Proposed Residential Redevelopment
Broom Road, Teddington TW11 9BE
Teddington Riverside
Environmental Statement – Addendum

June 2014

CONTENTS **PAGE(S)**

1.0 INTRODUCTION

1.1.1 This document is produced as an Addendum to the Environmental Statement submitted to the Council in March 2014. It arises from the Councils consideration of the planning application and the submitted Environmental Statement and consultation responses received. This has resulted in the Council originally issuing a letter dated 30th May seeking an Addendum under Regulation 22 of the Town and Country Planning (Environmental Assessment) (England and Wales) Regulations 2011.

1.1.2 An amended version of the Regulation 22 letter was issued on 2nd June 2014.

1.1.3 The Councils letter has attached a series of 'detailed comments' that under Regulation 22 (1) and (10) that they required more information on. These are set out under the respective ES Chapter headings. It is noted that no additional information is required under Chapter 2 – Ground Contamination, Chapter 3- Services, Chapter 5 – Archaeology and Chapter 7 – Built Heritage. Further that at the time of issuing the amended Regulation 22 letter the Council were still awaiting some consultation responses to Chapter 1- Health.

1.1.4 A further amendment letter dated 10th June was subsequently received relating to noise matters.

1.1.5 In responding to this formal request for additional information the response is set out in the same manner, under each Part or Chapter of the ES. The comment made is set out in **bold** text, with the response following. Some of the responses have required amendments to the technical appendices of the ES or the submission of additional drawings or schedules. These are cross referenced in this document and the following revised Appendices are attached.

Appendix 1 PTAL Plan

Appendix 2 Plans and Schedule of Unit Floor Areas

Appendix 3 Spatial Diagram

Appendix 4	Revised Flood Risk Assessment
Appendix 5	Revised Landscape Plan
Appendix 6	Revised Roof Plan showing Green Roofs
Appendix 7	Revised ES Appendix 1.6 Plan showing addition receptor location and photographs
Appendix 8	Additional Massing Models
Appendix 9	Revised Visual Receptors showing outline of proposed development.
Appendix 10	Revised Daylight and Sunlight Report

2.0 PART 2 – PROJECT INFORMATION

2.1.1 **Not all relevant local plan policies, supplementary planning documents (SPD)/supplementary planning guidance (SPG), or site briefs have been identified in this chapter in terms of compliance with section 38 (6) of the Planning and Compulsory Purchase Act 2004. No reference is made to Development Management policies SD3, SD7, SD10 OS5, OS11, HD7, HO2, TP1, TP2, TP3, TP6, TP7, TP9, DC3, DC4, DC5 and DC6, SPD: Affordable Housing, SPD: Car Club Strategy, SPD: Design Quality, SPD: Front gardens and other Off Street Parking Standards, SPD: Residential Design Standards, SPD: Sustainable Construction Checklist, SPG: Contaminated Land, SPG: Design of Maximum Access, SPG: Nature Conservation and Development, SPG: Planning Obligations Strategy, SPG: Recycling for Development, SPG: Security by Design, SPG: Trees, Landscape Design, Planting and Care and Site Brief: Teddington Studios.**

2.1.2 The following text addresses this matter by referring to the relevant policies.

Development Management Policies:

2.1.3 Policy DM SD 3 expects existing developments to meet the highest standards of energy and water efficiency through retrofitting. Conversions and extensions to existing properties will be encouraged to comply with the Sustainable Construction Checklist SPD as far as possible.

2.1.4 Policy DM SD 7 states that all development proposals, when disposing of surface water, are required to follow the London Plan's drainage hierarchy:

- Store rainwater for later use;
- Use infiltration techniques, such as porous surfaces in non-clay areas;
- Attenuate rainwater in ponds or open water features for gradual release to a watercourse;
- Attenuate rainwater by storing in tanks or sealed water features for gradual release to a watercourse;
- Discharge rainwater direct to a watercourse;
- Discharge rainwater to a surface water drain;

- Discharge rainwater to the combined sewer.

If surface water from the new development is to be discharged to a public sewer, evidence will be required that sufficient sewer capacity exists.

2.1.5 Policy DM SD 10 expects new developments to ensure that there is adequate water supply, surface water, foul drainage and sewerage treatment capacity to serve their needs. Evidence will be required of this capacity. Financial contributions may be required for new developments towards the provision of such infrastructure.

2.1.6 Policy DM OS 5 relates to biodiversity, and states that all new development will be expected to preserve and where possible enhance existing nature habitats, river corridors and biodiversity features such as trees.

2.1.7 Policy DM OS 11 expects new developments to protect and, where possible, enhance the special character of the Thames Policy Area. Further, Policy DM OS 12 confirms that new riverside developments must protect and enhance existing river-dependent industry and river-related uses, such as locally important wharves, boat building sheds, slipways, docks, jetties and stairs as they contribute towards the special character of the River Thames.

2.1.8 Policy DM HD 7 expects new developments to protect those attractive views and vistas that are illustrated on the Proposals Map and, where appropriate, to seek opportunities to create new ones.

2.1.9 Policy DM HO 2 relates to infill developments, noting that they must reflect the character of the surrounding area. In considering applications for infill development plot width; dwelling spacing; height; materials; trees and habitats; and impacts on local amenity will be taken into account.

2.1.10 Policy DM TP 1 expects higher trip generating developments such as larger offices, shopping and leisure facilities and mixed use and higher density residential schemes to be located in an area that is easily accessible by transport other than the private car and is within close proximity to local services.

2.1.11 Policy DM TP 2 confirms that new developments would be assessed for their impact on the existing travel network. Applications for major developments should be accompanied by a Transport Assessment.

2.1.12 Policy DM TP 3 expects all development to create or improve links with the local and wider transport, cycle and pedestrian networks. Permeability across the development should be maximised with those schemes adjoining the river providing a public riverside walk. Policy DM TP 6 further expects new developments to protect, maintain and, where appropriate, enhance the quality and permeability of the pedestrian environment.

2.1.13 Policy DM TP 7 requires all new developments to maintain and improve conditions for cyclists. Schemes must not adversely impact on cycling network and must provide appropriate cycle access and sufficient cycle parking facilities.

2.1.14 Policy DM TP 9 relates to the provision of car parking in existing front gardens, explaining that such proposals will be discouraged particularly where they would detract from the streetscape of character of the property.

2.1.15 Policy DM DC 3 confirms that tall buildings are inappropriate within the borough with the exception of identified areas in Twickenham and Richmond.

2.1.16 Policy DM DC 4 expects development to protect and enhance the borough's trees and natural landscape. The planting of new trees should be encouraged and existing trees in the streets and public open spaces should be maintained. Schemes which result in a significant and unjustified loss of trees with no replacements proposed will not be acceptable.

2.1.17 Policy DM DC 5 requires the design of new developments to be as such so as to protect the amenities of adjoining properties. Schemes should not result in an unreasonable loss of privacy, pollution, visual intrusion, noise or disturbance. Further, developments should be designed so as to ensure that sufficient sunlight and daylight to penetrate into and between buildings and that there are no instances of undue overshadowing.

2.1.18 Policy DM DC 6 concerns the design of balconies and upper floor terraces, noting that their use is encouraged where residential units are located on the

upper floors. They should be suitably deep, located off a dining or living space, provide a degree of shelter and privacy and be secure.

Supplementary Planning Documents:

2.1.19 The SPD for Affordable Housing (March 2014) was adopted the day before the application was submitted. It sets out guidance on the requirements for new housing developments, mixed use schemes that incorporate residential units and schemes that propose the change of use into wholly residential where planning permission is required, to provide an element of affordable housing. The SPD supplements Core Strategy Policy CP 15 and Development Management Plan Policy HO6, and notes that the Council will seek the maximum reasonable amount of affordable housing on sites capable of providing 10 units or more, subject to financial viability.

2.1.20 The SPD for the Car Club Strategy (December 2006) notes the benefits of residential developments, particularly those close to town centres and within Controlled Parking Zones, being provided with access to a car club as this will negate the need for off street parking and reduce reliance on private car ownership. The SPD supplements the aims of the London Plan to improve road safety, reduce traffic congestion and car reliance and encourage the use of more sustainable forms of transport.

2.1.21 The SPD for Design Quality (February 2006) explains the degree of quality that is expected from new developments in the borough. It notes that schemes should:

- Respond to locally distinctive patterns and promote the area's local character;
- Clearly distinguish between public and private spaces and promote the continuity of the street frontage;
- Promote attractive and safe public spaces;
- Promote accessibility, be well connected to public transport links and safe to move around;
- Provide distinct and recognisable routes and landmarks to assist people in finding their way around;
- Promote adaptability through development that can respond to changing social, technological and economic situations;

- Promote diversity and choice, creating viable places that respond to local needs.

2.1.22 The SPD for Front Gardens and other Off-Street Parking Standards (September 2006) provides guidance on the use of existing front gardens for car parking where planning permission would be required. It notes that in those limited cases where such development would be acceptable, the parking area should be designed to cause minimal visual impact on the street scene. This document was not referred to previously as there is no parking in front gardens proposed.

2.1.23 The SPD for Residential Development Standards (March 2010) illustrates the Council's approach to the design of residential developments. It considers the role of design in providing suitable levels of sunlight and daylight; a sense of enclosure; amenity and play space; privacy; a comfortable and usable layout and minimum internal space standards along with sustainable and environmental design measures.

2.1.24 The Sustainable Construction Checklist (August 2011) is relevant for all developments that create 1 or more new dwellings and/or 100sqm or more of non-residential floor space. The list will primarily be used to assess the scheme's compliance with BREEAM and the Code for Sustainable Homes. It also provides a checklist of general design measures that would contribute towards better sustainability practise.

Supplementary Planning Guidance:

2.1.25 The SPG for Contaminated Land (2003) confirms the approach that developers are expected to take in ascertaining whether or not the proposal site contains contaminated land and, if contamination does exist, the extent of the remedial works required. It is also noted that contingency plans must be in place should land contamination be revealed during the course of the build.

2.1.26 The SPG for Design of Maximum Access (undated) expects those users with restricted mobility to be taken into account in the design of residential developments and publicly accessibly buildings. It notes that design requirements vary according to the user's disability.

2.1.27 The SPG for Nature Conservation and Development (undated) illustrates the requirement for nature conservation to be incorporated into the design of a building from the earliest stage. It notes that existing trees, hedges and natural habitats should be retained and enhanced with further tree, shrub and lawn planting encouraged.

