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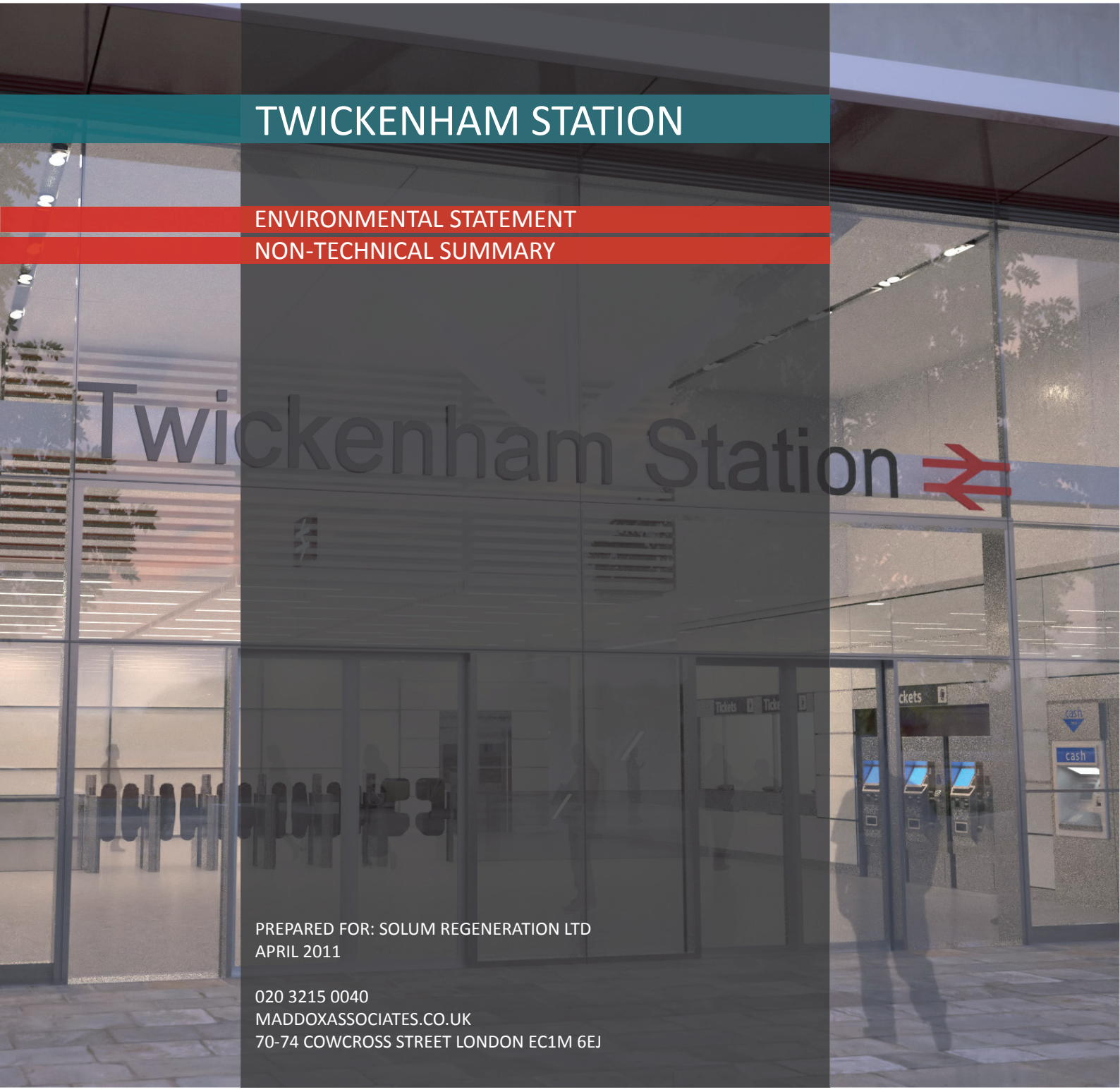

