distance of 20 metres is comparable to the distance between existing properties opposite each other on Cole Park Road. The distance between Mary's Terrace and the proposed scheme is over 50 metres.

5.4.46 The bay windows on Block C have been carefully designed so that sightlines are directed along the River Crane rather than directly towards the opposite properties. It is also proposed to maintain the dense vegetation cover along both sides of the River Crane which provides further privacy for the existing properties on Cole Park Road.

5.4.47 Detailed noise and air quality assessments have also been carried out with the findings set out in *Chapter 9: Air Quality* and *Chapter 10: Noise and Vibration* demonstrating that the development will not have a detrimental impact. Web based monitoring will be carried out throughout the construction process to ensure that they noise and air quality level are maintained at an acceptable level. Further details of construction mitigation are presented in *Chapter 6: Site Preparation and Construction*.

5.4.48 The scheme sensitively addresses the surrounding properties on Cole Park Road and Mary's Terrace through daylight, sunlight and overshadowing together with the proximity of development. It is demonstrated that noise and air quality impact will be also be acceptable. The scheme is therefore acceptable in planning policy and neighbourhood amenity matters.

Transport and Highways

5.4.49 Core Strategy Policy CP5 (Sustainable Travel) aims to reduce the need for travel by providing employment, shops and services at the most appropriate level locally, within the network of town centres. With respect to car parking and travel, the policy seeks to discourage commuter parking particularly by giving priority to residents' needs. Site specific policies T17 and CP9 both recognise that the Twickenham Station site should provide car-free development.

5.4.50 UDP Policy TRN2 (Transport and New Developments) states that new development, or changes of use will only be allowed where it can be demonstrated that the transport infrastructure can accommodate it, or be adapted to do so, without creating congestion and hazards on the road networks. Car and cycle parking standards are detailed in Appendix 1 of the UDP.

5.4.51 Detailed discussions have been undertaken with Transport for London and the Council regarding the transport related matters. *Chapter 08: Transport* sets out details of the comprehensive Transport assessment with the full Transport Statement presented in *Appendix C of ES Volume III*.

5.4.52 The site benefits from a Public Transport Accessibility Level of 5 and is located with a Controlled Parking Zone (CPZ) which restricts parking between the hours of 8.30am and 6.30pm Monday to Saturday.

5.4.53 The residential element of the scheme is proposed to be car free with the exception of three disabled car parking spaces. It is envisaged that no car parking permits will be issued to any residents of the development, which would be secured by a Section 106 Agreement. Three car club spaces are proposed which will link into an existing local scheme.

5.4.54 The Train Operating Company (TOC) requires the re-provision of all car parking spaces. The number of car parking spaces relating to the station is reduced from 44 to 35 on the site including 3 disabled parking spaces. The remainder of the spaces are to be provided on the Station Yard site currently used as a public car park on London Road.

5.4.55 The cycle provision for station users is increased from approximately 80 spaces to 250 spaces. The cycle storage area is located on a mezzanine level above the car park accessed at grade from London Road. The residential element of the scheme will be served by at least 1 cycle space per unit. The residential cycle storage is separate to the station cycle storage provision. Each residential block has a designated secure cycle storage area close to the main stair and lift core entrance.

5.4.56 A new taxi rank and kiss and ride are proposed at river level. Access to the plaza and station entrance is via a set of stairs or lift to the station plaza. On event days at Twickenham Stadium this lower area has been designed to convert easily into a crowd holding area to reflect the current capacity on site. For restricted evening hours, taxis will be permitted to wait in front of the station in a lay-by area on London Road.

5.4.57 Deliveries, servicing and refuse collection will occur at the River level within specified zones. This is demonstrated in detail within the Transport Assessment.

5.4.58 Pedestrian linkages through the site have been improved with the introduction of a river walkway linking to Moormead Park. The potential for the use of the passageway link to the Royal Mail site has been maintained. Detailed studies of the daily use of the station and the management of match day crowds have demonstrated that the link is of no benefit.

5.4.59 The scheme fully complies with the site specific planning policy requirements to provide an enhanced transport interchange through the provision of a new fit-for-purpose station concourse and access to the platforms, taxi rank, kiss-and-ride facility and relocation of bus stops. Pedestrian linkages have been improved through the site linking the town centre with Moormead Park. Cycle parking is to increase for station users from 80 spaces to 250 spaces with additional separate residents cycle parking located at the relevant core entrances. No parking on the site for residential is proposed except for 3 disabled parking spaces and 3 car club spaces. Car parking for commuters is to be reduced on site from 44 to 35 spaces. The remaining spaces are to be reallocated in the Station Yard car park. All these transport measures are fully in accordance with both adopted site specific policy requirements

Inclusive Access

5.4.60 London Plan Policy 4B.5 requires all future development to meet the highest standards of accessibility and inclusion. Core Strategy Policy CP20 (Visitors and Tourism) requires accommodation and facilities to be accessible by all. UDP Policy BLT 12 (Accessible to All) states that all applications for the development of buildings used for employment will be required to provide full access for all users including people with disabilities and others with mobility difficulties.

5.4.61 Access from the station car park to the new station concourse and platforms has been designed to be step-free with the provision of lifts for the mobility impaired. Public access across the site is also step free to the car park, kiss and ride, taxi rank and riverside.

5.4.62 The residential units have been designed to meet the Lifetime Homes requirements where possible (as demonstrated in the Design and Access Statement) with 10% of units being either designed, or easily adaptable for wheelchair use. The residential element of the scheme is designed to be car-free. With this in mind, only 3 disabled car parking spaces are provided in an accessible location within the car park area.

Site Contamination

5.4.63 *Chapter 11: Ground Conditions* provides a full assessment of the potential contamination impacts of the proposed development. The assessment has been based on the following reports which are presented in *Appendix F of ES Volume III*:

- Phase 1 Ground Contamination Desk Study Report (October 2007).
- Geotechnical Report for Twickenham Railway Station (August 2010).
- Generic Quantitative Environmental Risk Assessment - Interpretive Environmental Report on Ground Investigation at Twickenham Railway Station (August 2010).

5.4.64 Some elevated contamination levels were found in the soils beneath the site. No elevated contaminants were found in the surface water samples taken from the River Crane. The site was found to conform to a Characteristic Situation 2, whereby precautionary ground gas measures will be required for the new development. In conclusion, the overall risk rating for the site is currently low to medium. However, with implementation of appropriate mitigation measures as part of the proposed development, this risk will be reduced to low. The Environment Agency has reviewed the information and currently raises no objection to the proposed development subject to conditions attached to the permission.

Flooding

5.4.65 The site is located in Flood Zone 1 as shown on the Environment Agency Maps (see *Chapter 12: Waster Resources*). This low-risk zone comprises of land assessed as having less than a 1 in 1000 annual probability of fluvial flooding in any given year. The Environment Agency has been consulted on the proposed development and currently has no objection.

Sustainability

5.4.66 The London Plan identifies Twickenham at one of London Borough of Richmond's most sustainable options for development based on its accessible location and established range of services. Core Strategy Policy CP1 (Sustainable Development) states that development will be required to conform to the Sustainable Construction checklist, including a requirement to meet the BREEAM 'excellent' rating. Additionally, Policy CP1 and the Sustainable Construction Checklist require proposals to demonstrate a reduction in carbon dioxide emissions of 20% from on site renewable energy generation. It is recognised, however, that the requirement for 20% renewable will be difficult to meet in certain schemes. It is understood from previous schemes in the Borough that the Council can apply the above measures with some degree of flexibility where appropriate and in particular recognise that increases in energy efficiency may offset (or partially offset) the renewable requirement.

5.4.67 The Sustainable Construction Checklist has been informed by the Mayor of London's Supplementary Planning Guidance on Sustainable Design and Construction and is based on national planning guidance including Planning Policy Statement (PPS) 1: Delivering Sustainable Development, PPS23: Planning and Pollution Control, PPS25: Renewable Energy, and Planning Policy Guidance (PPG) 25: Development and Flood Risk. A Sustainability Statement has been prepared and submitted in support of the planning application which demonstrates the proposals are in accordance with the policy objectives to mitigate against climate change and minimise carbon dioxide emissions.

5.5 Summary and Conclusions

5.5.1 The application proposes the comprehensive redevelopment of Twickenham Station to provide a residential led mixed-use development including a new station facility, riverside walk and associated facilities including commercial uses at ground floor and car parking.

5.5.2 The scheme has been assessed against statutory development plan policy set out in the adopted London Plan, Richmond UDP and Core Strategy and has been found to be acceptable.

5.5.3 The scheme provides a new transport interchange together with a predominantly residential scheme above. Complimentary commercial uses are located at ground floor level fronting London Road and the new station plaza including possible retail, restaurants, bank, cafes and a gym. The land uses proposed are fully in accordance with the site specific policy requirements of UDP policy T17 and Core Strategy policy CP9.

5.5.4 The residential mix, density, and affordable housing levels further accord with policies set out in the London Plan, UDP and Core Strategy.

5.5.5 The height of the scheme is fully in accordance with adopted planning policy, specifically Core Strategy policies CP7, CP8 and CP9 together with the supporting Sustainable Urban Development Study.

5.5.6 The scheme proposes an appropriate siting, design, scale and massing of development for its location reflecting the transitional nature of the site between the town centre and the surrounding residential area whilst providing a landmark for Twickenham Station. The scheme preserves the appearance of the nearby conservation area, buildings of townscape merit located on both Mary's Terrace and Cole Park Road and the view from Richmond Hill. It is therefore considered that the scheme accords with Core Strategy policies CP7 and CP9 together with UDP policies ENV 5, BLT 2, 4 and 11.

5.5.7 The scheme has been assessed against neighbouring amenity policies BLT 15, 16, 30 and CCE18 and by reason of its appropriate and compatible scale and massing, distance to properties and gardens and orientation of balconies it is considered to be acceptable with respect to light, privacy, visual impact, noise and light pollution.

5.5.8 The scheme proposes to provide no car parking spaces for the residents, except for 3 disabled spaces and 3 car club spaces. The site is located in a controlled parking zone and the residents will not be permitted to apply for parking permits. Parking for commuters will be replaced like for like with some spaces allocated in the Station Yard car park. Deliveries would take place within the site and specific delivery areas have been allocated. Due to the accessibility of the site, together with the transport measures being fully in accordance with the site specific policy requirements set out in T17 and CP9, it is considered that the scheme is acceptable in transport policy terms CP5 and TRN2.

5.5.9 The scheme does not pose any undue issues with respect to flooding and contamination and is therefore in accordance with UDP policies ENV 34 and 7.

5.5.10 The scheme will achieve Code for Sustainable Homes Level 4 and BREEAM 'Excellent', includes the provision of a CHP with the potential for a district wide facility and provide photovoltaic's as a renewable source of energy. The scheme also responds to all other aspects of the Sustainable Construction Checklist. The scheme therefore complies with the aims and objectives of Core Strategy policy CP1.

5.5.11 The scheme is considered compliant with statutory policy with no material considerations that would indicate not making a decision in accordance with the development plan.

6.1 Introduction

6.1.1 This Chapter of the Environmental Statement (ES) describes the proposed outline programme and key activities for the demolition of part of the existing building on-site and subsequent construction works. Potentially significant environmental impacts associated with the activities are identified and, where necessary, proposals for mitigation are outlined.

6.1.2 Planning for demolition and construction is necessarily broad at this stage and may be subject to modification during the detailed construction planning. Consequently, a number of aspects of construction in relation to environmental issues cannot, at this stage, be accurately predicted. However, it is considered that sufficient information is available at this stage to enable the likely significant environmental impacts relating to the construction works to be identified and their significance assessed.

6.1.3 In each relevant technical Chapter of the ES, detailed consideration of the construction related environmental impacts together with their associated mitigation measures are provided.

6.2 Programme of Works

6.2.1 The construction works are anticipated to take approximately 33 months and will comprise the following key stages:

- Mobilisation;
- Site Clearance;
- Foundations;
- Podium Slab
- Superstructure to Podium;
- New Station
- Superstructure to Residential and Commercial
- Fitting Out
- External Works, Services and Drains and Landscaping
- Handover

6.2.2 The main activities to be undertaken and the approximate duration of the works are set out in Table 6-1. Indicative Summary Programme and Phasing Plans are presented in *Appendix A-5 of ES Volume III*. Timescales for individual activities may overlap and are indicative at this stage subject to planning permission and legal agreements being finalised.

Table 6-1 Indicative Site Preparation and Construction Activities, and Approximate Duration

Activity	Approximate Duration
Design	4 months
Procurement	10 months
Mobilisation	3 months
Site Clearance	6 months
Foundations	5 months
Podium	5 months
Block A&B	6 Months
Temporary Station Facilities (Install)	10 Weeks
Temporary Station Facilities (Operation)	19 Months
Construction of New Station	17 Months
Construction of Residential and Commercial Units	28 Months
Fit out of Internal Spaces of Block C	7 Months
Fit out of Internal Spaces of Blocks A & B	10 Months
External works and Landscaping of Block C	5 Months
External works and Landscaping of Blocks A & B	6 Months

Note: Activity timeframes will overlap

6.3 Description of Works

6.3.1 The following provides an overview of the site preparation and construction strategy for the proposed development.

Site Preparation

6.3.2 The main compound for the works will be set up in the existing car park (adjacent to Station Road) to the south of the station; this will house welfare facilities and general storage areas. The compound will be enclosed by a site hoarding comprising a solid timber hoarding approximately 2.4m high. Whilst every effort will be made to maintain the availability of station car parking during the construction period, there will be periods when the car park will be subject to part or full closures. Advanced notice will be given to users of the car park during these periods together with instructions in respect of the availability of other local car parks.

6.3.3 At all times pedestrians will have clearly defined routes protected from the works by hoarding and fencing.

6.3.4 Site preparation activities will also include:

- Utilities diversions;
- Installation of the temporary footbridge;
- Removal of the existing footbridge;
- Diversion of railway systems; and
- Canopy removal/demolition.

Foundation Strategy

6.3.5 The construction of the foundations will be preceded by excavation works and the construction of the piling mat.

6.3.6 Works will be carried out in four areas:

- Island Platform
- Mary's Terrace
- Station Car Park
- Existing Station Area

Piling/Substructure

6.3.7 The foundations are to be piled, using traditional techniques, likely to be augered piles and for the podium works "reduced height" rigs will be used, enabling works to be carried during normal rail operating hours.

6.3.8 Materials will be supplied to site for the podium works during evening/night time periods, using lane closures off London Road. The reinforced concrete foundations will be constructed using traditional techniques behind the site hoardings. The lane closures will be agreed with the Highways Authority and will include the necessary pedestrian management. Full details of this will be included in the Traffic and Pedestrian Management Plan produced in agreement with the Local Highway Authority in due course.

Superstructure

6.3.9 The pre cast concrete walls and beams to the podium area will be erected in major railway possessions using mobile cranes operating within temporary road closures. The cranes will be located in Mary's Terrace and the existing Station Car Park area. When cranes are located in Mary's Terrace they will be in the vicinity of Regal House and therefore will be sufficiently far away from the buildings such that there could be no impact on the fabric of the Buildings of Townscape Merit

6.3.10 A corridor for emergency vehicles will be retained at most points throughout the project from the Railway Approach end of Marys Terrace. At times when any closures are proposed the temporary widening of Marys Terrace at the Beauchamp Road end will be provided to allow for emergency vehicles to access.

6.3.11 Precast walls and beams will be delivered to the point of lifting by road. A delivery schedule will be agreed prior to each possession, detailing routes and temporary storage areas.

6.3.12 The superstructure to the main works will be constructed during normal working hours utilising mobile cranes where necessary and permanent tower cranes to suit the construction programme. The position of the tower cranes are shown in *Appendix A-5 of ES Volume III*.

6.3.13 It should be noted that the cranes will be fixed with restrictors so as to avoid oversailing adjoining properties.

Pedestrian Access and Egress

6.3.14 Prior to works commencing on site, liaison meetings will be held with the local and Highways authorities and the Train Operating Company to confirm arrangements for pedestrian and traffic management. A Traffic and Pedestrian Management Plan will be produced following these meetings. The Plan will detail each phase of the project, setting out the proposed traffic and pedestrian routes to be used. At all times pedestrians will be provided with clearly defined routes, protected from the works by hoardings and fencing.

6.3.15 A major part of the proposals for ensuring continued pedestrian access to the station is the installation of a pre-fabricated temporary footbridge to the north of the new podium construction. The existing chair lift for the mobility impaired will be relocated on to the temporary gantry so that the facilities will be maintained as existing. This will allow the demolition of the existing footbridge and the construction of the podium and superstructure works and provides safe access until such time as the new station is open.

6.3.16 With respect to events at Twickenham Stadium discussion has taken place with the Train Operating Company, the RFU and the police and an agreed strategy so as to maintain safe access to and egress from the station for attendees at the events has been agreed with the relevant parties which will be implemented during the course of the construction works. The station has been designed in capacity terms to allow for growth on a normal day. Clearly the size of crowds to be handled at the station on match days is dictated by the capacity of the stadium and the attendance at the event, there will not be any increase in footfall from the stadium. The temporary footbridge will provide equal capacity to the existing gantries and a management plan will control the event day crowds.

Continued Station Operation (Including Operating at Peak Capacity)

6.3.17 The use of the temporary footbridge described above in 6.3.15, will ensure that existing pedestrian flows are maintained during the construction period.

6.3.18 Major construction activities to the podium (i.e. PCC wall and beam erection) will be carried out during planned major railway possessions – other activities will take place during place during short duration closures.

Emergency Procedures

6.3.19 Emergency procedures for the project will be agreed with the Client, Network Rail, the Train Operating Company, local authority and emergency services prior to works commencing. An Emergency Procedures Plan (EPP) will be drawn up, which will set out the required response to any emergency situation. The requirements of the plan will be briefed out to all personnel as part of the site induction process.

Construction of New Station

6.3.20 The new station will be constructed in accordance with the Network Rail and Train Operating Company Specification and during this and the rest of the works the Contractor will comply with the Network Rail, Train Operating Company and the Office of Rail Regulation (ORR), Health & Safety and Construction Requirements.

Demolition of Current Station and Decanting to New Station

6.3.21 Following completion of the podium works and during the erection of the superstructure over a temporary station facility will be constructed along the elevation facing London Road to enable the existing station to be demolished. The temporary station facilities will be agreed with the Train Operating Company and appropriate notice will be given to passengers so that they are aware of the timescale involved for the changeover to take place. Safe pedestrian access will be provided from the temporary ticket office to the temporary gantry and then down on to the platforms.

6.3.22 Following completion of the new station the temporary ticket office will be removed and passengers permitted to utilise the new facilities with a new pedestrian access, including lift access to and from the platforms.

Build of Residential and Commercial Elements

6.3.23 The residential and commercial elements construction will be a continuous process throughout the programme. These works will be carried out in a phased manner, the intention being to endeavour to hand over completed residential units in sections. This will be developed further as time progresses.

Fit-Out

6.3.24 The fitting out works to the residential units will be a continual process running in parallel with the superstructure works.

6.3.25 This equally applies to the fitting out of the station.

6.3.26 The retail units will be built to a shell standard for fitting out by the eventual tenant/operator of the unit.

Landscaping

6.3.27 Landscaping and planting will be undertaken towards the end of the project. Hard landscaping being a continuous process towards the latter stages of the project in order to provide safe access and egress to and from the completed units.

6.4 Materials and Resource Use

Site Preparation

6.4.1 During the site preparation stage, excavation arisings will be produced, which will be removed from site.

6.4.2 Wherever possible, materials will be recycled and re-used either onsite, or provided for use or recycling off site.

Construction

6.4.3 Details of key construction materials:

- Concrete piles
- Steel reinforcement
- Concrete to pile caps
- Precast concrete beams & walls
- Insitu concrete slab
- Concrete frame above
- Façade cladding
- Internal walls, partitions etc
- Fitting out materials including kitchen and bathroom fittings
- Mechanical and electrical plant and materials.

6.4.4 Off site processes will include manufacture of pre-cast concrete elements and fabrication of steelwork and façade panels/windows. Consideration will also be given to prefabrication of bathroom pods off site.

Plant and Equipment

6.4.5 Consideration has been given to the types of plant that are likely to be used on-site during the site preparation and construction phases of the proposed development. The plant and equipment associated with each key element of the construction process is set out in Table 6-2.

Table 6-2 Estimated Types of Plant and Equipment during Site Preparation and Construction Phase

Phase	Plant
Site Preparation	• 360 tracked excavators • Hi-ab Lorries • Temporary Welfare facilities • Fork Lift Truck • 20T Road Wagons • Traffic Management Vehicles • Small dumpers • Various Craneage • Machine mounted hydraulic breakers • Compaction plant • Groundwater pumps • Diesel generators • Compressors and small tools
Construction	• Piling rigs (reduced height), • Twin 350t cranes • City Cranes • Fork Lift Truck • Articulated delivery wagons • Traffic Management Vehicles • Road/rail mounted elevated working platforms • Lighting towers • Concrete pump • Concrete Wagons • Compaction Plant • Road/Paving Plant • Compressors and small tools • Diesel generators • Tower cranes • Pedestrian hoist • Dumpers • Scaffolding & scaffold towers

6.5 Hours of Work

6.5.1 It is anticipated that the core working hours for site preparation and construction will be as set out as follows:

- 08:00 – 18:00 hours Weekdays;
- 08:00 – 13:00 hours Saturday; and
- Working on Sunday will be subject to reasonable notice for works required "out of hours"
- During scheduled possessions operations will be carried out on a 24 hour basis.

6.5.2 All work outside these hours will be subject to prior agreement, and/or reasonable notice to London Borough of Richmond upon Thames who may impose certain restrictions. Although night-time working will not normally be undertaken, it is expected that material deliveries relating to the podium will take place at night and that certain works, particularly those involving major rail possessions or work to the operational station (to avoid conflict with the travelling public) will have to be undertaken during this period.

6.6 Potential Environmental Impacts

6.6.1 A review has been undertaken of the potential sources of adverse impacts associated with site preparation, demolition and construction works. These are:

- **Noise and Vibration** - Increased noise and vibration levels from vehicles and plant during demolition, foundations and general construction works e.g. from the use of air compressors and diamond cutters on-site and piling
- **Dust/Air quality** - Windblown dust from ground surfaces, stockpiles, vehicles, work faces and cutting and grinding of materials. Exhaust emissions from lorries and plant delivering and removing materials including dust and particulates.
- **Waste** - Waste generation and its disposal.
- **Water –** Potential Increase to sediment loadings to on site water courses potentially affecting storm water runoff.
- **Ground Contamination** - Japanese knotweed transfer and oil and carbon spillage
- **Traffic** - Increased vehicle movements mainly consisting of Heavy Goods Vehicles (HGVs). Transfer of mud and material from vehicles onto the public highway. Disruption from abnormal or hazardous loads.
- **Storage of fuels and construction materials** - Accidental spills, contamination to local water bodies to ground.
- **Hazardous materials and contaminated land** - Exposure of the workplace to deleterious/hazardous materials and contaminated land, mobilisation of any source contaminants and creation of pathway from source to ground receptor.
- **Ecology** - Disturbance to fauna and flora present on-site.
- **Energy Usage** - Indirect impacts associated with energy consumption such as CO2 emissions, depletion of natural resources, air pollution etc.
- **Light –** Task lighting required for activities being carried out at night may affect the local environment.

6.7 Mitigation

Demolition and Construction Method Statement

6.7.1 A principal contractor for the demolition phase will be appointed to develop a Demolition and Construction Method Statement (DCMS) that will apply to all contractors, sub-contractors, trade and site management and include a Construction Environmental Management Plan (CEMP) to detail working procedures for the control of emissions and environmental risk.

6.7.2 The DCMS will place obligations on contractors to adopt best environmental practice and reflect the LBRuT Major Projects Guidance Note.

6.7.3 The DCMS will identify all the statutory procedures to be adhered to through demolition and construction. Individual trade contractors will incorporate all relevant environmental control, health and safety regulations, and best practice. This will ensure that all contractors involved with the demolition and construction phases are committed to agreed best practice.

6.7.4 Trade contractors will be required to demonstrate how they will meet the targets of the DCMS.

6.7.5 The DCMS will include the following items:

- Demolition and construction programme;
- Broad plan of the demolition and construction works, highlighting the various stages and their context within the whole project;
- Details of the Environmental Management Plan (EMP), including restricted operations, site access and housekeeping procedures;
- Detailed site layout arrangements (including requirements for temporary works) during the project, including plans for storage, accommodation, vehicular movement, delivery and access;
- Site working hours;
- Details of operations likely to result in disturbance, with an indication of the expected duration of each phase with key dates. This should include a procedure for prior notification of the Client and relevant statutory and non-statutory (including neighbours) parties, so that local arrangements can be agreed;
- A procedure to ensure communication is maintained with the Client and the local community to provide information on any operations likely to cause disturbance (through for example; meetings and newsletters);
- Provisions for affected parties to register complaints and procedures for responding to complaints; and
- Provisions for reporting to the Client and the Applicant.

Construction Environmental Management Plan

6.7.6 Matters concerning site activities during demolition and construction that relate to environmental issues will be discussed and agreed with the London Borough of Richmond Upon Thames in advance of works commencing. Where necessary further assessments can undertaken when a contractor is appointed and detailed method statements and programme information are available. As such, the site will be managed in accordance with best practice. This includes the agreement of the DCMS and the CEMP, which will include:

- A commitment to environmental protection (all Consultants and Trade Contractors will be invited to declare their support for this at the tender stage);
- Documentation of planning provisions setting out background information and considerations on impact types to help the project team plan both their activities in relation to environmental issues and their control measures. References will also be included on what will be needed to comply with the environmental elements of any planning conditions;
- Detail on control measures and activities to be undertaken to minimise environmental impact;
- Monitoring and record-keeping requirements;
- Establishment of baseline levels for noise, vibration and dust;
- Details of a dedicated point of contact during both normal working hours and after hours, with responsibility to deal with environmental issues if they arise; and
- Commitment to a periodic review of the EMP and regular environmental audits of its implementation.

Considerate Contractors Agreement

6.7.7 In line with best practice Solum Regeneration will require contractors to sign a Considerate Contractors Agreement.

Protection of Site Workers and Public

6.7.8 During demolition and construction, precautions would be taken to eradicate or at the very least minimise the exposure of workers and the general public to potentially harmful substances. Attention would be paid to restricting possible off Site nuisances, such as those arising from any dust and odour emissions. Such precautions would be included within the CEMP and include:

- Personal hygiene, washing and changing procedures;
- Personal protective equipment, including disposable overalls, gloves and particulate filter masks to be worn;
- Adoption of dust suppression methods, e.g. water spraying, wheel washing facility for vehicles leaving the Site;
- Measures to avoid surface water ponding and positive collection and disposal of all on Site runoff;
- Regular cleaning of all Site roads, access roads and the public highway.

Service Diversions and Temporary Installations

6.7.9 Details of all required service diversions and temporary installations will be agreed prior to works commencing. Early discussions will be held with Utilities providers to confirm timescales for diversion works.

Public Relations

6.7.10 Local residents, train users and others will be kept informed of site progress and major activities by means of project notice boards, newsletters and letter drops.

Management of Trade Contractors

6.7.11 Trade contractors will be appointed and managed on site in accordance with the Principle Contractor's procedures. All contractors will be made aware of site environmental requirements and will be required to demonstrate how they will comply with them.

Traffic Management

6.7.12 A Construction Logistics Plan (CLP) will identify the duration of the phases and will also identify methods and routes for delivery of construction materials and removal of waste materials. The CLP will be prepared in accordance with the Tfl CLP guidance document – 'Building a Better Future for Freight: Construction Logistics Plans' (Ref. 6.1).

Access and Egress

6.7.13 There will be four delivery points for materials and plant in use throughout the construction phase of the project - these will be:

- The existing car park to the south of the station;
- The proposed lane closure on the highway bridge, to give access to the island platform;
- The existing station car park; and
- Mary's Terrace – use of this route will be kept to a minimum access only from Station Yard end.

6.7.14 During Twickenham events these access points will be suspended in order to enable the Train Operating Company, Police, etc to manage the crowds.

6.7.15 With respect to the interface with the Travelodge development at Regal House we will set up regular meetings with the appointed contractor in order to ensure that any use of Mary's Terrace is co-ordinated to avoid conflict.

6.7.16 With respect to the Platform Extension Works which are being undertaken during the planned possession closures, we will liaise with the appointed contractor (the Solum contractor is also tendering for these works) to ensure there is a co-ordinated plan and agreement for logistics, deliveries and working in and around the existing station areas so as to avoid conflict and ensure least disruption in the vicinity of the development.