2.1.28 Where a development may not be acceptable in planning terms, the SPG for Planning Obligations (2009, updated 2012) explains those measures that can be put in place in order to enable the proposal to continue in a sustainable manner. Dependant on the scale and nature of the development, legal obligations can:

- Restrict the development or use of the land in a specified way;
- Require the land to be used in a certain way;
- Require a monetary sum to be paid to the Council in order to assist in their delivery of related infrastructure or services.

2.1.29 The SPG for Recycling for New Development (undated but understood to be 2004) expects recycling facilities to be provided in new or converted flats with communal facilities which contain at least 6 units. The document provides guidance on the size and locations of the required bins, the design of their stores and details of their collection and management.

2.1.30 The SPG for Security by Design (undated but understood to be 2002) addresses the role of design in reducing the potential for crime. It notes that there are three important design elements that must be incorporated into a development in order to maximise security; defensible space; natural; surveillance and secure buildings. A safe and usable design would combine all three.

2.1.31 The SPG for Trees, Landscape Design, Planting and Care (November 1999) illustrates the positive role different types of trees can play in developments, optimum locations for their planting and how they should be maintained.

2.1.32 The Site Brief for Teddington Studios (October 2000), based on the now superseded UDP designations, was compiled to guide the redevelopment of the site. It illustrates the Council's preferred land use mix, activities and facilities and design objectives.

2.1.33 **The PTAL of the site is not adequately described in the description of the site and surrounds, in particular how the site is split into 1b and 2 for the purpose of calculating planning obligations.**

2.1.34 The use of the TfL Planning Information Website (http://www.webptals.org.uk/) enables point locations to be identified and the PTAL calculated for that particular point. Placement of the cursor outside Weir Cottage identifies that this point has a PTAL of 2. Similarly placement of the cursor on the street frontage at the south eastern most part of the site also shows a PTAL of 2. Indeed placement of the cursor anywhere within the body of the site shows a PTAL of 2.

2.1.35 The Council has provided a plan that is able to show with more refinement the extent of the site that is located within each of the PTAL zones. This is attached as Appendix 1.

2.1.36 This identifies that the PTAL of the site changes across the depth of the site and becomes PTAL 1b towards the river frontage. The 'divide' between PTAL 2 and PTAL 1b is broadly on a north south alignment through the site as shown on the plan with the higher PTAL towards Broom Road.

2.1.37 By application of this 'division' within the site to the proposed buildings we have been able to apportion the proposed unit numbers, tenure and type between the two PTAL zones. The resulting configuration is identified in the table below.

	PTAL 1	PTAL 2	Total
Market			
1b	15	26	41
2b	61	34	95
3b	41	24	65
4b		6	6
Intermediate			
1b	4		4
2b	8		8
Total	129	90	219

2.1.38 Whilst the plan was not provided within the original ES, the detail of the plan had been taken into account. This configuration was used to input into the Councils S106 calculator in order to reflect the different accessibility of parts of the site, so that this is reflected in the financial contributors offered.

2.1.39 **The schedule of proposed residential accommodation does clearly set out total sizes, identification of shared ownership units, location of wheelchair units.**

2.1.40 The schedule of accommodation is set out on page 87 of the Design and Access Statement and identifies the mix of accommodate within each building. This information is also reflected in Part 2 of the Environmental Statement in the table on pages 14 and 15.

2.1.41 Attached as Appendix B for indicative purposes are the floor plans for the proposed units together with overall unit sizes. This is supported by a schedule.

2.1.42 The shared ownership or intermediate units are located within Block E7. These comprise the 4 x 1 bed units and 8 x 2bed units.

2.1.43 Wheelchair units are provided at 10% of the total number of residential units, thereby equating to 20 units throughout the scheme. Their locations are identified in the schedule in Appendix B.

2.1.44 **With regard to the 'No development Alternative' it is not agreed that an adverse impact would occur as a result of this project not materialising. No baseline situation is set out and no identification of harm is expressed i.e. no description of harm from the continued use of the offices and studio or retention of site buildings although it is acknowledged that a negative description of the existing buildings is provided.**

2.1.45 The baseline situation is that the site is currently occupied by a number of buildings developed in a piecemeal manner over a considerable number of decades. A large part of the site is laid to hardstanding with little softening of the site. They do not contribute in a positive manner to the character of the local area or the conservation area.

2.1.46 The studio buildings have effectively reached the end of their useful life with the advance of film and television technology. There has been little investment on that part of the site for a number of years and Pinewood will be fully vacating shortly. The GLA both in their pre-application advice and in their Stage 1 report accept the loss of the studios.

2.1.47 Considerable investment would be needed in those buildings but this is unlikely to be viable given that investment is being made elsewhere in film and television production. Therefore this part of the site will become vacant and continue to deteriorate, thereby detracting from the wider site and the local area.

2.1.48 The Haymarket part of the site is also in need of considerable investment. They need to expand to accommodate the staff that have been temporarily relocated from Central London and to bring all those staff together under one permanent roof. The accommodation of the additional staff at Broom Road has always been seen as a short term solution but the buildings are unsuitable to accommodate 1200 people on a permanent basis.

2.1.49 Haymarket need to identify an alternative location for their new offices. Their relocation from Teddington would leave the main part of the site vacant as well. Previous proposals in 2001 to retain the studios but to redevelop the rest of the site for two five and six storey office buildings and a third five storey building for A3 and offices above was not determined after being with the Council for three years. Following that the site was sold to the present owners. The proposal is no more attractive for redevelopment for offices than it was then, given its location in relation to the railway station in particular.

2.1.50 The 2000 Planning Brief accepts at paragraph 3.1 that "the location of the site and its relationship to public transport mean that it would not be appropriate to have a major increase in employment levels through redeveloping the whole site more intensively, just for employment use…….small employment units would be preferred, including river related employment, live/work units and/or small studio spaces".

2.1.51 The Brief states that in conjunction with these employment uses there "should be a mix of residential units". The proposal meets this aspect of the Briefs aspirations. However it is not viable to meet the rest of the Briefs aspirations

in the manner suggested 14 years ago. Vacation of the buildings by the owners would not see them reoccupied. This would result in an adverse impact.

2.1.52 Harm would result from the vacation of the buildings in that without occupation and maintenance they would start to deteriorate. Given the site has a presence to Broom Road, the River Thames and is partially with a conservation area this would not be beneficial and would start to adversely impact on the character of the area.

2.1.53 Therefore the 'no development alternative' would have an adverse impact.

2.1.54 **It is noted that the preferred use, layout and scale and massing has been presented, but there is no exploration of continued employment use, mixed site (site brief), or riverside uses. As such, the consideration of alternative compared to that proposed is not fully addressed.**

2.1.55 There is no possibility of the site being redeveloped for continued employment use as indicated above. The proposals in 2001 for such development were not pursued and as indicated above are no more likely today than they were then. There is no demand for buildings of this nature in this location and it is not viable to redevelop the site for employment use.

2.1.56 We have considered the possibility of the site being developed in accordance with the Planning Brief as a mixed use. In this regard it will be noted that its is nearly 14 years since the brief was adopted and planning policy nationally, strategically and at local level has changed since then. Indeed the emerging Site Allocations DPD designates the site for residential development subject to the relocation of the existing employment use. Whilst no yet adopted this demonstrates the 'direction of travel' of the emerging policy towards the site that is more relevance that the previous brief.

2.1.57 The application that proposed a mixed use of the site in 2000 was not pursued and treat as 'withdrawn' by the Council in 2003. A mixed use of the site would require demolition of the existing buildings. It would not be viable to provide offices as part of a mixed use redevelopment of the site. The sites relationship to the railway station remains an impediment to employment use here.

2.1.58 Paragraph 3.3 of the 2000 Brief refers to the consideration of 'riverside uses' and it refers to what was then emerging policy in the UDP Review. Adopted Development Management DPD Policy DM OS 12 deals with 'Riverside Uses'. The supporting text states:

> "River-dependent uses are those whose primary purpose is dependent on the river for siting and function. They are defined as an activity which can only be conducted on, in, over or adjacent to the river because the activity requires direct access to the river and which involves as an integral part of the activity the use of the water.
>
> River-related industrial and business uses, especially those involving the construction, repair and servicing of river craft, make a vital contribution to the continuation of the historic tradition and function of the Thames for transportation, communication and recreation and they also have a significant role in the local economy. River-related uses may include a garden or park designed to enhance public appreciation of the river and its ecology"

2.1.59 The site has not in recent decades, if at all, contained any river related uses as suggested above. In respect of 'river related uses' the above text accepts that this can include a garden or park. The application proposal in providing a riverside walkway in accordance with Policy DM TP 3 therefore also provides a river-related use.

2.1.60 The existing use of the site does not provide any river related use. Therefore in considering the 'no alternative development' scenario retention of the existing buildings in an attempt to find an alternative occupier(s) will not deliver a riverside walkway in accordance with Policy DM TP 3 or the 2000 Brief in seeking a river-related use. The emerging Site Allocations DPD does not seek any river-related uses for the application site as part of its redevelopment.

2.1.61 We therefore consider that we have fully addressed the consideration of alternatives compared to that proposed.

3.0 PART 3 – CHAPTER 1 – SOCIO- ECONOMIC

Land Use

3.1.1 **No assessment has been provided on the impact of loss of employment use which is required given that there has been no marketing evidence to support lack of demand and the redevelopment of the site away from employment uses.**

3.1.2 Whilst it is proposed that with the intended development there will be no employment use provision made on the application site, there is no loss of employment floorspace within the Borough. This linkage is set out in the submitted draft Heads of Terms. Therefore it is not considered that the site needs to be specifically marketed in this context. The emerging site allocations document allows for the residential use here on relocation of the employment use elsewhere.

3.1.3 Planning applications submitted to the Council by the previous owners in 2000 and 2001 for a mixed use development of the site to include B1 offices were not determined in 2003 and 2004 respectively.

3.1.4 Our client's consultants Colliers have provided some commentary on the present market position for offices here.

SUMMARY

3.1.5 This is a poor quality decaying office and studio complex with ancillary buildings.

3.1.6 It has no on-going suitability for modern day office use – office use is about flexible and functional floors which are cost effective to run.

3.1.7 Large and small corporate office occupiers will only take new well designed newly built office buildings – a move is a major capital commitment, be the move to 93m² (1,000sqft) or 9293m² (100,000sqft).

3.1.8 Any move will not be to something such as Teddington studios which will require a major investment to convert and when converted in current form will still not fit with modern requirements.

3.1.9 The subject property has no on-going value and use as an office function and as such is now detrimental to the on-going business continuity of Haymarket.