TWICKENHAM STATION

ENVIRONMENTAL STATEMENT
NON-TECHNICAL SUMMARY

PREPARED FOR: SOLUM REGENERATION LTD
APRIL 2011

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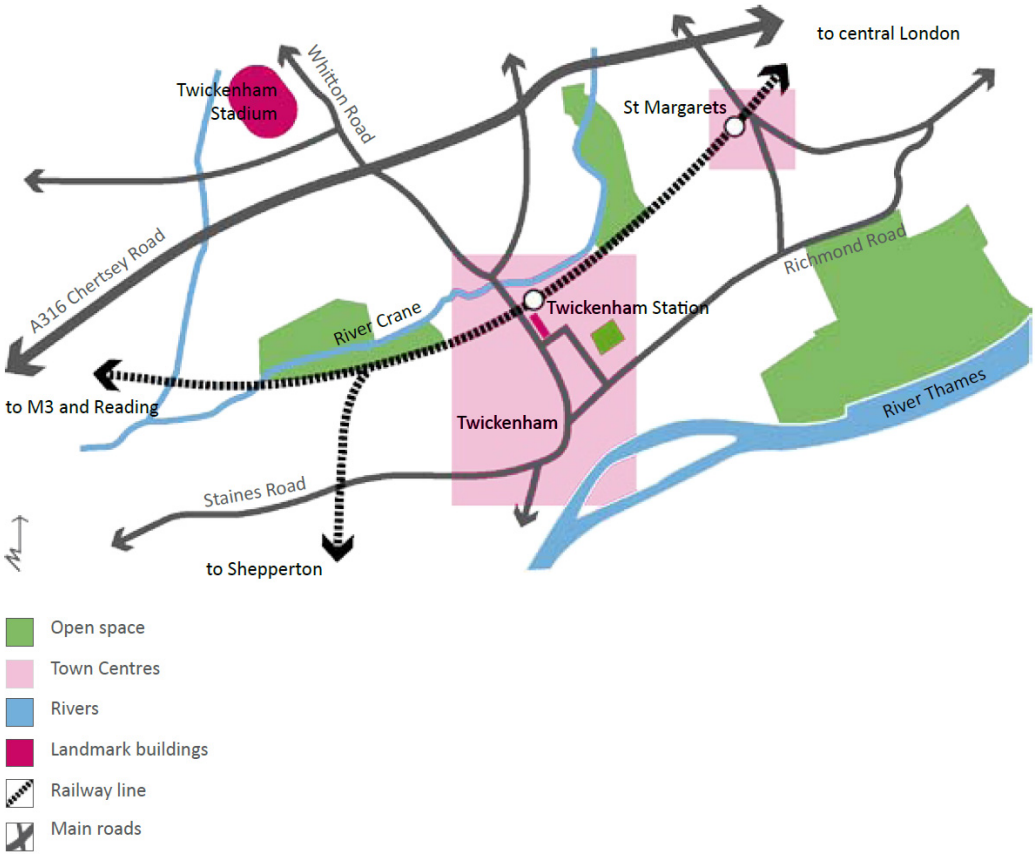
1.0 Introduction

The Application

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). The site is occupied 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.

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 (see Figure 1). The Site includes land to the north and south of the railway line, and is bounded by the River Crane to the north, Mary's Terrace to the south and London Road to the west as shown in Figure 2. The passenger footbridge across the railway line forms the eastern boundary of the site.

Figure 1 Site Location

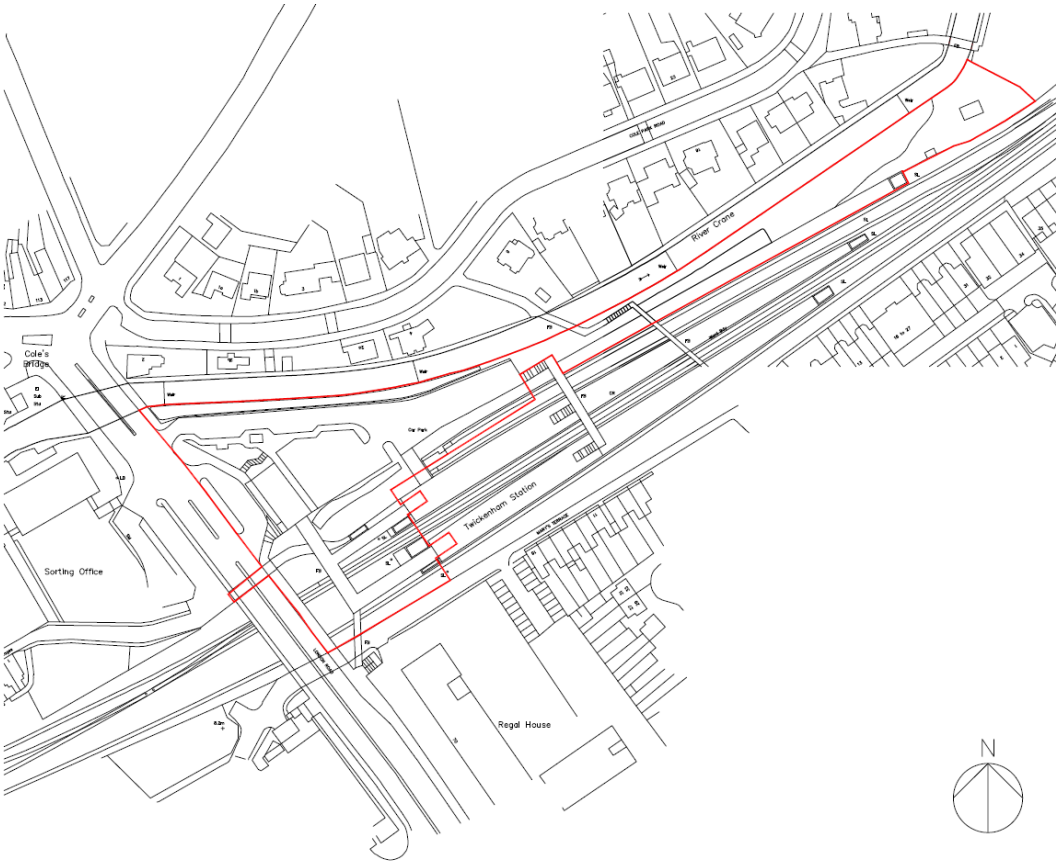


2.0 The EIA Process

2.1 Maddox & Associates has been commissioned by the Applicant to undertake an Environmental Impact Assessment (EIA) in line with the Town and Country (Environmental Impact Assessment) (England and Wales) Regulations. The results of this process are presented in the Environmental Statement (ES) and accompanying appendices. This document, known as the Non-Technical Summary (NTS), provides an overview of the findings of the EIA. The NTS has been prepared for a general audience, including parties close to, or potentially affected by the development. The ES describes the potential impacts of the project during:

- Site preparation and construction activities; and
- Operation of the station and occupation of the residential and commercial units of the development.