Road Closures/Diversions

6.7.17 Night time lane closures will be required on London Road to facilitate the delivery of materials to the island platform for the podium works.

6.7.18 There will be a need for oversized vehicles, i.e. piling rigs and cranes to access the site. These occasions will be pre-arranged with the Highways authority and local police.

6.7.19 All temporary road closures will be agreed with the local authority during detailed construction planning. All required notices regarding any planned closures of roads or footpaths will be made in accordance with the appropriate timescales for their issue.

Car Parking and Travel to Site

6.7.20 Personnel travelling top site will be encouraged to use public transport. No on site parking will be provided. Any local traffic management measures for site access will agreed with the relevant authorities.

6.7.21 There will be no public car parking on the station site during the works so as to avoid potential conflict between construction vehicles and users of the station.

Road Cleanliness

6.7.22 To minimise the affects of construction activities on local roads, arrangements will be made for wheel washing at access points and the use of road brushes on all roads in the vicinity of the site.

Management of Noise, Vibration and Dust

6.7.23 Assessments of all activities with the potential to generate high levels of noise, vibration and dust will be made prior to works commencing. Best practicable methods of prevention, reduction and minimisation will be adopted in agreement with the local authority. Measures currently planned include:

- Use of hoardings to assist in screening noise and dust from low level sources;
- All plant and equipment to be properly maintained, silenced where appropriate, operated to prevent excessive noise and switched off when not in use;
- Selection of appropriate techniques to mitigate impacts i.e. use of hydraulic plant, rather than percussive;
- Setting of threshold limits and the establishment of monitoring equipment at sensitive locations; and
- Netting/screening to scaffolding to assist in screening dust
- All noise complaints or any exceeding of agreed levels to be investigated.

Waste Management

6.7.24 The disposal of all waste or other materials will be carried out in accordance with all current legislation.

6.7.25 A Site Waste Management Plan will be produced and agreed prior to any works commencing (A draft is provided in *Appendix A-5 of ES Volume III*). This will set out the steps to be taken to avoid waste production, reduce waste removal and to re-cycle waste. Where space on site permits, all waste will be segregated at source.

6.7.26 All sub-contractors and suppliers will be involved in the waste minimisation process.

Energy and Water Usage

6.7.27 Measures to reduce the usage of energy and water will be investigated and will be employed on site where suitable. The supply chain will be involved in this process. Measures to be adopted may include:

- Monitoring energy consumption on site;
- Motion sensors on lights in particular areas i.e. welfare units;
- Use of self closing taps;
- Use of alternatives to petrol/diesel powered plant; and
- Reducing paper use on site.

6.8 Cumulative Impacts

6.8.1 In advance of the works commencing we will arrange meetings with the Regal House Contractor in order to ensure that there is a co-ordinated plan and agreement for logistics, deliveries and working in and around Mary's Terrace so as to avoid conflict and to ensure the least disruption to the users of Mary's Terrace in the vicinity of the developments.

6.8.2 With respect to the Platform Extension Works which are being undertaken during the planned possession closures, we will liaise with the appointed contractor (the Solum contractor is also tendering for these works) to ensure there is a co-ordinated plan and agreement for logistics, deliveries and working in and around the existing station areas so as to avoid conflict and ensure least disruption in the vicinity of the development.

6.8.3 With respect to the Royal Mail site, at this stage we are unaware of any planned development to this site but should during the course of the construction process on the station site, works commence on the Royal Mail site then we would arrange the necessary co-ordination/interface meetings with that Contractor and agree appropriate interface, logistics and deliveries plans.

6.9 Detailed Design

6.9.1 As discussed in Paragraph 6.1.2, planning for Site preparation and construction is necessarily broad at this stage and the information contained within this chapter will be subject to amendments post planning.

6.9.2 Specific construction design information will be developed through discussions and consultations with London Borough of Richmond Upon Thames, Building Control and other relevant parties. As further construction design work is undertaken on the scheme and detail is added, a number of documents will be produced to provide greater detail on the distinct site preparation, demolition and construction phases and associated environmental impacts, as well as providing further clarification on the mitigation proposals for the predicted impact. The documents to be produced as part of the construction design work include:

- Traffic and Pedestrian Management Plan;
- Demolition and Construction Method Statement;
- Construction Logistics Plan;
- Environmental Management Plan; and
- Site Waste Management Plan.

6.10 References

Ref. 6-1: TfL, Building a Better Future for Freight: Construction Logistics Plans (London: TfL).

Ref. 6-1: HMSO, Control of Pollution Act (COPA), 1974.

Ref. 6-2: DEFRA The Site Waste Management Plans Regulations 2008 [SI 2008 314].

Ref. 6-3: HMSO, Environmental Act 1995.

Ref. 6-4: HMSO, Special Waste Regultions 1996.

Ref. 6-5: HMSO, Duty of Care Regulations, 1991.

7.1 Introduction

7.1.1 This Chapter of the Environmental Statement (ES) assesses the potential social and economic impacts of the proposed development. It covers supply and demand of social and community infrastructure within the local area as well as the economic impact in terms of local spend, jobs and Gross Value Added (GVA).

7.1.2 Regeneris Consulting researched and produced the Chapter. The company is a specialist economic development and regeneration consultancy employing 25 staff in offices in London and Manchester. We regularly support planning applications through provision of economic impact analysis and review of social and community infrastructure provision and capacity.

7.1.3 The Council responded to original development proposals. The response with regards to socio-economic issues was:

'The scope of the EA and the full socio-economic assessment outlined is considered to be appropriate for this project. Particular attention should be paid to the potential individual and cumulative impacts on local services and amenities, such as healthcare, school places and community facilities as these issues have been raised as of particular concern to borough residents'.

7.1.4 Recommendations for the socio-economic element of the ES from LB Richmond upon Thames Formal Scoping Opinion have been responded to within this Chapter.

7.1.5 Specifically, this chapter provides an analysis of: the current policy and statistical context of Twickenham and Richmond; the provision of social and community infrastructure (covering education, health and open space) in terms of existing supply, spare capacity and ability to meet increased demand arising from the Twickenham Station development; the impact of the development on economic factors such as jobs, Gross Value Added and local spend; and the wider catalytic impact.

7.1.6 The information necessary to inform the analysis was obtained from a variety of sources including details of the development plans from Solum Regeneration (developer) and Rolfe Judd (architects); consultation with a number of individuals across local public sector organisations; policy documentation relating to economic development; statistics pertaining to the local area; capacity and roll figures for local education and health provision; and, benchmarks and standard ratios with regards to social and community infrastructure.

7.2 Planning Policy Context

7.2.1 This section explores the relevant economic development policy, drawing on national, regional and local documents.

National Planning Policy

7.2.2 With the exception of the announcement of Regional Growth Fund and Local Enterprise Partnerships, we still know little about future government policy in relation to economic development and regeneration. However, in recent years there have been a number of important national publications, the fundaments of which should still be borne in mind.

7.2.3 PPS4: Planning for Sustainable Economic Development (Ref. 7-1) aims to put in place a national planning policy framework for economic development at regional, sub-regional and local levels for both urban and rural areas. The document has strong links to PPS1 suggesting that economic development should be encouraged in line with the principles of sustainable development.

7.2.4 Local Authorities should adopt a positive approach towards proposals for economic development. Full consideration should be given to the economic aspects of a proposal to ensure that communities have access to jobs and services as well as homes and an attractive environment. Local Authorities should also recognise the needs of businesses, ensuring that there is a sufficient supply of land to meet a range of business needs and providing flexibility to respond to a changing economy or new business requirements. This highlights the need to cater for a broad range of business types such as small start-up businesses through to small and medium sized firms and larger.

7.2.5 Securing a high quality and sustainable environment is also important. A high quality and well designed working environment can foster local economic growth by influencing a company's decision to locate and remain in a particular area, encouraging other businesses to invest and attracting employees and visitors. Developments must deliver attractive and healthy working environments. For example, through the provision of landscaping and open space and where appropriate through facilities such as healthcare, childcare, shopping and leisure. Due to the increasing demands on the land available for development, local authorities should make efficient and effective use of land and buildings. Finally, Local Authorities should use evidence to plan positively.

Regional Planning Policy

7.2.6 The Mayor's London Plan is the Spatial Development Strategy for Greater London and sets out objectives for London to be – a city that meets the challenges of economic and population growth; an internationally competitive and successful city; a city of diverse, strong, secure and accessible neighbourhoods; a city that delights the senses; a city that becomes a world leader in improving the environment and a city where it is easy, safe and convenient for everyone to access jobs, opportunities and facilities.

7.2.7 Spatially, the London Plan sets out priorities for both Outer London as a whole and London's network of town centres. The vision and strategy for Outer London is based around recognising and building upon its diversity and varied strengths and providing locally sensitive development frameworks to enhance and promote its distinct existing and emerging strategic and local economic opportunities, and transport requirements. Specifically, the document highlights the need to bring forward capacity in and around town centres by enhancing public transport accessibility (both in terms of interchange and linkages to town centres) to accommodate leisure, retail and civic needs and higher density housing.

7.2.8 The Mayor's Economic Development Strategy incorporates a number of overarching themes – innovation, value for money, equality of opportunity and diversity, sustainable development and environmental improvement, health and health inequalities, community safety and climate change adaptation and mitigation. These themes are based across five core objectives:

- To promote London as the world capital of business, the world's top international visitor destination, and the world's leading international centre of learning and creativity.
- To ensure that London has the most competitive business environment in the world.
- To make London one of the world's leading low carbon capitals by 2025 and a global leader in carbon finance.
- To give all Londoners the opportunity to take part in London's economic success, access sustainable employment and progress in their careers.
- To attract the investment in infrastructure and regeneration which London needs, to maximise the benefits from this investment.

7.2.9 The latter two of these objectives are of particular relevance here, reflecting the need to support employment creation (for all) and development activity in London's town centres. The strategy cites the need to "direct investment into existing major employment areas including the Central Activity Zone (CAZ), town centres and the Strategic Outer London Development Centres". The strategy recognises that the development of London's town centres is primarily a matter for the local borough councils through their local economic assessments, plans and activities. However, it also states the desire that the leading town centres in outer London evolve as even more effective hubs, readily accessible from surrounding areas by public transport.

7.2.10 The Mayor of London's Transport Strategy emphasises the role that transport can play in working toward goals of supporting economic development and population growth and enhancing quality of life. A number of the key themes addressed in the strategy have clear relevance to the Twickenham Station proposals.

7.2.11 One of the core themes which runs throughout the strategy is the need to improve transport opportunities for all Londoners – TfL, working with the DfT, Network Rail, train operating companies, London boroughs and other stakeholders, will seek to increase accessibility for all Londoners by promoting measures to improve the physical accessibility of the transport system, including streets, bus stops, stations (including step free access) and information provision. As part of this, the need to better integrate London's transport system and services through improved interchange is cited.

7.2.12 The strategy also highlights the need to support regeneration by enhancing connectivity, reducing community severance, promoting community safety, enhancing the urban realm and improving access to jobs and services. There is a particular need to deliver transport improvements across London's network of district town centres. The strategy cites the need to work with the boroughs to develop a package of improvements within local town centres which provide better streets and facilities to make walking and cycling easier and which improve the public realm. Ultimately, the goal is to make town centres more attractive places to live, work and visit – 'lifetime neighbourhoods'. The strategy also highlights the importance of integrating land use development with transport planning - the design and layout of development sites should maximise access on foot, cycle and to public transport facilities. The provision of safe walking and cycling routes and of secure cycle parking are examples of how this can be achieved.

7.2.13 The Mayor of London's Housing Strategy assesses current housing conditions in London and the need for further housing provision and presents policies designed to meet needs and improve housing conditions in the future.

7.2.14 The strategy sets out London's housing needs and examines pressing issues for each housing tenure. The need to provide more homes in a range of tenures is emphasised as being key to providing Londoners with better housing choice and opportunity. Within this, the issue of affordability is seen as key, and the target is set for a net supply of at least 13,200 new affordable homes in London each year (replacing the previous affordable homes target of 50%). In providing new homes, the strategy highlights the importance of encouraging a better mix of homes (in terms of size) and of creating mixed communities (through mixed tenure developments).

7.2.15 Aside from the supply of housing, the strategy also highlights the importance of good design in all new homes and of the highest standards of sustainable design and construction.

Local Planning Policy

7.2.16 The Richmond Core Strategy (Ref. 7-2) was adopted in April 2009 and is one of the key constituents of the Local Development Framework. The strategy presents the Local Development Framework Vision, which comprises three inter-related themes:

- 'A Sustainable Future' – taking into account the Borough's responsibility towards global sustainability and the need for the Borough to relate in a sustainable way to London and the wider South East through the provision of housing, jobs, shops and services.
- 'Protecting Local Character' – the Core Strategy introduces the idea of Richmond's 'Urban Villages' - communities will have access to a range of housing, shops and services, employment and recreational activities locally, with strong education and training provision. The strategy also highlights the importance of the Borough's town and district centres – in particular Richmond, Twickenham, Whitton, Teddington and East Sheen. These centres are to continue to be the location for larger shops, offices and leisure uses.
- 'Meeting People's Needs' – in respect of new development, the Core Strategy highlights the need for higher density and larger commercial schemes which will as far as possible be concentrated in the five town centres, "enabling people to walk to shops and services or use public transport". The need to ensure that opportunities are accessible for all is also emphasised, through measures including more affordable housing, improving training and links to employment opportunities, and improving the environment. The importance of making public spaces and buildings accessible for people with disabilities or mobility problems is also emphasised.

7.2.17 Focusing on the spatial distribution of development in the Borough, the strategy highlights the fact that Richmond (town centre) and Twickenham provide the most sustainable options for development in the Borough. In Twickenham, emphasis is placed on revitalising the town centre, making environmental improvements to the shopping areas and civic space and maximising benefits from redevelopment opportunities such as Twickenham Station. Of particular relevance here, the Core Strategy states the need to encourage higher density residential development in Twickenham (including affordable and small units and car free development, in the town centre and tall buildings in the station area only) and to improve public transport – particularly Twickenham Station interchange facilities and bus stops. Public realm / open space improvements are also seen as important – particularly the improvement of the River Crane Corridor as part of a wider open space. All development must adhere to the green and sustainable principles set out in the Strategy.

7.2.18 In total, the Core Strategy targets a net increase of 700-1100 residential units, 2,500 jobs (to 2021) and 400sq m of retail space in Twickenham by 2017/18.

7.2.19 The Richmond Community Plan, 2007-2017 sets out a future vision for Richmond as a Borough which is inclusive, which puts protection of the environment at the core of its services and community life, which delivers quality public services that truly reflect the needs of all its local people, which addresses its challenges by harnessing the capacity of all its partners in the public, private, voluntary and community sector and which is green, safe and responsive to the needs of all local people.

7.2.20 The Plan sets out seven main priorities:

- Priority 1: Tackling disadvantage and inequalities – with the vision of reducing the gap between the most disadvantaged residents and the borough average by focusing on the five priority areas (Ham, Heathfield, Hampton Nursery Lands, Mortlake and Castelnau) where disadvantage is concentrated.
- Priority 2: Being the greenest borough in London, with the vision of setting the standard for reducing domestic and business energy consumption, and also transport emissions.
- Priority 3: Being the safest London borough for all our communities – with the vision that everyone in the Borough can continue to work, live and enjoy their leisure in the safest borough in London, especially in the five priority area.
- Priority 4: Growing up in Richmond upon Thames – with a vision that at 16, the majority of young people continue in education, training and employment and that young people make good progress through this phase of education in the public and private sector, employment and training.
- Priority 5: Creating a healthy and caring Richmond upon Thames – with a vision of strengthening Richmond's position as one of the healthiest boroughs by tackling health inequalities, supporting active ageing, offering care services that support independence and choice, and reducing binge drinking and smoking.
- Priority 6: Creating a vibrant and prosperous Richmond upon Thames – with a vision of building upon the Boroughs two key economic strengths (being home to some of the country's largest visitor attractions and sporting venues and being a prime location for small and medium sized business in high value added fields requiring skilled workers, access to central London and major transport routes, and who want to be located in a high quality local environment).

- Priority 7: Improving access and participation – with a vision of building a community where everyone has equal access to quality public services that meet their local needs.

7.2.21 The Richmond upon Thames Local Housing Assessment (Ref. 7-3) presents a detailed evidence base regarding the current supply and characteristics of housing in the Borough.

7.2.22 The research presented in the document suggests a shortfall of affordable housing in the Borough of around 2,723 units per annum. Whilst this shortfall is relevant to all sizes of accommodation, it is particularly the case for one and two bedroom units. Putting these findings into context, it is suggested that the affordable housing requirement in Richmond upon Thames is significantly above averages found in housing needs assessments for other areas – both nationally and regionally.

7.2.23 Research also shows that there is a small shortfall in the owner occupier sectors – with a shortfall in larger properties (two, three or four bed) and a surplus in one bedroom flats (although this is likely to be countered by a projected increase in the number of one person households in the Borough in coming years). There is a large surplus in the private rented sector.

7.2.24 The assessment concludes by highlighting the future need to maximise the availability of affordable housing from all possible sources (including newbuild, acquisitions and conversions).

7.2.25 Building upon the Local Housing Assessment, the Richmond upon Thames Housing Strategy 2008-2012 (Ref. 7-4) sets out a number of key themes and related objectives. These include more affordable homes, better quality and greener homes, preventing homelessness, supporting independent living, understanding and influencing the housing market and promoting housing choice.

7.2.26 Objectives of particular relevance include promoting more affordable family sized accommodation, maximising opportunities to deliver affordable housing through partnership working with external stakeholders and promoting good quality sustainable design which is inclusive, helps lower crime and promotes greener homes.

Summary

7.2.27 In summary, the Twickenham Station development is supported by policy at a national, regional, sub-regional and local level. This is demonstrated in the Table 7-1.

Table 7-1 Policy Documents – Summary of Key Points and Implications

Level	Key Points in Policy Documents	Twickenham Station Linkages
National	• Local Authorities should adopt a positive approach towards economic development • They should ensure that new developments: provide access to jobs and services, be responsive to the needs of businesses and secure a high quality environment	• The Twickenham Station development will make a significant contribution to the economic development and regeneration of Twickenham town centre • As well as providing new homes, the development will provide improved access to jobs and services; will provide space which will be of a high standard to ensure a high quality environment.
Regional	• The need to bring forward capacity in and around town centres in Outer London by accommodating leisure, retail and civic needs and higher density housing. • The need to provide new housing across a range of tenures • The importance of good design in new housing development, meeting high environmental standards • The need to improve connectivity in and around town centres and to improve levels of access to public transport for all	• The Twickenham Station development will provide significant additional capacity for Twickenham – primarily through residential, but also through leisure and commercial uses. The scheme has the potential to act as a marker for the wider regeneration of the town centre • The development will supply new housing for Richmond and London • The development has been designed to respond to the high quality design aspirations of the London Plan and local planning documents. The development will be car free and promote the use of a car club and cycling • The development will incorporate significant improvements to accessibility both within the station (including step free access) and between the station and town centre
Local	• The continuing importance of Richmond's town centres as locations for larger shop, office and leisure uses. • The need to revitalise Twickenham town centre, environmental / public realm improvements and improved public transport accessibility • A need for higher density residential development	• The development has the potential to make a significant impact on efforts to revitalise Twickenham, providing employment and business space, improving accessibility to the town centre and improving the environment – particularly through improved public realm and links to the River Crane and Moor Mead recreation ground • The development will significantly improve access to public transport in and around the station • The scheme will provide Twickenham with 115 new homes

7.3 Assessment Methodology and Significance Criteria

7.3.1 This section of the Chapter details the approach used for the socio-economic impact analysis. Of fundamental importance to the analysis in the Chapter is the makeup of the scheme itself. This enables calculation of the number of residents as well as breakdown by age which in turn enables analysis of both the impact on social infrastructure provision and the beneficial impacts arising from additional resident spend such as GVA and jobs.

7.3.2 Solum Regenerations Twickenham Station development is a mixed-use scheme involving the upgrade of the existing station frontage and facilities (including taxi rank and cycle storage), provision of both residential and commercial units and improved landscaping including river path and access to Moormeads Park. There will be 115 private housing units. The residential mix is shown in Table 7-2.

Table 7-2 Twickenham Station Residential Mix

		1 bed	2 bed	3 bed	Total
Total	No.	37	66	12	115
	Percentage	32%	57%	10%	
Source: Rolfe Judd					

7.3.3 The commercial units comprise the following:

Unit		Size
Unit 1 (Block A)	158	sqm
Unit 2 (Block A)	144	sqm
Unit 3 (Block A)	133	sqm
Unit 4 (Block B)	244	sqm
Unit 5 (Block B)	24	sqm
Unit 6 (Block B)	31	sqm
Total	734	sqm

7.3.4 The commercial space will provide for a range of uses, including A1, A3 and D2. It is anticipated that these units will be occupied by uses such as a small convenience store and a mix of cafe and retail units.

Assessment Methodology

7.3.5 The Chapter involves a number of discrete, as well as interrelated, sets of analysis. These are indicated in Table 7-3.

Table 7-3 Socio-Economic Impact Assessment Chapter Methodology

Element	Detail	Method
Social and Community Infrastructure	Analysis of impact on social and community infrastructure covering education, health and parks/open space	**Supply** • Mapping of existing facilities within defined catchment areas(Ref. 7-5) • Identification of capacity, roll/list numbers of users in relation to education and health where relevant • Consultation with relevant local representatives on existing supply **Demand** • Calculation of estimated number of residents overall, by age group and those likely to access the facilities in consideration • Comparison of additional demand to existing supply and capacity • Consultation with relevant local representatives on impact of demand • Considered analysis of impact
Housing Need	Analysis of degree to which development meets housing need in the area	• Review of local housing assessments and policy • Consultation with relevant local representatives on views of housing mix and numbers of new housing provision associated with the development • Considered analysis of impact
Business Response	Analysis of potential impact on the businesses community	• Review of relevant policy • Consultation with proxy organisations • Considered analysis of impact
Economic impact	Analysis of impact of development on jobs, spend and GVA at a local and regional level	• Calculation of estimated number of residents • Review of 2009 Household Spending Survey to obtain overall and broken down spending patterns • Identification of commercial unit size and prospective use • Application of leakage, tax and multiplier figures to obtain direct, indirect and induced jobs, spend and GVA • Use of construction costs to estimate direct construction employment

7.3.6 The information necessary to inform the analysis was obtained from a variety of sources including:

- Housing mix, commercial floorspace and developer costs provided by Solum Regeneration and Rolfe Judd.
- Consultation with a number of individuals in organisations such as the Primary Care Trust, Local Education Authority, LB Richmond upon Thames Parks and Open Spaces team and Twickenham Town Centre Manager. A full list of consultees is appended.
- National, regional and local policy documentation relating to economic development.
- Nationally available statistics pertaining to the local area such as the Annual Business Inquiry, Census and Annual Population Survey.
- Capacity and roll figures for education and health both from local and national sources.
- Local, regional and national benchmarks and standard ratios with regards to social and community infrastructure catchment areas, child yields and economic multipliers among others.

Standards Applied

7.3.7 The socio-economic analysis uses standards and guidance on a number of areas of analysis. These are indicated in Table 7-4.

Table 7-4 Socio-Economic Impact Assessment Standards and Guidance

Element	Type of standard / guidance		Source(s)
Social and Community Infrastructure	Catchment areas	Primary and Secondary Education	Department for Education and Skills
		Parks and Open Spaces	Strategic Planning Advice for London (1988), referenced in Richmond Parks and Open Spaces Strategy
Economic impact	Impact multipliers		Additionality Guide, English Partnerships (2008)
	Household spend		Family Spending, Office for National Statistics (2009)
	Employment densities (m2 requirements per employee)		Employment Densities: A Full Guide Final Report, Arup for English Partnerships (2001)

Significance Criteria

7.3.8 Building on the significance criteria identified in the Methodology Chapter, Table 7-5 details how each of these (extreme, major, moderate, minor and negligible) is applied in relation to the social and economic impact.

Table 7-5 Significance Criteria in Relation to Social and Economic Impact

Significance Criteria	Broad Description	Relation to Chapter
Extreme	Key factors in decision-making process. Associated with sites and features of national importance and features which if lost cannot by replaced.	• Important positive economic impact which will be significant at a national level. • Important consideration for service provision which has national significance.
Major	Important considerations at regional or district scale and can be concerns for the project if adverse effects are identified and have a particular importance attached to the decision making process.	• Important positive economic impact which will have benefits for the local and potentially the regional economy. • Important consideration for service providers at a regional or district scale (e.g. housing). If adverse effects are identified this could have significance for the design making process. Unlikely to be addressed through S106 contributions alone – additional provision may be required.
Moderate	If adverse, important at local scale but not likely to be key decision making issues. Cumulative effect could lead to increased effects on an area or resource.	• Reasonably positive local economic impact, beneficial to Richmond. • Medium impact on local services. Impact will be an important issue for local service providers e.g. in health and education, and consideration will need to be given to how increased demand can be accommodated. S106 contributions may be required.
Minor	Local issues but unlikely to be of importance in the decision making process.	• Small positive local economic impact but unlikely to be important in decision making • Small impact on local services which is unlikely to be of importance in decision making processes since it can be easily accommodated within existing provision.
Negligible	Beneath the levels of perception, within normal bounds of variation or within the margin of forecasting error.	• Unlikely to have any noticeable impact on social and community infrastructure. • Unlikely to have any noticeable economic impact.

7.4 Baseline Conditions

Baseline Data Collection

7.4.1 This section draws on a broad range of indicators to provide an analysis of the current socio-economic issues and opportunities for Twickenham. A full review of official datasets has been carried out and this section summarises the key points from this review.

7.4.2 A number of different geographical definitions have been used to examine the key issues for Twickenham and these are illustrated in Figure 7.1 and described in more detail below:

- Local Impact Area or Twickenham Town Centre – In order to fully understand the social and economic characteristics affecting the proposals, it is necessary to consider a wider geography than just the site itself. As such, the local area immediately surrounding the site – Twickenham Town Centre – has been defined as the local impact area for this Chapter. Due to variations in data availability, two slightly different definitions of Twickenham Town Centre are used. One definition is based upon a group of eight lower level super output areas (LSOAs), whilst the second definition is based on three wards – Twickenham Riverside, St Margaret's & North Twickenham and South Twickenham. Twickenham Station is located on the border of Twickenham Riverside and St Margaret's & North Twickenham wards and in close proximity to South Twickenham ward. Clear reference is made to which of these definitions is used throughout.
- Richmond upon Thames Borough – the pre-defined London Borough. Where data is not available at a local level this geography is used as a proxy.

7.4.3 Throughout the report, a number of benchmark geographies (Figure 7-2) have been used. These benchmark geographies allow the performance of Twickenham to be compared and put into context:

- Surbiton Town Centre –a town centre with similar characteristics to Twickenham, located in neighbouring Kingston. Due to variations in data availability, two slightly different definitions of Surbiton Town Centre are used. One definition is based upon a group of eight lower level super output areas (LSOAs), whilst the second definition is based on three wards – Berrylands, Surbiton Hill and St Marks. Clear reference is made to which of these definitions is used throughout.
- Kingston upon Thames, Merton and Croydon – South London Boroughs neighbouring / in close proximity to the Borough of Richmond Upon Thames.
- London, England and Great Britain – wider regional and national comparator areas against which it is useful to benchmark Twickenham's performance.