LOCATION

3.1.10 The proximity of central London and the availability of a reasonably fast and efficient rail service has made Teddington, like many of the surrounding suburbs, a popular residential & commuter location - a substantial proportion of the local population therefore commute on a daily basis. Road communications in the area are also good with the A3 and the M3 / A316 providing access into central London and to the M25.

3.1.11 Teddington station provides services into London (Waterloo) with a journey time of approximately 35 minutes. The station also provides local services to Richmond, Putney, Kingston-upon-Thames and Wimbledon. Regular bus services link the suburb with Richmond, Kingston, Twickenham and Wimbledon. The nearest London Underground station is at Richmond (District Line). Heathrow Airport is about 9.66km (6 miles) to the west.

3.1.12 This dynamic has driven the location as a major and sought after residential area.

LOCATION OF SUBJECT PROPERTY

3.1.13 The property is about 1.1kn (2/3 mile) outside of Teddington town centre on the north-eastern side of Broom Road, which runs broadly parallel to the A310 (Kingston Road) and is connected by means of Ferry Road at its north-western end.

3.1.14 Broom Road is a residential thoroughfare.

3.1.15 The property comprises a large office/studio complex which was originally constructed about 100 years ago, but has been extended at various times. It is currently sub-divided into two distinct elements. At the front of the site,

fronting Broom Road, there are television studios, together with ancillary offices and facilities. To the rear of the site there is an office complex occupied by Haymarket.

ACCOMODATION OCCUPIED BY TEDDINGTON STUDIOS

3.1.16 There are three principal studios all of which provide large open plan accommodation, with a floor to ceiling height of between 9.1m (30ft) and 12.2m (34ft). The build specification and equipment of the studios is out of date for today's digital needs.

3.1.17 The studio complex also includes numerous small inflexible offices, hospitality suites, post production facilities and storage accommodation. These are provided in a range of buildings including a four storey element building known as the Technical Block, a three storey building known as the Administration Block and a two storey building known as the Engineering Block.

3.1.18 Reflective of the piecemeal development of the site over the last 100 years, the buildings comprise a mixture of framed construction with flat roofs and traditional brick construction with pitched tiled roofs.

3.1.19 In addition the property includes a former house, known as Weir Cottage. This comprises very basic office accommodation.

ACCOMODATION OCCUPIED BY HAYMARKET

3.1.20 This part of the complex comprises part four storey and part five storey buildings which were constructed in the 1960s.

3.1.21 It is arranged in three sections, known as Blocks A, B and C, each of which is of framed construction with brick elevations and asphalt surfaced flat roofs.

3.1.22 The ground floor is of a much reduced specification and reflective of this is used for a variety of purposes, including two photographic studios, listening studios, archive storage, plant rooms and a substantial electricity switch gear room which is outside of the control of Haymarket.

3.1.23 Blocks A and B both have independent staircases, toilet facilities and lifts.

3.1.24 Also included is a self-contained former restaurant building in the eastern corner. This comprises a three storey building which was constructed, we estimate, in the early 1970s. The building is of reinforced concrete framed construction with part brick and part glazed elevations and an asphalt covered flat roof. Part of the first floor has been constructed on stilts. The windows are single glazed.

3.1.25 The restaurant building has not been used since 2005, other than for storage. When it was last used it provided a kitchen on the ground floor, a restaurant and hospitality suite on the first floor and a bar on the second floor.

Accommodation

3.1.26 When considering the whole site, it is important to realise the extent to which the buildings have evolved in a piecemeal fashion offering little in the way of contiguous use either by way of floor use, design or mechanical & electrical services linkage.

3.1.27 The approximate floor areas of the part of the property occupied by Haymarket are as follows:

	sq ft	***sq m***
Offices	71,729	6,663.8
Ancillary (archive/studios/storage)	10,523	977.6
Restaurant	12,331	1,145.8
Total	**94,583**	**8,787.0**

3.1.28 The approximate floor areas of the parts of the property occupied by Teddington Studios are as follows:

	sq ft	***sq m***
Reception	2,329	216.4
Studio 1	8,985	834.7
Studios 2 and 3	7,276	676.0

	sq ft	***sq m***
Wardrobe & Dressing Rooms	10,771	1,000.6
Production / Editing	2,618	243.2
Green room / Crew / Store	6,671	619.8
Engineering Block	10,524	977.7
Administration	9,645	896.1
Technical Block	29,467	2,737.6
Gate House	185	17.2
Ancillary	16,789	1,559.8
Weir Cottage	1,620	150.5
Total	**106,880**	**9,929.5**

3.1.29 The pure office element of the entire complex is therefore very small.

OFFICES DEMAND

3.1.30 Teddington is a small suburban/secondary office centre with a level of office accommodation to match – due to the high residential component, little office development has taken place a key factor of which has been a complete lack of demand.

3.1.31 An element of the subject property has been adapted for use as a single corporate office headquarters building which, if vacant would compete with similar sized properties in other nearby more established office centres, such as Richmond, Kingston-upon-Thames, Egham, Chertsey, Weybridge and Staines.

3.1.32 These offices do not provide a good standard of accommodation being arranged across a series of interconnected buildings of different ages and an overriding specification that the modern day office headquarters does not seek or require. They are very expensive to run.

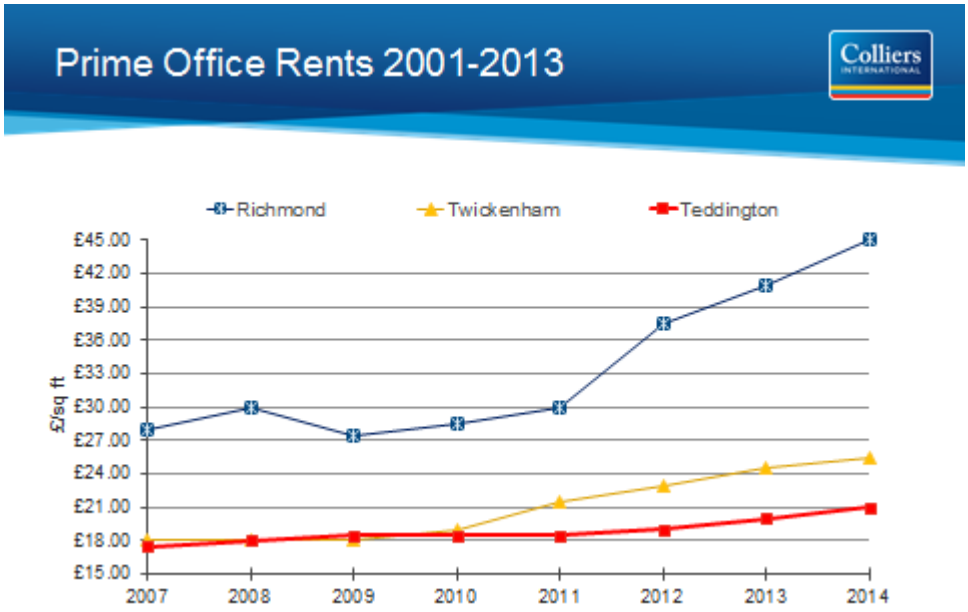
3.1.33 Today's modern headquarters function seeks operational efficiency through cost to run:bigger single floor plates, centralised service cores and adherence to corporate and social responsibility – for an office headquarters this translates

into environmental efficiency achieved through modern and improved design criteria against which an occupier will pay a higher rent thus allowing office refurbishment and development to take place.

3.1.34 There would therefore be no demand for the property from a whole range of companies, particularly those who would prefer to be in a less prominent location than provided by the major town centres (such as pharmaceutical, electronics and security related companies all of whom by nature require high quality work space to attract and keep employees). Even those that wanted cost effective accommodation in a location close to Central London and Heathrow Airport can find such properties built to a modern standard in adjoining locations.

3.1.35 Office occupier demand (outside of central London) is only just beginning to improve. Where it has improved, the occupier focus is on prime locations and for modern, well connected buildings alongside direct rail/underground access.

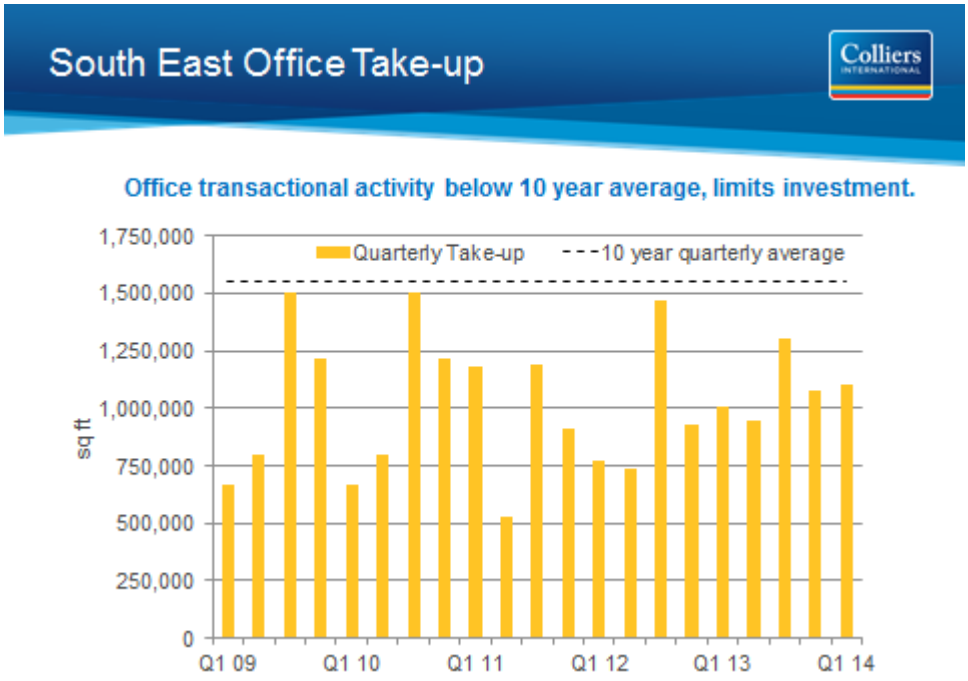
3.1.36 The incentives required to let office properties in secondary areas remains and evidence of rental values and lease length still being under pressure is commonplace in secondary areas. The outlook for secondary properties, such as the subject property remains uncertain against a backdrop of a flight to modern office buildings by investor owners i.e. prime due to the desire of occupiers for modern well located flexible office space in very established office areas.



3.1.37 Putting all the above into a financial viability against the subject property means that with the combination of rising build costs, low rental receipt and yield on return will not allow for the property to be refurbished. Occupiers are not going to pay high enough rents to justify refurbishment. Rents have to be close to £30psf to afford new development – Teddington has never recorded a rent at this level, nor will it due to the office/corporate perception of it being a residential not business location.