Figure 2 Site Plan (including Red Line Boundary)



2.2 The ES has considered the likely impact of the development on its neighbours, local environment, local and regional economy and wider area. 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 mitigation measure has been identified, the ES has highlighted the remaining or 'residual' impacts.

2.3 The significance of residual impacts (i.e., impacts remaining after mitigation) has been evaluated with reference to definitive standards, accepted criteria and legislation where available. Where it has not been possible to quantify impacts, qualitative assessments have been carried out, based on professional experience and judgement. Impacts have been classified as adverse, negligible or beneficial in significance and either minor, moderate or major magnitude. Where possible, impacts are also assigned a geographic and temporal scale (e.g., temporary, local, regional, short-term or long-term).

2.4 The ES comprises:

- 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, 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

2.5 The images contained within this NTS 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.

2.6 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*.

3.0 Consultation

3.1 The EIA has included a programme of ongoing consultation, which is critical to the development of a balanced ES. As part of the EIA process a 'Scoping Study' was undertaken and report submitted to the London Borough of Richmond upon Thames. The purpose of this study was to obtain the views of statutory and non-statutory consultees to identify the likely significant environmental effects associated with the proposed development and to define the focus of the EIA. Consultation also enables mitigation measures to be introduced during the project design process.

3.2 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
- Rugby Football Union (RFU)
- Metropolitan Police
- British Transport Police
- South West Trains
- Richmond upon Thames College
- Greater London Authority
- Richmond Design Panel

3.3 A Public Consultation exercise was undertaken during June and July 2010 including a resident's 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.

4.0 Planning Policy Context

4.1 The development has been assessed against relevant National, Regional and Local planning policies, including various planning guidance documents on town centres and retail developments. Planning policy has been considered in each of the Technical Chapters of the ES as appropriate for the consideration of environmental effects.

4.2 The Adopted Development Plan comprises the:

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

4.3 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.

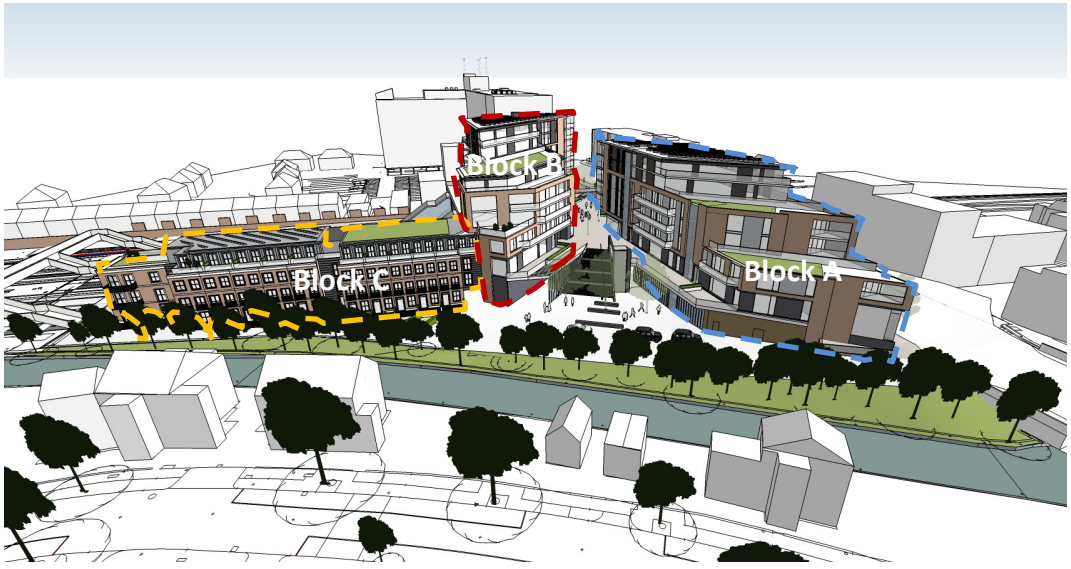
5.0 Proposed Development

5.1 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.

5.2 The development comprises three elements (Blocks A, B and C) and ranges in height from 2 to 7 storeys, with the highest element to the south west of the site on London Road (see Figure 3). 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.

5.3 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.

Figure 3 Proposed Development View from the North



5.4 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.

5.5 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 35 replacement car parking spaces (including 3 disabled spaces) for station users and staff. For the residential element of the scheme 3 disabled spaces are proposed with 3 additional car club spaces.

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

5.7 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 for station users is being re-provided (35 spaces on site with the remained on the Station Yard site) with the inclusion of 3 car club spaces and 3 disabled bays for residents;
- 734m^2 of commercial space (A1/A2/A3 and D2);
- A new pedestrian route along the River Crane, linking the town and station to Moormead Park.

Key Features of the Twickenham Station Redevelopment

5.8 Twickenham Station is located in Block B and is expressed as a simple double height box consisting of rectangular concourse with immediate access to all platforms via the shortest possible route.

5.9 Access to the station is via a new public plaza which is bounded by Blocks A & B. The station sits directly in the centre of the plaza and the glazed entrance screen has elements that relate to other landscape & way-marking points in the plaza resulting in a homogenous environment. The station is flanked on both sides by small retail units potentially containing a range of possible uses including a small convenience food store, cafés, family restaurants and a gym.