Figure 7-1 Local Impact Area or Twickenham Town Centre

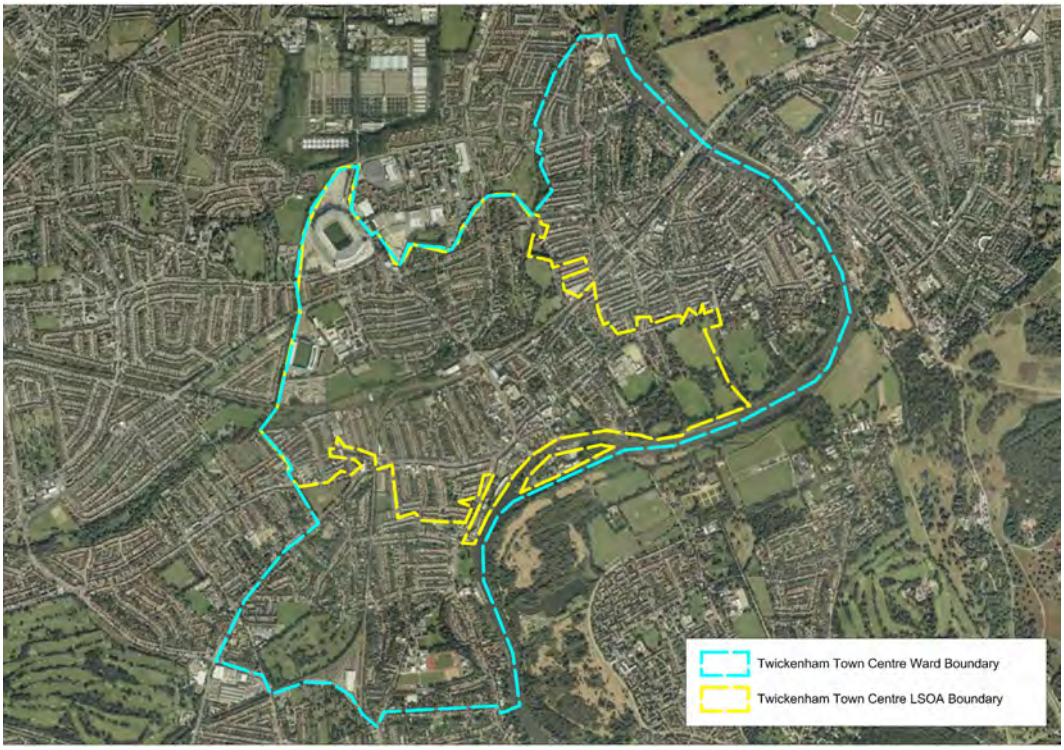


Figure 7-2 Comparator area of Surbiton Town Centre

The Demand Side – Broad Economic Performance

7.4.4 A number of measures have been used to assess the economic position of Twickenham Town Centre. A look at overall trends in the Town Centre's employment and businesses base gives way to a more detailed examination of the key sectors in the Town Centre and levels of enterprise locally.

Employment – Strong Growth in Recent Years

7.4.5 An indication of the relative size of Twickenham Town Centre in the context of the London Borough of Richmond upon Thames can be gained by looking at the quantum of jobs that it provides. The Town Centre is home to around 9,400 jobs, accounting for around 14% of jobs in the Borough. Despite this, Twickenham is recognised to be the second largest town centre in the Borough after Richmond town centre (Ref. 7-6).

7.4.6 Between 2003 and 2008, the town centre performed strongly, gaining over 1,300 jobs (employment growth of 13.8%). During the same time period, employment in Surbiton town centre declined by 3%. The strong performance of Twickenham Town Centre has contributed to strong performance across the whole of Richmond in recent years – the Borough has seen an employment increase of 9.8% since 2003. Whilst performance across the Borough of Kingston has also been strong (+14%), performance across other comparator areas has been weaker – Merton and Croydon experienced stable and declining employment respectively during the same time period, whilst employment across London as a whole grew by only 6%. This data is contained in Table 7-6.

7.4.7 It is important to note here the importance of understanding data constraints. The latest Annual Business Inquiry data is for 2008 and as such does not capture the impact of the 2008-9 recession in the UK economy. It is possible that employment across all geographies under consideration has fluctuated in the period since 2008. A more accurate assessment of the impact of the recession on the local area is highlighted later in the context of labour market performance.

Table 7-6 Employment Change 2003-2008

	Number of Jobs						
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**% Change 2003-8**
Twickenham Town Centre	9,400	8,900	9,000	9,000	10,400	10,700	13.8%
Surbiton Town Centre	5,200	4,700	4,600	4,700	5,100	5,000	-3.4%
Richmond upon Thames	66,200	66,700	66,800	67,300	69,300	72,700	9.8%
Kingston upon Thames	66,600	70,900	71,100	73,400	74,500	76,000	14.1%
Croydon	132,700	128,000	128,900	127,100	129,300	130,500	-1.6%
Merton	65,800	75,100	70,100	63,500	64,500	65,900	0.2%
London	3,927,900	3,968,700	4,060,600	3,993,800	4,096,900	4,167,900	6.1%
Great Britain	25,552,800	25,901,600	26,331,600	26,174,200	26,423,200	26,493,600	3.7%

Source: Annual Business Inquiry © Crown Copyright

Twickenham's Key Sectors – Public Administration, Education and Business Activities

7.4.8 Analysis of the key employment sectors in Twickenham Town Centre reveals more detail about the characteristics and nature of employment in the local area.

7.4.9 When considering employment sectors in their broadest definition, over half of all jobs in Twickenham Town Centre are shared between two sectors – Public Administration, Education and Health (3,700 jobs) and Banking, Finance and Insurance (2,500 jobs). The Distribution, Hotels and Restaurants (Ref. 7-7) and Other Services (Ref. 7-8) sectors provide a further 2,100 jobs and 1,400 jobs respectively. The latter of these sectors is significantly overrepresented locally compared to the regional and national averages (LQ (Ref. 7-9) vs GB = 2.6) and has experienced growth of 78% since 2003. This sector incorporates leisure and recreational activities and as such, is likely to reflect activities relating to the operation of Twickenham Stadium. There has also been strong employment growth in the Public Administration, Education and Health and Banking, Finance and Insurance sectors in recent years.

7.4.10 An analysis of more specific industrial sectors (by two digit Standard Industrial Classification – SIC) allows the sectoral composition of employment in Twickenham Town Centre to be analysed more closely:

- The top employment sectors in Twickenham Town Centre are the public administration (1,600 jobs), education (1,600 jobs) and other business activities (1,300 jobs) sectors.
- All three of these sectors – along with the recreational, cultural and sporting activities (again, reflecting the presence of Twickenham Stadium) and health and social work sectors – have experienced strong employment growth in recent years.
- The public administration and recreation, education and cultural and sporting activities sectors have strong over-representation locally in comparison to the national average. The real estate and sewage and refuse disposal sectors also have strong over-representation locally relative to the national average but are smaller sectors in terms of the absolute number of jobs they provide.

Table 7-7 Top Twickenham Town Centre Employment Sectors 2008 (2 SIC)

	No.	%	LQ vs GB	% Change 2003-8
Public administration and defence; compulsory social security	1,600	14.8	2.7	52.1
Education	1,600	14.5	1.5	37.8
Other business activities	1,300	12.4	0.9	52.8
Recreational, cultural and sporting activities	900	8.1	2.9	40.9
Retail trade, except of motor vehicles and motorcycles	800	7.8	0.7	3.0
Hotels and restaurants	800	7.9	1.2	2.8
Health and social work	600	5.2	0.4	92.0
Real estate activities	400	3.8	2.0	-28.0
Computer and related activites	400	3.5	1.7	27.5
Sewage and refuse disposal, sanitation and similar activities	300	3.2	8.0	n/a
Wholesale trade and commission trade	300	3.1	0.7	23.6

Source: Annual Business Inquiry

Business and Enterprise – Strong Growth in the Local Business Base

7.4.11 Twickenham Town Centre is home to around 1,100 businesses, accounting for around 9% of all businesses in the London Borough of Richmond.

7.4.12 Between 2003 and 2008, the town centre has gained over 100 businesses – growth of 17.6%. Performance has been similarly strong in Surbiton town centre. The performance of both these town centres has contributed to strong performance in the Borough level business base in recent years - since 2003, Richmond and Kingston experienced business base growth of 11.2% and 12.2% respectively. This compares to an average increase of 9.7% across London as a whole and 10.6% across Great Britain.

7.4.13 Again, it is important to note that the latest Annual Business Inquiry data does not capture the impact of the 2008-9 recession in the UK economy. It is likely that the trend of business base growth seen across all geographies between 2003-8 has been negatively affected in the context of the recession.

Table 7-8 Business Base Change 2003-2008

	Number of Jobs						% Change 2003-8
	2003	2004	2005	2006	2007	2008	
Twickenham Town Centre	1,000	1,000	1,000	1,100	1,100	1,100	17.6%
Surbiton Town Centre	700	700	700	700	800	900	19.6%
Richmond upon Thames	10,700	10,700	11,000	11,200	11,400	11,900	11.2%
Kingston upon Thames	7,000	7,000	7,100	7,400	7,600	7,800	12.2%
Croydon	11,800	11,600	11,900	12,100	12,300	12,500	6.1%
Merton	7,800	7,700	7,900	8,200	8,200	8,700	12.5%
London	365,700	365,100	375,400	382,100	387,500	401,200	9.7%
Great Britain	2,211,800	2,235,500	2,312,800	2,361,400	2,406,300	2,446,000	10.6%

NOTE: To comply with data confidentiality, all absolute number have been rounded to the nearest 100.

Source: Annual Business Inquiry

7.4.14 Local level data on levels of business enterprise is not available. However, analysis of Borough level data highlights some of the key trends likely to be affecting Twickenham.

7.4.15 In 2008, the rate of business births in Richmond was 87.5 per 10,000 population – a rate significantly higher than comparator areas such as Kingston (71.8 per 10,000 population), Croydon (46.5 per 10,000 population) and the UK as a whole (52.5 per 10,000 population). The average rate across London was 77.6 per 10,000 population.

7.4.16 Despite having a high business birth rate, the business death rate in Richmond was also relatively high in 2008, at 63.6 businesses per 10,000 population. This compares to 45.3 businesses per 10,000 population in Kingston, 36.4 businesses per 10,000 population in Croydon and 53.1 businesses per 10,000 population across London as a whole.

7.4.17 As a result, of the birth and death rates of business described above, in 2008 there was an overall net change of businesses in Richmond of +23.9 businesses per 10,000 population. This is roughly comparable to the net change seen in Kingston and London as a whole.

Summary of Key Points

- Twickenham Town Centre has enjoyed strong economic performance in recent years.
- In the period to 2008, the town centre experienced relatively large increases in both its employment and business bases.
- The Twickenham Town Centre economy is largely dependent upon a number of employment sectors – public administration, education and other business activities. The local presence of Twickenham Stadium is reflected by a strong concentration of employment in the recreation, cultural and sporting activities sector.
- The Borough of Richmond as a whole performs successfully in terms of enterprise, with a relatively high number of business 'births' (and resulting from this, a strong net increase in the number of businesses)

The Supply Side – The Local Labour Market

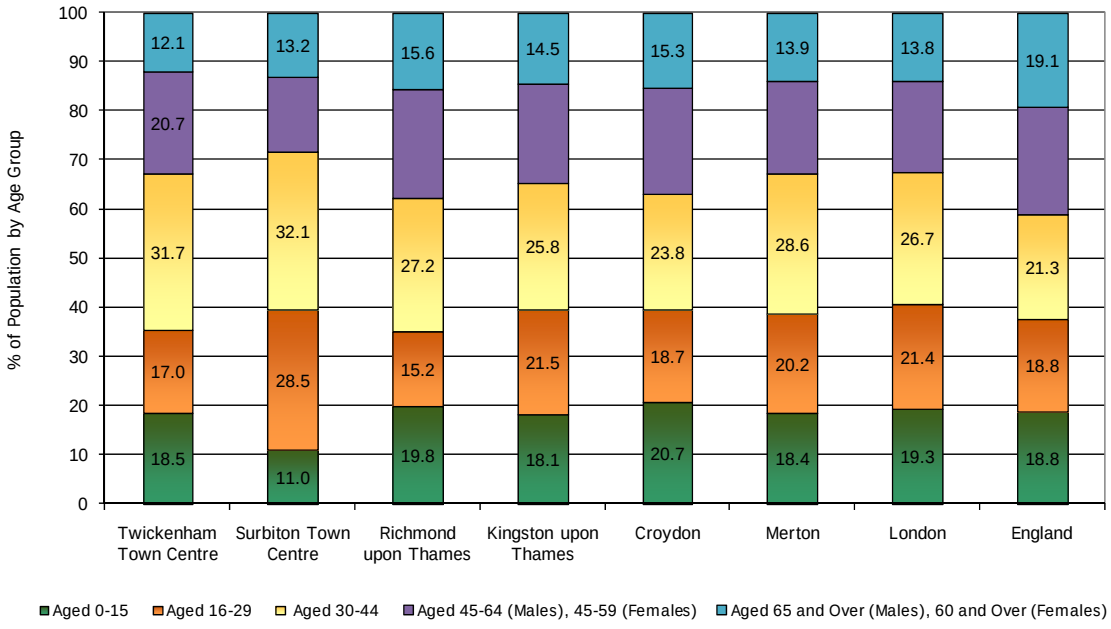
7.4.18 This section of the report explores the supply of labour in Twickenham. An analysis of Twickenham's demographic situation sets the context for an examination of the levels of education in the town, the skills pool present amongst local residents and the levels of economic activity in the town.

Twickenham's Population – A large working age cohort

7.4.19 In 2008, the population of Twickenham Town Centre was estimated at just over 12,800 – an increase in population of 5.7% since 2001. Despite being slightly lower than the population increase experienced by Surbiton Town Centre during the same time period, this population increase is relatively high compared to Borough (+3.3%), regional (+4.1%) and national (+4%) averages.

7.4.20 The age profile of a population is an important determinant of the size of a local labour market. Twickenham Town Centre has a relatively large working age population – in 2008, just under 70% of the population were deemed to be of working age. This working age population is larger than the average for the Borough (64%), London (67%) and England (62%). Figure 7-3 below sets out the age profile of the local population in more detail and highlights the presence of a relatively large cohort aged 30-44.

Figure 7-3 Population Age Profile



Source: ONS Mid Year Population Estimates

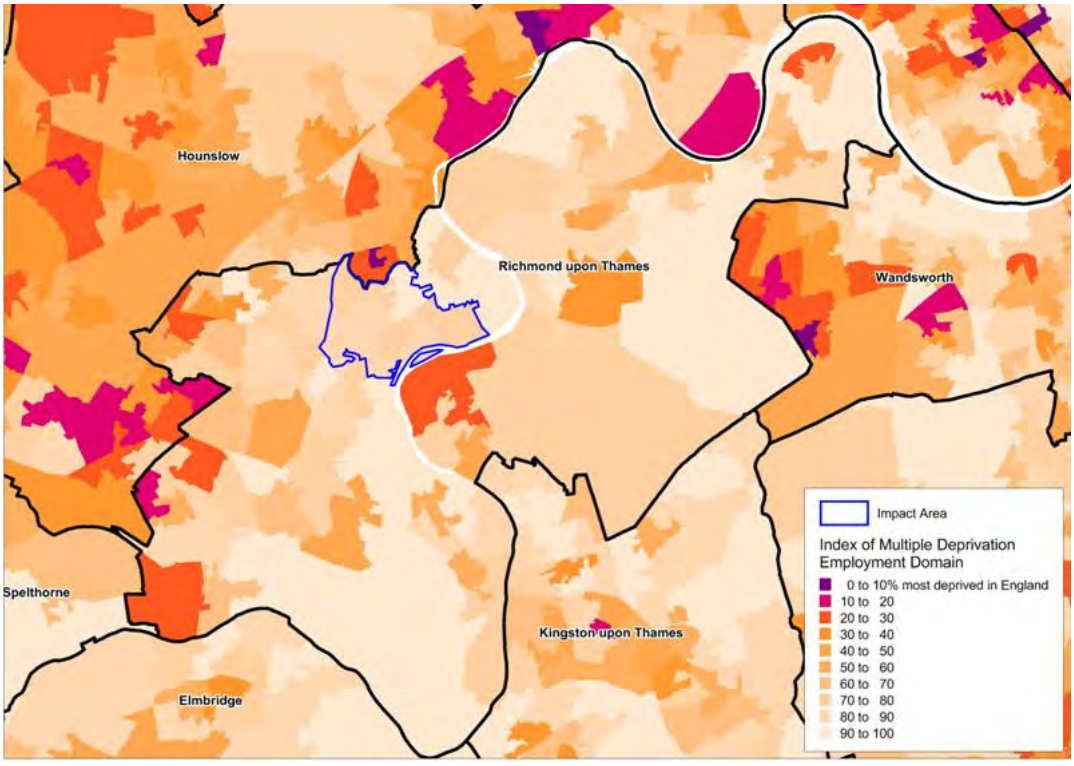
Economic Activity and Employment – A Highly Active Labour Market

7.4.21 Up to date information on levels of economic activity and employment is not available at a local level. However, data at a local authority level can be used to gain some indication of the key trends.

7.4.22 Both economic activity and employment rates are relatively high in LB Richmond compared to regional and national averages. In September 2009, the economic activity rate of 80.3% compared to 75.8% across London and 78.9% across the UK. Similarly, the local employment rate of 76.2% is relatively high compared to the regional and national averages (69.3% and 72.9% respectively). As is the case regionally and nationally, economic activity rates and employment rates are on average higher for males than they are for females. The male economic activity rate for Richmond is 87.8%, compared to the female rate of 72.2%. Of those who are in employment in Richmond, around 14.9% (18,900 people in total) are self employed. This self employment rate is particularly strong when compared against the regional and national averages of 10.8% and 9.1%.

7.4.23 More local detail on levels of employments in Twickenham can be gained by examining deprivation relating to employment. As can be seen by the pale shading in Figure 7-4, levels of relative multiple deprivation in this respect are low in Twickenham.

Figure 7-4 Index of Multiple Deprivation 2007 – Employment



Source: Indices of Multiple Deprivation, CLG

Worklessness in Twickenham – Relatively Low Levels of Unemployment

7.4.24 Unemployment is a key indicator in analysing worklessness in a particular geography. There are two measures of unemployment that are commonly used:

7.4.25 International Labour Organisation Unemployment (ILO) – this measures all those people who want to work, are available to work, and who are actively seeking employment.

7.4.26 In September 2009, the unemployment rate of the working age population in the London Borough of Richmond was 4.7%. The Borough has a significantly lower unemployment rate than averages across London (8.4%), Great Britain (7.4%) and the neighbouring Borough of Kingston (5.3%). Whilst the unemployment rate in Richmond remains relatively low, it is important to note the impact of the recession on the local labour market in recent years. Since 2007, the unemployment rate has risen by 1.3 percentage points, meaning that there are now an additional 1,100 people registered as unemployed.

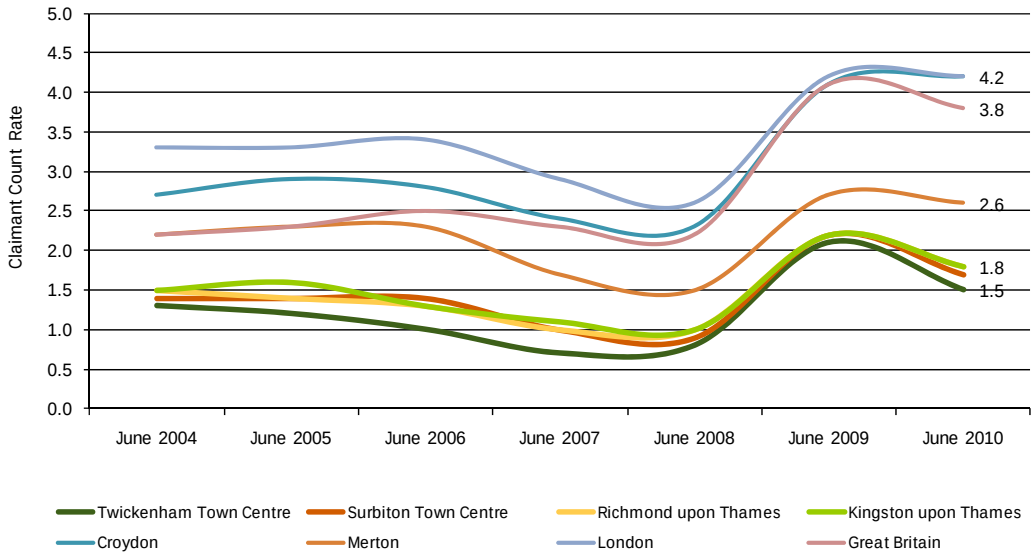
7.4.27 The Claimant Count – this only measures those people who are claiming unemployment related benefits and does not include all unemployed people, as some of those unemployed may not be able to claim benefits or chose not to do so. Data is available at a more local level.

7.4.28 There are currently around 300 claimants in Twickenham Town Centre (wards). In recent years, the claimant count rate of Twickenham Town Centre (wards) has fluctuated – rising relatively sharply from 0.7% to 1.5% between 2007 and 2009, before falling to 2.1% in June 2010.

7.4.29 In this respect, the recession hit the Twickenham labour market relatively sharply – the number of claimants rose by 175% between 2007 and 2009, compared to only 113% in Surbiton Town Centre (wards), 110% across Richmond and 48% across London. It is important to note, however, that the size of this percentage increase partly reflects the very low base of claimants in Twickenham in 2007. Twickenham Town Centre (wards) has also recovered comparatively well – the number of claimants fell by 25% from 2009-2010, compared to by only 1.1% across London as a whole.

7.4.30 As a result, the claimant count remains below that seen in each of the comparator geographies – including Surbiton Town Centre (1.7%). The claimant count rates for London and Great Britain are significantly higher at 4.2% and 3.8% respectively.

Figure 7-5 Claimant Count Rate, 2004-2010 *(Source: NOMIS Claimant Count)*



7.4.31 Another indication of levels of worklessness can be gained from an analysis of Incapacity Benefit and Severe Disablement Allowance claimants. In November 2009 the IB /SDA claimant rate in Twickenham Town Centre (wards) was 2.6% (just over 300 claimants in absolute terms). Whilst this rate is higher than that seen in Surbiton Town Centre (wards) (1.6%) and across the wider Boroughs of Richmond and Kingston, it is significantly below the regional average (3.5%) and the national average (4.3%).

A Highly Educated and Skilled Labour Market

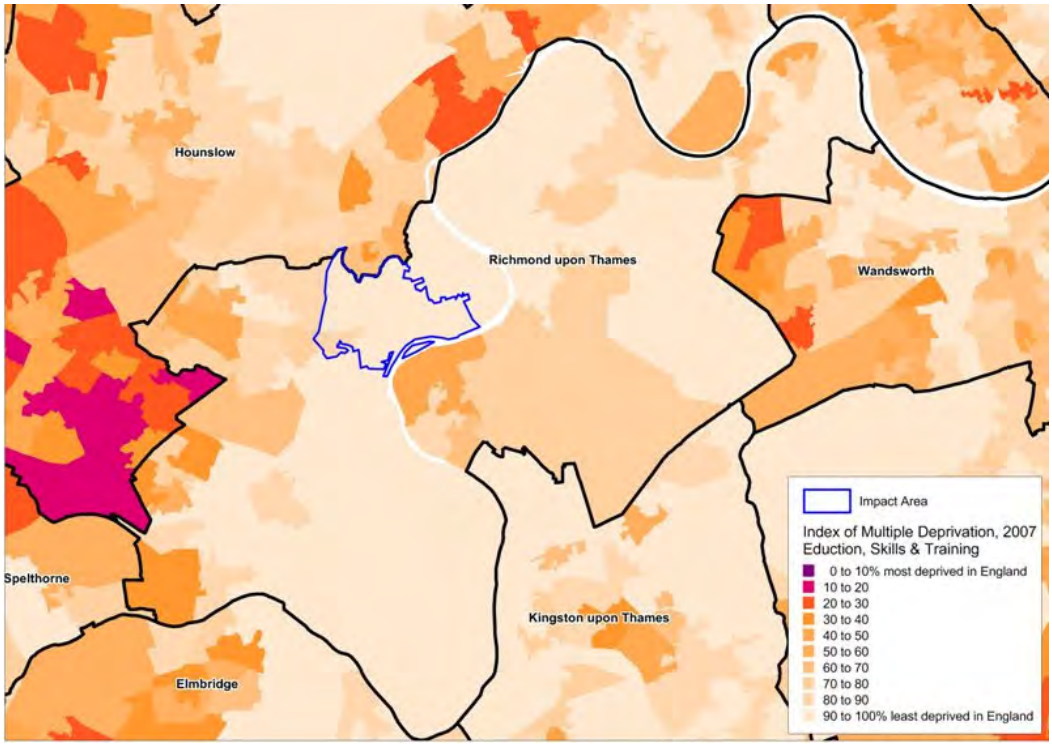
7.4.32 The presence of a skilled and educated resident working age population is important for the economic vitality of an area. An educated population is an important factor in efforts to attract inward investment and in developing a comparative advantage over competitor regions. Meanwhile educated residents are likely to have access to a greater range of employment opportunities and are also more likely to develop entrepreneurial tendencies.

7.4.33 Whilst data is not available at a very local level, the Annual Population Survey provides up to date information on skills levels of the adult population:

- Overall, the Borough of Richmond is home to a highly skilled population. Around 57% of working age residents are qualified to degree level or above (NVQ4+), whilst only 7% of the working age population has no qualifications. Across London as a whole, around 39% of the population has degree or higher level qualifications, whilst 12% of the working age population has no qualifications.
- The proportion of people with 'other qualifications' often indicates the presence of a large migrant population. However, in Richmond, the proportion of people with these qualifications is low, especially relative to the London average.
- These relatively strong skills levels are reflected by analysis of the occupation structure of the Boroughs population. Relative to the London and national averages, a high proportion of residents are employed in higher skilled occupations such as managerial and professional occupations. Nearly three quarters of all working age people in employment are employed in the top three SOC groups (those occupations deemed to require the highest skills levels), compared to 54% across London and 44% across the country. Conversely, relatively few working age residents are employed in occupations deemed to require the lowest levels of skill.

7.4.34 More local detail on levels of education and skills in Twickenham can be gained by examining deprivation relating to education, skills and training. As can be seen by the pale shading in Figure 7-6, levels of relative multiple deprivation in this respect are low in Twickenham.

Figure 7-6 Index of Multiple Deprivation 2007 – Education, Skills and Training Domain



Source: Indices of Multiple Deprivation, CLG

7.4.35 The Department for Education, Families and Schools provides data based on individual school performance which allows educational performance to be analysed at ward level:

- School performance by Twickenham residents at Key Stage 2 is strong. In each of the three wards – St Margarets and North Twickenham, South Twickenham and Twickenham Riverside – the proportion of pupils achieving Level 4 or above is higher than regional and national average for English, Maths and Science.
- Data on performance at GCSE level is only available for the Twickenham Riverside ward. Here, the proportion of pupils achieving 5 or more A*-C grades is 80.6% - compared to only 62% in 2005. This performance is stronger than the Borough average (70.9%) and the regional and national averages (71% and 70%).

Travel to Work – A Large Net Daily Outflow of Commuters

7.4.36 Travel to Work analysis can be undertaken using Origin and Destination statistics from the 2001 Census. These statistics allow an analysis to be undertaken of the labour market flows affecting Twickenham, including the travel to work flows of its residents, but also the flows of non Twickenham residents who work in the area. Travel to work statistics reveal the following trends:

- There is a net daily outflow of just under 1,000 people from Twickenham Town Centre (wards).
- The top destinations for out-commuters include the wider Richmond area, Central London (including Westminster and the City of London) and Hounslow. Top places of residence for people commuting into Twickenham include the wider Richmond area and neighbouring Boroughs such as Hounslow and Kingston.

Summary of Key Points

- Twickenham Town Centre is home to a relatively strongly performing labour market.
- The town has a large working age population, which Borough level evidence suggests is highly active in nature.
- Levels of worklessness locally are low. Whilst the number of people claiming Job Seekers Allowance more than doubled during the recession, the town has recovered quicker than comparator areas over the past year. As such, claimant counts remain low compared to regional and national averages.
- Borough level evidence suggests that Twickenham is home to a highly skilled workforce. Performance in schools in the local area is typically above the average for the Borough, region and county.
- Twickenham Town Centre has a daily net outflow of commuters – typically to Central London and to neighbouring areas.