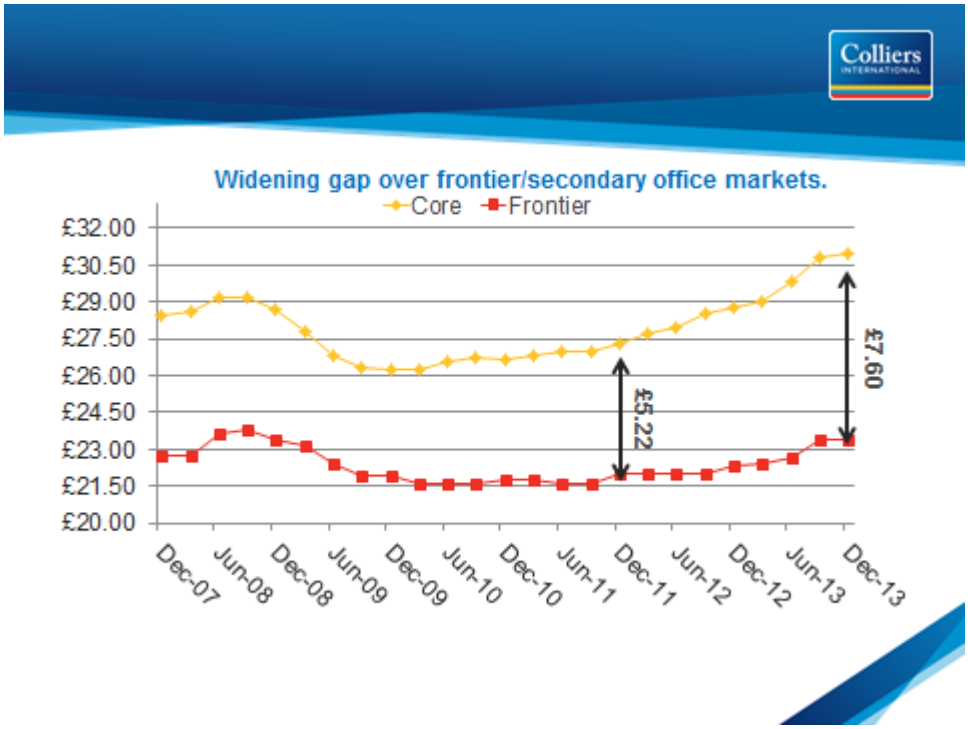
3.1.38 If the property was offered in current condition as a single HQ then again, the interest would not be there due to the cost prohibitive nature of trying to get the buildings anywhere close to being functional. It is not therefore viable for an owner to refurbish for multi leasehold occupancy or single leasehold occupancy – and, additionally no party would enter into a repair liability due to the age of the buildings and potential risk of high capital repairs. Prime office areas are offering modern well designed purpose built single HQ office buildings.

3.1.39 This is also said against a backdrop where office demand remains challenging and below the ten year average – the dynamic of the office market has changed with a generational change on where people want to work: Teddington Studios due to age, configuration, cost liability, capital expenditure need and risk does not work for this change in office demand:



3.1.40 Below is rental evidence to support the low rental receipt expectation for Teddington – and in further support of our opinion, office market demographics showing preference of prime locations over fringe :

Address	***Date***	***Size (Sq Ft)***	***Rent (£ psf)***	***Comment***
Part 4th Floor, Harlequin House, 7 High Street, Teddington	Dec-13	Circa 2,000	£19.00	Recently refurbished office suite. Term of 5 years subject to a tenant's break option at the end of year 3. Includes two car spaces.
Regal House, 70 London Road, Twickenham	Aug-13	8,455	£19.50	Comfort-cooled 10-storey office building close to Twickenham Railway Station.
Regal House, 70 London Road, Twickenham	Aug-13	5,810	£19.50	Comfort-cooled 10-storey office building close to Twickenham Railway Station.
8 Waldegrave Road, Teddington TW11	Jun-13	3,677	£20.00	Grade A air-conditioned three storey office building extending to 21,475 sq ft. Second-floor accommodation let to Morrisons Solicitors on a new 10 year lease subject to a tenant's break option at the end of year 5.



3.1.41 **No assessment on the impact of the loss of cultural, entertainment and creative industries i.e related to Teddington Studios**

3.1.42 Haymarket Media Group purchased Teddington Studios in 2004 and has since occupied much of the site. Pinewood Shepperton has operated the studios on part of the site since March 2005 following its purchase of Teddington Studios Limited (TSL) after TSL fell into administration.

3.1.43 There has been a downward trend in the financial viability of the studios under the tenure of both TSL and Pinewood. A review of the financial results over the last 14 years show ever reducing turnover and increased losses, with a profit having been achieved in only 2 of these 14 years. A loss of over £3m on turnover of £1.8m was reported in 2013 alone. This financial performance reflects the declining fortunes of the Studios as a viable given both its location, poor quality of its buildings and old equipment.

3.1.44 Pinewood will leave Teddington when its lease expires in 2014. It has previously underlined its commitment to the studio sector and invested heavily in its facilities in Buckinghamshire and Shepperton as demand for older

facilities such as Teddington diminishes. It has ruled out Teddington as an option for intensification or redevelopment.

3.1.45 A recent dilapidation inspection of the studios highlighted many problem areas with those buildings, estimated at between £750,000 and £1,000,000 to remedy. The roofs and external fabric of the main studio buildings are in poor condition as are external decorations, leading to corrosion and some areas of rot. The internal condition of the building is dilapidated. The services to the main building are of considerable age and do not comply with current regulations in a number of areas, making future occupation of the main areas very difficult. This dilapidations survey only covers the deterioration between 2005 and now, and doesn't include the much more significant "technology gap" over the last 30 years between the antiquated TV production equipment still in situ, and the huge investment in technology required to operate a modern TV studio and digital technology.

3.1.46 Whilst the departure of Pinewood from the studios has been well publicised, no sound commercial approach has been made for continued use of the studios following the end of Pinewood's lease. Nor is any such offer likely to be made given the significant level of investment required, the financial history of the facility and that Pinewood is consolidating and improving its own facilities elsewhere. Continued operation of the studios is not a viable commercial proposition.

3.1.47 The future of the site in its current form has been in question for many years which is reflected by the publication of a development brief for the site by Richmond Council back in 2000.

3.1.48 In light of the departure of Pinewood, Haymarket has considered the future of Teddington Studios, along with its other London buildings. The Teddington site is in need of significant investment and Pinewood's departure provides the opportunity to bring forward the comprehensive redevelopment of the site in order to meet other needs in the Borough, for housing.

3.1.49 Haymarket has decided to move to a new headquarters building within the Borough of Richmond. In the meantime, it has increased the number of staff based at Teddington from 650 to 1,200 pending a move to a new headquarters

building within the next three years. This is a temporary measure as it is not sustainable to have this number of staff on site long term.

3.1.50 A residential redevelopment at Teddington is a viable way to enable Haymarket's consolidation within the Borough and is appropriate given the nature of the surrounding area. This would be more in keeping with the local area than an employment use and help to meet the housing needs of the Borough.

3.1.51 The redevelopment will help underpin Haymarket's move to a new headquarters and secure their long term future in the Borough of Richmond.

Economy

3.1.52 **No assessment on the impact on local economy, particularly retail, from the loss of employment and studio use.**

3.1.53 In respect of the impact of the loss of the studio use employment numbers have been in decline for several years and there are now very few people still on that part of the site. Whilst there has been a significant growth in staff employed by Haymarket in recent months this has always been seen as temporary and in the space available not sustainable in the long term. Therefore the appropriate base line would be below the level of the existing employment numbers. This is difficult to measure accurately.

3.1.54 However the submitted Environmental Statement addresses 'Increased Retail Spending in the Local Economy' on page 38. This refers to the "The transference of the existing office workers to another location within the Borough is likely to have some impact on the Town Centre in the short term. However the spend is likely to be relatively small when compared to that from permanent local residents and to be more convenience related shopping for lunch meals and food purchases on the way home.

3.1.55 Further paragraph 1.5.15 states "Whilst there will be some loss of spending associated with the relocation of the existing office jobs and this is considered to be minor adverse impact the potential spending associated with the new residents will represent a moderate beneficial effect on Teddington Town Centre and the wider area".

3.1.56 We therefore consider that the submission does address the main impact of the proposal on the local economy. Further in addition to the direct spending associated with the new residents occupying the units, whilst the development is under construction there will be spend associated with the construction workers.

3.1.57 There will be a change in the local economy arising from the original employees at the site, to the increased temporary numbers, to the relocation of the staff to another location, to the construction phase, and finally to occupation by new residents. So there will be a minor adverse impact through to a moderate beneficial impact on the local economy.

Housing

3.1.58 **Section 1.5.28 states the addition of 219 new dwellings as an "insignificant addition" for the borough, which is not agreed with. Against a current annual target of 245 homes per annum the proposal would be significant addition to housing delivery within the borough. This statement also conflicts with the Planning Statement (paragraph 6.19) which states the proposal will contribute significantly towards housing supply in both the Teddington area and the overall borough.**

3.1.59 The proposal will provide for 219 new residential units. As a percentage of the total existing unit provision within the Borough this is an insignificant amount.

3.1.60 The London Plan 2011 housing target for Richmond is 245 dwellings/annum or 2,470 new units over the ten year period. The Draft Further Alterations to the London Plan (January 2014) have suggested increasing the target for Richmond to 315 dwellings/annum. We are aware that in responding to this proposed alteration the Borough has stated that "Meeting the higher target will be a significant challenge for the borough". This proposal can assist in meeting that significant challenge.

3.1.61 However it is accepted that the proposal at 219 dwellings will be a significant addition to the Boroughs present and future housing supply. Providing for a range of unit sizes. Given the scale of the development it is likely to be delivered over more than one year, but equates to 89% of the Boroughs current annual housing target. It is likely to contribute to around 50% of the

Boroughs per annum target over a couple of years. However it will not be delivered immediately as Haymarket need to secure an alternative site, construct replacement facilities and relocate before construction can commence.

3.1.62 **Affordable housing is not referred to in the assessment of impacts which is considered necessary within the borough where land supply and the opportunity to meet local housing need is limited, which is required to be addressed. A statement should be provided to demonstrate engagement with Registered Providers and justification of the lack of on-site rented units and the principle of a financial contribution towards off site affordable housing, addressing how this reflects best value for money.**

3.1.63 The table below shows the level of affordable housing achieved in the Borough over the last decade, derived from the Councils AMR.