5.10 Simplicity defines the interior design of the station, light glazed wall panels in modular for incorporating signage, ticketing facilities lighting and security. The station has been designed to fulfil the Network rail requirements for the next 25 years allowing flexibility for future expansion.

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

Figure 4 Station Entrance

Figure 5 Station Layout

Sustainability

5.12 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. The proposals aim to achieve high levels of sustainability demonstrated through achievement of the following:

- Code for Sustainable Homes Level 4
- BREEAM Excellent

5.13 The proposals aim to respond positively to the climate change and include energy efficiency measures, a Communal CHP (Single Energy Centre) and renewable energy technologies are proposed through the integration of on site photovoltaic electricity generation.

5.14 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%.

Pedestrian and VehicularAccess

Pedestrian Access

5.15 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 and Moormead Park facilities. All have direct connection to the station and residential entrances.

Disabled Access

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

Vehicular Access

5.17 Vehicles use the existing route but with improved taxi, 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 250 station user spaces in a secure covered facility, and additional private residential facilities are located close to the relevant cores.

Parking

5.18 Station car parking is provided to replace the existing scenario of 44 spaces (35 spaces on site with the remainder on the Station Yard site). There is also the provision of 3 car club spaces and 3 disabled spaces for the residents. Electric vehicle charging points have been provided within 3 of the parking spaces.

5.19 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.

Service Goods Siting

5.20 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.

Alternatives and Design Evolution

5.21 Under the 1999 EIA Regulations, an 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".* Alternatives analysis is a key part of the EIA process and serves to ensure that environmental considerations are built into the project design at the earliest possible stage. 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.

5.22 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. The timeline for scheme production within the design process has been:

- Initial Design Concept November 2008
- June 2009
- November/December 2009
- February 2010
- September 2010
- February 2011

5.23 The current scheme as described in the Proposed Development chapter to be submitted for planning approval addresses the following key impacts:

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

6.0 Site Preparation and Construction

6.1 The site preparation and construction programme is expected to take 33 months. The main activities will involve: site clearance, podium build, temporary station facilities, construction of new station, construction of residential and commercial units, fit-out and landscaping.

6.2 The Applicant will develop and issue 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).

6.3 The DCMS will place obligations on contractors to adopt best environmental practice and reflect the LBRuT Major Projects Guidance Note. The DCMS will include detailed working procedures for the control of emissions and environmental risk.

6.4 The DMS will identify the proposed working practices, working hours, a breakdown of construction methodology, a list of plant and equipment used for each stage of the construction, noise implications of activities and site layout and the likely impacts upon sensitive receptors. The document will also specify working hours measures for, among others:

- Neighbour relations;
- Traffic management (including access and egress);
- Road and utility diversions;
- Parking provisions;
- Waste management;
- Clean road management;
- Protection of ecological and archaeological resources;
- Site hoarding, housekeeping and security; and
- Provisions for complaints.

7.0 Environemntal Assessments

Socio-Economics

7.1 The proposed Twickenham Station redevelopment will have a number of impacts on the local economy and provision of social and community infrastructure. The residential elements of the development will contribute to the housing needed in the area and the Station works will provide improvements to the physical environment and accessibility.

7.2 A population profile of the proposed development has been undertaken and from this analysis it is estimated that 199 individuals will occupy the residential units.

7.3 The social and community infrastructure considered in the assessment was:

- Education (nursery, primary and secondary state provision);
- Health (GP/health centres, hospitals and dentists); and,
- Parks and open space (including playgrounds, small, district and regional parks).

7.4 The analysis considers existing capacity within pre-defined catchment areas around the Site against forecast demand arising from the residents of the development. The impact on local housing need and the business community are also considered.

7.5 In relation to education the analysis shows that there is sufficient capacity to accommodate the anticipated population increase of secondary school pupils. The nursery provision within the borough is also anticipated to accommodate the additional nursery pupils. However, the assessment highlights that the existing provision of primary education is over capacity and will not easily accommodate the additional pupil numbers from the proposed scheme (8 primary education pupils).

7.6 In terms of health provision (GP/health centres, hospital provision and dentists) consultation with the Primary Care Trust indicates that there is sufficient capacity within the system to absorb the additional 199 residents.

7.7 The development includes plans to link Twickenham Station to Moormead Park and playground using a new riverside pathway (Figure 6). For the proposed residents of the scheme this provides an appropriate link to the parks and playgrounds in the local area.

7.8 The new development may result in small scale competition with existing businesses in the town, particularly food retailers. However, it is acknowledged that the additional residents will also increase demand for existing local retailers.

Figure 6 Landscape Plan (Showing New footpath to the North East)

7.9 The economic impacts considered included:

- construction investment and employment;
- gross direct employment;
- gross value added (GVA) (a financial measure of productivity);
- indirect and induced impacts on jobs and GVA.

7.10 The Twickenham Station development will have a number of positive economic impacts within the area as well as more widely, including job creation (29 permanent jobs) and increased local spend. In addition, the residents will have a financial impact of £224k per annum in council tax.

Transport

7.11 The proposed development will deliver a new transport interchange which is considered to have beneficial impacts for station users in terms of increasing the capacity and accessibility of the station and improving the public realm.

7.12 The residential element of the scheme is a car-free scheme except for 3 disabled spaces and 3 car club spaces and does not include for an increase over the existing station car parking provision.