Living in Twickenham – Quality of Life and Social Inclusion

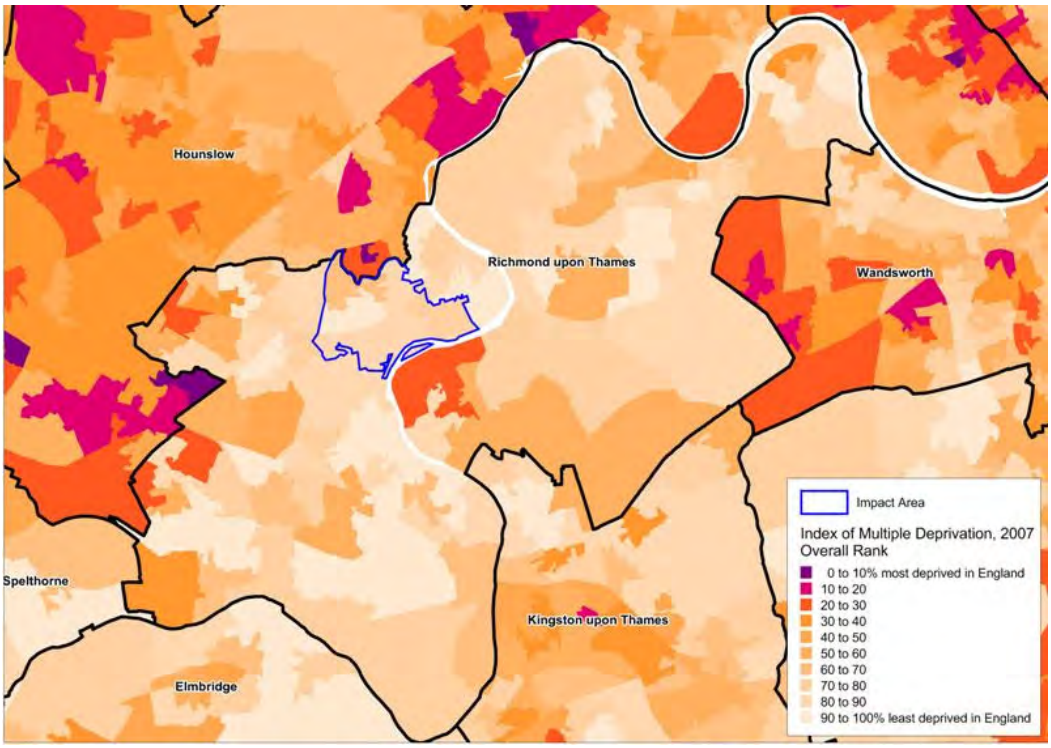
7.4.37 Quality of Life is closely linked to economic performance, having a bearing on key factors such as attracting a highly skilled workforce and interest from investors. A number of indicators have been used to build up a picture of quality of life in Twickenham. These indicators include levels of deprivation, income, crime, health and housing.

7.4.38 Relatively Low Levels of Relative Multiple Deprivation

7.4.39 The Index of Multiple Deprivation 2007 provides the most recent assessment of deprivation at district and SOA level across England. The index is compiled using seven deprivation 'domains' - Income, Access to Housing and Services, Crime, Employment, Education and Training, Health and Living Environment. Evidence provided by these deprivation domains is referred to throughout this section.

7.4.40 As highlighted by Figure 7-7, overall levels of deprivation in Twickenham – and indeed the wider Borough of Richmond – are low.

Figure 7-7 Index of Multiple Deprivation 2007



Source: Indices of Multiple Deprivation, CLG

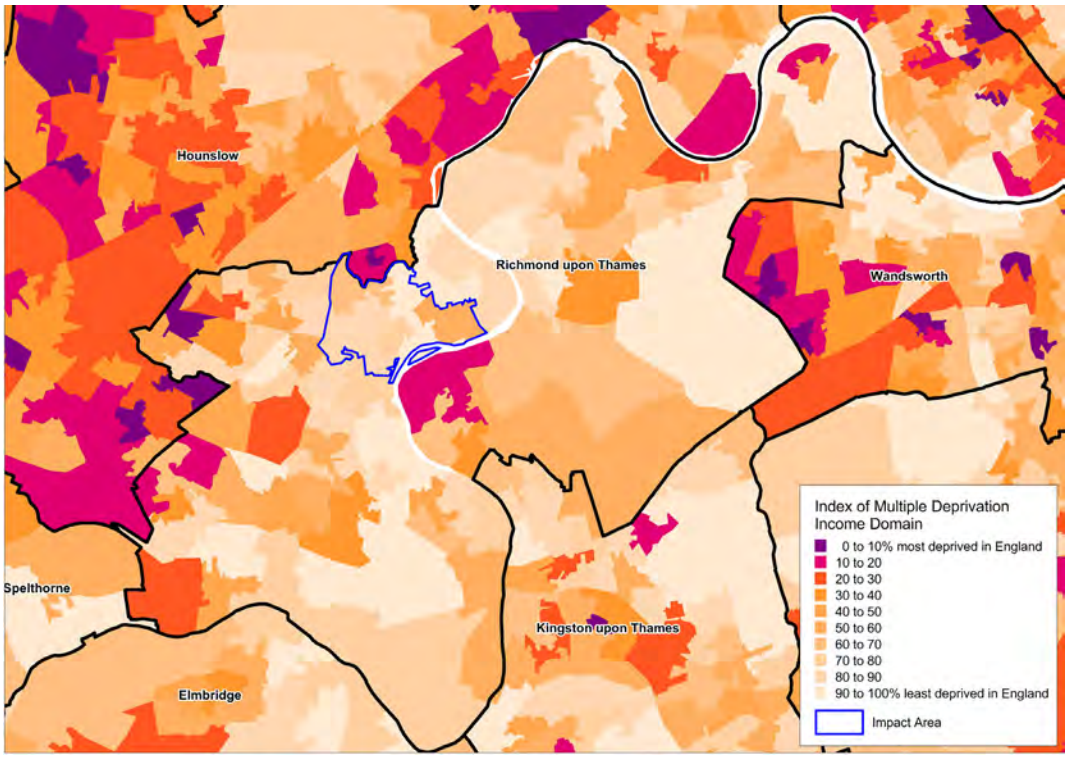
High Income and Earnings for Local Residents

7.4.41 There is an obvious connection between earnings and quality of life. People with higher earnings are likely to have access to a higher quality of life.

7.4.42 Data on earnings can be analysed at both residence and workplace based levels using ONS' Annual Survey of Hours and Earnings. Whilst only available at Borough level, the data paints a very positive picture of earnings in Richmond. The average gross weekly pay for Richmond residents is £710.5 - £90 higher than the average for Kingston, £112 higher than the average for London and £219 higher than the national average. Earnings are lower for people who work in Richmond – on average Richmond residents earn £135 per week more than those in work in the Borough.

7.4.43 More local detail on levels of income in Twickenham can be gained by examining income related deprivation. As can be seen from Figure 7-8, levels of relative multiple deprivation in this respect are low in Twickenham.

Figure 7-8 Index of Multiple Deprivation 2007 – Income Domain



Source: Indices of Multiple Deprivation, CLG

Variations in Levels of Health within Twickenham

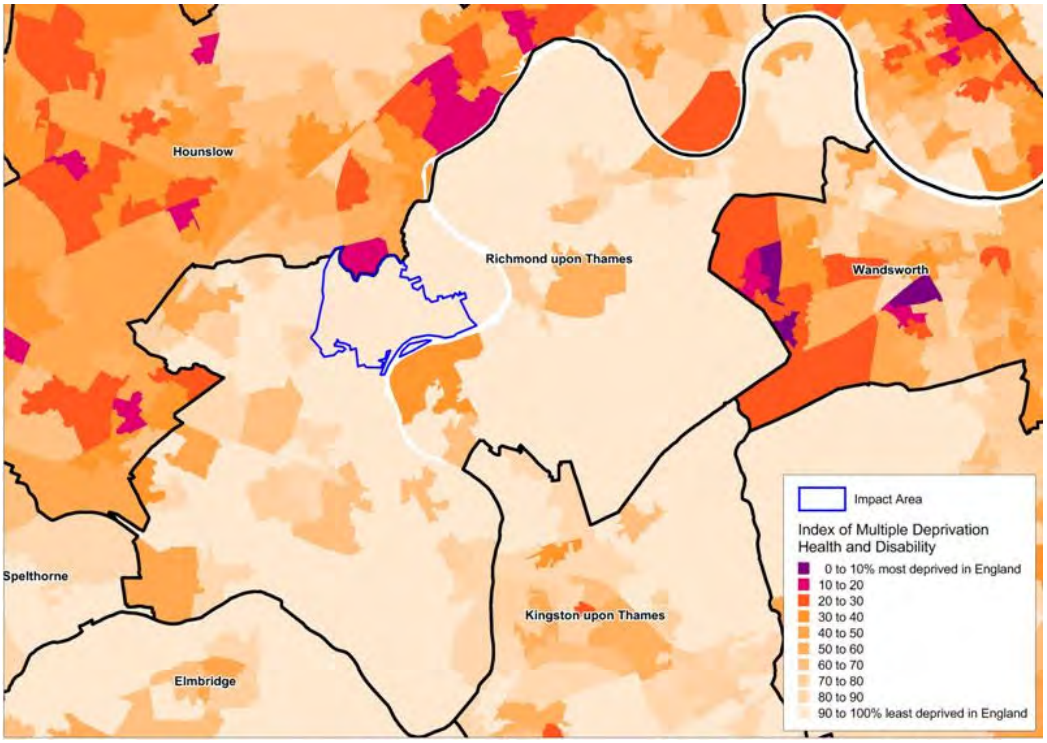
7.4.44 A number of health indicators have already been considered. Incapacity Benefit / Severe Disablement Allowance data highlighted relatively low levels of these claimants in Twickenham.

7.4.45 In addition, there are a range of other measures that can be used to assess levels of health in an area in more detail:

- In 2008, the rate of deaths per 1,000 population for the three wards – St Margarets and North Twickenham, South Twickenham and Twickenham Riverside – was 4.6, 5.2, and 8.3 respectively. As such, whilst the death rates in the former two wards are relatively low, the rate in Twickenham Riverside is above the regional and national averages (6.6% and 9.4% respectively).
- A similar pattern is true when considering the general fertility rate. The rate is below regional and national average in St Margarets & North Twickenham (62.4 births per 1,000 population) and South Twickenham (58.6 births per 1,000 population). However, in Twickenham Riverside the rate is above regional and national average at 68.1 births per 1,000 population.
- These trends are repeated in terms of life expectancy. Life expectancy in Twickenham Riverside (76.7 for men and 79.4 for women) is significantly lower than in St Margarets & North Twickenham (81.5 for men and 84.4 for women) and South Twickenham (81.0 for men and 82.9 for women). Again, the performance of Twickenham Riverside is slightly below that of London and England in this respect.

7.4.46 More local detail on levels of health in Twickenham can be gained by examining health related deprivation. As can be seen from Figure 7-9, levels of relative multiple deprivation relating to health in Twickenham are low.

Figure 7-9 Index of Multiple Deprivation 2007 – Health Domain

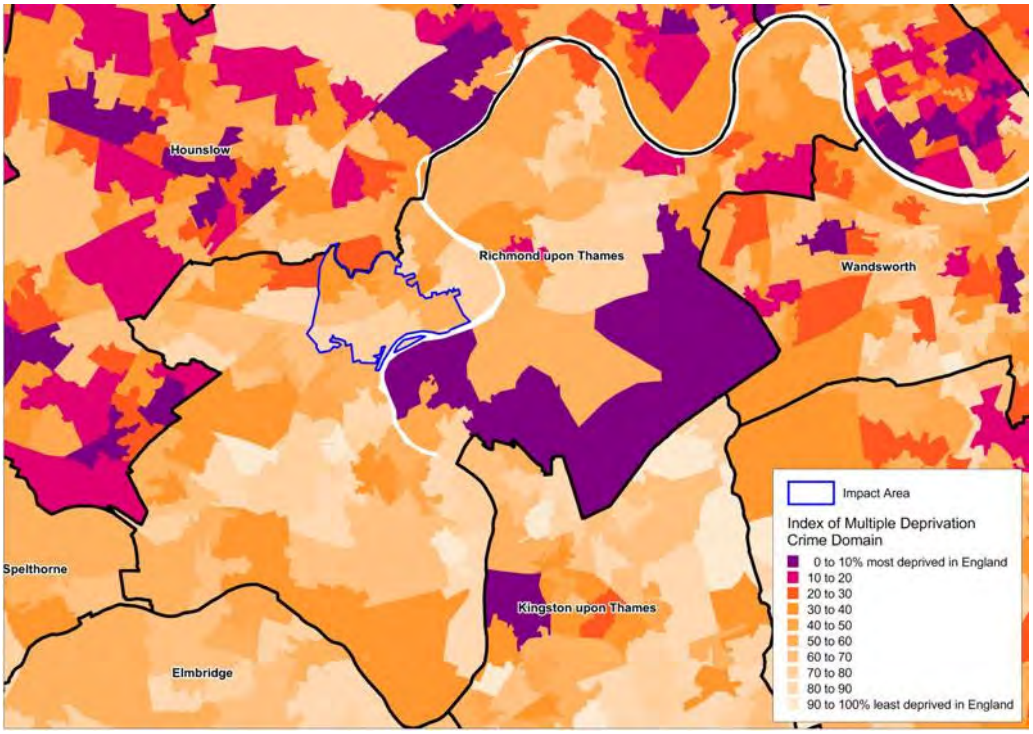


Source: Indices of Multiple Deprivation, CLG

Crime

7.4.47 Levels of crime can be closely correlated to Quality of Life. An area with high levels of crime and a bad reputation for crime is likely to hold less appeal to a highly skilled workforce and potential investors. As can be seen from Figure 7-10, levels of relative multiple deprivation relating to crime in Twickenham are low.

Figure 7-10 Index of Multiple Deprivation 2007 – Crime Domain



Source: Indices of Multiple Deprivation, CLG

An Overall Lack of Affordable Housing

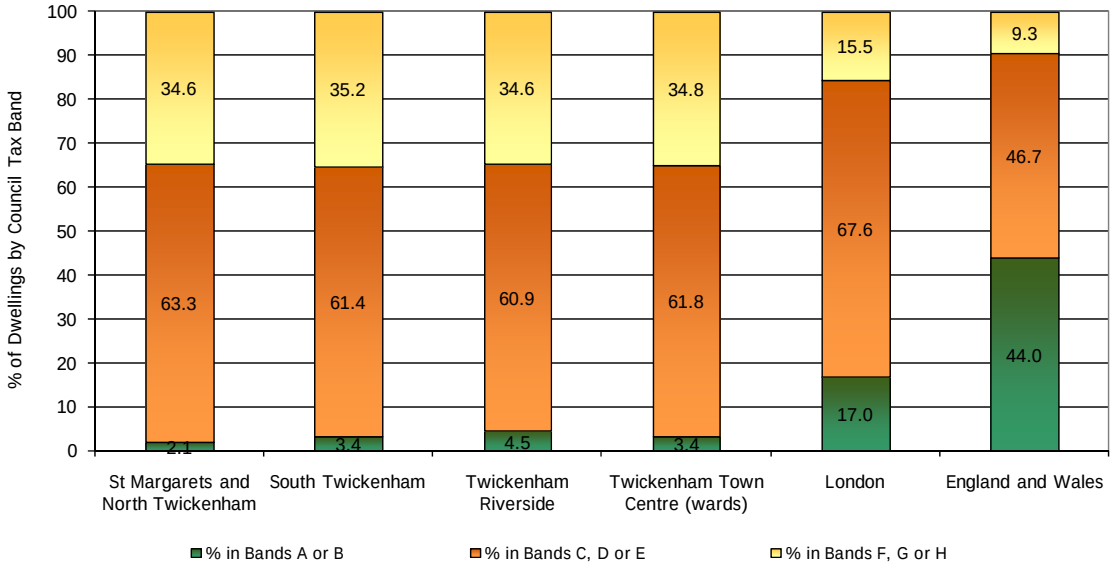
7.4.48 The quality and cost of property in a particular location will directly influence the ability of that location to compete effectively in attracting highly skilled labour and retaining existing residents (particularly first time buyers). As the Twickenham station proposals centre around the provision of a mix of new residential and commercial space for the town, an examination of current availability and cost is key.

7.4.49 The Richmond upon Thames Core Strategy notes that the Borough's housing is mainly in owner-occupation (68% in 2001), with 15% rented privately, and 12% rented from a housing association.

7.4.50 House prices are high in the London Borough of Richmond. In June 2010, the average house price in the Borough was £438,159 – significantly higher than the average for neighbouring Kingston (£310,311) and the regional average (£338,027).

7.4.51 The profile of dwellings in Twickenham Town Centre is highlighted by analysis of council tax bands. As shown by Figure 7-11, a very low proportion of dwellings in Twickenham Town Centre (3.4%) are classified as being in Council Tax Bands A or B. Conversely, nearly 35% of dwelling are in the highest bands (F,G or H) – more than double the London average and treble the England average.

Figure 7-11 Dwellings by Council Tax Bands by Ward, 2008



Source: London Datastore

7.4.52 As this suggests, affordability is seen as a key issue locally. With high average house prices, and despite the relatively high earnings of residents described previously, the ratio between earnings and house prices mean that there is a particular issue for first time buyers being able to afford even the less expensive properties in the Borough (Ref. 7-10).

7.4.53 This is highlighted by the Richmond Local Housing Assessment (Ref. 7-11). This document suggests a shortfall of affordable housing in the Borough of around 2,723 units per annum – the shortfall is particularly the case for one and two bedroom units. It is suggested that the affordable housing requirement in Richmond upon Thames is significantly above averages found in housing needs assessments for other areas – both nationally and regionally.

7.4.54 Evidence provided by Council Tax Band data suggests that Twickenham has experienced comparatively low growth in the overall number of dwellings since 2008. The overall number of dwellings has grown by 3% since 2001, compared to an average of 5.5% across both London and England. Within Twickenham, the rate of dwelling increase has been particularly slow in the Twickenham Riverside ward (1.8%).

Access to a Diverse Range of Open Spaces for Local Residents

7.4.55 Residents in the Twickenham area have access to a large and diverse range of open spaces – ranging from local public spaces within Twickenham Town Centre to regionally significant open spaces such as Richmond Park. Detailed analysis of parks and open space in proximity to Twickenham is included in the next section.

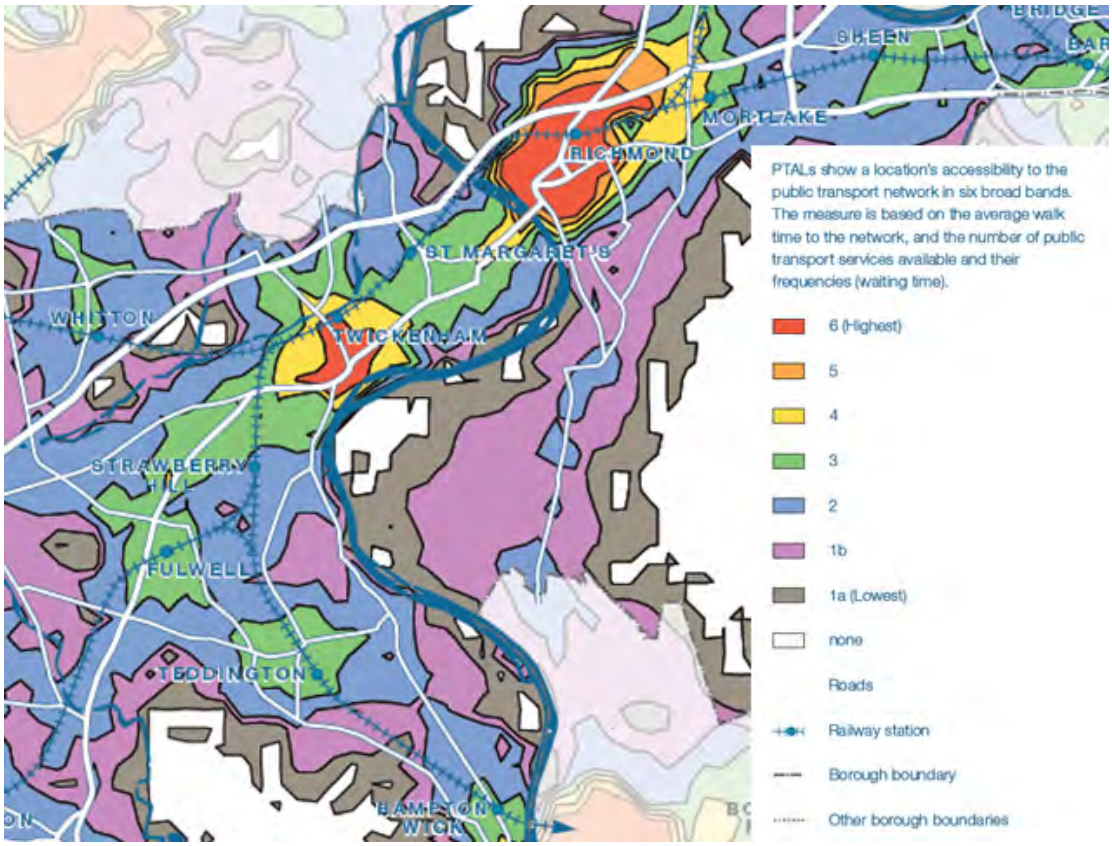
Strong Levels of Public Transport Accessibility

7.4.56 Twickenham has strong levels of public transport accessibility. The station benefits from very regular trains to London Waterloo, at journey which takes as little as 23 minutes. As discussed previously, there is a trend of daily net out-commuting from Twickenham and this is partly represented by station usage figures. In 2008-9, total entries and exits to the station totalled 5,108,980. A further 459,364 passengers interchanged within the station.

7.4.57 Residents living in proximity to Twickenham town centre also benefit from a number of other stations located in close proximity including St Margaret's and Strawberry Hill.

7.4.58 The strong accessibility of Twickenham town centre is highlighted by Public Transport Accessibility Level data from the Richmond Core Strategy – Figure 7-12. Red, orange and yellow colours indicate the most accessible locations based on average walk time to the public transport network and the number of services available. As would be expected, accessibility levels are highest in areas in closest proximity to Richmond and Twickenham stations.

Figure 7-12 Public Transport Accessibility Levels – London Borough of Richmond



Source: Richmond Core Strategy

Summary of Key Points

Overall levels of deprivation in Twickenham (and across Richmond as a whole) are low.

Average earning for residents in LB Richmond are amongst the highest in London.

Levels of health fluctuate in Twickenham. Whilst South Twickenham and St Margaret's and North Twickenham wards perform well in comparison to regional and national averages, Twickenham Riverside performs less well across a range of health indicators.

Access to housing is a key concern for LB Richmond. House prices are amongst the highest in London and evidence collated for the Local Housing Assessment suggests that there is a real lack of affordable housing in the Borough.

Residents living in proximity to Twickenham Town Centre benefit from strong levels of public transport accessibility and from access to a range of public and open spaces.

Existing Social and Community Infrastructure

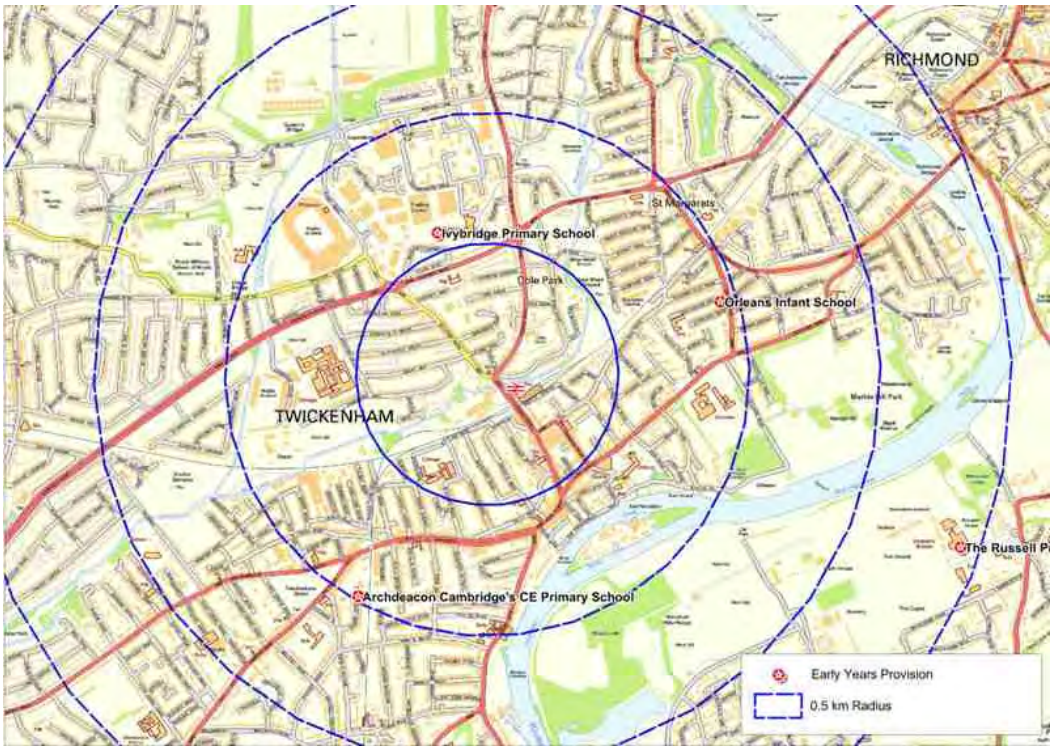
7.4.59 This section provides an overview of the existing provision of social and community infrastructure within a reasonable accessible distance from the Twickenham Station site. The infrastructure analysis includes education, health and public open space. The analysis includes mapping of existing facilities and their capacity. It draws on desk-based research, document review and mapping, together with consultation with relevant representatives from Richmond upon Thames Council and other organisations such as the PCT. A full list of consultees is contained in the appendix.

Education - Childcare

7.4.60 Free childcare (12.5 hours per week) is made available to all three and four year olds nationally. It is provided locally by the Council through children's centres, schools and through private sector providers.

7.4.61 There are three public sector providers of such childcare within 1.5km of the Twickenham Station site (see Figure 7-13) with capacity for 140 children between the ages of three and four. Of the 140 capacity, both Archdeacon and Orleans schools provide 52 nursery places while Ivy Bridge provides 38. At present, the three providers are at capacity. The Children and Young People's Plan 2009-2013 noted that the provision of children's centres in the borough is expanding, with five main centres and a number of satellite centres planned or in place.

Figure 7-13 Public Sector Nursery Provision (1.5km)



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7.4.62 All councils are required to undertake a childcare sufficiency assessment which covers all children up to 14 years. This provides a measure of the nature and extent of the need for, and supply of, childcare within each local area.

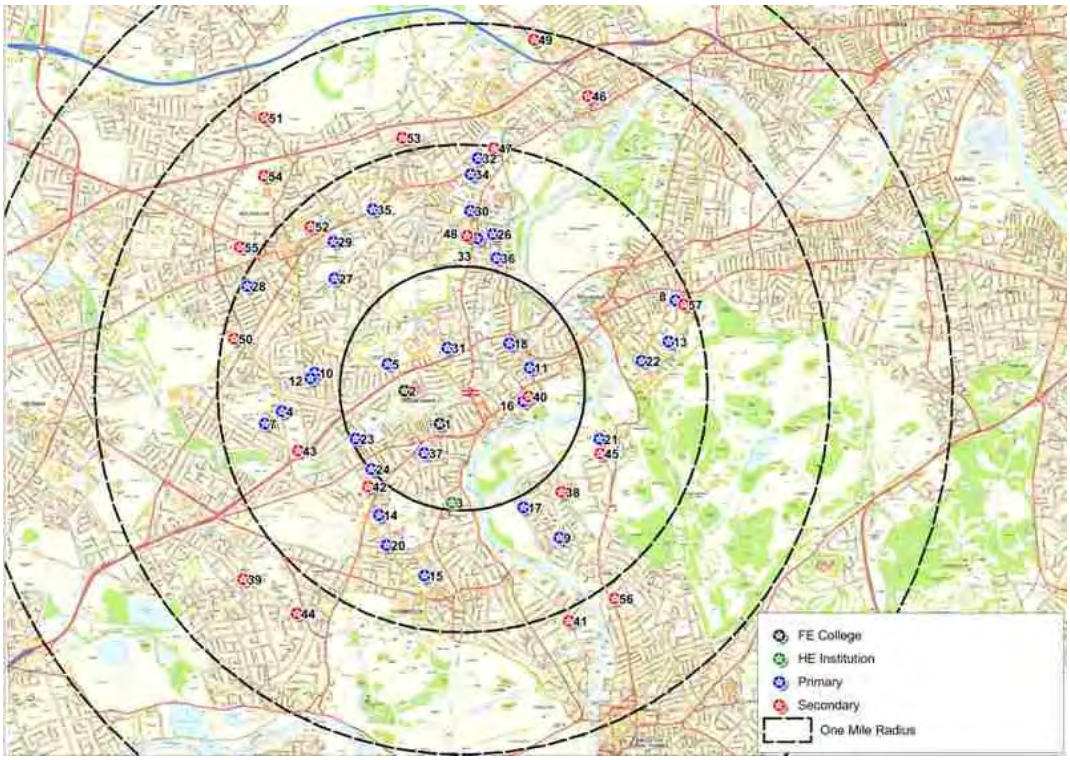
7.4.63 The 2007 Childcare Sufficiency Assessment carried out in the London Borough of Richmond identified that there are sufficient childcare places overall. Additional places in some areas for under twos (in Mortlake and Barnes Common ward area) and children between five and 14 years old would be beneficial.