Year	Total completions	Total affordable	% affordable	% Tenure split	Other comments
04/05	582	140	24%	75/25*	
05/06	842	231	27%	60/40*	
06/07	230	38	16%	50/50*	
07/08	260	3	1.2%	66/34*	
08/09	436	98	23%	58/42	- Affordable provided over 3 sites - More work on policy implementation needs to be done
09/10	145	0	0%	N/A	
10/11	399	126	32%	77.5/22.5	- Affordable provided over 5 sites - Good progress towards reflecting policy requirements
11/12	208	75	36%	58/42	- Affordable provided over 6 sites - Majority of intermediate units were from one site on the basis that is was 100% affordable

12/13	695	227	33%	75/25	- Affordable provided over 13 sites - Constraints made achieving exact mix unviable - One site achieved 100% affordable housing permitting a higher mix

Table AH: On-site provision of affordable housing

3.1.64 As can be identified in Table AH above, the affordable housing provision from 2010-2013 has seen a significant improvement on previous years. Overall however, the percentage of affordable housing being provided on development sites within the Borough still remains below the 50% baseline target set in Policy CP15.

3.1.65 With regards to tenure mix, the priority for the Council is the provision of social rented units rather intermediate. However, this is subject to the constraints of the site particularly where the provision of a higher number of social rented units in lieu of intermediate units would render the scheme unviable.

3.1.66 The proposal is to provide for 12 intermediate units on site as part of the development of the site. These will be provided as one and two bedroom units. In addition to the on site provision the draft Heads of Terms offers an off-site financial contribution to the provision of affordable housing elsewhere in the Borough.

3.1.67 The justification for no provision of on site social rented accommodation is that it is not viable to do so as set out in the submitted viability assessment.

3.1.68 The provision of affordable housing and wider planning obligations is subject to the outcome of a Viability Assessment. Savills submitted Viability Assessment concludes that the scheme currently results in a financial deficit. In spite of the deficit, the applicant has committed to providing units on site - Shared Ownership properties are the most valuable affordable housing tenure on a like-for-like basis and as such the inclusion of Shared Ownership properties create the greatest opportunity for a financially viable scheme (where affordable housing is included on site).

3.1.69 On-site rented accommodation would produce a lesser value, and therefore a less viable scheme in respect of the 12 units being offered in their own right, prior to taking account of any reduction in the values of the private sale units in the adjacent blocks / across the development. If providing an equivalent contribution to affordable housing (represented by the reduction of overall GDV) the number of Affordable Rented homes would be fewer than the number of Shared Ownership homes proposed - i.e. there would be a lower on-site quantum of affordable housing if Rented were included as opposed to Shared Ownership with the same financial capacity.

3.1.70 Savills specialist Affordable Housing Team have regular engagement with the leading Registered Providers in the marketplace, which includes LBR's preferred providers. In addition they carry out formal and informal valuations of affordable housing on behalf of both RPs and Developers.

3.1.71 Savills have discussed the proposed scheme options with RPs operating in the borough and have received a written response from Richmond Housing Partnership of their interest in the proposed units.

3.1.72 Savills are in discussion with other RPs with regard to the potential acquisition of these units. To dates, discussions have confirmed that RPs anticipate Shared Ownership to contribute the most revenue to the wider scheme.

3.1.73 The site is located in one of the most valuable parts of the Borough. With an available fixed financial sum, a greater number of affordable homes can be provided in lower value areas than in higher value areas as the cost of providing affordable homes is proportionally reduced.

3.1.74 Savills are preparing a separate report, in the context of on going affordable discussions, to consider the potential routes of procuring affordable housing off-site, and the number of units that may be delivered with a fixed sum, and will provide this to the borough in due course.

Education

3.1.75 **An assessment is required on the impact on tertiary education**

3.1.76 Richmond's secondary schools did not previously offer post 16 (sixth form) education, with the majority of students instead opting to attend sixth form institutes outside the Borough. This will now change. In December 2010, the Council published a report, Choice and Diversity: a policy paper for Education and Children's Services 2010, which sets out the intention to create high-quality sixth forms within the Borough from September 2014.

3.1.77 In conjunction with The Richmond upon Thames Post 16 Partnership, existing further education facilities in both the existing Richmond Upon Thames College and the Richmond Adult Community College will be modernised with the Partnership further supporting the creation of dedicated sixth form facilities in eight of the Borough's secondary schools.

Name	Address	Projected Capacity	Comments
Richmond Upon Thames College	Egerton Rd, TW2 7SJ	3,000	Modernisation of existing education facility 3750 x 16-19 year olds currently on roll New facilities to open Sept 2014
Richmond Adult Community College	Parkshot, TW9 2RE	N/A	Expansion of existing further education facility 3.1.78 09 x 16 19 year olds currently on roll. This is set to increase following opening of new facilities in Sept 2014
Christ's Church of England Comprehensive Secondary School	Queens Road TW10 6HW	180 places	New sixth form in existing secondary school Open Sept 2014

Grey Court School	Ham Street, TW10 7HN	N/A	New sixth form in existing secondary school Open Sept 2014
Hampton Academy	Hanworth Road, TW12 3HB	75	New sixth form in existing secondary school Open Sept 2014
Orleans Park School	Richmond Road, TW1 3BB	260	New sixth form in existing secondary school Open Sept 2014
Richmond Park Academy	Park Avenue, SW14 8EF	200	New sixth form in existing secondary school Open Sept 2014
Teddington Academy	Broom Road, TW11 9PJ	300	New sixth form in existing secondary school Open Sept 2014
Twickenham Academy	Percy Road, TW2 6JW	75	New sixth form in existing secondary school Operational, 90 students on roll
Waldegrave School	Fifth Cross Road, TW2 5LH	240	New sixth form in existing secondary school Open Sept 2014

3.1.37 Twickenham Academy is the only school that currently has a fully operational sixth form facility, opened under the Post 16 Partnership. The remaining schools and colleges are still undergoing the admissions process. As such, given that admission to all further education facilities are dependant on pupils' GCSE results, there are no projections available on numbers of students expected to enrol in each facility.

3.1.38 Following September 2014, the Borough will have a total further education capacity of 4,330 spaces. These spaces are allocated to pupils sequentially – with priority given to those who have attended the secondary school, those who live in the London Borough of Richmond Upon Thames, followed by those pupils who live outside the Borough.

3.1.39 Richmond Upon Thames College currently serves approximately 3750 16-19 year olds. Upon the new facility's opening in September 2014, this number will be reduced to 3,000. However, it is important to note the comments made by Ofsted in their review of the college in 2007. Taking into account the college prioritises those pupils who reside in the London of Richmond Upon Thames, it was recognized that only 40% of pupils in attendance were as such, with a further 34% of pupils travelling in from neighbouring Ealing and Hounslow. It can therefore be considered that an increase in the number of pupils in the Borough aged 16-19 that would be created by the proposed residential development could be comfortably accommodated for within this college, as they would be allocated spaces first before those from other Boroughs.

3.1.40 The majority of pupils aged 16-19 attend further education facilities outside the London Borough of Richmond Upon Thames. As such, there are currently no figures available to forecast the percentage of the Borough's secondary school pupils that would be likely to attend those new facilities created by the Post 16 Partnership. However, given that pupils living in the Borough would be given priority over those from outside the Borough, it is considered that any increase in 16-19 year olds resulting from the proposed residential scheme would be comfortably accommodated for in the new facilities opening in September 2014.

3.1.41 It is therefore concluded that there will no significant impact on tertiary education arising from the proposals.

Health

3.1.42 **In respect of this section the Council has reserved its position for the present.**

3.1.43 Whilst this is noted, we have assumed that given the development provides no specific on site provision and a financial contribution is offered there are no issues to be addressed.

Play Space

3.1.44 **It is expected that the child yield and plays space, including the level of existing play space near the application site, will be assessed within this socio-economic chapter which to date only includes an open space and sports provision assessment, but not an assessment of existing play space within 100m, 400m and 800m actual walking distance. It is noted that projected resident population has been assessed (Table 1.10); however, this does no provide an assessment of child yield and occupancy.**

3.1.45 A consideration of child yield was undertaken. Using the child yield formula that is provided in Richmond's Planning Obligations Strategy 2005, it would suggest that the proposed development would generate approximately 149 children of differing ages. However, this figure differs slightly from that suggested by the Council in the 'Education' tab of their S106 Calculator. This illustrates the generation of approximately 139 children. Given the likely accuracy of the figure derived from the S106 calculator however, this is the figure against which future play space provision has been assessed.

3.1.46 The Council's S106 Calculator notes that, typically, 35% of those children generated by a development would be aged 0-4 years, 38% would be aged 5-10 years and 27% would be aged 11-15 years. As such, with regards to the 139 children generated by the proposed development, there would be a play space need for; 49 children aged between 0-4 years; 53 children aged between 5-10 years; and 37 children aged between 11-15 years.

3.1.47 As part of the development and for the use of residents play facilities will be provided on site for children aged 0-4 to address their needs.

3.1.48 The London Plan's Play and Informal Recreation SPG notes that 800m is the maximum suitable walking distance from a development to a play space, such that the respective play space can be considered usable by children who are aged 12 years or more. As is illustrated in amended Table 1.8 below, Grove Gardens and Vicarage Road, which are situated approximately 640m and 730m, respectively from the proposed development, both contain play areas and facilities for use by children up to 13 years. So these areas could cater for older children than specifically provided for on site.

3.1.49 With regards to play space for children aged 5-11, the same SPG states that 400m is the maximum suitable walking distance at which such play space can be considered usable. There will be no specific provision for this play space in the proposed development neither is there such play space within 400m of the site. As with older children's playspace provision is made for this younger age group at both Grove Gardens and Vicarage Road, although these site are more than 400m distance.

3.1.50 There is a minor negative impact that can be addressed to some degree through a financial contribution to alleviate this.

3.1.51 **It is not clear from the information provided to what extent all the other landscaped areas can be used as play space, in particular, it is unclear as to whether children will be allowed to play in the communal residents' gardens and the 'riverside boulevard' areas.**

3.1.52 It would be possible for children to play within the riverside boulevard areas as these are not enclosed. The area to the west of Block A and to the east of Block C are enclosed and could be used for play but only for residents of the development.

Open Space

3.1.53 **No identification of any public open space with the exception of the river walkway. A plan of the whole site should be submitted which clearly sets out what areas will be private, communal and public (including the public open space to be designated).**

3.1.54 The Spatial Diagram included at Appendix 3 identifies the various spatial designations throughout the site. The diagram is hatched and colour coded to reflect the nature of the respective public and private areas.