Air Quality

7.13 The site lies within an Air Quality Management Area which was designated due to current and predicted future air pollutant levels. The air quality assessment has considered the construction and operational phases of the proposed development on local air quality.

7.14 Throughout the site preparation and construction phases the impacts on air quality though dust emissions will be minimised through best practice measures. These measures will be agreed with London Borough of Richmond upon Thames and form part of the Construction Environmental Management Plan. The impacts of the construction phase on air quality are considered to be temporary minor adverse. Proposed mitigation measures include:

- Erect solid barriers around site.
- Use water as dust suppressant.
- Construction traffic to switch off engines when not in use.
- Vehicle movements on site to be on hard surfacing.
- Loads entering or leaving site to be covered.
- Enclose and cover stockpiles.
- All non-road diesel plant to use ultra low sulphur fuel and to be low emission types or retrofitted with emission controls.
- Monitor dust at site boundaries on dry windy days between April and October.

7.15 The operational effects on air quality are anticipated to be negligible and conditions at the proposed development are considered to be acceptable. The development is a 'car-free' development and changes to the traffic flow are confined to low volumes of delivery and servicing vehicles for the proposed commercial units. The proposed scheme will incorporate modern plant and building services with low emissions.

Noise and Vibration

7.16 The noise and vibration effects associated with the proposed development have been assessed in terms of:

- Predicted noise and vibration levels from site preparation and construction;
- Impact of train vibration on future residents;
- Noise from building services plant of the completed development; and
- Any increases to road traffic attributed to the development.

7.17 The ambient noise at the site and the need to provide an adequate internal noise environment within the proposed development were key considerations through the design process.

7.18 The ambient noise level at locations around the site was established through daytime and night-time monitoring. Noise measurements were also taken during a major event at Twickenham Stadium (The Guinness Premiership Rugby Final) when activity at the station was at a peak.

7.19 Noise impacts from the site preparation and construction phase of the proposed development were calculated and it was concluded that there is the potential for major noise impacts at the nearest residential receptors on Cole Park and St Mary's Terrace. However, these major impacts will be reduced through the use of best practise mitigation measures including surrounding the site with a temporary 2m high impermeable hoarding, using quiet plant and construction measures, locating noisy activities as far from housing as practicable and adherence to specified work hours. These measures will be finalised and agreed with London Borough of Richmond upon Thames to form part of the Construction Environmental Management Plan. The impacts of the construction phase on noise are considered to be temporary minor adverse.

7.20 The assessment concluded that ambient noise levels, particularly from traffic on London Road, were such that any habitable rooms on the northern, eastern or western facades of the proposed development would require acoustic double or secondary glazing plus acoustic ventilation (as an alternative to opening windows for cooling ventilation) to maintain internal noise levels within the World Health Organisation standards.

7.21 The further detailed design of the proposed development will reduce noise from the train line and highway to ensure that conditions within the residential units are suitable for future residents through glazing, trickle vents and higher standards of insulation.

7.22 Whilst vibration from passing trains will occasionally be perceptible in those parts of the proposed development closest to the railway lines, it is anticipated that there will be negligible vibration impact on the proposed building or occupants.

7.23 On completion of the proposed Development, the changes in local traffic flow through increased servicing vehicles and the proposed plant equipment would not give rise to any significant noise or vibration effects on receptors surrounding the Site.

Ground Conditions

7.24 A ground conditions assessment was undertaken in order to establish the likely contamination risks posed to local receptors including:

- Construction site workers;
- Current users of the transport interchange;
- Future occupants, residents and users of the proposed development;
- Biodiversity and habitat currently found on-site; and
- River Crane Corridor Site of Important Nature Conservation.

7.25 The site has been developed as historical railway land since at least the late 1800's. The current Twickenham Station itself was developed in the 1960s. This included a car park, two small buildings, three platforms, railway lines and a footbridge. The site has been in its current layout since at least 2007.

7.26 Historical mapping also indicates that the surrounding area was largely open land and residential land use from at least the 1870s with Twickenham Junction Railway Line noted to be present. A Brewery, the River Crane, a School, a Railway Engine Shed, two children's Nurseries and a Carriage Factory were all present within 500m of the site during the late 1800s and early 1900's. A Hospital was located approximately 150m to the southeast between 1896 and 1995, while a Goods Shed, Corporation Depot and a Coal Yard were shown to be present within 150m of the site between 1914 and 1991.

7.27 The site geology comprises made ground of between 1 and 2m in depth underlain by the Kempton Park Gravels and London Clay. Localised contamination has been identified in the made ground.

7.28 Currently, the majority of the Site is covered with hardstanding and railway structures and this provides a barrier between ground contamination and users of the Site. During the site preparation and construction stage, this hardstanding would be affected and potential pathways for contamination could occur. However the site preparation and construction works would be subject to a range of controls required under current legislation which would prevent construction workers coming into direct contact with any potential contamination in the soil or ground gases. Such controls would form part of the site-specific Construction Environmental Management Plan.

7.29 The Construction Environmental Management Plan would also sets out measures to ensure that risks to soils and groundwater would be minimised such as measures to reduce the spillage of vehicle fuel or construction chemicals and identification of specific construction measures (e.g. type of piling).

7.30 Waste material created during the demolition and construction phase could be contaminated. However, by meeting relevant legislation requirements in terms of storage, treatment, and disposal, the associated environmental effects would be negligible.