7.4.64 The quality of provision in the Borough has been rated 'good' by Ofsted due to a range of choice in sessional and full daycare (including Steiner and Montessori models). Private sector businesses can also provide the statutory nursery provision and balance the free nursery education places provided by other childcare services.

Education - Primary

7.4.65 There are 34 primary schools within a two-mile radius of the Twickenham Station site, including one community special school (see Figure 7-14). Two miles is the benchmark primary school catchment as advised by the Department for Education and Skills (now Department for Education). Due to the natural barrier of the river, as well as other factors such as traffic density, Richmond Council recognise that accessing a school within one and a half or one mile is more feasible (Ref. 7-12). Indeed, of those primary schools within the two mile formal catchment area, 23 are in Richmond with the remainder in Hounslow.

Figure 7-14 Primary, Secondary and Tertiary Education (one to four mile catchments)



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7.4.66 Appendix 7-1 provides a breakdown of the capacity, pupils on roll and performance (based on Key Stage 2 results) of each of these primary schools. In total, the 34 institutions have capacity for 11,347 and have around 11,591 (Ref. 7-13) pupils on roll (102% of capacity). Of those primary schools in Richmond within a two mile radius of Twickenham Station, there is a total capacity of 7,894 and there are 7,891 pupils on roll (100% of capacity). Schools are considered to be at capacity when pupil roll numbers reach 96% of available places (Ref. 7-14) to allow for parental choice flexibility.

7.4.67 Richmond Local Education Authority (LEA) stresses that present provision is not sufficient for the level of demand in the local area. This is exacerbated at reception level, upon which the LEA basis its calculations for primary school need. For example, the Reception Roll Estimates (as of March 2010) identify that, for the borough as a whole, there are 289 less reception places than forecast pupils in 2010/11 and 247 less in 2019/20.

7.4.68 Demand is highest in St Margarets/East Twickenham LEA area (in which Twickenham Station is located) as well as Richmond/East Sheen and Teddington areas. For example, in St Margaret's and North Twickenham as well as Twickenham Riverside (the two wards that Twickenham Station straddles), there are 68 more reception year pupils than places in 2010/11 and 72 more pupils than places in 2019/20. For the Twickenham side of the Thames there is a shortfall of 208 places in 2010/11 and 194 by 2019/20.

7.4.69 The Richmond Primary Strategy for Change (2008) highlights that the growing demand for primary provision is as a result of more parents opting for state schools due to high achievement levels, with many being awarded 'outstanding' by Ofsted; increases in mortgage rates; booms in births following the Millennium; small housing developments; and conversions of houses to flats.

7.4.70 Due to forecast demand outstripping supply, the Primary Strategy for Change identified a selection of Richmond primary schools which could be expanded: Archdeacon Cambridge's; Chase Bridge; Holy Trinity; Kew Riverside; Orlean's Infant; St Mary's and St Peter's; Stanley Infant and Stanley Junior (these have been amalgamated); and The Vineyard. All of these schools, bar Holy Trinity and Key Riverside, are within two miles of Twickenham Station. There are no plans to open new schools due to the lack of suitably designated land and the high costs of land purchase.

Education - Secondary

7.4.71 There are 20 secondary schools within a three mile radius of the Twickenham Station site, including two community special schools (see Figure 7-14). Three miles is the benchmark secondary school catchment as advised by the Department for Education and Skills (now Department for Education). Of these 20 schools, nine are in Richmond, ten are in Hounslow and one is in Kingston.

7.4.72 A detailed breakdown by school is provided in Appendix 7-2. The schools have a combined capacity of 18,743 for pupils (over all years including sixth form provision where available) and a total of 17,607 on roll (84% of total capacity). None of the secondary schools within a three mile Radius in Richmond offer sixth form education but all of those falling within the three mile radius in Hounslow and Kingston do. Additional information on the provision of further education is provided in the following section.

7.4.73 The Primary Strategy for Change (2008) identifies that the over capacity experienced at primary level is not replicated at secondary level entry. The Strategy suggests that this is due to lower performing secondary schools in comparison to the 'outstanding' Ofsted ratings at primary level.

Further Education

7.4.74 There are two further education colleges (Richmond upon Thames College and Richmond Adult and Community College) and one higher education institution (St Mary's University College) within 1.5km of Twickenham station (Figure 7-14 and Table 7-9).

Table 7-9 Breakdown of Tertiary Education

Institution Type	Institution Name	Number on Map
Further Education	Richmond upon Thames College	2
	Richmond Adult and Community College	1
Higher Education	St Mary's University College (Catholic)	3

Source: Information from London Borough of Richmond website (http://www.richmond.gov.uk/home/education_and_learning/adult_and_community_education.htm; accessed 28/07/10)

7.4.75 In 2007 Richmond College was graded 'good' by Ofsted in terms of effectiveness of provision achievements and standards; quality of provision; and, leadership and management. It was graded 'outstanding' in terms of capacity to improve. In 2001 Richmond Adult and Community College was graded 'outstanding' for quality and reputation by Ofsted.

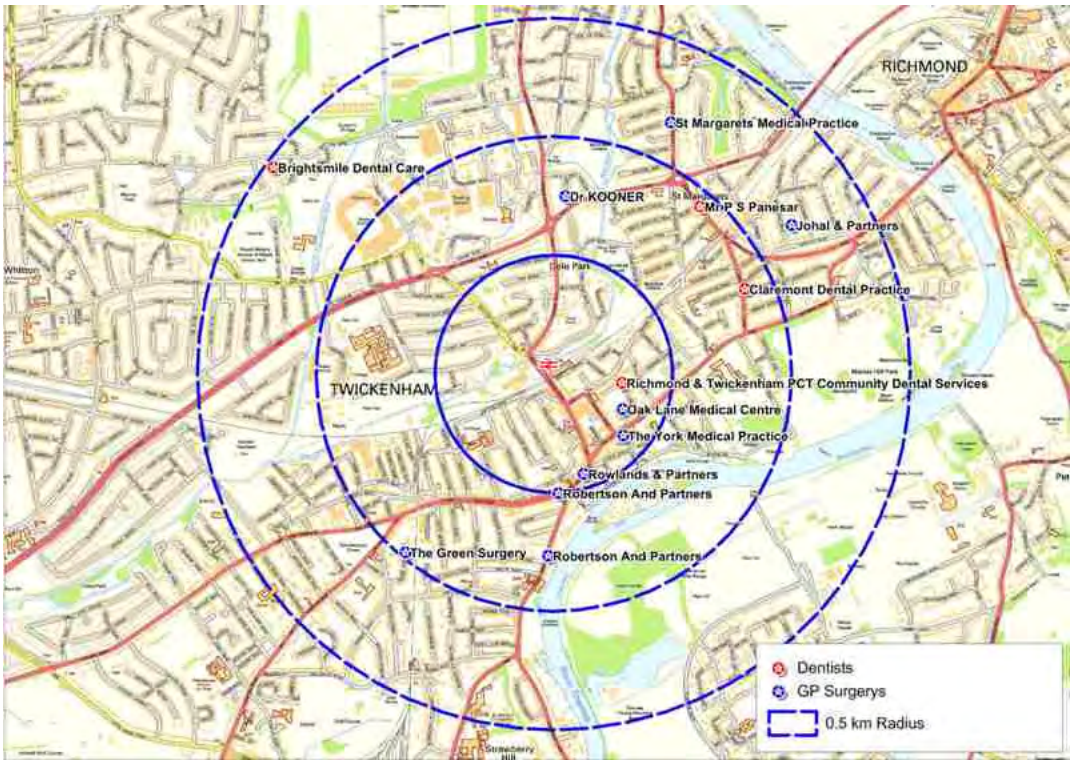
7.4.76 Both Richmond upon Thames College and Richmond Adult and Community College have been identified by Vince Cable (8th September 2010) on the government's Renewal and Enhanced Renewal Grant list of Colleges. This list identifies those colleges earmarked to receive a grant worth up to £225,000 from the Department for Business, Innovation and Skills. In turn they are required to contribute twice the amount of the grant to a certain building or renovation project.

Health

GPs and Health Centres

7.4.77 There are eight GP surgeries/health centres (comprising around 34 individual GPs) within 1.5km of the Twickenham Station site (see Figure 7-15). According to the Royal College of General Practitioners, a typical GP will have 1,800 residents on their books.

Figure 7-15 Health Centres and Dentists (1.5km)



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7.4.78 Consultation with the PCT revealed that the practices in proximity to Twickenham Station are operating under-capacity, their GP lists are open and they are therefore accepting new patients. In addition, a new GP service at Teddington Memorial Hospital (see below) is also undersubscribed.

7.4.79 Table 7-10 details the list sizes of GP and health centres within 1.5km of the Twickenham Station development. These practices currently serve over 46,200 residents.

Table 7-10 GP and Health Centre Provision (1.5km)

GP Practice	List Size
The York Medical Practice	11,061
Oak Lane Medical Centre	4,841
Rowlands & Partners	7,346
Dr Kooner	See Note
Robertson And Partners	9,335
The Green Surgery	7,457
St Margarets Medical Practice	See Note
Johal & Partners	6,181
Total Capacity	**46,221**

Source: Richmond Primary Care Trust, June 2010 list sizes

Note: List Sizes for Dr Kooner and St Margaret's Medical Practice were unavailable at the time of writing and are not included.

7.4.80 Richmond PCT has been awarded a 'good' for both quality and use of resources by the NHS Annual Health Check in 2008.

Hospitals

7.4.81 The nearest hospital to Twickenham Station is the West Middlesex University Hospital which is around two miles away (1.9 miles). The hospital provides a full range of services through six clinical business units: early in life; medicine; surgery; late in life and complex care; critical care; and clinical support services. In the 2008/2009 NHS Performance Rating assessment, the Care Quality Commission gave West Middlesex University Hospital a rating of fair for quality of services indicating adequate performance.

7.4.82 Twickenham Station is also in the catchment of Teddington Memorial Hospital which is two miles to the South. Teddington Memorial Hospital offers inpatients and outpatients services including a rehabilitation unit, pharmacy, walk-in centre, physiotherapy and diagnostics.

7.4.83 In 2008/2009 NHS Richmond was fully compliant with all 24 core standards of the NHS Standards for Better Health as both a provider and commissioner of services.

Dentist

7.4.84 There are four NHS dentist surgeries (comprising around 15 individual dentists) within 1.5km of Twickenham Station (see Figure 7-15). Dentists tend to serve between 1,300 and 1,500 registered patients. Based on this, there is an estimated capacity of between 19,500 and 22,500 within 1.5km of the Station.

7.4.85 Consultation with the PCT indicates that dentists in the local area have large available capacity.

Public Open Space

7.4.86 Public open space includes civic space, open space, parks, playgrounds, semi-natural areas and sports grounds. The Richmond Parks and Open Spaces Strategy identifies the following types of publically accessible open space and the required distance from a resident's home location (Table 7-11). The Parks and Open Spaces Strategy is currently being revised. This is not yet available and so the existing Strategy is used as reference here.

Table 7-11 Types of Publically Accessible Open Space

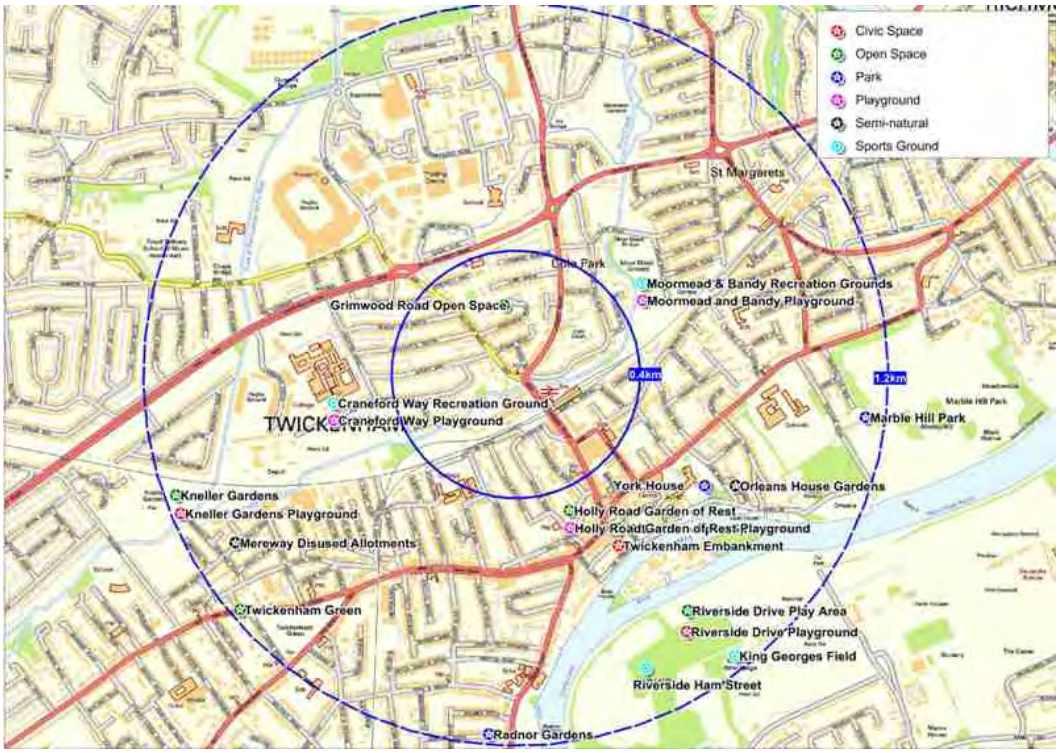
Hierarchical Type	Size and Distance from Home	Characteristics
Regional parks and open spaces	400 hectares 3.2-8km	Large areas/corridors of natural heathland, downland, commons, woodlands and parkland. Including areas not publically accessible but which contribute to environmental amenity.
Metropolitan parks	60 hectares 3.2km (or more where park is larger)	Either natural woodland, downland, commons, woodlands or formal park provision.
District parks	20 hectares 1.2km	Landscape setting with a variety of natural features for a range of activities including outdoor sports facilities, playing fields, children's play and informal recreational pursuits.
Local parks	Over 2 hectares 0.4km	Providing for court games, children's play, sitting areas, nature conservation, landscaped environment, playing fields.
Small local parks and open spaces	Under 2 hectares 0.4km	Gardens, sitting areas, children's playgrounds, areas of specialist nature including conservation.
Linear open spaces	Variable size Wherever feasible	Informal recreation.

Source: LPAC: Strategic Planning Advice for London (1988). Referenced in Richmond Parks and Open Spaces Strategy

7.4.87 Twickenham is well provided for in terms of parks and open spaces. The Richmond Parks and Open Spaces Strategy identifies that 100% of the Twickenham area is within 3.2km of a metropolitan or regional park (Richmond Park); 61% of the area is within 1.2km of a district open space; 94% of the area is within 400 metres of a local open space, 59% is within 400 metres of an equipped playground and 77% is within 500 metres of an area of nature conservation interest. This is before factoring in GLA advice which recommends a 10 minute rail of 15 minute bus journey which can increase the catchment area of larger parks.

7.4.88 Figure 7-16 identifies those public open spaces which are within 1.2km of the Twickenham Station development. This covers small parks and open space and local parks (0.4km) and district parks (1.2km). All locations within Twickenham are within 3.2km of Richmond Park, which is not shown here. There are a number of parks and open spaces (including playgrounds) within proximity of Twickenham Station: Grimwood Road Open Space; Moormead and Bandy Recreational Grounds and Playground, Holly Road Garden of Rest and Playground, Craneford Way Recreation Ground and Playground. Distance to local space is not considered an issue in the consultation response from the Parks and Open Spaces team.

Figure 7-16 Public Open Space (1.2km catchment)



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7.5 Site Preparation and Construction Impacts and Mitigation Measures

7.5.1 This section addresses the impacts associated during the site preparation and construction phases. In terms of the social and economic impact assessment this refers to employment resulting from construction investment.

Construction Investment and Employment

7.5.2 The total construction costs for the scheme have been estimated by Kier Property and the costs are equivalent to £26 million (including external works).

7.5.3 Turnover per construction job is used to estimate construction jobs resulting from a given level of construction spend. At 2008 prices, turnover per FTE construction job is £87,489 per annum. The construction of the Twickenham Station development will therefore support an estimated 297 person years in employment (temporary jobs).

7.5.4 The accepted rule of thumb states that ten person years in employment equate to one permanent job, therefore turnover per permanent construction job is £874,890. Based on this assumption, the Twickenham Station development will therefore support 30 permanent jobs directly. These are gross, direct impacts – we have not sought to calculate additional supply chain and uplift effects or to apportion the estimates of economic impact across our impact areas.

7.5.5 Another method for estimating construction employment is to use Gross Value Added (GVA) per construction job. However, this often leads to an over estimate of jobs created. Turnover per job includes the costs of bought in goods and services which are excluded from Gross Value Added and is therefore considered to be a more accurate basis for calculations to be made.

7.5.6 The impact of the Twickenham Station development during the site preparation and construction phase is therefore identified as minor beneficial.

7.6 Operational Impacts and Mitigation Measures

7.6.1 This section identifies the social and economic impacts arising when the Twickenham Station scheme is fully operational. It includes direct, indirect and induced impacts. Where adverse impacts are identified, the mitigation response is noted.

7.6.2 In it is identified that particular primary education provision will experience adverse impact as a result of the new scheme due to existing strains on provision.

Population Impacts

7.6.3 The Twickenham Station scheme includes 115 private units. Based on the unit size mix and data from the English Housing Survey (DCLG), the population arising from the mix of units is estimated as 199 (see Table 7-12). This is 0.1% increase on the existing Richmond population of 180,100 in 2008 (ONS).

Table 7-12 Population Estimate

Number of bedrooms	**1**	**2**	**3**	**Total**
Number of residents per unit	1.2	1.7	3.5	N/A
Number of units	37	66	12	115
Total number of residents	44.4	112.2	42	**198.6**

Source: English Housing Survey (DCLG)

7.6.4 When the existing population age profile of Twickenham town centre (Ref. 7-15) is applied to the new population, the following number of residents by age is estimated:

Table 7-13 Population Age Profile

Age Band	**Existing Age Profile (% of population)**	**New Residents (No.)**
Aged under 1 year	1.7	3.2
Aged 1 - 4 years	5.3	10.9
Aged 5 - 9 years	5.2	12.5
Aged 10 - 14 years	4.2	10.8
Aged 15 - 19 years	3.0	9.9
Aged 20 - 24 years	6.4	10.0
Aged 25 - 29 years	10.3	12.2
Aged 30 - 34 years	13.1	16.8
Aged 35 - 39 years	11.3	18.7
Aged 40 - 44 years	7.5	18.6
Aged 45 - 49 years	6.5	14.9
Aged 50 - 54 years	6.4	12.5
Aged 55 - 59 years	4.3	11.4
Aged 60 - 64 years	3.3	10.7
Aged 65 - 69 years	2.6	6.9
Aged 70 - 74 years	2.4	5.4
Aged 75 - 79 years	2.3	4.9
Aged 80 - 84 years	1.8	4.0
Aged 85 and over	2.4	4.2
Total	100	**198.6**

Source: Census 2001; Regeneris Consulting

7.6.5 This population size and age profile is used in the main throughout the remainder of the Chapter to demonstrate the potential impact of the Twickenham Station development on social and community infrastructure, spending, jobs and GVA.

Child Population

7.6.6 There are a number of methods to estimating the additional population of children arising from a new development: age profiling (as detailed above); child yield (number of children within a residential development based on unit mix); and pupil take up (number of children accessing state education). Each of these gives a different estimate for the additional number of children. The number of children arising from the development according to the three methods are detailed below.

Population Profile

7.6.7 The population profile estimates the number of children arising from a development based on the existing population age profile of the area. This approach gives a total of 35 children (aged 0 to 16). Further breakdown by age is also provided here to illustrate the potential levels of demand for particular education facilities. These figures give total estimated children and do not account for a proportion of families opting for private education.

Table 7-14 Children by Population Profile

Infrastructure	Age	Number	Note
Children	**0 to 16**	**35.2**	n/a
Childcare	0 to 14	32.7	n/a
Preschool Childcare	0 to 4	12.7	50% of 4 year olds
Statutory Nursery	3 and 4	3.7	50% of 4 year olds
Primary	4 to 11	14.7	50% of 4 and 11 year olds
Primary reception age	4 to 6	4.7	50% of 4 and 6 year olds
Secondary	11 to 16	7.1	50% of 11 and 16 year olds

Source: Solum Regeneration; Census 2001; Regeneris Consulting.

Note: These figures refer to child yield by age and not pupil take up

Child Yield

7.6.8 There are two methods for calculating child yield used within this report; LBRuT Planning Obligations Strategy, 2005 and GLA Supplementary Planning Guidance: Providing for Children and Young People's Play and Informal Recreation, 2008.

7.6.9 London Borough of Richmond upon Thames apply a child yield formula to assess Section 106 contributions, using London Research Centre Child Yield estimates which are based on the typical proportion of children attending each school type. The total child yield is estimated at 50 children.

Table 7-15 LBRuT Child Yield (0-16 years)

Bedrooms	1	2	3	Total
Private Housing Units	37	66	12	115
Child Yield Ratio	0.1	0.49	1.13	1.72
Child Yield	3.7	32.34	13.56	49.6

Source: Solum Regeneration; Planning Obligations Strategy, LBRuT, June 2005, Regeneris Consulting.

7.6.10 This can subsequently be broken down to estimate the pupil yield for nursery, primary and secondary. The proportional breakdowns are provided by London Borough of Richmond upon Thames Planning Obligations Strategy, drawing on standard distributions produced by the London Research Centre.

7.6.11 A total of 83% of the child yield is accounted for through this calculation. It is assumed that the remaining 17% of children are not old enough to attend nursery. A total of 41 children who will be at the age to access education are estimated.

Table 7-16 LBRuT Pupil Yield

	%	No. of Children
Nursery	13	6.4
Primary	52	25.8
Secondary	18	8.9
Total	83	41.2

Source: Solum Regeneration; Planning Obligations Strategy, LBRuT, June 2005, Regeneris Consulting

7.6.12 Application of LBRuT's pupil yield ratios to the population profile calculation for children aged 0 to 16, set out previously, provides a closer reflection of likely number of children accessing education from the Twickenham Station development. These figures are lower when compared to those obtained using LBRuT's child yield formula and provide a more realistic estimate of the number of children within the development: the development is over a station and does not contain amenities often sought by families with children, such as gardens. The pupil yield is obtained by applying LBRuT pupil yield ratios to the population profile figures. This gives a pupil yield of 29 children overall, as shown in Table 7-17.

Table 7-17 Population Profile Pupil Yield (using LBRuT ratios)

	%	Number of Children
Total Number of Children Aged 0-16		35.2
Nursery	13	4.6
Primary	52	18.3
Secondary	18	6.3
Total	83	29.2

Source: Solum Regeneration; Planning Obligations Strategy, LBRuT, June 2005, Regeneris Consulting.

7.6.13 The GLAs child yield ratios are detailed in Supplementary Planning Guidance: Providing for Children and Young People's Play and Informal Recreation (2008), and are based on Wandsworth child occupancy data for private housing. A total of 17 children are estimated using this approach.

Table 7-18 GLA Child Yield

	No. Units	Child Yield	No. Children
Private and Intermediate			
1 bed	37	0.11	4.07
2 bed	66	0.11	7.26
3 bed	12	0.48	5.76
Total Number of Children			17.09

Source: SPG Providing for Children and Young People's Play and Informal Recreation, GLA 2008

7.6.14 Based on the GLA breakdown by age the Twickenham Station development will result in 10 children aged 0 to four, five children aged five to ten and two children aged 11 to 15.

Table 7-19 GLA Child Yield Age Groups

	% of Total Children	Total Children
Private and Intermediate		
0 to 4	59%	10.08
5 to 10	27%	4.61
11 to 15	14%	2.39
Total Number of Children	100	17.09

Source: SPG Providing for Children and Young People's Play and Informal Recreation, GLA 2008

Pupil Product Ratio (Pupil Take Up)

7.6.15 The Pupil Product Ratio (PPR), or pupil take up, estimates the number of children arising from a new development who are likely to access state education. For private housing, 57% of secondary and post-16 pupil yield is applied. For primary and nursery sectors a local variable is applied. For Central and East Twickenham, which relates to the Twickenham Station development, this is 42% (Ref. 7-17).

7.6.16 Building upon LBRuT pupil yield figures, a total of three children are estimated to attend state provided nursery, 11 children primary and five children secondary based on the pupil take up. This sums to 19 children taking up state education provision.

Table 7-20 LBRuT Pupil Take Up.

Education Type	Private		
	Pupil Yield	Take Up Rate (%)	Take Up
Nursery	6.4	42	2.7
Primary	25.8	42	10.8
Secondary	8.9	57	5.1
Total	41.2		18.6

Source: Solum Regeneration; Planning Obligations Strategy, LBRuT, June 2005; Regeneris Consulting

7.6.17 As the population profile method provides a closer reflection of the likely child numbers associated with Twickenham Station development, the resultant pupil take up is demonstrated below. This applies LBRuT pupil take up ratios to the population profile pupil yield calculated earlier in the report. Using this method, a total of two children are estimated to attend state provided nursery, eight children to attend primary and three to four children to attend secondary. This sums to 13 children taking up state education provision.

Table 7-21 Population Profile Pupil Take Up

Education Type	Private		
	Pupil Yield	Take Up Rate (%)	Take Up
Nursery	4.6	42	1.9
Primary	18.3	42	7.7
Secondary	6.3	57	3.6
Total	29.2		13.2

Source: Solum Regeneration; Census 2001; Planning Obligations Strategy, LBRuT, June 2005; Regeneris Consulting.

Comparing the Different Approaches

7.6.18 As this section illustrates, there are three main methods to calculating the estimated number of children arising from a development. The main figures are compared in the table below.

Table 7-22 Comparison of Different Approaches

		Population Profile	LBRuT	GLA
Total Number (Child Yield)		**35.2**	**49.6**	**17.09**
Age Groups	0 to 4	14.0	-	10.08
	5 to 10	12.5	-	4.61
	11 to 15	7.4	-	2.39
Pupil Yield	Nursery	4.6	6.4	-
	Primary	18.3	25.8	-
	Secondary	6.3	8.9	-
	Total	**29.2**	**41.2**	-
Take Up	Nursery	1.9	2.7	-
	Primary	7.7	10.8	-
	Secondary	3.6	5.1	-
	Total	**13.2**	**18.6**	-

7.6.19 The population profile child yield, pupil yield and take up estimates are used throughout the remainder of the document to provide an assessment of the impact of the new population arising from the Twickenham Station development on education services in the local area. These figures provide a more realistic estimate of the likely numbers of children given the nature of the development: the town centre location and limited amenities, such as gardens, lead us to assume that the development will not attract high numbers of families with children but would be owned and rented by individuals entering the housing market, young professionals taking advantage of the town centre and station facilities for commuting and older individuals and couples looking to downsize.

7.6.20 The LBRuT and GLA figures are also referenced where relevant to provide a comparison.

Impacts Associated with Increased Spending

7.6.21 This section details both the spending impacts and the fiscal impacts arising from the scheme.

Spending Impacts

7.6.22 Increasing the size of the residential population can have an impact on the total volume of economic activity in local and regional economies. This increased spending becomes output for local and regional businesses and supports employment. The full effect of all subsequent rounds of spend can be estimated using multipliers.

7.6.23 In generating estimates of the impact of additional spend, a number of simplifying assumptions have been made:

- All units are fully occupied and developed
- Patterns and levels of household expenditure mirror the national average as reported in Family Spending (2009). This found that average household expenditure is £469.7 per week or £24,424 per annum.
- Leakage: not all household spending will fall within our impact areas. Instead a proportion of spending (varying by type of purchase) is likely to leak out to surrounding areas. We have made a number of assumptions, taking into account the type of purchase and expected impact on local and regional economies. We have excluded all spend on housing, fuel and power since these tend to be paid to major companies and financial institutions with indiscernible direct impact on the local and regional economy.
- Indirect Taxation. We have taken account of the proportion of spending which would be taken by the Exchequer through indirect taxation.
- Turnover per employee: we have estimated that turnover per employee would be £153,236. This is in line with turnover per employee for retail and food/drink services sectors in London.
- Multiplier: a medium multiplier is assumed, as recommended in EP Additionality Guidance.
- GVA per employee: we have estimated that GVA per employee is £39,616 which is equivalent to levels for London average in the retail and food/drink service sectors.