3.1.55 **A plan showing the details of the public walkway through the site and along the river should be supplied. Clarification on the access times from Broom Road through the site and the walkway along the frontage is required.**

3.1.56 The Spatial Diagram shows the areas of public access in terms of the hardsurfaced walkways from Broom Road through the site and along the river frontage. The access arrangement for the public walkway are set out in the draft Heads of Terms reproduced below:

> Riverside Pedestrian Walkway
>
> 5.1 HGPL shall provide a pedestrian walkway from Broom Road to the frontage of the Site with the River Thames, and along the Site's frontage with the River Thames.
>
> 5.2 On completion of the development of the Site, HGPL shall allow the public to use the pedestrian walkway (but not to dedicate the same as a public highway) Subject to the right of HGPL:
>
> 5.2.1 to erect gates and exclude the public from the pedestrian walkway: at all times overnight; and, in addition, where there is persistent disturbance/nuisance to residents caused by users of the pedestrian walkway, or anti-social behaviour on the part of users of the pedestrian walkway; and
>
> 5.2.2 to close the whole or any part of the pedestrian walkway:
>
> 5.2.2.1 for carrying out works associated with the residential development on the Site;
>
> 5.2.2.2 for the purpose of repair, maintenance and renewal of the pedestrian walkway, including the river wall/embankment; or
>
> 5.2.2.3 on grounds of safety, for reasons of security, in case of emergency and/or for other reasons of good estate management.
>
> 5.3 If the Council secures the provision of a pedestrian walkway along the frontage of the River Thames across the immediately adjoining land:
>
> 5.3.1 of the Anglers Public House to the north-west of the Site, which shall connect to the existing pedestrian footbridge; and

5.3.2 of the Lensbury Club to the east of the Site, which shall connect to a public highway (or cross further adjoining land and then connect to a public highway) then HGPL shall be entitled to close the existing access from Broom Road through the Site to the River Thames (but not the pedestrian walkway along the frontage of the River Thames).

3.1.57 **The methodology used to assess the availability of nearby public open spaces and sports provision is considered to be incorrect. The assessment needs to use actual walking distance rather than 'as the crow flies'; in addition, distances should be provided in metres rather than miles. It also appears to be inaccuracies in where existing open spaces are situated; for example, the Ham Riverside Pitches are located near Ham House which is approximately 1.5-2km away, whereas its is stated that these are located only 0.379km away. Ham Common is almost 1.5km away rather than just 0.7km.**

3.1.58 We have reappraised the location of the sites listed in Table 1.8 of the Chapter having regard to their location, distance in kilometres, facilities, size and type. This information is now presented in an amended Table 1.8 below.

Table 1.8 Public Open Spaces and Sports Provision

Name	Location	Distance (km)	Facilities	Size (ha)	Type
Udney Hall Gardens	Langham Road, Teddington, TW11 9HQ	0.3	Tree sheltered grass land and seating for picnics and informal play	1.05	Small Open Space
Manor Road Recreation Ground	Manor Road, Teddington, TW11 8BF	0.3	Riverside green space for picnics and informal play	0.46	Small Open Space
Ham Lands	Kingfisher Drive, Richmond, TW10 7UE	0.4	- Nature Reserve - Horse riding - Tennis court - Walking	74	Metropolitan Park
Burnell Avenue Open Space	Burnell Avenue, Richmond, TW10 7YE	0.6	Play area	2.18	Local Park
Grove Gardens	The Grove, Teddington, TW11 8AS	0.64	- Changing rooms - Play for 7-13 - Play for under 7 - Sculptures / Monuments	0.67	Small Open Space

Vicarage Road	Wades Lane, Teddington, TW11 8HF	0.73	- Play for under 7 - Play for 7-13	0.27	Pocket Park
Teddington Sports Centre	Teddington School, Teddington, TW11 9PJ	0.85	- 2 dance studios - Multi-purpose sports hall - All weather sports pitches - Tennis courts - Squash courts - Outdoor netball courts	2.7	Local Park
Langdon Park	Broom Road, Teddington, TW11 9PQ	0.95	Enclosed grass area for picnics and ball games	3.98	Local Park
Broom Road Recreation Ground	Trowlock Way, Teddington, TW11 9QY	0.95	- Changing rooms - Cricket pitch - Football Pitch - Play for under 7 - Play for 7-13 - Play for over 13 - Tennis court	6.62	Local Park
Normansfield Play Park	Langdon Park, Teddington, TW11 9NZ	1.1	- Play for under 7 - Play for 7-13	0.05	Pocket Park
Church Road Play Area	Church Road, Teddington, TW11 8PY	1.5	Play equipment suitable for all ages	0.06	Pocket Park
School House Lane Orchard	School House Lane, Teddington, TW11 9DP	1.5	Grass land and seating for picnics	0.13	Pocket Park
Ham Village Green	Ham Street, Richmond, TW10 7HW	1.5	- Play for under 7 - Play for 7-13 - Play for over 13	1.21	Local Park
Radnor Gardens	Cross Deep, Twickenham, TW1 4RB	1.5	- Changing rooms - Historic features - Play for 7-13 - Play for under 7 - Sculptures / monuments - Fishing	1.88	Local Park
Ham Common	Upper Ham Road, Richmond, TW10 5LA	1.6	- Open green for cricket matches, picnics and ball games - Pond with ducks - Purpose built horse track - Woodland with wildlife and walking paths	8.01	Local Park
Riverside Drive Playground	Riverside Drive, Richmond, TW10 7QA	1.8	- Open grass land for ball games - Play for under 7 - Play for 7-13	1.1	Small Open Space

Ham Riverside Pitches	Ham Street, Richmond, TW10 7RS	1.9	Full size football pitch	11.3	Local Park
Sandy Lane Recreation Ground	Sandy Lane, Richmond, TW10 7EJ	2.0	- Play for under 7 - Play for 7-13	0.6	Small Open Space
Ham Avenues	Sandy Lane, Ham, TW10 7EJ	2.1	- Horse riding - Walking - Picnics	2.01	Local Park
King Georges Field	Ham Street, Richmond, TW10 7RS	2.2	- Car parking - Changing rooms - Cricket pitch - Full sized football pitch - Tennis court	4.1	Local Park
Alpha Road Gardens	Alpha Road, Teddington, TW1 10QG	2.3	- Play for 7-13 - Play for under 7	0.26	Pocket Park
Holly Road Garden Of Rest	Queens Road, Twickenham, TW1 4EU	2.4	- Historic monuments and sculptures - Play for 7-13 - Play for over 13	0.21	Pocket Park
Twickenham Embankment	Embankment, Twickenham, TW1 3NP	2.5	Soft and hard landscaping good for picnics and walking	0.58	Small Open Space
Champions Wharf Play Beach	Champions Wharf, Twickenham, TW1 3DT	2.7	- Suitable for all ages - Play 7m Viking Boat and 5.5m Victorian water taxi - Play archaeological dig	0.08	Pocket Park
Twickenham Green	First Cross Road, Twickenham, TW2 5AQ	3	- Changing rooms - Cricket pitches - Refreshments	2.81	Local Park
York House Gardens	Sion Road, Twickenham, TW1 3DD	3	- Historic features - Nature Trails - Good for picnics - Tennis courts	1.27	Small Open Space
Orleans Gardens	Lebanon Park, Twickenham, TW1 3DG	3.1	- Play for under 7 - Play for 7-13 - Refreshments	1.59	Small Open Space
Holly Road Recreation Ground	School Road Avenue, Hampton, TW12 1QJ	3.2	- Junior football pitch - Play for 7-13 - Play for under 7	0.95	Small Open Space
Grimwood Road Recreation Ground	Grimwood Road, Twickenham, TW1 1BY	3.3	- Play for under 7 - Play for 7-13 - Play for over 13	0.24	Pocket Park
Mill Road Open Space	Mill Road, Twickenham, TW2 5HA	3.4	Informal grass land with trees and seating	0.2	Pocket Park

Kneller Gardens	Meadway, Twickenham, TW2 6PH	3.5	- Changing rooms - Football Pitch (full) - Play for under 7 - Play for 7-13 - Play for over 13 - Refreshments - Tennis court - River access	4.97	Local Park
Kneller Gardens/Crane Park	Meadway and length of River Crane	3.5 +	(see above) plus - Historic features - Sculptures / monuments	-	District Park
Moormead and Bandy Recreation Ground	Moor Mead Road, Twickenham, TW1 1JS	3.7	- Full size football pitch - Play for under 7 - Play for 7-13 - Play for over 13 - Tennis court - Cricket pitch with pavilion	4.39	Local Park
St Albans Riverside	Hampton Court Road, Hampton, TW12 2EN	3.8	Seating and grassland along the river good with walkers	2.07	Local Park
Bushy Park	Hampton Court Road, Hampton, TW12 2EJ	3.8	- Play area - Managed by Royal Parks	447	Regional Park

3.1.59 **Clarification required on why the assessment is to the level of open space within 4.8km, which does not fit within the public open space categorisation as set out in the London Plan (table 7.2).**

3.1.60 Table 7.3 of the London Plan places open space into seven categories. These being as shown below.

Category	Size Guideline	Distance
Regional Parks	400 hectares	3.2 to 8 km
Metropolitan Parks	60 hectares	3.2 km
District Parks	20 hectares	1.2 km
Local Parks and Open Spaces	2 hectares	400 m
Small Open Spaces	Under 2 hectares	Less than 400 m
Pocket Parks	Under 0.4	Less than 400 m
Linear Open Spaces	Variable	Wherever feasible

3.1.61 A version of this table is also reproduced after Policy CP10 of the Core Strategy. This states:

Public Open Space Hierarchy:

Type and main Function	Function and strategic proposals
Regional Parks **400 ha+**	• Large areas of natural land • Primarily informal recreation, some active recreation • Car parking at key locations
Metropolitan parks **60 – 400 ha**	• To include provision of playing fields, golf courses and other uses which require extensive land. • To include areas managed for nature conservation purposes • To include extensive land for informal activities such as walking, picnics and barbeques. • To include some car parking and refreshment facilities. • To include children's play facilities.
District parks **20 – 60 ha**	• To include all of the above but majority of space to be more formally managed as playing fields. Proposals Treat as key parks: Sheen Common, Palewell Common, Old Deer Park, KnellerGardens/CranePark
Local parks **2 – 20 ha**	• To provide children's play, court games and nature conservation. • Limited playing field provision. Proposals Treat as key parks: Barn Elms, Carlisle Park, Hatherop Park, King Georges Field, North Sheen Rec, Kingsfield, Murray Park
Small local parks and open spaces **Less than 2 ha**	• To provide gardens, sitting out areas, playgrounds and nature conservation. Proposals Treat as key parks: Vine Road Rec., Mortlake Green
Pocket Parks **Under 0.4 ha**	• Small areas of open space that provide natural surfaces and shaded areas for informal play and passive recreation, may or may not have seating and play equipment
Linear open spaces	• To be managed to provide for informal recreation, including nature conservation.