7.31 Upon completion of the proposed Development the risk of contamination to future occupants, water bodies and habitats would be negligible as contaminated material would have been removed from the Site during the construction period. Furthermore, the Site would be covered in hardstanding, and new areas landscaping would provide a barrier between any remaining below ground contamination and above ground users of the Site.

Water Resources

7.32 The site is immediately to the south of the River Crane and approximately 550m to the northwest of the River Thames. There are no watercourses crossing the site and no surface water or groundwater abstractions within a 1km radius.

7.33 Potential impacts to water resources during site preparation and construction processes are associated with the generation and release of sediments into the surface water drainage network, spillage and leakage of oils and fuels, leakage of wet concrete and cement and disturbance of contaminated land and foul drainage. The Construction Environmental Management Plan will contain details to minimise these risks. In addition, the use of an appropriate piling technique would ensure that contamination of the groundwater is prevented.

7.34 The site is located within Flood Zone 1 with less than a 1 in 1000 annual probability of fluvial flooding in any given year. There are no records of flooding in the immediate area. The rate of surface water runoff from the site will be limited to mimic the existing levels and no adverse impact will result.

7.35 Groundwater has been recorded at 4.5m AOD, a minimum of 1.5m below the made ground. However, the development does not include a basement or large scale excavation required.

7.36 The site is predominantly hard paved and will remain so. As a result no changes to hydrology or adverse impacts on watercourses or groundwater are anticipated.

7.37 The impact of the development once operational is limited to a small increase in foul water flows and potable water demand. No long term significant adverse impacts are anticipated from the proposed development.

Ecology

7.38 A full ecological impact assessment has been undertaken including a habitat survey, bat surveys and arboricultural surveys.

7.39 The Site does not contain any statutory or non-statutory designated sites. However, the River Crane Corridor Site of Importance for Nature Conservation runs along the northern boundary of the site.

7.40 It is not anticipated that the proposed development will adversely affect any statutory or non-statutory designated sites for nature conservation. In addition, the integrity of the River Crane and its associated habitats will be maintained throughout development.

7.41 No trees will be lost or adversely affected as a result of development and the proposed diverse planting of trees of local provenance will maintain and enhance the woodland within the site.

7.42 Artificial light spillage and pedestrian disturbance will be kept to a minimum within the River Crane and its associated habitats.

7.43 No significant impacts are anticipated towards bats; bat monitoring surveys will be undertaken to confirm this. In addition, the mitigation proposed may be beneficial to foraging and roosting bats in the long term. There are no significant impacts anticipated on any other species.

7.44 On balance, the overall impact on site ecology and the River Crane is anticipated to be negligible and potentially beneficial in the long term as steps will be taken to increase its biodiversity.

7.45 Japanese knotweed was identified on the site during the site survey. By law it is an offence to plant, or cause Japanese knotweed to grow in the wild. Advice on an appropriate management strategy for Japanese knotweed will be developed and implemented in conjunction with site clearance and construction activities.

Daylight, Sunlight, Overshadowing and Solar Glare

7.46 A daylight, sunlight, overshadowing and solar glare assessment was undertaken to determine the following:

- likely effect of the proposed development on the amount of daylight and sunlight experienced by adjacent residential buildings;
- whether the new buildings would overshadow amenity spaces within and around the Development; and,
- the potential for solar glare from the buildings.

7.47 The residential properties in the vicinity of the site which have been assessed are: 2, 2a, 2b, 4 Cole Park Road and 11-16 Mary's Terrace.

7.48 The daylight and sunlight analysis indicates that the neighbouring properties will be affected by the development proposals to varying degrees. However the daylight distribution results show that the proposed development has been designed to continue to allow sufficient light into the neighbouring residential rooms and the impact is considered to be negligible.

7.49 The shadow analysis indicates negligible impact caused by the proposed development in overshadowing terms on the adjacent surrounding amenity areas. Amenity areas will remain adequately lit to satisfy the appropriate values for overshadowing.

7.50 There is expected to be negligible impact in Solar Glare terms on the key locations and junctions identified. Solar glare is not anticipated to cause safety to be compromised for pedestrian or vehicular traffic.

Wind

7.51 The wind microclimate assessment was to assess the likely effect of the proposed Development on the local wind conditions, and the safety and comfort of pedestrians within and around the Site.

7.52 Long-term wind statistics for London were analysed and adjusted to the Twickenham site by modelling the wind profiles that would be generated by the different ground roughness that approach the site. Further analysis of this data concluded that the wind microclimate on the site would be suitable for standing/entrance use at the current time.

7.53 The wind microclimate is benchmarked in terms of the Lawson Comfort Criteria. The criteria reflect the fact that pedestrians will tolerate relatively strong winds when engaged in transient activities such as walking but require lower wind speeds to sit comfortably for long periods.

7.54 In urban, mixed-use, developments the target wind microclimate would usually target sitting, standing/entrance and strolling activities as typical, but with the focus on sitting conditions during the summer season.

7.55 Analysis of the meteorological data and consideration of the building massing indicated that the wind microclimate across the site would be suitable for standing/entrance use or leisure walking during the windiest season at ground level. Wind conditions on the balconies were also assessed. It was concluded that with the inclusion of partition screens between balconies and side screens on the more exposed corner balconies the microclimate would be suitable for residents to sit comfortably on calm summer days.

7.56 At ground level the café seating and entrance to the northwest of the main station entrance would benefit from additional screening to create localised shelter during the summer and windier winter seasons respectively. The overall effect of the development on wind microclimate was Negligible with conditions suitable for the intended pedestrian use of the site.