7.6.24 Under these assumptions, total household expenditure (before indirect taxation and discounting any leakage) from occupants of the 115 dwellings would be £2.8 million per annum at 2008 prices. Our estimates of the total spending impact and the associated employment that this would support are shown in Table 7-23.

Table 7-23 Total Spending Impact - Direct, Indirect and Induced

	Local Impact Area	Richmond	London
Direct Impact			
Additional Spend	1,126,797	1,510,735	1,761,469
Turnover per employee (£)	153,236	153,236	153,236
Direct Jobs Supported (B)	7.35	9.86	11.50
Direct GVA Supported (£m)	0.3	0.4	0.5
Indirect and Induced Impact			
Multiplier (C)	1.1	1.3	1.5
Total Jobs Supported D (B x C)	8.1	12.8	17.2
Total GVA Supported (£m)	0.32	0.51	0.68

Source: Regeneris Consulting; English Partnerships, Additionality Guide; Annual Business Inquiry (2008); Nomis (2008); Family Spending Survey (2009).

Note: Average Turnover and GVA per Worker in retail and food/drink service sectors in London; GVA per employee is assumed to be £39,616 based on Annual Business Inquiry and Nomis data (both 2008); Turnover per employee is assumed to be £153,236 based on Annual Business Inquiry and Nomis data (both 2008)

7.6.25 These estimates refer to the gross impacts. In order to generate estimates of the net value of additional spending that may be generated as a result of the development and take up of these new residential units we would need to make a set of additional assumptions about displacement – that is the proportion of output which can be accounted for by reduced outputs elsewhere. Due to the remit and time restrictions this aspect has not been covered in this Chapter review.

7.6.26 The spend impact of the Twickenham Station development is therefore identified as moderate beneficial.

Fiscal Impacts

7.6.27 Additional residential development within Richmond will also increase local authority Council Tax revenues. In estimating Council Tax revenue impact we make a number of simplifying assumptions as follows:

- All units are fully occupied
- No rebates or discounts given (e.g. single occupier discount)
- All properties fall within Council Tax E (Ref. 7-18) (£1,952.15)

7.6.28 Using these assumptions, we estimate that the Council Tax revenue from these units would be £224,500 annually in 2010/11 based on 115 units.

7.6.29 The fiscal impact of the Twickenham Station development is therefore identified as minor beneficial.

Impact on Housing

7.6.30 The Twickenham Station development provides 115 private residential units. In terms of the unit mix, 37 (32%) are one-bed, 66 (57%) are two-bed and 12 (10%) are three-bed. Table 24 provides detail on the housing mix.

Table 7-24 Twickenham Station Development Housing Mix

Housing Type		1 bed	2 bed	3 bed	Total
Housing	No.	37	66	12	115
	Percentage	32%	57%	10%	100%

Source: Rolfe Judd

7.6.31 As identified within the section on local policy, provision of housing in Twickenham is welcomed. In particular, the Core Strategy identifies that, in Twickenham, emphasis should be given to maximising redevelopment opportunities such as Twickenham Station. The Strategy states the need for higher density residential development in Twickenham including small units as well as car free development, in the town centre and tall buildings around the station area only.

Small Units

7.6.32 Consultation with representatives at the Council identified that one bed units would help meet the predicted growth in single person households as well as provide a more affordable option to enable people to get on the housing ladder. The adopted policy identifies that new developments should comprise around 25% of small units (studios and one bed) but it is noted that more sustainable locations, such as Twickenham Station, could support up to 75% small units. Due to the need for housing, discussions with Richmond Council representatives has highlighted that any provision will be considered.

7.6.33 The Solum Regeneration proposal will provide 37(32%) one bed units and 66(57%) two bed units (as well as 12 three bed units) within a high density development, offers limited car parking, and is located at the station. In light of the findings in relation to housing, the Twickenham Station development will help respond to housing need identified in the Borough.

Family Housing

7.6.34 The Richmond upon Thames Housing Strategy 2008-2012 sets out a number of objectives. Of particular relevance is the need to promote more affordable family sized accommodation, promote good quality sustainable design which is inclusive, helps lower crime and promotes greener homes. Again, the Solum Regeneration development will help meet some of these objectives through provision 12 three bed units (family homes), good design which will help to 'design out' crime, and inclusion of solar panels and green roofs.

Contributing to Local Targets

7.6.35 The Core Strategy sets the housing target of a net increase of 700-1100 residential units in Twickenham to 2017 with a target of around 270 per annum across Richmond as a whole. The Twickenham Station development contributes 12-16% of this target to 2017 and 43% of Richmond's annual housing target during the year of completion.

Affordable Housing

7.6.36 There is a recognised need for affordable housing in Richmond. The Richmond upon Thames Local Housing Assessment identifies a shortfall of affordable housing of around 2,723 units per annum across the Borough. However, to ensure deliverability, the Solum Regeneration plans for the redevelopment of Twickenham Station do not include affordable residential units..

7.6.37 The impact of the Twickenham Station development on housing is therefore identified as minor beneficial.

Impact on Social and Community Infrastructure

7.6.38 This section identifies the impact of the additional residential population arising from the Twickenham Station development. This assessment has been informed through consultation with key public sector representatives (details provided in the appendix) as well as desk-based quantitative analysis drawing on capacity data and demand calculations.

7.6.39 The population profile method, detailed previously within the Chapter, has been used to ascertain demand levels. This method provides a more realistic estimate of the population arising from the Twickenham Station development with regards to the central location above a transport interchange and limited amenities (for example, large gardens) which is likely to attract fewer families with children than other locations across the Borough. LBRuT's child yield, pupil yield and pupil take up ratios have been applied to the population profile figure to ensure consistency with the Council's established calculations with regards to education and play space. The use of these figures generates different calculations but essentially the same overall conclusions.

Education

Childcare

7.6.40 The Twickenham Station development is estimated to result in state nursery pupil take up of two children (see Table 7-25). This figure has been calculated using the population profile method and application of LBRuT's child and pupil yields and take up ratios.

Table 7-25 Population Profile Pupil – Nursery Take Up

Private		
Pupil Yield	**Take Up Rate (%)**	**Take Up**
4.6	**42**	**1.9**

Source: Solum Regeneration; Census 2001; Planning Obligations Strategy, LBRuT, June 2005; Regeneris Consulting.

7.6.41 LBRuT's population calculations give a pupil take up of three children for nursery education.

7.6.42 Within 1.5km of the Twickenham Station development there is currently no capacity within the three primary school providers of state nursery provision identified earlier in the Chapter. However, these relate only to state nursery provision available through schools; private sector providers also provide state nursery education for three and four year olds and it is possible that there may be capacity within the area. According to Richmond's Childcare Sufficiency Assessment there is sufficient supply within all childcare (covering ages 0-16) within the area.

7.6.43 While Richmond's Childcare Sufficiency Assessment identifies that future housing development may additionally impact on the demand for childcare (ages 0-16) over the next five to ten years, this level of demand is unlikely to cause any major adverse impact in itself.

7.6.44 The impact of the Twickenham Station development on childcare is therefore identified as **minor adverse.**

Primary

7.6.45 The new development is expected to generate a pupil take up of eight children at primary school age. Table 7-26 illustrates these calculations.

Table 7-26 Population Profile Pupil – Primary Take Up

Pupil Yield	Take Up Rate (%)	Take Up
18.3	42	7.7

Source: Solum Regeneration; Census 2001; Planning Obligations Strategy, LBRuT, June 2005; Regeneris Consulting.

7.6.46 LBRuT's calculations give a primary school pupil take up of 11.

7.6.47 A two mile catchment is recommended by DfES for primary education. Richmond Local Education Authority recognises that due to limited primary school capacity in Richmond, residents are likely to access schools within close proximity to their place of residence. Primary schools in Richmond within a two mile catchment of Twickenham Station are presently at 100% capacity, with Richmond's state education provision at 97%. Once a school reaches 96% capacity it is considered to be at capacity to enable parental choice.

7.6.48 The estimated eight children at primary level arising from the Twickenham Station development will account for an additional 0.1 to 0.2% of school roll and does not alter the total percentage of capacity on roll within any of the geographies and school types considered (see Table 7-24).

Table 7-27 Impact on Primary School Provision

	Current			Additional Demand from Twickenham Station (8 pupils)		
Area	**Number on Roll**	**Capacity**	**% of Capacity on Roll**	**Number on Roll**	**Capacity**	**% of Capacity on Roll**
Richmond Schools within 2 mile catchment	7891	7894	100%	7899	7894	100%
Richmond State Schools within 2 mile catchment	4486	4628	97%	4494	4628	97%
Total within 2 mile catchment (including Hounslow)	11591	11347	102%	11599	11347	102%
Total State Schools within 2 mile catchment (including Hounslow)	7636	7662	100%	7644	7662	100%

Sources: Regeneris Consulting; Directgov (http://schoolsfinder.direct.gov.uk/; accessed 28.07.10); Edubase2 (http://www.edubase.gov.uk/home.xhtml; accessed 02/09/10); LBRuT 'Richmond Schools Roll'

7.6.49 However, due to current lack of capacity within local primary school provision, primary school pupils arising from the Twickenham Station development will contribute to the pressure placed on supply now and in the future.

7.6.50 The impact of the Twickenham Station development on primary school provision is therefore identified as **minor adverse**. The developer will make a contribution towards necessary education provision.

Secondary

7.6.51 The new development is expected to generate a pupil take up of four children at secondary school age. Table 7-28 illustrates these calculations.

Table 7-28 Population Profile Pupil – Secondary Take Up

Pupil Yield	Take Up Rate (%)	Take Up
6.3	57	3.6

Source: Solum Regeneration; Census 2001; Planning Obligations Strategy, LBRuT, June 2005; Regeneris Consulting

7.6.52 LBRuT's calculations give a secondary school pupil take up of five.

7.6.53 There is capacity within the secondary provision within three miles of Twickenham Station. Three miles is the DfES recommended catchment area for secondary education. In Richmond, within three miles of Twickenham Station, capacity is at 88% within both state provision and overall. Capacity within the whole of the three mile catchment area capacity reduces to around 94%. An additional four secondary school pupils will not have a significant impact on the provision of secondary education. It will increase demand (number on roll) by around 0.0-0.1%.

7.6.54 The impact of the Twickenham Station development on secondary school provision is therefore identified as **negligible**.

Health

GPs and Health Centres

7.6.55 Consultation with Richmond PCT identified that there is existing capacity within the GP and health centres in proximity to Twickenham Station. Current provision within 1.5km of Twickenham Station covers over 46,200 residents. Local GP lists are open and accepting new patients. The PCT feel that the additional 199 residents could be easily accommodated within existing provision.

7.6.56 The impact of the Twickenham Station development on GP and health centre provision is therefore identified as **negligible.**

Hospitals

7.6.57 Teddington Memorial Hospital and West Middlesex University Hospital, both of which are within two miles of the Twickenham Station development, are large acute care providers serving Richmond and the wider area. It is understood that there will be sufficient capacity to cater for an additional 199 residents within existing provision. This is a small number of residents compared with the catchment area of the hospitals.

7.6.58 The impact of the Twickenham Station development on hospital provision is therefore identified as **negligible.**

Table 7-29 Impact on Secondary School Provision

Area	Current			Additional Demand from Twickenham Station (7 pupils)		
	Number on Roll	Capacity	% of Capacity on Roll	Number on Roll	Capacity	% of Capacity on Roll
Richmond Schools within 3 mile catchment	6052	6847	88%	6056	6847	88%
Richmond State Schools within 3 mile catchment	5464	6224	88%	5468	6224	88%
Total within 3 mile catchment (including Hounslow and Kingston)	17607	18743	94%	17611	18743	94%
Total State Schools within 3 mile catchment (including Hounslow and Kingston)	11750	12703	92%	11754	12703	93%

Sources: Regeneris Consulting; Directgov (http://schoolsfinder.direct.gov.uk/; accessed 28.07.10); Edubase2 (http://www.edubase.gov.uk/home.xhtml; accessed 02/09/10); LBRuT 'Richmond Schools Roll

Table 7-30 GP and Health Centre List Sizes

GP Practice	List Size
The York Medical Practice	11,061
Oak Lane Medical Centre	4,841
Rowlands & Partners	7,346
Dr Kooner	See Note
Robertson And Partners	9,335
The Green Surgery	7,457
St Margarets Medical Practice	See Note
Johal & Partners	6,181
Total Capacity	**46,221**

Source: Richmond Primary Care Trust, June 2010 list sizes
Note: List Sizes for Dr Kooner and St Margaret's Medical Practice are not included here as they were unavailable at the time of writing

Dentist

7.6.59 There are four dentists operating within 1.5km of the Twickenham Station development. Consultation with the PCT identified that these are currently operating under capacity and that an increase of 199 residents could be easily accommodated within existing provision.

7.6.60 The impact of the Twickenham Station development on dentist provision is therefore identified as **negligible**.

Public Open Space

7.6.61 As identified previously within the Chapter, the Twickenham Station development will be in proximity of a number of parks and open spaces. There are a number of parks and spaces in proximity to the development site (Grimwood Road open space, Moormead and Bandy Recreational Grounds and Playground, Holly Road Garden of Rest and Playground, Craneford Way Recreation Ground and Playground). Due to the relatively open capacity of parks and open spaces, the Twickenham Station development will not have a direct impact on the capacity of such facilities. However, consultation has identified the need for upgrade of some parks which could be a consideration for developer contributions. In particular:

- Holly Road and Garfield Road Recreational Grounds would benefit from improvements to the open space and additional funding for playground facilities (within Holly Road). Grimwood Road open space is also in need of re-landscaping. Additional residents would put a greater strain on Holly Road Recreational Ground and Garfield Road Recreational Ground unless they are redesigned.
- All three parks noted above are in need of re-design/landscaping to improve aesthetics, security and seating for residents and businesses (as they are used as lunch-time venues).
- Opening up links with the River Crane and improving its natural habitats and biodiversity.
- Linking Kneller Gardens to the West with Moormead Recreation Ground in the East.
- Adjoining green space on both sides of the River Crane through joint working with the Sorting Office development.

7.6.62 The Solum Regeneration development will provide considerable linkage to the River Crane and Moormead Recreation Ground. The Council may wish to enter into discussion with Solum Regeneration with regards to possible developer contributions towards the upgrade of parks and open spaces in the local area.

7.6.63 Given the 35 (Ref. 7-19) additional children aged 0 to 16, which the Twickenham Station development is estimated to attract to the area, there is likely to be some increase in demand for parks and open spaces within the local area. It is anticipated that, due to the improved links, the Moormeads Recreational Park (and playground) will accommodate the majority of the increase.

7.6.64 In response to the original scoping report, the Friends of the River Crane Environment (FORCE) welcomed the principle of a new pedestrian footpath proposed along the River Crane linking to the River Crane walk and identified that the development provides a unique opportunity to provide pedestrian and cycle links upstream and downstream to Moormead Park.

7.6.65 In addition to the consultation response, there are some local considerations identified within Richmond Parks and Open Spaces Strategy which should be taken into consideration with regards to the Twickenham Station development. These are: the need to ensure local people have access to a substantial sized park or open space; addressing the shortage of equipped playgrounds; and, improving local knowledge of the network of parks and open spaces opportunities. The opportunities to address these issues include creating pleasant walking and cycling routes as well as signage improvements.

7.6.66 The Twickenham Station development proposed by Solum Regeneration addresses these considerations. It includes a connecting path from the Station to Moormead Recreation Ground and Playground with appropriate signage. While the park is located just beyond the ideal 400 metres catchment area, the path will increase the connectivity to this amenity. The path itself is to include natural play facilities such as a nature interpretation trail.

7.6.67 The impact of the Twickenham Station development on parks and public open space provision is therefore identified as **minor adverse**. The developer will provide a riverside walkway and public open space with subsequent permissive access rights. A management plan will be devised to secure the maintenance of both amenities.

Impact on Business

7.6.68 The impact on businesses in the local area has been informed by consultation with Twickenham Town Centre Manager, information from the baseline analysis set out earlier in the Chapter, and selected documents pertaining to the business base in Twickenham and Richmond such as the Richmond Retail Study Update (GVA Grimely, 2009). The scope of Regeneris Consulting's commission does not allow for a detailed analysis providing depth of analysis of local issues (such as a retail impact assessment).

7.6.69 As explored in the statistical baseline section of the Chapter, Twickenham's business base is characterised by public administration (14.8%), education (14.5%) and 'other business activities' (12.4%).

7.6.70 Twickenham town centre suffers from a perceived lack of accessibility, accentuated by the peripheral location of Twickenham Station. There is a potential concern amongst business owners that the upgrade of the station, and provision of shops at the station site, will accentuate the spatial divide between the Station and the Town Centre as individuals will be able to access some retail and leisure services at the Station. Conversely, it is recognised that an aesthetic upgrade to the station is a huge positive and is likely to attract more customers and raise the profile of the area. In addition, if the redevelopment also improves visitor flows during match days and concerts, businesses would possibly benefit from a more manageable and consistent footfall.

7.6.71 Supermarkets in proximity to the Station (Waitrose) are likely to welcome the new development due to an increase in residents, while the provision of a supermarket within the development would not be seen as positive by other food retails (such as Waitrose). However, the opening of a small supermarket (Tesco) at the opposite end of Twickenham on Heath Road did not lead to a backlash from local supermarkets suggesting that there may be some spare capacity for additional retail provision.

7.6.72 Anecdotally, Marks and Spencer's Simply Food outlet in Twickenham Town Centre is looking to expand their operation while another premium pre-prepared food company is seeking 1,000m2 of floorspace in the area. The commercial space within the Twickenham Station development may provide an appropriate opportunity for one or both of these businesses. Indeed, the Richmond Retail Study Update (GVA Grimley, 2009) notes that Twickenham has negative convenience goods floor space until after 2021 which suggests there is a requirement for additional space.

7.6.73 According to the Town Centre Manager, in terms of needs within Twickenham's retail provision, there are currently gaps in clothing retail and the town is looking to attract a multiple clothing retailer. Other types of store which are needed are homewares and a butchers. The Richmond Retail Study Update (GVA Grimey, 2009) notes that the Borough could support an additional 153 m2 net comparison goods floorspace by 2011 rising to 16,470 m2 by 2026. The identified need is primarily in the East of the Borough in Richmond. However, Twickenham Town Centre (based on eight LSOAs) has an under-representation of retail with a Location Quotient of 0.7 (where provision above 1 equals over-representation).

7.6.74 The Town Centre Manager hopes that Twickenham's tourism offer could also be promoted through the development. Facilities such as a tourist information point and improved signage to local attractions (including the river, museums, the theatre, Orleans House Gallery as well as seasonal events) could be included to raise the profile and visitor numbers of the areas attractions.

7.6.75 Richmond's Core Strategy (April 2009) identifies the vision for local business which includes:

- Encouraging provision of small units (under 250 m2) with an LDF target for 75% of all employment floorspace completions to be below 250m2 – the Twickenham Station development includes six commercial units, all of which are under 250m2 (24m2, 31m2, 133m2, 144m2, 158m2 and 244 m2).
- Supporting a strong sustainable economy through sufficient well-located employment land suitable for modern business needs – the development is well-located given its immediate proximity to Twickenham Station.
- Provision of a range of employment opportunities including those which do not require considerable travel – the location and mixed-use nature of the scheme means that some residents in the local area may access jobs within the Twickenham Station development to which they are able to walk or cycle.

7.6.76 The impact of the Twickenham Station development on local businesses is identified as both **minor beneficial** (additional residents spending in local area and improved retail and leisure offer) and **minor adverse** (increased competition with existing food retailers) and is therefore ultimately identified as negligible.

Gross Direct Employment

7.6.77 As well as new residential units, the Twickenham Station development includes proposals to develop new employment space. It will create a total of 734 m2 employment space (based on Gross Internal Areas).

7.6.78 In order to inform our assessment of the volume of employment associated with this employment floorspace, we have used 'Employment Densities: A Full Guide' by English Partnerships. This provides recommended employment densities (i.e. the amount of floorspace per worker) based on median variables derived from surveys of a wide range of employment developments.

7.6.79 A summary of the employment element of the scheme together with our assumptions on employment densities is provided below:

- Retail (A1) –We have assumed an employment density 20m2 for shop units and 19 m2 for supermarket uses.which is in line with EP Guidance for the respective uses. This gives an average of 19.5 for A1 uses.
- Restaurant / Cafe (A3) –We have assumed an employment density of 13 m2 for any A3 uses which is in line with EP Guidance for restaurants.
- Assembly / Leisure (D2) – We have assumed an employment density of 36m2 for cultural attractions, 40 m2 for amusement and entertainment centres and 55m2 for private sports clubs. This is in line with EP Guidance for these uses and gives an average of 44m2 for likely D2 uses.

7.6.80 Based on these employment densities detailed above, an average employment density of 25.4m2 is applied to the floorspace of 734m2. The results are illustrated in Table 7-31. This suggests that the scheme would result in 29 gross direct jobs.

Table 7-31 Direct Employment

Total Area (Gross Internal Areas for all except retail which uses net internal areas) (m2)	734
Employment Density (m2 per workspace)	25.4
Direct Employment (A)	28.9

Source: Rolfe Judd; English Partnerships; Regeneris Consulting

7.6.81 The impact of the Twickenham Station development on employment is therefore identified as **moderate beneficial**.

Gross Value Added

7.6.82 Gross Value Added (GVA) measures productivity according to the sum of incomes generated by the process of production of goods and services. It is a headline measure used to monitor economic performance. By identifying the average GVA per employee in the sectors which will occupy the commercial space within the development and applying this to the direct number of employees associated with the scheme once it is operational, it is possible to provide an estimate of the total GVA associated with the scheme. This provides an indication of the additional economic benefit arising from the new development which can be extrapolated, using standard multipliers, to local and regional scales.

7.6.83 Table 7-32 demonstrates that, based on this calculation, the Twickenham Station redevelopment will result in additional £1.1m GVA in the local economy.

Table 7-32 Direct Gross Value Added

Direct Employment (A)	28.9
GVA per employee	£39,616
Direct GVA Supported (£m)	**£1.1**

Source: Regeneris Consulting
Note: GVA per employee figures are the average for employees in the retail and restaurants/cafes sectors in London sourced from Annual Business Inquiry, 2008.

7.6.84 The impact of the Twickenham Station development on gross value added is therefore identified as moderate beneficial.

Indirect and Induced Impacts

7.6.85 Any injection of economic activity into local and regional economies generates multiplier effects, both indirect multiplier effects that are the result of supply chain effects and induced multiplier effects that are the result of a general uplift in spending in the area associated with increased employment income. The larger and more diverse an economy is, the larger these multiplier effects tend to be, since less spending leaks out. These effects can be broadly estimated using combined indirect and induced multipliers as shown in Table7-33. In addition to the direct GVA supported by the development (£1.1m) the development will support a further £0.2m in the Local Impact Area, £0.4m in Richmond and £0.6m in London in any one year.

Table 7-33 Indirect and Induced Employment and GVA

Direct Employment Supported (A)	**29**		
Direct GVA Supported (£m)	**£1.1**		
	Local Impact Area	**Richmond**	**London**
Assumed Indirect and Induced Multiplier (B)	1.1	1.3	1.5
Total Employment (A x B)	32	38	43
Total Additional Employment Supported per annum	**3**	**9**	**14**
Total GVA Supported per annum (£m)	£1.3	£15	£1.7
Total Additional GVA Supported per annum (£m)	**£0.2**	**£0.4**	**£0.6**

Source: Regeneris Consulting

7.6.86 A full assessment of the net economic impacts would need to take account of possible displacement effects, in which a proportion of the employment generated by occupiers of the employment space displaces employment that could have been generated elsewhere. Due to the remit and timescales for this study we have not been able to look in detail at this.

7.6.87 The impact of the Twickenham Station development on indirect and induced employment and GVA is therefore identified as moderate beneficial.

Summary of Total Quantitative Economic Impacts

7.6.88 Once operational, Solum Regeneration's Twickenham Station development will contribute the following economic benefits directly as well as the Local Impact Area, Richmond and London:

Table 7-34 Total Quantitative Economic Impacts

Spend and Fiscal Impacts (Associated with new residents)				
	Direct, Indirect and Induced			
	Local Impact Area	Richmond	London	
Spend	£1.6m	£2.2m	£2.5m	
Jobs Supported	12	18	25	
GVA Supported (per annum)	£0.5m	£0.7m	£1m	
Fiscal (per annum)	-	£0.3m	-	
Gross Direct Employment and GVA (Associated with commercial units)				
	Direct	Direct, Indirect and Induced (Including 29 Direct Jobs)		
		Local Impact Area	Richmond	London
Jobs	29	32	38	43
GVA (per annum)	£1.1m	£1.3m	£1.5m	£1.7m

Source: Regeneris Consulting
Note: The jobs referenced here are in addition to the 30 permanent construction jobs as a result of the construction phase. All figures are cumulative.

7.6.89 In total, it is estimated that the scheme will support 44 jobs and £1.8m GVA per annum within the Local Impact Area and 68 jobs and £2.7m GVA per annum across London.

Wider and Catalytic Impacts

7.6.90 As well as the quantitative assessment provided above, it is also important to acknowledge the wider and catalytic qualitative impacts. The following have been identified with this regard:

- Creating a vibrant and prosperous Richmond upon Thames - Investing in improvements to Twickenham Station and the provision of housing and commercial services in the vicinity will support Richmond upon Thames in competing with other boroughs. Twickenham is identified in Richmond's Core Strategy as being the second largest centre in the borough, the development will also enhance Twickenham's profile in the Borough and London as a whole.
- Labour market - Twickenham Town Centre has a strongly performing labour market, though the number of people claiming Job Seekers Allowance more than doubled during the recession. The area has a daily net outflow of 1000 commuters, typically to Central London and neighbouring areas. The provision of commercial units at Twickenham Station will provide local retail and leisure employment opportunities, particularly for the cohorts of the community who do not have higher qualification levels and may reduce some out-commuting. The location and visibility of the station will ensure that the job opportunities are both transparent and easy to access.
- Physical Environment and Accessibility – The facilities at Twickenham Station will be improved while signage and pedestrian areas, cycle storage and taxi areas will also be provided to ensure easy access and navigation to further destinations. The proximity of residential provision to the station supports the Core Strategy's identification of the need to support an increase in non-car based travel. The physical environment will also be improved by landscaping and the station facade upgrade provided by the scheme.

- Improved Image and Perceptions – The Twickenham Station scheme will significantly improve the visual image of the site. As Twickenham Station acts as a 'gateway' to Twickenham for leisure, business and residential use, there is likely to be an improved perception of the area. This could, in turn, help to attract investment. In addition, the scheme has been designed with 'designing out crime' principles. The residential use will mean 24 hour usage of the site which adds to the safety of the area as a point of arrival.
- Other Impacts Identified – The redevelopment of Twickenham Station will bring an underutilised site into employment and residential use as well as providing much needed housing in the area. The development also reflects Richmond Core Strategy requirements for sustainable builds and communities due to environmental considerations and proximity to an existing town centre offering local services and facilities.

7.7 Residual Impact Assessment and Conclusions

7.7.1 This assessment draws on information from the previous impact sections and indicates the net social and economic impact of the Twickenham Station development. That is, those impacts which cannot be eliminated through design change or the application of standard mitigation measures.