3.1.62 The open space assessment in the originally submitted Table 1.8 identifies all types of site that were located within what is considered a reasonable travel distance to access open space and reflects the varying nature of the space. It also reflected the fact that some open spaces beyond 3.2km whilst of a lower category than Bushy Park offered facilities that were not available in closer facilities. Examples of this are the BMX track at Hampton Common and tree house at Heathfield Recreation Ground. In adopting that distance, given the availability of open space in the local area, this identified that all categories of open space within London Plan Table 7.2, are available to future residents of the development.

3.1.63 We did not identify a single park that was large enough to be considered a 'District Park'. However the Councils Public Open Space Hierarchy reproduced above, refers to Kneller Gardens/Crane Park as a key park under the 'District Park' category and therefore all categories are available to the site.

3.1.64 Having considered the matter again and in light of the Councils comments we have now amended the table so that it not longer includes facilities that are located further afield then Bushy Park; this being the top category as a Regional Park. Given the Park is 3.8km from the site, it is located within the distance range of 3.2 – 8km in the London Plan.

3.1.65 The amended Table confirms that all categories of open space are available within the specified distance from the site. The closest locations under each category are:

Name	Distance (km)	Type
Vicarage Road	0.73	Pocket
Udney Hall Gardens	0.3	Small Open Space
Burnell Avenue Open Space	0.6	Local Park
Kneller Gardens/Crane Park	3.5	District Park
Ham Lands	0.4	Metropolitan Park
Bushy Park	3.8	Regional Park

3.1.66 **The assessment also needs to take account of the size of the existing opens spaces.**

3.1.67 The amended Table 1.8 above address the size of the existing open spaces particularly when considering their typology and meeting the open space hierarchy.

4.0 CHAPTER 4 - FLOOD RISK

Flood Plain Storage

4.1.1 **The submitted FRA fails to demonstrate that adequate flood storage compensation can be provided on site. The broad approach is agreed, but the FRA requires further work information to support the detail of the proposed compensation. A drawing similar to figure 4.12 to support the values in table 4.3 should be provided and it should be demonstrated that every flood level after the works that floodwater can freely fill and drain. It is not considered adequate to excavate holes in the floodplain, create landlocked areas of lower ground even if connected to the main floodplain by channels or culvert or provide volumes to replace high level floodplains and vice versa.**

4.1.2 The revised FRA (Appendix 4) demonstrates that flood storage considerations are satisfied on a level-for-level and volumetric basis. This is shown independently for parts of the site that are on the "riverside" and "development side" of the flood defences. This is achieved through landscaping and provision of dedicated flood storage under Block C. Additional figures and tables have been provided along with additional demonstration - see Tables 4-3 to 4-6 and Figures 4-16 to 4-19 [Section 4.3.2].

4.1.3 **It is unclear if the proposed soil embankments indicated in section 4.3.2 is for flood protection or landscaping and clarification is required.**

4.1.4 The soil embankments are for landscaping purposes only. Flood storage compensation on a level-for-level basis for these embankments is demonstrated in Table 4-7 [Section 4.3.2].

4.1.5 **Section 4.4.5 refers to a flow route and storage under both blocks B and D, but it is also states that further voids could be incorporated under block B to provide flood storage. This discrepancy should be addressed.**

4.1.6 There is no flow route under Block B. There is a stormwater attenuation tank under Block B as shown in Figure 4-21.

Safe Access

4.1.7 **Whilst the finished floor levels in block A, B and C are set at 7.3m AOD, paragraph 4.2.1 indicates that the stairwell will be set at 6.0m AOD indicating flooding of around 1m in these areas. It is proposed that the stairwells are protected by demountable flood barriers, but these would be reliant on site management staff to erect and could fail. Clarification should be provided on how it will be ensured that site management staff are on site/can get to site at any time to erect these barriers.**

4.1.8 It is considered that the occurrence of flooding of the site can be predicted with lead times of days. A precautionary approach may be adopted in the deployment of the barriers such that they be deployed in advance of any flood and the use of the stairwells effectively prohibited. Site management staff would be on site on a daily basis; this is considered reasonable given the lead times for flooding. Barriers to be used would be in accordance with BSI PAS1188-2 - Temporary and demountable flood protection products.

4.1.9 **After descending the stairwell, evacuating residents would exit at ground floor level at 5.6m AOD, indicating flood of around 1.4m AOD for the design event in crossing the garden. As such, the access route is dangerous according to DEFRRA/EA Technical Report FD2320: Flood Risk Assessment Guidance for New Development and would need to be addressed.**

4.1.10 These exits would effectively be closed to the residents. They do not form part of the access route.

4.1.11 **The internal paths at the site will be a minimum of 6.8m AOD, therefore sections of the path may be below the design flood event and flood up to 17cm. For a velocity of 1m/s the access route would be considered dangerous according to DEFRRA/EA Technical Report FD2320: Flood Risk Assessment Guidance for New Development and would need to be addressed.**

4.1.12 The level of the access route has been set in conjunction with staff from LBRT and the Environment Agency. Velocities of 1 m/s are considered to be unrealistic given the shallow depth of 17 cm, the likelihood that flood levels would be lower away from the river (as shown by the Environment Agency modelling), zero gradient of the walkway, the protected nature of the site in general from the Thames and the protected nature of the walkway. Accordingly, the hazard index for the route is considered to "very low hazard" and "acceptable" for use in emergency.

Finished Floor Levels

4.1.13 **The townhouses along Broom Road (Block E) are set at 6.2m AOD which is below the minimum requirements as set out in the SFRA. For this reason the statement in Appendix B: Flood Emergency Plan that all residential accommodation has been set a minimum of 0.3m above the design flood event and so is at an acceptably low risk of flooding is not considered to be accurate. An alternative design of the townhouses should be investigated to ensure the finished floor levels can be set at design event level. If it can be demonstrated that this is not feasible, the use of flood resistant/resilient measures and a flood emergency plan may be considered to provide an acceptable protection of these properties to the required level. Details would be required.**

4.1.14 It is accepted that the text in Appendix B incorrectly referred to all accommodation being at a level of 7.3 mAOD and this has been corrected. The finished floor level for the Town Houses was set following a meeting with staff from LBRT and the Environment Agency at which the principle of both flood "resistance" and flood "resilience" was established and is outlined in the FRA in Section 4.2.1. Since this is new build, there is a clear opportunity to design and build resistance and resilience measures to a high standard. Devices to be used would be in accordance with BSI PAS 1188-1 - Flood protection products. Building apertures.

4.1.15 **The existing floor level of Weir Cottage is approximately 6.92m AOD. For this reason, the statement of Appendix B: Flood Emergency Plan that all residential accommodation has been set a minimum of 0.3m above the design flood event and so is at an acceptable low risk of**

flooding is not considered to be inaccurate. It is noted that flood resistant measures are proposed, but it is recommended a freeboard of 300mm above the design event should be demonstrated.

4.1.16 It is accepted that the text in Appendix B incorrectly referred to all accommodation being at a level of 7.3 mAOD and has been corrected. The flood level of 6.97 mAOD refers to the river levels; the Environment Agency's modelling suggests that levels will be about 0.2 m lower than this at Weir Cottage at around 6.8 mAOD. This is "below" the finished floor level. Nevertheless, flood "resistance" and "resilience" measures are proposed appropriate to this shallow depth of flooding and contingency.

Deployment of Temporary Bridge

4.1.17 **Clarification on why a telescopic bridge has been proposed in comparison to the alternatives, and how it is considered safe to lead residents (including children, elderly and infirm people) to the source of the flooding.**

4.1.18 The site has been designed such that it is both resistant and resilient to flooding. In the event of flooding, the recommended action is for residents to remain in their homes; there is no requirement for the site to be evacuated. Egress from the site is possible via two routes. For moderate floods eg up to 2% fluvial, Broom Road is classed as "Hazard for Some" (Figure B-4) for pedestrian access. For more severe floods, egress will still be possible using vehicles (eg four wheel drive and Burg Buggy) operating as a shuttle from the Piazza. The telescopic bridge provides an alternative egress route for pedestrians for extreme floods.

4.1.19 Although the river is the "source" of the flooding, the hazard is manifest on both Broom Road and adjacent to the river. The telescopic bridge has been proposed as it offers a viable and safer access/egress route for pedestrians than use of Broom Road or Ferry Road in extreme flood events. The bridge thus provides an opportunity for safe access and egress for those wishing to leave the site – as well as for emergency purposes should this be required. This facility would be available for neighbouring residents of Broom Road and Ferry Road and would thus provide some improvement for their access arrangements.

4.1.20 **Details of how the telescopic bridge takes into account the future need to raise the flood defences to the required TE2100 levels should be provided.**

4.1.21 The vehicle on which the bridge is mounted will be deployed on ground at a level of 5.6 mAOD. The raised defences are likely to be at a level of 6.9 mAOD. The operating platform for the bridge will be above 7.0 mAOD and the soffit of the telescopic bridge will be situated well above this level. There will be no need for refinements to be made to the bridge, following raising of the defences.

4.1.22 **Details of how the telescopic bridge would be connected to Teddington Footbridge as required.**

4.1.23 Drawings are provided in the revised FRA (Figure B-9) showing the connection between the bridge and the Teddington footbridge. The connection is to the ramped section of the bridge.

4.1.24 **There is a reliance on site management staff to erect/deploy the temporary bridge from site to Teddington Lock. Clarification is required on how it will be ensured that on site management are on site/get to site at any time at any time, areas of hardstanding for the heavy duty machine over soft natural surfaces, how Flood Access vehicle (FAV) will be moved into place, how access the area between the site and Teddington Lock will be maintained in perpetuity and kept clear of trees, etc**

4.1.25 Site management staff would routinely be on site on a daily basis, though not 24/7, except in emergency situations. Whilst the decision to deploy the bridge will be made by site management staff, its deployment will be undertaken by specialist "on-call contractors". The contract would also make provision for "test" deployments in line with the frequency required by the manufacturer. The threshold for deployment would be at a sufficiently low level, when there was "safe" access on Broom Road – this being helped by the fact that the occurrence of flooding here is predictable with a lead time of days. The deployment of the bridge will also serve as a very visual indication to residents of the escalation of the flood situation.