Electronic Interference

7.57 An assessment of the potential impacts to analogue and digital television reception of the proposed development has been undertaken. Prior to mitigation it is predicted that there will be long term adverse impacts for up to 98 existing aerial installations. However, suitable mitigation measures are available in all cases including providing a non-subscription satellite service or upgrading the existing aerials. Following mitigation, impacts to TV reception are considered to be of negligible significance. All mitigation measures are expected to provide TV reception of at least the same quality as that previously enjoyed by any affected households.

Townscape and Visual Impact

7.58 The townscape and visual impacts of the proposed Twickenham Station development were assessed in relation to study areas, as follows:

- The "site" study area , which includes the application site boundary and extends to the railway boundary wall along Mary's Terrace and to the footbridge linking Mary's Terrace with Cole Park Road
- The "townscape context" is the immediately adjacent area within which the site is located, which may be regarded as within the "zone of influence" of the site
- The study area for the visual impact assessment extends to include places identified as likely to provide views of the proposed development where the visual impact is an important consideration.

7.59 The London Borough of Richmond sought that the visual impact on some long distance views should be analysed. Eleven viewpoints were agreed for study in relation to the visual impact assessment:

1. Junction of Arragon Road and London Road.
2. Junction of Whitton Road and London Road.
3. Junction of Beauchamp Road and Marys Terrace.
4. Richmond Hill (long distance).
5. Crane Valley – playing fields off Craneford Way
6. Marsh Farm Road – Pedestrian link over the railway line
7. St Margarets – view from railway bridge, St Margarets Road.
8. Cole Park Road
9. Corner of Cheltenham Avenue, St Mary's School
10. In front of The Albany public house
11. Moormead Park.

7.60 For these viewpoints, photomontages were prepared showing the proposed Twickenham Station development and a second set showing this proposal in conjunction with the consented Regal House extension for a hotel development, for the cumulative impact assessment.

7.61 There are two conservation areas within 200m of the site, at Queen's Road and at Amyand Park Road and five listed buildings (all Grade II) within 200m of the site, the nearest being Heatham House. The council also identifies Buildings of Townscape Merit of which there are several within the study area, the nearest including along Mary's Terrace, Cole Park Road and the Albany public house.

7.62 The geography of the site is such that is seems to recede from its townscape context, presenting almost a gap in the tighter urban fabric of its context. The low buildings of the station and the combination of railway lines and the height provided by the bridge to create a large opening in the urban fabric, opens a view over the bridge to a wide extent of sky. The station itself is characterised by a disparateness of elements, lack of cohesion, and a generally dull appearance except where the "front of house" areas have been upgraded, using modern materials and creating a more enjoyable experience for passengers. But even in the upgraded areas, there is a medley of elements, especially in the London Road forecourt and in boundary treatments, and the site struggles with its geography and topography to present a positive character.

7.63 Areas with visibility of the proposed development are confined to:

- The site's immediate surroundings, represented by viewpoints 1, 2, 3, 8, 9, 10
- Locations further away, where open space or elevation (footbridges) provides a view out of the built up area, represented by viewpoints 5, 6, 7, 11
- The distant, elevated western edge of Richmond and its Terrace and Gardens, represented by viewpoint 4.

7.64 The development has the potential for major beneficial effects on the townscape qualities of its London Road context in improvement to the street frontage, including additional street trees, generous public plazas to the two main entrances, an appropriate station approach and frontage, and a footpath link to Moormead Park. Only localised adverse effects were assessed, on the character of the setting of Cole Park Road and Mary's Terrace reducing to neutral in time.

7.65 The principal effects of the proposed development would be on the local townscape, replacing the openness and views of large skies with large buildings, which would link the larger building of the town centre to the south of the railway with the domestic scale buildings to the north. The development would continue the built frontage along London Road, across the open area associated with the bridge, varying in height to relate to the different scale buildings immediately adjacent to the site.

7.66 The layout of the development in three main blocks provides generous public open space with plazas to the two main entrances, from London Road and from the River Crane frontage to the north. The development would provide an appropriate station approach and frontage, and street trees along London Road and in the plazas.

7.67 Townscape effects on other sensitive receptors such as conservation areas, listed buildings, or public rights of way, were assessed as minor adverse or less.

7.68 During construction, short term major adverse effects would result from the activities, disruption and changes during the construction period, principally on the immediately surrounding areas: on the townscape of London Road and on the character and setting of the residential areas of Mary's Terrace, at times during the period, and within the site and on the western end of Cole Park Road, throughout the period. At other times and further afield, the effects would be moderate adverse or less, and short term.

7.69 During construction, the short term visual effects were assessed as adverse; major to moderate for nearby residents and moderate for people using local facilities in the London Road area and the Albany public house-Queens Road area. Elsewhere the visual impacts of construction were assessed as slight or less.

7.70 Major beneficial visual impact was assessed for pedestrians and viewers in the London Road area, where, although the loss of the openness at the bridge would be noticeable, the street would be contained and defined by buildings of an appropriate scale and form, with discernible benefit to the townscape. Moderate beneficial visual impact was assessed for residents in the Albany public house-Queens Road area, from where the development would provide containment as well as townscape improvement, with moderate benefit for viewers from the public house and conservation and for pedestrians and people using local facilities in the London Road area.