Table 7-35 Residual Impact Assessment

Classification	Socio-economic Element	Detail	Where Adverse or Beneficial	
			Significance (Extreme, Major, Moderate, Minor)	Short / Medium / Long term
Beneficial	Housing	The scheme will provide 115 units. Housing need for private units in Richmond and the Twickenham area is high and the Council welcomes housing provision.	Major	Long term
	Spend	The new population is estimated to spend £2.8m per annum. Spend would be accumulated within the Local Impact Area (£1.1m), Richmond (£1.5) and London (£1.7m).	Moderate	Long term
	Fiscal	£224.5k per annum Council Tax revenue from 115 additional units.	Minor	Long term
	Construction Jobs	Construction investment is anticipated to support 30 permanent jobs directly.	Minor	Short term
	Jobs	The scheme will provide 29 direct jobs once operational. With the inclusion of multiplier effects, an additional 3 jobs will be supported within the Local Impact Area, 9 in Richmond and 14 in London.	Moderate	Long term

Classification	Socio-economic Element	Detail	Where Adverse or Beneficial	
			Significance (Extreme, Major, Moderate, Minor)	Short / Medium / Long term
	GVA (related to commercial units)	The scheme will support £1.1m per annum once operational. With the inclusion of multiplier effects, an additional £0.2m will be supported within the Local Impact Area, £0.4m in Richmond and £0.6m in London per annum.	Moderate	Long term
Negligible	Secondary School	This provision currently has capacity to absorb the additional 4 pupils estimated to take up state education as a result from the scheme.		
	GP/Health Centre	There is existing capacity within GP provision in the local area to absorb an additional 199 residents.		
	Hospital	The two hospitals within two miles of the development have sufficient capacity to absorb an additional 199 residents.		
	Dentist	There is sufficient capacity within local dentist provision to accommodate an additional 199 residents.		
	Business	While there is need for additional small retail units in the area (which the development provides) this provision will also increase competition to other providers.		
Adverse	Nursery	State nursery provision (covering ages 3 and 4) provided by local primary schools is currently at capacity and are unlikely to be able to accommodate the additional 2 children anticipated to require state nursery provision from the development. However, the analysis was unable to map private providers who also provide state nursery provision for 3 and 4 year olds. Based on the findings of Richmond's Childcare Sufficiency Assessment, there is sufficient provision of childcare for children aged 0 to 16. It is therefore considered likely that there will be some state nursery capacity within private provision.	Minor	Long term

Classification	Socio-economic Element	Detail	Where Adverse or Beneficial	
			Significance (Extreme, Major, Moderate, Minor)	Short / Medium / Long term
	Primary School	Provision is currently over-capacity and additional residents of primary school age who will take up state primary education (estimated to be 8 pupils) will add to the increasing levels of demand. The developer will make a contribution towards necessary education provision.	Minor	Long term
	Parks and Open Spaces - Playgrounds	Quality of provision is not currently at the level needed to support additional demand (35 children aged 0-16). However, quantity of provision is suitable, particularly given the links to Moormead Recreational Ground and playground, as well as play scapes along the river path, provided by the scheme.	Minor	Long term

7.8 Cumulative Impact Assessment

7.8.1 The Twickenham Station development will not occur in isolation. As detailed in *Chapter 2: EIA Methodology*, planning approval has been granted for the development of a 111 bed Travelodge hotel with associated bar and restaurant. The cumulative impacts likely to materialise are:

- Increased employment space and therefore jobs (35 positions in the hotel and associated bar and restaurant (Ref. 7-20) in the Local Impact Area – in addition to the 29 jobs identified in this analysis with regards to direct employment in the commercial units on the Twickenham Station site. This gives a total of 64 direct jobs from both developments.
- Subsequent increase in local spend (from both visitors and employees) above that identified in this analysis
- Multiplier effects will in turn increase the number of jobs and GVA supported in the area above that identified in this analysis
- The areas image will also be promoted further and the 'gateway' aspect to Twickenham from the station towards the town centre will be reinforced.

7.8.2 Given the different use of the two sites there is likely to be an enhancing relationship as opposed to a competing relationship. In addition, the Travelodge will add to the beneficial economic impacts as opposed to increased demand for local social and community infrastructure.

7.8.3 As detailed in *Chapter 2: EIA Methodology*, the proposed use for the Royal Mail Site has not been determined and the cumulative impact cannot be accurately assessed. If the site were to be developed for residential use the cumulative impacts are likely to be beneficial in the provision of private and affordable housing to contribute to meeting the Core Strategy Housing target for residential units.

7.8.4 The impact of the development on the local educational, childcare and healthcare facilities and public open space would need to be assessed through the planning application for the Royal Mail Sorting Office Site and associated S106 contributions agreed for that site.

7.8.5 The Twickenham Station development would have a beneficial impact on any proposals for the Royal Mail site through the provision of improved transport interchange for future users.

7.9 References

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Ref. 7-4: Mayor of London (2010) 'The Mayor of London's Transport Strategy'

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Ref. 7-6: London Borough of Richmond upon Thames (2009) 'Richmond Local Development Framework Core Strategy'

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Ref. 7-9: London Borough of Richmond upon Thames (2008) 'Richmond upon Thames Housing Strategy 2008-2012'

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Ref. 7-24: LBRuT, Education and Children's Services (2007), 'Childcare Sufficiency Assessment'

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Ref.7-26: LBRuT (2005), 'Planning Obligations Strategy'

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Ref.7-31: LBRuT, http://www.richmond.gov.uk/home/education_and_learning/adult_and_community_education.htm , accessed July 2010

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8.1 Introduction

8.1.1 This Section of the Environmental Statement (ES) assesses the transportation implications and whether there are any significant effects of the Development. It incorporates a summary of the Transport Statement (TS) (Ref. 8-1), which is provided in full in *Appendix C of ES Volume III*.

8.1.2 A detailed description of the proposals is set out in *Chapter 4: Description of Development*. Critically in terms of assessing the Transport Impacts the scheme does not provide an increase in car parking over the existing provision for station commuters, unless an agreement for a reduction can be agreed with the Train Operating Company (TOC), and has therefore been accepted, in pre-application discussions with the Transport Officers of the London Borough of Richmond upon Thames (LBRT) and Transport for London (TfL), as being a car free scheme with no offsite highways impacts. The scheme includes for 3 car club spaces with a Section 106 obligation which will disallow residents of the development to obtain a parking permit to park in the surrounding roads.

8.1.3 This Section has been prepared by Mayer Brown Ltd the Transport Advisors to Solum Regeneration and describes the methodology used to determine the effects; the baseline conditions currently existing at the Site and its surroundings; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been employed.

8.1.4 This Section has been written to respond to comments raised in the Scoping Opinion issued by Maddox and Associates and further scoping discussions held with the Transport Officers of LBRT and TfL.

8.1.5 The assessment methodology comprises four main components: assessing the existing transportation situation and forthcoming proposals for the area; identifying areas of concern in terms of highways and public transport provision; addressing any problems with a package of transport measures to encourage travel by means other than the private car.

8.1.6 The TS has been written in accordance with the Transport for London's (TfL) Transport Assessment Best Practice Guidance Document' April 2010 (Ref. 8-2). Pre-application discussions were held with the LBRT and TfL.

8.2 Planning Policy Context

8.2.1 The following section considers the relevant Transport Policies implications of the proposed development.

National Planning Policy

Planning Policy Guidance Note 13 - Transport

8.2.2 Government Planning Policy Guidance in relation to transport is contained in PPG13. The key aims of PPG 13 are to;

1. *Locate development in locations that offer a realistic choice of access by non car modes*
2. *Encourage alternative means of travel which have less environmental impact*
3. *Reduce reliance in the private car*
4. *Reduce the growth in the number of motorised journeys*

8.2.3 In respect of site accessibility PPG13 states at paragraph 16 that;

"Local Planning Authorities should 'seek greater intensity of housing development at places with good public transport accessibly such as city, town district and local centres or around major nodes along good quality public transport corridors".

8.2.4 Similarly "Cycling *also has potential to substitute for short car trips, particularly those under 5km"* (Paragraph 78, PPG 13). To achieve it, paragraph 79 of this document states that it is important that there is:

- *"the design, location and access arrangements of development to ensure that it promotes cycling;*
- *the provision of convenient, safe and secure cycle parking and changing facilities in developments and the provision of cycle storage facilities at transport interchanges;*
- *the provision of cycling routes and cycle priority measures in major new developments"*

8.2.5 The proposals are considered to be in accordance with the criteria set out in PPG13.

Regional Planning Policy

The London Plan (Consolidated with Alterations since 2004)

8.2.6 The main aim of The London Plan is;

"The Economic Development Strategy sets out the framework for sustainable economic development founded on investment in London's places and infrastructure, its people and enterprise, and in marketing and promoting the best of what the capital has to offer."

8.2.7 Section 3C of the London Plan relates to the improvement to public transport in London. In particular, Policy 3C1 states;

"The Mayor will work with TfL, the government, boroughs and other partners to ensure the integration of transport and development by:

- *encouraging patterns and forms of development that reduce the need to travel, especially by car*
- *seeking to improve public transport, walking and cycling capacity and accessibility where it is needed, for areas of greatest demand and areas designated for development and regeneration, including the Thames Gateway, Central Activities Zone, Opportunity Areas, Areas for Intensification and town centres and other parts of suburban London in which improved access is needed*
- *in general, supporting high trip generating development only at locations with both high levels of public transport accessibility and capacity, sufficient to meet the transport requirements of the development. Parking provision should reflect levels of public transport accessibility (see Annex 4 on Parking Standards)*
- *encouraging integration of the major transport infrastructure plans with improvements to the public realm, particularly in key areas around major rail and Underground stations."*

8.2.8 In terms of development in London, Policy 3C.2 (Matching Developments to Transport Capacity) of the London Plan states;

"The Mayor will and boroughs should consider proposals for development in terms of existing transport capacity, both at a corridor and local level. Where existing transport capacity is not sufficient to allow for travel generated by proposed developments, and no firm plans exist for a sufficient increase in capacity to cater for this, boroughs should ensure that development proposals are appropriately phased until it is known these requirements can be met."

8.2.9 In relation to car free developments, Paragraph 3.196 states;

"The Mayor supports the use of car clubs and car free or virtually car free development where appropriate, taking account of the need for disabled parking."

8.2.10 The proposed development satisfies the London Plan policy requirements through siting the development to encourage sustainable travel practices and reduce the need to travel by private car. The development also seeks to improve a public transport interchange and improve capacity at peak periods. As previously noted the development is to be car free i.e. does not provide an increase in car parking over the existing provision for station commuters.

The Draft Replacement London Plan

8.2.11 A draft replacement London Plan is currently in consultation, with the policies being given some weight in respect of planning applications in London. Therefore, we also consider the policies set out in the draft replacement London Plan.

8.2.12 Section 6 of the Plan sets out the transport policies. Policy 6.3 relates to Assessing Transport Capacity and states;

- *"Development proposals should ensure that impacts on transport capacity and the transport network, at both a corridor and local level, are fully assessed.*
- *Where existing transport capacity is insufficient to allow for the travel generated by proposed developments, and no firm plans exist for an increase in capacity to cater for this, boroughs should ensure that development proposals are phased until it is known these requirements can be met, otherwise they may be refused. The cumulative impacts of development on transport requirements must be taken into account.*
- *Transport assessments will be required in accordance with TfL's Transport Assessment Best Practice Guidance for major planning applications. Workplace and/or Residential8 Travel Plans should be provided for planning applications exceeding the thresholds in, and produced in accordance with, the relevant TfL guidance. Construction Logistics Plans and Delivery & Servicing Plans should be secured in line with the London Freight Plan9 and should be coordinated with Travel Plans."*

8.2.13 Policy 6.9 of the Plan sets out the Cycling policy for London, which states that;

"Developments should:

- *provide secure, integrated and accessible cycle parking facilities in line with the minimum standards set out in Table 6.2*
- *provide on-site changing facilities and showers for cyclists*
- *facilitate the Cycle Super Highways shown on Map 6.2*
- *facility the central London cycle hire scheme"*

8.2.14 In respect of Walking, Policy 6.10 states;

"Ensure pedestrian environments in and around new developments emphasize the quality of the pedestrian and street space."

8.2.15 In respect of car parking, Policy 6.13 states;

"The maximum standards set out in Table 6A should be applied to planning applications.

8.2.16 In addition, developments must:

- *ensure that 1 in 5 spaces (both active and passive) provide an electrical charging point to encourage the uptake of electric vehicles*
- *provide parking for disabled people in line with Table 6.1*
- *meet the minimum cycle parking standards set out in Table 6.2*
- *provide for the needs of businesses for delivery and servicing."*

8.2.17 It is considered that the proposals for Twickenham Station are in line with the policies and aspirations of the draft replacement London Plan.

Local Planning Policy – LBR UDP and LDF

Unitary Development Plan

8.2.18 Paragraph 1.2 of the UDP states;

"The Plan sets out the Council's proposals for the development and other use of land including measures for the improvement of the physical environment, the conservation of natural beauty and amenity of land, and the management of traffic over the next ten years or so."

8.2.19 Chapter 7 of the UDP is related to Transport Policies, for which we have analysed in respect of the proposals for Twickenham.

8.2.20 Policy TRN2 sets out the policy for Transport and New Developments, which states;

"The Council will only permit new development, or changes of use where it can be demonstrated that the transport infrastructure can accommodate it, or be adapted to do so, without creating congestion and hazards on the road network. Transport Assessments will be required to support development proposals where there are significant transport issues to be addressed. New development should:

- *Provide adequately for the needs of disabled people, pedestrian and cyclists;*
- *Provide links to the pedestrian and cycle network and add to and enhance it, wherever appropriate;*
- *Make provision for short, direct links to public transport and add to/enhance the public transport network wherever possible;*
- *Be acceptable in terms of traffic generation and traffic impact on the road network (taking into account the cumulative effects with other existing and committed developments in the area), and in terms of availability of public transport and its ability to meet increased demands;*

- *Adequately provide for vehicular access and servicing, having regard to the needs of safety and to ensure that limited improvements in vehicular access are only allowed where they do not increase overall highway congestion;*
- *Where possible minimise the environmental impact and amount of land used by transport facilities, including roads, parking and turning heads. Street signs and furniture should be well designed and rationalised wherever possible;*
- *Be acceptable in terms of impact on air quality and noise levels caused by traffic generated;*
- *Seek in appropriate cases the concept of planning advantages appropriate to the site and commensurate to the scale of development in accordance with the Council's transportation policies."*

8.2.21 In relation to car and cycle parking, policy TRN4 of the UDP states;

"Maximum car parking standards are set for all types of development. In Controlled Parking Zones and within 400 metres of a railway station, more restrictive standards than elsewhere in the Borough will apply as these are generally indicators of higher accessibility levels to public transport. The Council is committed to adopting a Public Transport Accessibility Level (PTAL) Model in future to determine parking standards. Appropriate provision for people with disabilities and cycle parking will be required."

8.2.22 In relation to pedestrian routes, policy TRN8 of the UDP states;

"New development must be designed to give priority to pedestrian access and to the provision of links to existing pedestrian routes. Pedestrian routes should be accessible for disabled people. Identifiable safe pedestrian routes will be provided, improved and promoted to key destinations such as town centres, schools, leisure facilities, public transport, and routes primarily for recreation. Routes should be direct, convenient, safe and secure, with appropriate levels of lighting. Closed circuit television will be introduced if necessary to help ensure personal security."

8.2.23 Policy TRN11 relates to cycling and states;

"The Council will seek to provide practical facilities for the safe and convenient movement of cyclists, including the development of a local cycle route to complement the London Cycle Network shown on Map 8. New development must be designed to give high priority to cycle facilities and to link to the cycle route network and include secure parking in accordance with standards. It will also seek to provide and support the provision of secure parking areas for cycles in shopping and leisure centres, public transport interchanges and other public buildings"

8.2.24 In terms of Public Transport, Policy TRN 12 states;

"The Council will support and promote proposals to make the public transport service more efficient, safe, convenient, comfortable, reliable, frequent and more accessible, particularly for those people with disability or mobility problems. In particular the Council will oppose any proposal to close any of the railway stations in the Borough or any changes which reduce the level of service of public transport. Existing transport infrastructure should normally be retained. New development which affects transport infrastructure should provide the opportunity to improve rather than detract from public transport."

8.2.25 Similarly, policy TRN13 states;

"The Council will support and promote proposals for improved public transport bus and rail facilities in outer south and west London"

8.2.26 Also in relation to public transport, policy TRN 14 states;

"The Council will seek to improve the interchange facilities at all rail stations and bus interchanges in the Borough, having particular regard to information systems, cycle parking, bus and pedestrian links, safety / security, access for people with mobility difficulties and environmental improvements."

8.2.27 In relation to on street parking, policy TRN 21 states;

"The Council will pursue the control of on-street parking where this is necessary to ensure the safe and efficient movement of motor vehicles, public transport, pedestrians, and cyclists, to maintain essential access to premises fronting the roadway, to provide loading bays to improve the local environment or to maintain the vitality of shopping centres. Where parking congestion is so severe that an equitable balance between conflicting demands cannot be achieved, the Council will promote the introduction of Controlled Parking Zones."

8.2.28 In relation to station car parking, policy TRN23 states;

"The Council will support and promote the provision of some additional off-street parking spaces at railway stations in the Borough where there is local need, where there is sufficient highway capacity and where it forms part of the implementation and development of a public transport interchange, involving improvements to bus, cycle and pedestrian facilities."

Core Strategy 2009

8.2.29 Section 8 of the Core Strategy, adopted in April 2009, sets out the Spatial Policies. In relation to transport, policy CP5 of the Core Strategy relates to sustainable travel and states;

*"**5.A** - The need for travel will be reduced by the provision of employment, shops and services at the most appropriate level locally, within the network of town centres identified in CP 8. To implement this policy the Council will :*

Protect and enhance local facilities and employment to reduce the need to travel.

Require developments which would generate significant amounts of travel to be located on sites well served by public transport.

***5.B**-Land for transport*

Safeguard land for existing and proposed transport functions

Reflect the above priorities in the allocation of road spaces as part of the Parallel Initiatives Programme

***5.C** - Cycling and Walking*

Give priority to pedestrians, including those with disabilities, particularly in Richmond town centre and the district and local shopping centres.

Provide and promote a well designed bicycle and walking network across the Borough (the Strategic Walks network, Richmond Borough Cycle Network and London Cycle Network Plus), and improve conditions for cyclists and pedestrians elsewhere.

Prioritise the needs of pedestrians and cyclists in the design of new developments including links to existing networks and requiring the provision of adequate cycle parking.

Investigate the possibility of a footbridge across the Thames between Ham and Twickenham for pedestrians and cyclists.

***5.D** - Public Transport*

Improve provision for buses particularly in Richmond and Twickenham town centres, and seek to improve bus services within River Crane Corridor through the implementation of development proposals.

Achieve integration and convenient interchange facilities at all the borough's stations

Seek improvements to orbital public transport including rail access to Heathrow.

Improve walking, cycling and public transport in areas less well served by public transport, including some of the areas of relative deprivation.

***5.E** - Congestion and Pollution*

Undertake traffic management measures to reduce the impact of traffic particularly in Richmond town centre, the district and local centres, residential areas and streets unsuitable for through traffic.

***5.F** - Car parking and travel*

Require new car free housing in Richmond and Twickenham town centres and in other areas where there is good public transport and elsewhere have regard to maximum parking standards.

Require car share facilities and car clubs in appropriate new developments and encourage the use of low emission motor vehicles in order to reduce congestion and pollution.

Discourage commuter parking particularly by giving priority to residents' needs.

Limit any further expansion of parking in town and local centres and manage parking controls to help maintain the vitality and viability of the centres, including the evening economy.

***5.G** - Sustainable travel*

Encourage major employers and schools to develop Green Travel Plans and require these where appropriate with planning applications.

Require all major developments to submit a Transport Assessment based on TfL's Best Practice Guidance.

Encourage efficient, safe and sustainable freight transport.

Encourage river transport through the retention and support for new transport infrastructure.

***5.H** - The Council will support measures to minimise the impacts of Heathrow, particularly on traffic and noise on the Borough and will oppose changes that increase local impacts. Specifically it will seek the support of BAA, the Government and relevant statutory authorities for the following measures:*

a) maintenance of the 480,000 limit on total air transport movements;

b) maintenance of the current system of segregated mode;

c) maintenance of the current noise preferential routes;

d) the discontinuation of night flights;

e) restrictions of the use of private cars and improvements to public transport including a southern rail link"

8.2.30 It is considered that the proposed development is consistent with the Policies set out in the UDP and LDF.

8.3 Assessment Methodology and Significance Criteria

8.3.1 The methodology comprises four main components: assessing the existing transportation situation and forthcoming proposals for the area, identifying areas of concern in terms of highways and public transport provision, addressing any problems with a package of transport measures to encourage travel by means other than the private car, and finally to assess the impact the site will have of the surrounding highways and non car network.

8.3.2 The Transport Statement (*Appendix C of ES Volume III*) has been written in accordance with Transport for London's 'Transport Assessment Best Practice Guidance Document' April 2010 (Ref. 8-2).

8.3.3 The Environmental Impacts from the Proposed Development have been assessed as:

- Nature of Effect – Whether Permanent or Temporary.
- Significance – Whether Major/Moderate/Minor/Negligible and whether it is beneficial or adverse.
- Mitigation Measures – details are summarised.
- Residual Effects – Whether Major/Moderate/Minor/Negligible and whether it is beneficial or adverse.

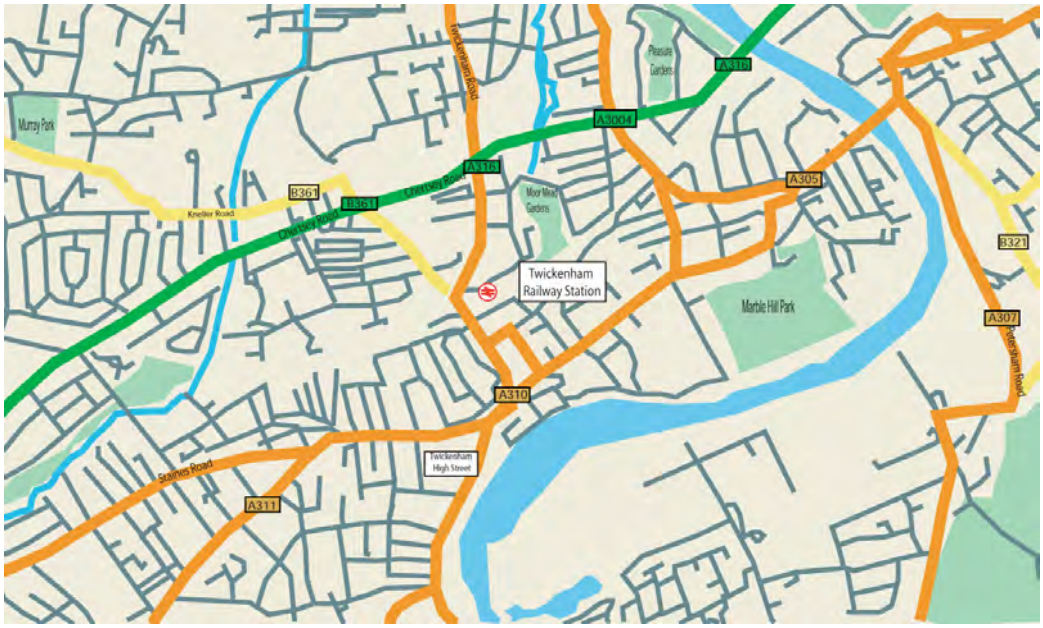
8.4 Baseline Conditions

8.4.1 We have considered in the following paragraphs the location of the site in relation to the local highways network and its existing accessibility by means other than the private car.

8.4.2 The site is located on London Road in Twickenham. Twickenham Station is managed by South West Trains, and serves National Rail services. From Twickenham, destinations such as London Waterloo, Windsor and Eton Riverside, Reading, Shepperton, Aldershot, Hounslow and Brentford can be reached directly, with convenient interchanges to other destinations. There are approximately 20 trains departing per hour from Twickenham Station. Twickenham is the nearest station to the Twickenham Stadium.

8.4.3 The location of the site is shown in Figure 8-1.

Figure 8-1 Site Location



The Public Transport Accessibility Level (PTAL)

8.4.4 The site is in a highly accessible location in relation to access by public transport. Using the TfL Planning Information Database, we have looked at the Public Transport Accessibility Lever (PTAL) for the site location, which shows that it has a PTAL of 5, out of 1 (lowest) to 6b (highest).

Existing Bus Routes and Stops

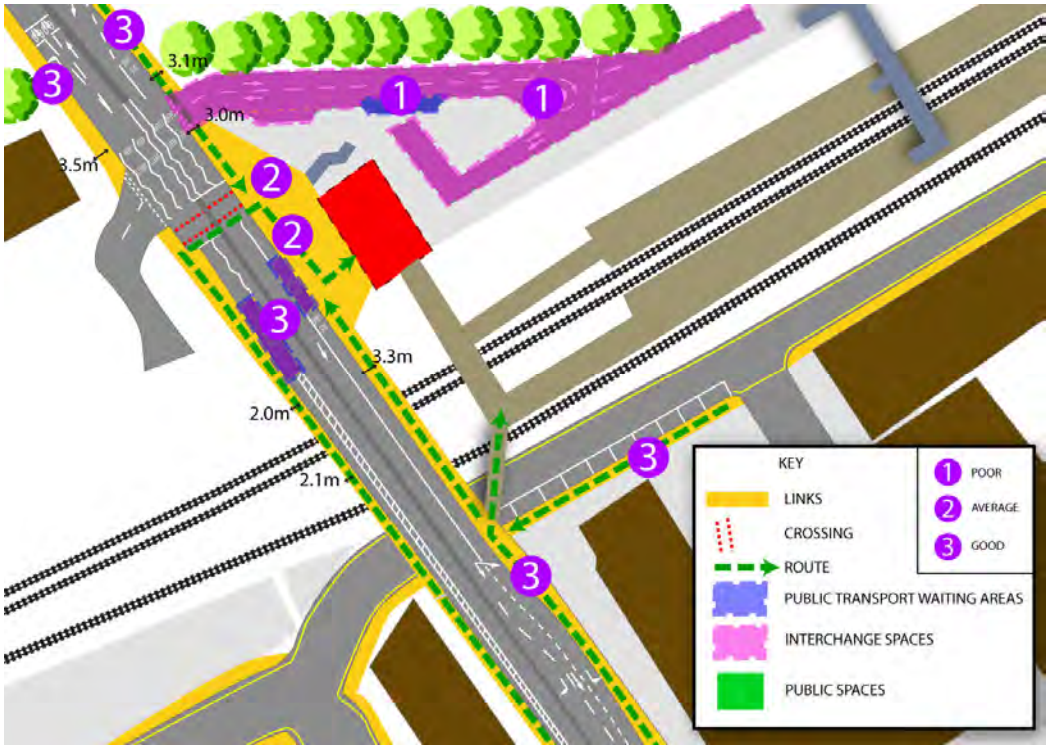
8.4.5 The site is well located in relation to bus routes, with bus stops located outside of the station routing the 267 from Hammersmith to Hampton Court and 281 from Tolworth to Hounslow. There are also other bus routes served by bus stops located within the vicinity of the site.

Existing Pedestrian Routes

8.4.6 A pedestrian environment review (PER) assessment has been undertaken, which looks at the quality of the existing pedestrian environment (*Appendix C of ES Volume III*). Figure 8-2 shows the existing station pedestrian routes. In particular the review notes:

- Kiss & Ride and Taxi rank and parking is not easily accessible;
- Queuing capacity in the front of the main entrance is low;
- The pedestrian crossing is well located adjacent to wide footpaths on either side of London Road.

Figure 8-2 Existing Station Pedestrian Routes



8.4.7 The development proposals will improve the existing environment for pedestrians through:

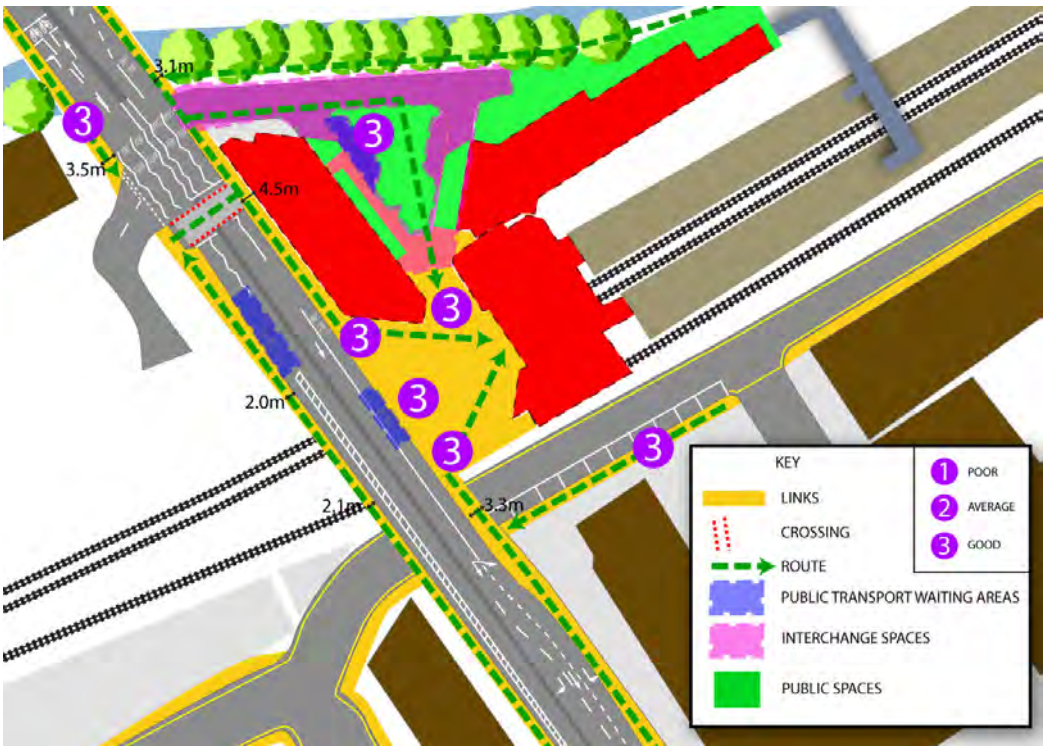
- Re-positioning of the Kiss & Ride and Taxi Rank facilities enabling vehicles to drop off and exit easily, with full accessibility by mobility impaired users
- Greater pedestrian space outside of the station to allow improved queue management at the station on match days
- New public open space at the station
- New route along the River Crane from the station to Moor Mead Gardens.