8.0 Potential Cumulative Impacts

8.1 It is a requirement of an EIA to consider the possible combination effects of different types of environmental impacts (eg noise, dust etc) and also the cumulative impacts of other projects likely to overlap in timing with the Development.

8.2 The cumulative impacts of the proposed Twickenham Station redevelopment, the consented development of Regal House and the potential development of the Royal Mail Sorting Office Site has been considered within each of the technical assessments (See Figure 7).

Figure 7 Cumulative Scheme Location

8.3 The Regal House Extension 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 to step down in height to achieve height levels at Mary's Terrace to the east.

8.4 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. 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.

8.5 It is considered that principally cumulative impacts will occur during the construction phase. It is anticipated that early phases of the Twickenham Station construction will coincide with the Regal House extension construction. Construction phase mitigation is proposed through the ES to minimise the potential impacts including:

- Construction traffic;
- Air quality;
- Noise and vibration; and
- Ground and water contamination.

8.6 During the construction period of the Twickenham Station development, short term major adverse effects were assessed on the immediately surrounding areas. Construction of the Regal House extension would be in progress during the foundation works within the Twickenham Station development and construction of the two developments in conjunction is unlikely to increase the effects assessed, either on the immediate surroundings or further afield.

8.7 A Demolition and Construction Method Statement will be produced and an Environmental Management Plan (EMP) implemented to minimise the effects of construction and operational activities. A Construction Logistics Plan (CLP) will also be implemented to minimise the potential impacts of construction traffic.

8.8 Due to 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.

8.9 In conjunction with the Twickenham Station development, the Regal House extension would allow a transition between the taller buildings of the town centre and the smaller scale residential area of and surrounding area such as Mary's Terrace and Cole Park Road.

8.10 The beneficial visual effects for people in the immediate surroundings of the Twickenham Station development would be slightly enhanced by the addition of the Regal House extension, in views from east and west, where the gap between the buildings would be reduced by the Regal House extension and they would appear as an integrated cluster.

8.11 A full quantitative assessment on the cumulative impacts has not been possible due to the lack of detail currently available for the Royal Mail Sorting Office Site. A broad presumption has been made that if the Royal Mail development is for residential use then the cumulative impacts would be beneficial in providing residential units that will go to meeting the Boroughs housing targets. If the Royal Mail Site included employment uses then it is broadly assumed the cumulative impact would be beneficial due to a rise to new jobs which are predicted to have a positive impact on the area, although this would be dependent on the Use Class of any proposed development.

8.12 The cumulative impacts on air quality, noise and vibration, water resources and ground conditions are difficult to accurately predict due to the lack of information presently available to carry out a quantitative cumulative impact assessment. Providing similar mitigation as proposed for Twickenham Station is applied to the other developments the cumulative impacts are considered likely to be minor to moderate adverse. Details of proposed mitigation measures are set out within the Environmental Statement.

8.13 The Twickenham Station Development has the potential for major beneficial effects on the townscape qualities of its London Road context in improvement to the street frontage, including additional street trees, generous public plazas to the two main entrances, an appropriate station approach and frontage, and a footpath link to Moormead Park. This is considered to have a beneficial impact to future developments around the site. Once established, the three developments together would create a new townscape in the centre of Twickenham and, as anticipated in the Sustainable Urban Development Study, would combine in the long term to provide enhanced public realm, pedestrian links and green space.

9.0 Residual Impacts and Conclusions

9.1 Residual impacts are defined as those impacts that remain following the implementation of mitigation measures. Mitigation measures for each area of environmental and social impact are discussed in full in the relevant technical chapters.

9.2 The Development has evolved in response to regional and local planning policy for the Site and a comprehensive consultation exercise.

9.3 The design and consultation process has led to a Development which will result in an improved transport interchange including increased capacity for the peak movements experienced on Twickenham Stadium event days. The townscape and built environment of the Site will be improved with the creation of modern housing, retail facilities and opening of links to surrounding green space.

9.4 The proposed development will add 115 residential units to the existing stock, improving the housing stock within the Borough. In addition the Development will give rise to new jobs which are predicted to have a positive impact on the area.

9.5 The development has the potential for major beneficial effects on the townscape qualities of its London Road context in improvement to the street frontage, including additional street trees, generous public plazas to the two main entrances, an appropriate station approach and frontage, and a footpath link to Moormead Park. Only localised adverse effects were assessed, on the character of the setting of Cole Park Road (major-moderate) and Mary's Terrace (moderate). Cumulatively with the Regal House extension, there would be no additional adverse townscape or visual effects, and slight beneficial effect in the reducing the gap between the developments and integrating them as a cluster.

9.6 The Environmental Impact Assessment (EIA) has been undertaken in parallel with the design process and measures have already been undertaken to eliminate adverse environmental and social impacts, including revising block location, height and massing to provide an overall scale appropriate to the site's location, and consideration of measures to ensure the ecological features protected.

10.0 Project Team

10.1 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 as set out in Table 1.

Table 1 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
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 Limited	Landscape Architect
White Young Green Environment Planning Transport Limited	Townscape & Visual Impact Consultants

11.0 ES Availability

11.1 The ES is available for viewing by the public during normal office hours at the London Borough of Richmond upon Thames. Comments on the planning application should be forwarded to:

Mr Chris Tankard
London Borough of Richmond upon Thames
Civic Centre
44 York Street
Twickenham
TW1 3BZ

11.2 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