8.4.8 Figure 8-3 shows the proposed station pedestrian routes.

Existing Cycle Facilities

8.4.9 The station is well located in relation to cycle routes, with on-road and off-road cycle routes that directly connect the site to the surrounding areas. The existing station also has cycle parking facilities which are covered. The proposals include an increase in number of cycle facilities at the station from 80 cycle spaces to approximately 250 spaces, located in one central place.

Figure 8-3 Proposed Station Pedestrian Routes



The Accessibility of the Site in Relation to Local Amenities

8.4.10 We have analysed the location of the site in relation to the local amenities which are accessible by means other than the private car. In particular we have looked at;

- Education Facilities
- Healthcare Facilities
- Shopping Facilities; and
- Sports and Leisure Facilities

8.4.11 This has shown that there are a number of accessible facilities near to the site. In particular a nursery school, primary school and secondary school, along with a number of healthcare facilities all within 1km of the site. Also there are sports and leisure facilities, and shopping facilities from the High Street, within 500m of the site.

The Relation of the site in respect of Local Car Clubs

8.4.12 There are a number of existing Car Clubs within close proximity to the site; with the nearest Car Club Space being located on Grosvenor Road. This demonstrates the ability to introduce three car club spaces within the site, which will form part of an established car club network.

Parking Restrictions

8.4.13 Twickenham Station lies within controlled parking zone 'D' which is a Monday to Saturday 8.30am – 6.30pm restriction; this includes the surrounding residential roads. The Roads and the applied parking restrictions are set out in and Table 8-1.

Table 8-1 Parking Restrictions in Surrounding Roads

Road Name	Parking Restriction
Mary's Terrace	Monday to Saturday 8.30am-6.30pm – Resident and Business Permit Holders Only
Beauchamp Road	Monday to Saturday 8.30am-6.30pm – Resident Permit Holders Only
Amyand Park Road	Monday to Saturday 8.30am-6.30pm – Resident Permit Holders Only with Pay and Display Bays
Cheltenham Avenue	Monday to Saturday 8.30am-6.30pm – Resident Permit Holders Only with Pay and Display Bays
Grosvenor Road	Monday to Saturday 8.30am-6.30pm – Resident Permit Holders Only with Pay and Display Bays and Business Permit Holder Only Bays
Arragon Road	Monday to Saturday 8.30am-6.30pm – Resident Permit Holders Only
Cole Park Road	Monday to Saturday 8.30am-6.30pm – Resident Permit Holders Only with Pay and Display bays

The Site in relation Taxis Ranks

8.4.14 There is a taxi rank on the access road to the Car Park from London Road, which is located on a lay-by on the southern side of the road. The lay-by can accommodate approximately 3 taxis.

Highways Network

8.4.15 The station is located on London Road, in Twickenham. London Road is the A310. To the north, the A310 leads to the A316 and to the south, the A305. The A316 west turns into the M3 at junction 1, which leads to Southampton. The A316 east leads to the A4. The A4 connects to Avonmouth, near Bristol. The A305 to the east leads to the A205, which subsequently leads to the A3. The A3 runs between London and Portsmouth. The A305 west leads to the A316 and subsequently the M3.

Safety Analysis

8.4.16 Accident data has been obtained from the London Borough of Richmond upon Thames, for the purpose of preparing the Transport Statement, for part of London Road, from the junctions with Arragon Road and Whitton Road, for the last 5 years.

8.4.17 There have been 18 accidents in the last 5 years, with a total of 22 casualties. Of the casualties, 19 were classed as slight, with 2 serious and 1 fatal casualty. The details of this accident state that the casualty was crossing the road, not using a dedicated crossing

8.4.18 Excepting for delivery vehicles the proposals, which amount to 5-6 on an average day, it can be seen that the proposals have a negligible impact on movements on London Road and therefore there are not considered to be any additional road safety issues arising from the proposals.

The site in relation to Riverboat Services – Existing Routes and Facilities

8.4.19 There are Leisure River Services from Twickenham and Richmond Piers, which run in the summertime. The River Services from Richmond serve Hampton Court, Westminster and Kew and have approximately 4 services per day.

8.4.20 From Twickenham Pier, there are services to Richmond, Kingston and Hampton Court, with approximately 6 services per day. Twickenham Pier is approximately 1.5km from the station.

8.5 Site Preparation and Construction Impacts and Mitigation Measures

Construction Impacts

8.5.1 It is anticipated that the construction phase for the development will be from mid/ late 2011 until mid/late 2014. Further details of the construction period are contained within *Chapter 6: Site Preparation and Construction* of the ES.

8.5.2 Throughout the construction phase there will be a need for heavy goods vehicles and other vehicles to access the site for deliveries of plant, equipment, and materials etc, and for construction workers to access the site; although these will be for a temporary period. The primary vehicle access will be to the position of the current station car park. Whilst every effort will be made to maintain the availability of station car parking during the construction period, there will be periods when the car park will be subject to part or full closures. Advanced notice will be give to users of the car park during these periods together with instructions in respect of the availability of other local car parks.

8.5.3 Any significant effects during construction will be for a temporary period and will be mitigated through the Demolition and Construction Method Statement (DCMS). It is anticipated that any planning approval will include the requirement for the submission of a DCMS for approval prior to commencement. This will contain details of vehicle routes to be used, hours of working, delivery times, number of vehicle movements and any temporary road or footway closures required during the construction period.

8.5.4 In relation to emergency access when the development is being constructed, this will be dealt with through the DCMS, which will ensure emergency access is available at all times throughout the construction period.

Mitigation Measures

8.5.5 The mitigation measures for the construction will be set out clearly in a Demolition and Construction Method Statement, as detailed in *Chapter 6: Site Preparation and Construction*, and will include;

- The times when vehicle movements and deliveries will be allowed;
- The proposals to minimise the number of vehicle trips by employees during construction;
- The facilities for loading and unloading;
- The facilities for parking cars and other vehicles;
- Construction vehicle access routes;
- Times of construction on site; and
- Travel Plan Measures for construction workers, to include;
  - Walking
  - Cycling
  - Bus
  - Rail outside periods of rail closures
  - Car Sharing

8.5.6 In summary the impacts during construction activities will be moderate adverse but temporary. The conclusion that the impacts will be moderate adverse is drawn from normal experience in respect of the construction of projects, where the contractor seeks to undertake movements outside of the peak periods of traffic congestion where possible.

8.5.7 As detailed within *Chapter 6: Site Preparation and Construction*, mitigation measures will be agreed through consultation with the Local Authority and clearly set out within the DCMS and through the production of a Construction Logistics Plan (CLP) to identify methods and routes for delivery of construction materials and removal of waste materials.

8.6 Operational Impacts and Mitigation Measures

Operational Impacts

8.6.1 We have set out in the TS (*Appendix C of ES Volume III*), the expected movements and impacts for the operational site for a) the station and interchange and b) the residential uses.

Operational Impacts Normal Day

8.6.2 For the station and interchange, the proposals include for the same level of parking for station commuters, unless a reduction can be agreed with the TOC. Future growth at the station would be accommodated through accessibility by non car means. Therefore any impacts will be **negligible**.

8.6.3 As stated previously, the proposals are for a car free development. Therefore we consider that there will be no highways implications from the proposals.

8.6.4 In terms of person trips from the development, we have interrogated the TRAVL Database to project the modal share and number of peak trips for the proposed residential development. The projected modal share and peak trips are set out in Table 8-2.

Table 8-2 Projected Peak Hour Trips to and from the Development

Mode		AM (07.00-09.00)	PM (16.00-18.00)
All Car Drivers	0%	0	0
Car Passenger	1%	3	3
Underground	4%	8	9
Rail	44%	93	98
Bus	9%	19	20
Motor Cycle	1%	2	3
Pedal Cycle	4%	8	8
Walk	37%	77	81
TOTAL	**100%**	**210**	**221**

8.6.5 Table 8-2 shows that the projected number of peak period trips is 210 for the am peak period and 221 for the pm peak period, the majority of which are rail trips and trips on foot. The additional rail trips are minor compared to the current use of the station and the impacts are considered to be **negligible**. The projected trips on foot are minor compared to the current use of the station and the impacts are considered to be **negligible**. This has been discussed as part of part of pre-application discussions with Transport for London, the Strategic Transport Authority responsible for public transport who is content that there are no capacity issues in respect of movements by rail and bus (Ref. 8-3).

8.6.6 In relation to emergency access the procedures that take place at present, would also be the procedures for the proposed station, with an access point on the station forecourt, and an access point in the station car park, from the servicing area. A 3.7m wide corridor will also be maintained to the residential units at the far eastern corner of the development, which will allow emergency vehicle access to this point.

Operational Impacts Match Day Analysis

8.6.7 We have analysed the existing Match Day Management at the station when an event takes place at the stadium, along with liaisons with South West Trains, in order to produce proposed match day plans, which are a non-detriment on the existing management at the station. Figures 8-4 and 8-5 show the existing egress and ingress arrangements at the station.

Figure 8-4 Current Queuing Arrangements for the Egress Route

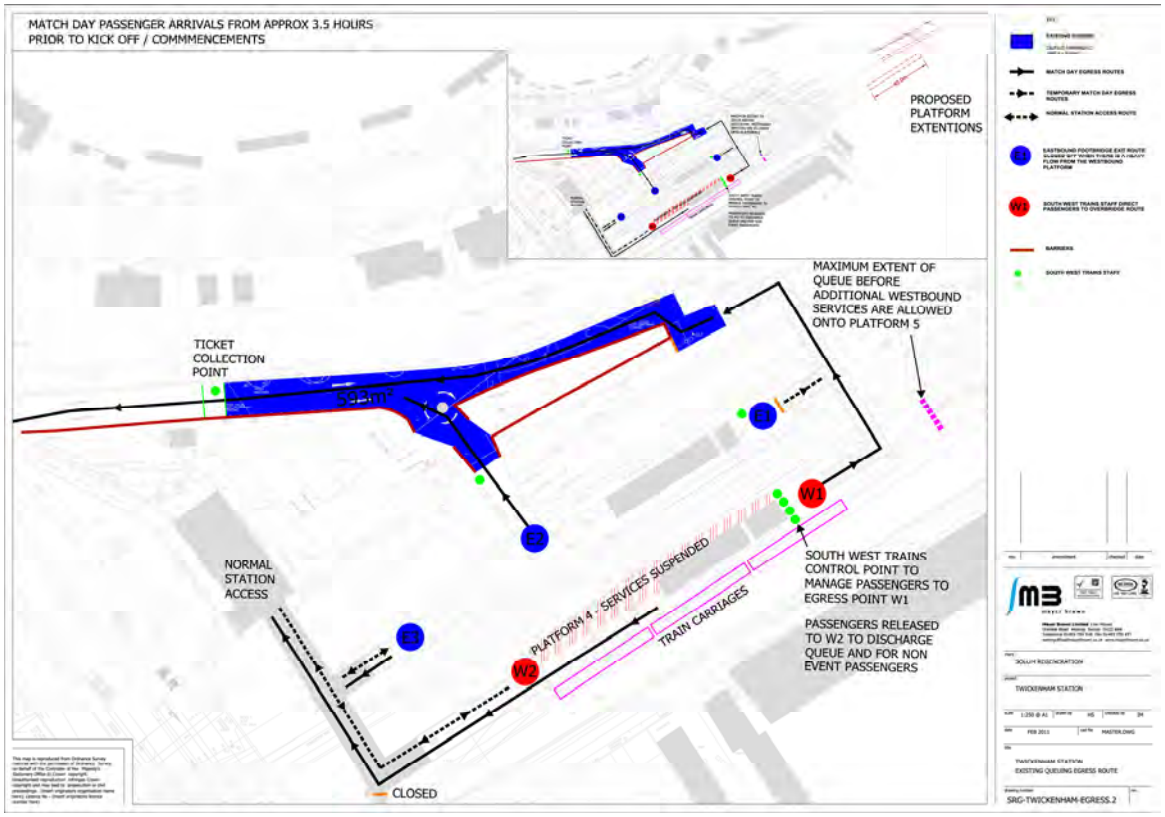


Figure 8-5 Current Queuing Arrangements for the Ingress Route

8.6.8 For the egress route, a similar procedure will be followed as at the existing station, with two egress routes. Firstly, for passengers on Platform 5, they will still use the eastern footbridge, which leads to a route along the northern side of the tracks and into the station car park/interchange area. For passengers on Platforms 2/3, they will follow a route from the platform through a gate to the car park/interchange area. This allows for the same management procedures by event staff at the station. The proposed route gives a 95% increase on area over the existing provision.

8.6.9 For ingress routes, in terms of east bound passengers, they will still enter via the station car park and interchange area, where they will queue through a 'queue snake'. In terms of queuing space, the proposals provide a slight increase in capacity over the existing area for event days. The proposals also include for two emergency routes, should passengers need to be diverted.

8.6.10 For west bound passengers, they will still queue via the station forecourt. The proposals involve a considerable increase in area on the station forecourt, which will allow for 2 queues to Platform 5.

8.6.11 Figures 8-6 and 8-8 show the proposed queuing arrangements.

Figure 8-6 Proposed Egress Route

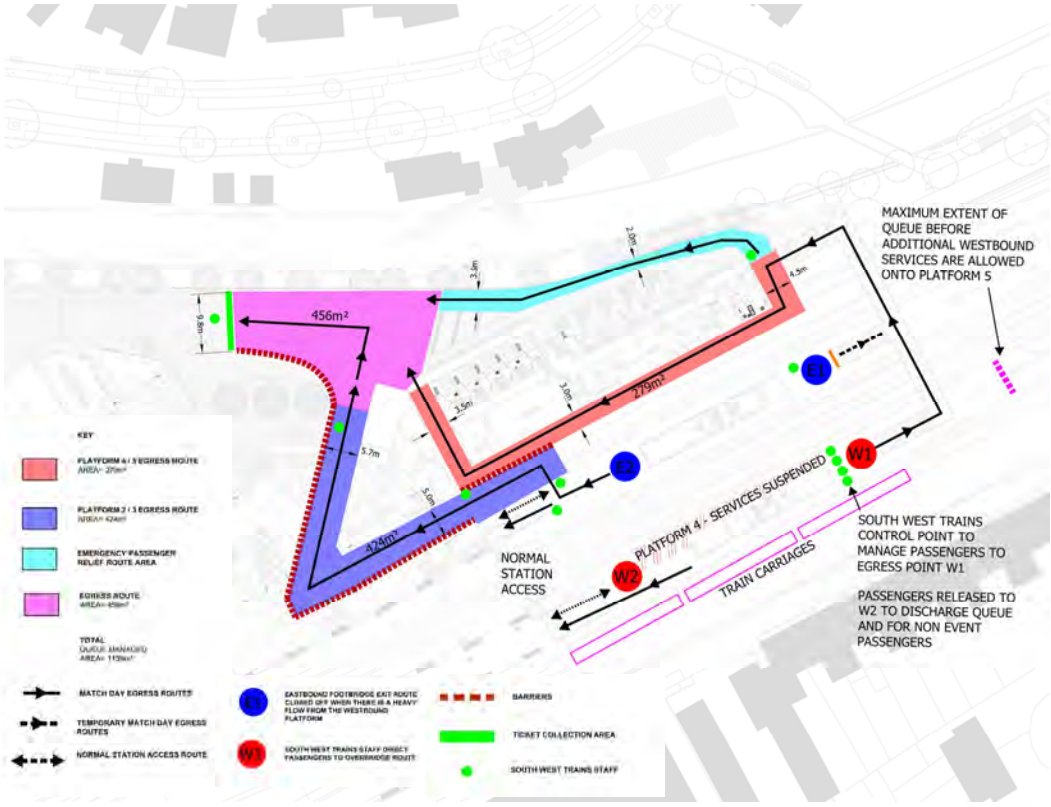


Figure 8-7 Proposed East Bound Queuing Arrangements

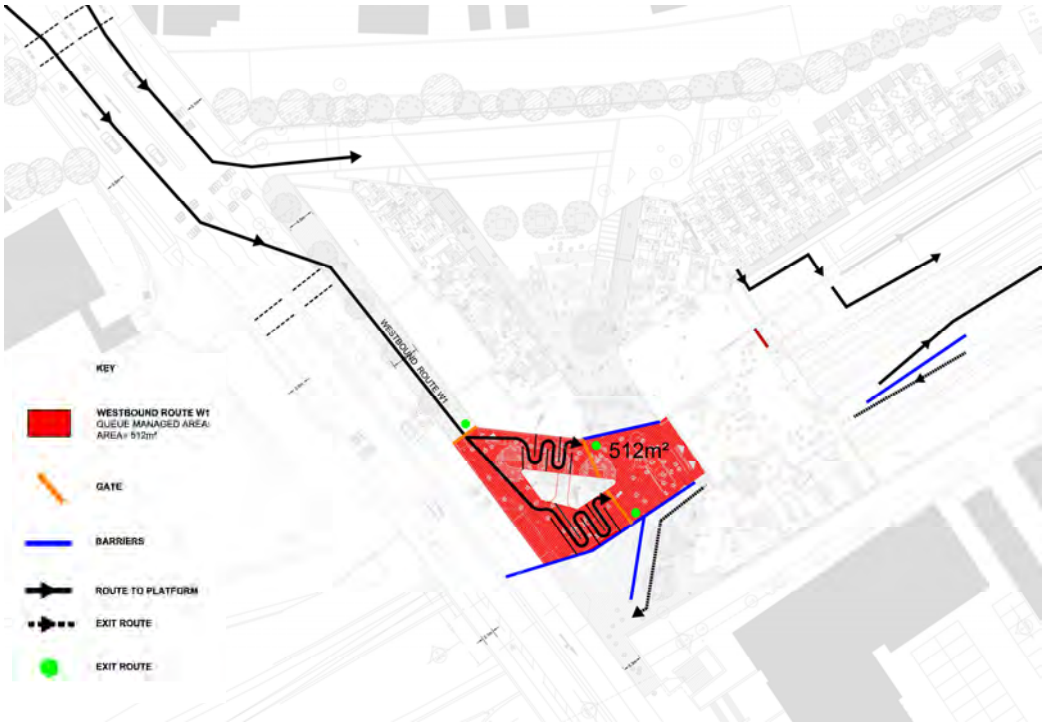
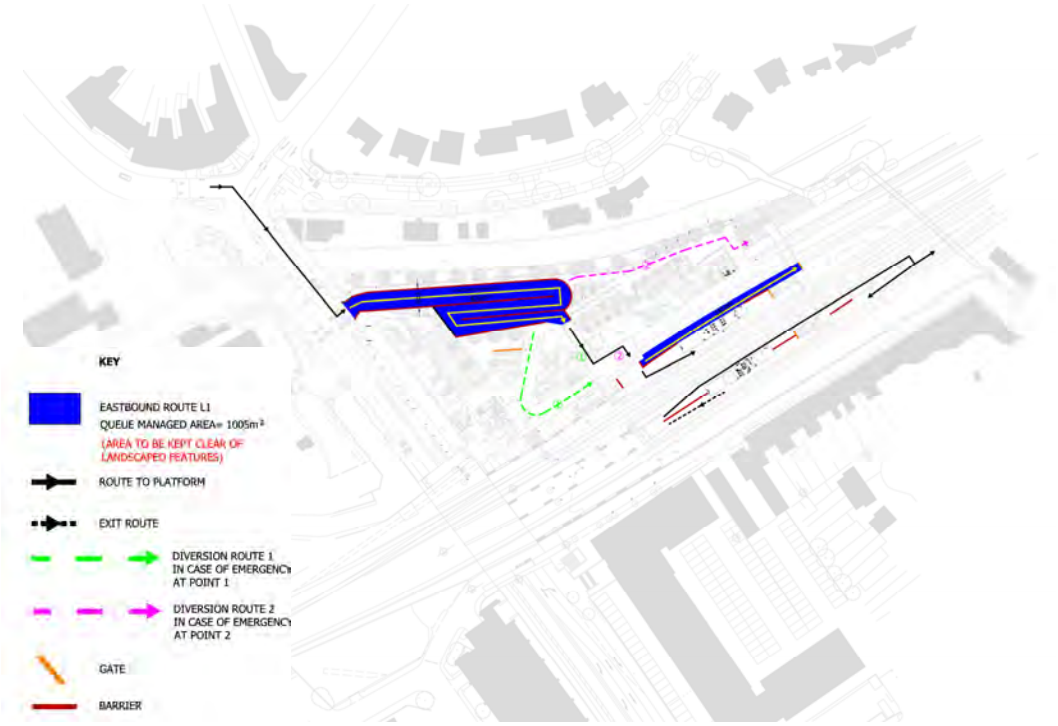


Figure 8-8 Proposed West Bound Queuing Arrangements



8.6.12 It can be seen that the proposals for the management at the station on a match day allows for the station to continue to be effectively managed, with an overall increase in space for the queuing of passengers. A full set of the plans are contained as an Appendix to the Transport Statement (Ref. 8-1).

8.6.13 Table 8-3 shows the difference in area for each of the routes within the Station boundary.

Queue	Existing Area	Proposed Area	Increase	% Increase
Egress Route				
Egress route	593sqm	1159sqm	566sqm	95%
TOTAL Egress	***593sqm***	***1159sqm***	***566sqm***	***95%***
Ingress Route				
East bound route	818sqm	820sqm	2sqm	0.2%
West Bound route	231sqm	512sqm	281sqm	122%
TOTAL Ingress	***1049sqm***	***1322sqm***	***283sqm***	***27%***

8.6.14 Discussions were also held with the emergency services to look at the emergency access to the station on a match day. The proposals allow for clear area within the car park so that queuing passengers can be moved into this area to allow for a clear route for an emergency vehicle to access the flats on the north side of the railway. A clear area is also retained on the Station forecourt on London Road to be used for emergency access.

8.6.15 These discussions also regarded the residential access on a match day. Residents would have a segregated access route via the existing footbridge on Beauchamp Road. South West Trains have explained that they operate a system of holding people at control points and these can be used to provide for crossings for residents at the points where residents might seek to cross one of the Match Day passenger access routes.

Mitigation Measures

8.6.16 Whilst the impacts of the proposed development are considered to be **negligible** a number of mitigation measures are proposed, with the objective encouraging methods of transport other than the private car. There are management mitigation measures and physical mitigation measures proposed for the development.

Car Parking Management Plan (Management Mitigation Measures)

8.6.17 A Car Parking Management Plan is included in the TS (*Appendix C of ES Volume III*). This sets out how the car parking for all of the elements of the development will be effectively managed. The contents of the Car Parking Management Plan sets out how the car parking will be enforced, the car parking opening hours and access control, the parking policies and how the car park will be monitored.

Delivery and Servicing Plan (Management Mitigation Measures)

8.6.18 A Delivery and Servicing Plan is included the TS (*Appendix C of ES Volume III*). In summary, the Delivery and Servicing Plan sets out the number of expected service vehicles, for which is approximately 36/37 per week at maximum, for the development. The Delivery and Servicing Plan also sets out how the Servicing of the site will be managed, which includes;

- Restrictions on loading times to ensure that there are no conflicts with peak movements on site.
- Proactive management of deliveries to reduce the number of unnecessary journeys and to prevent any confliction of servicing on site.
- An agreement with the occupants to use freight operators which demonstrate their commitment to following best practice
- Ongoing review of the management plan.

Station Travel Plan (Physical Mitigation Measures)

8.6.19 The object of the Station Travel Plan will be to further encourage movements to and from the Station by non car means, seeking in particular an ongoing reduction in vehicle movements to and from the station.

8.6.20 The key features, include;

- **Clear Travel Information at the Station:** The Station will have clear information located throughout the station to encourage travel by sustainable means. The information could include how to Car Share, and the promotion of Walking and Cycling to the Station.
- **The provision of a car sharing scheme:** A Car Sharing Scheme will be set up for the rail users, which will be promoted throughout the station. The Car Sharing Scheme will involve a website for rail users to sign up to car sharing, which will locate other drivers also wishing to car share. The car sharing scheme will be promoted throughout the station, via posters and leaflets on the benefits of car sharing and how rail users can sign up to it.
- **Safe and Secure Cycle Storage**: Safe and secure cycle parking will be supplied for the Rail Users to encourage people to cycle to and from the station.
- **Monitoring and Targets:** Annual surveys will be undertaken, in particular recording the use of the car park and vehicle drop off and pick up movements at the station.

Residential Travel Plan (Physical Mitigation Measures)

8.6.21 The key features of the Residential Travel Plan are:

- **The provision of Travel Information for Residents through Travel Folders and a Community Travel Web Site:** The Travel Folders will be provided to residents when they first move into their homes, along with the provision of the Community Travel Web Site, which will be marketed on the Travel Folders, and will be set up prior to the first occupancy. The Folders and Web Site will contain information of local public transport, including maps and timetables, along with links to real time travel information. They will also provide details on walking, cycling, car sharing, the local car clubs and how to obtain their free membership to the car club, and other initiatives such as local cycle training schemes and online shopping and delivery facilities.
- **The provision of Secure Cycle Storage:** 208 cycle storage spaces will be provided for residents in secured areas by the relevant core entrances. This is in line with standards set out in the draft replacement London Plan.
- **The provision of three car club spaces and a discount for residents for use of the car club:** Three car club spaces will be provided for residents of the new development and local residents, along with initial discounts for the residents of the new development, to encourage the use of the car club.
- **The provision of Access Management for Event Days at Twickenham Stadium:** This will be contained on the Community Travel Web Site to inform the residents of when events are taking place and the expected busy periods on this day to ensure that residents are fully aware of the best times to access their homes.
- **Monitoring and Targets:** Annual surveys will be undertaken to record the movements to and from the development.

8.7 Residual Impact Assessment and Conclusions

Residual Impacts

8.7.1 It is considered that during the construction phase there will be a temporary adverse effect. The development and adherence to the Demolition and Construction Method Statement and Construction Logistics Plan will help to ensure that the local impact will be Moderate adverse.

8.7.2 On a permanent basis, there will not be an increase in vehicle movements at the station, as the same provision as existing car parking for station commuters will be provided, unless an agreement for a reduction can be agreed with the TOC, and the residential element of the scheme will be car free. Therefore any impacts will be negligible. There will be a slight increase in overall movements at the station, which will be by sustainable modes, in comparison to the existing movements, any impacts will be negligible. Any possible impacts will be mitigated through the package of measures to encourage trips to be made by means of transport other than the private car.

8.7.3 Through the package of measures encouraging other modes of transport other than the private car, it is considered the proposed scheme will have a long term minor beneficial impact on the local transport network.

Conclusions

8.7.4 It is considered that there will be no adverse impacts as a result of the proposed operational development. The increase in delivery and servicing vehicles for the proposed development (approximately 36/37 per week) will be mitigated through the proposed Delivery and Servicing Plan.

8.8 Cumulative Impact Assessment

8.8.1 Due to the proposed station development being a car free scheme, there will be no cumulative impacts in terms of the Regal House development. The station will provide improved transport facilities for visitors of the Regal House Travelodge development.

8.8.2 The London Borough of Richmond has produced SPG in respect of the Station and the neighbouring Royal Mail Site. The Transport Statement considers the impacts of the Royal Mail Site coming forward. On the basis that the Station development is a car free scheme, there are no highways implications anticipated from the development of the Station site.

8.8.3 The Transport Statement demonstrates that vehicle and pedestrian access can be provided to the Royal Mail site to work alongside the Station development.

8.8.4 There are no adverse implications associated with the station development as a result of other developments coming forward.

8.9 References

Ref. 8-1: Twickenham Station Transport Statement, prepared by Mayer Brown Ltd.

Ref. 8-2: Transport Assessment Best Practice Guidance Document, by Transport for London, April 2010

Ref. 8-3: Transport for London Formal Pre-Application Advice letter. Appendix A to the Transport Statement.