4.1.26 The specialist contractors will undertake the deployment of the bridge. The manoeuvre will involve rotating the vehicle through around 90° on an area of grasscrete. The deployment of the bridge will involve the connection to the ramp of the Teddington footbridge as shown in Figure B-9 as well as a link to the elevated walkway within the site.

4.1.27 The testing, in line with the manufacturer's recommendation (at least annually) will provide an opportunity for inspection of the area between the site and the footbridge. Any required maintenance would follow, in conjunction with the adjacent landowners.

4.1.28 **None of the submitted plans show a hardstanding route/area to the likely position of the place where the bridge would be deployed; given that heavy rainfall is likely to precede the need to deploy the bridge, it should not manoeuvre over soft natural surfaces.**

4.1.29 A grasscrete area will be established from where the bridge would be deployed. This is indicated on a revised Landscape Plan drawing (Appendix 5).

4.1.30 **It is considered that annual testing of the telescopic bridge is not frequent enough, especially when this is compared with weekly testing of fire alarms in other premises. Clarification is required on why this is deemed acceptable.**

4.1.31 The bridge will be tested in accordance with the manufacturer's requirements and with a minimum annual frequency.

4.1.32 **The Design and Access Statement indicates that the technologies of the FAV or a 'Burg Buggy' are unproven and therefore clarification is sought.**

4.1.33 On the contrary, it is considered that such technologies are "proven". The technology for a vehicle for transporting people through flood water along Broom Road is essentially a tractor and trailer. There are examples of temporary bridges deployed in a variety of situations that demonstrate or prove the technology eg . http://www.heatherwick.com/rolling-bridge/

4.1.34 **The FRA should indicate the expected length of the 'short walk' from Block E to the internal paths set above 6.8m AOD and the depth of the 'shallow flooding' goes through.**

4.1.35 The maximum length of walk is 10 m to reach this path. The flood water in this area (rear gardens of Town Houses) would result from floodwater seeping through the ground into the gardens – effectively groundwater flooding. We have added a provision for 2 sump pump systems to help dewater this area and these are likely to keep the depth down to a few cm only, should there be floodwater in the area.

4.1.36 **Clarification is required on the level and expected flooding of the dedicated cottage walkway in the FRA.**

4.1.37 The level of the walkway will be at 6.92 mAOD – and therefore above the minimum level along the remainder of the access/egress route.

Flood Flow Route around Tidal Defences

4.1.38 **The FRA indicates that the area is protected by the tidal river wall along the Thames built to a statutory level of 6.1m AOD, but the FRA and topographical survey fails to sufficiently consider the potential for a flood flow route around the end of the tidal defences. This has an impact on section 4.2.2 (b) and the need for level for level or volume for volume flood compensation up to 6.1m AOD.**

4.1.39 Whilst there may be a flow route around the defences, the maximum level on the site (ie away from the source of the outflanking) is expected to be lower. Furthermore, the duration of any such flooding, being at the peak of the tidal cycle, would be expected to be of the order of tens of minutes. The practical consequences are thus thought to be minor. In any event, Table 4-5 shows that the proposed development will lead to an increase in flood storage to 6.1 mAOD of around 250 m^3 with allowance for contingency.

Flood Risk of Parking Areas

4.1.40 **Consideration should be given to risk to people from floating cars and how they could be contained safely on site.**

4.1.41 All cars in surface car parks will be relocated to the subterranean car park by "valet" parking when flooding of the site is forecast, or taken off-site.

4.1.42 **The proposed 1m high flip-up barrier to protect the subterranean car park would be reliant on site management staff to erect and could fail. Passive protection to the car park such a as bund that is not reliant on human action. Consideration should also be given to how people would be excluded from entering this area during a flood.**

4.1.43 It is considered that the occurrence of flooding of the site can be predicted with lead times of days. This would provide site management staff opportunity to further test the barrier, to manage the relocation of vehicles and ultimately to close the car park to residents for the duration of the flood event. Note that the invert of the lower barrier is at 6.3 mAOD – around the 2% flood level indicating that the expected frequency of its deployment is quite low.

Changes to Tidal Defences

4.1.44 **Section 4.2.4 considers the realignment of the existing tidal defences along the river frontage. Further information should be provided to demonstrate the realignment proposed would not result in a loss of flood storage.**

4.1.45 See response 4.1.2.

4.1.46 **A plan is required indicating the line of flood defences and how it will tie in with construction.**

4.1.47 The line of flood defence follows the existing line except for the two sections indicated in Figure 4-5. [Section 4.2.4] In the centre of the site, the line is pulled back to create a wider platform and flood storage (on the "riverside" of the defences). The line follows the river edge adjacent to Block C to achieve a

16m standoff for the buildings. The locations where it will be tied into the existing defences are shown in Figures 4-6 and 4-7.

4.1.48 **Clarification is required on how defences will be maintained through demolition and construction.**

4.1.49 The sequence of construction will see new defences constructed in advance of any demolition. Keying in and refurbishment of existing walls would follow at a time when there was no risk of fluvial or tidal flooding. On completion of this, the existing, redundant defences be removed.

4.1.50 **It should be demonstrated that the Thames tidal flood defences can be raised to 6.9m AOD in line with the Thames Estuary 2100 (TE2100) Plan requirement and the impact of raised walls on the development which may impact on wheelchair and pushchair access along the proposed riverside path should also be considered. This information is necessary to understand the EIAs proposed mitigation measures and how to deal with potential residual flood risks in the long-term and for the lifetime of the development.**

4.1.51 No problems are anticipated with raising the realigned sections of the defences to 6.9 mAOD, as envisaged under TE2100. Provision could indeed be made for this in conjunction with the Environment Agency design team. For the locations where the raised defences would traverse platforms at 6.1 mAOD, we anticipate the installation of flood-proof gates to maintain accessibility, as shown in Figure 4-8.

Loss of Flow Paths

4.1.52 **Clarification on how the flow path between the site and Broom Road at the gatehouse will be maintained through a culvert given that the culvert and grills are liable to blockages and that the culvert has a smaller cross sectional area compared to the existing situation.**

4.1.53 This existing flow path is only likely to be active for floods with a probability of about 1%. Furthermore, at this level, water level changes will be of the order of a few cm per day. Accordingly, the cross-sectional area is not a limiting

factor in allowing water to flow through this route – the rate of flow being determined mainly by water level differences across the site. The inlet and outlet are both visible and accessible and thus amenable to simple clearance should this be needed, without undue risk, or specialist equipment. Furthermore, there is an additional, narrow flow route (at 1m wide) with invert at 6.3 mAOD along the eastern boundary adjacent to the Affordable Housing (Building E7).

Opportunities for Development to Reduce Flood Risk

4.1.54 **No consideration has been provided in the FRA on the opportunity to provide access to the wider Broom Road community to safe access in combination with the proposed retractable bridge.**

4.1.55 We have added a new Section 4.2.5 to the FRA highlighting the benefits.

- Provision of emergency car parking;
- Allowing neighbours to use the proposed emergency access
- Allowing use of any emergency transport along Broom Road;
- Use of the site as a refuge;
- Provision of access/egress route for the Lensbury.

Surface Water Flooding

4.1.56 **A surface water strategy in accordance with the NPPF and Planning Practice Guidance is required to demonstrate that the proposed development will not create an increased risk of flooding from surface water.**

4.1.57 The drainage strategy has been refined and provides a flexible approach through the combined use of soakaways and stormwater attenuation to attenuate the site runoff for the 1%CC storm to greenfield runoff, entirely within the site. This is summarised in Table 4-12 and demonstrated in Section 4.3.3 and (new) Appendix G to the FRA.

Soakage Tests

4.1.58 **Soakage tests should be carried out in support of the soakaways design shown in figure 4.15.**

4.1.59 It has not been possible to conduct soakage tests and in their absence, we have used standard values from published guidance, informed by the likely soil properties. It is recommended that the soakaways be subject to detailed design once the results of SI are known. We have further demonstrated that should soakaways not be suitable on site, the runoff from the roof of Blocks A, B, C and D plus hardstanding can be attenuated to the greenfield rate of runoff using an enlarged attenuation tank beneath Block B.

Surface Water Discharge Hierarchy

4.1.60 **Given that this is the least sustainable option in this location in the London Drainage hierarchy, clarification is required on why it is proposed to discharge to the Thames water sewer system.**

4.1.61 In the revised strategy, the only discharge to the Thames water sewer is from an attenuation tank with volume of (nominal) 20 m^3 for the Affordable Housing (Building E7). This is a substantial reduction from the existing situation in which most site runoff discharges without attenuation to the sewer with the balance to the River Thames.

Surface Water Discharge Hierarchy

4.1.62 **It has not been demonstrated that the storage volume required to attenuate surface water run-off from the critical 1 in 100 change in any year storm event with an appropriate allowance for climate change can be provided on site. Surface water for up to 1 in 100 change in any year storm event, including an allowance for climate change, must be safely contained on site.**

4.1.63 See response 4.1.57.

4.1.64 **Section 4.3.3 indicates that half of the tank will be available for attenuation, but it is not considered safe to assume that 50% will be available. Further information in this regard is required**

4.1.65 In the revised drainage strategy, the proposed stormwater attenuation tanks are solely for that purpose. They will not form part of any rainwater harvesting system.

4.1.66 **Detailed calculations of the surface water network together with a drawing indicating attenuation volumes is required to show the surface water system has been designed to ensure no flooding for the 100 year plus climate change event in the entire surface water system or no flooding for the 30 year event in the entire surface water system and that all surface water flooding can be safely contained on site for the 100 year plus climate change.**

4.1.67 See response 4.1.57

Impact on Tidal Locking on Surface Water Discharge

4.1.68 **During high tides/flood events the water level in the Thames may be above the level of the outfall from the surface water system. Consideration should be given to the potential flood risk for these outfalls providing a route for floodwater to pass from the Thames to the site through the tidal wall.**

4.1.69 This is a real risk. However, evidence from the existing outfall from the tank in the north-west corner of the site does not indicate that this has ever occurred. The inspection and maintenance requirements are referred to in Section 4.4.3 of the FRA.

4.1.70 **It is unclear from the information provided if the flap valves from the detention tank and the flood storage area behind the existing defences are new features. Further details of their location and design should be provided.**

4.1.71 These are new devices, the location and proposed invert levels shown in Figure 4-18 and 4-22.

Flood Levels

4.1.72 **The breach modelling map as shown in figure 3.11 in the FRA includes in the key maximum flood extents for both 0.5% Annual Exceedance Probability (AEP) (1 in 200 year) 2025 and 0.5% AEP (1 in 200 year) 2017. However, the text on the map indicates that 'in the case of breaches downstream of the Thames barrier, the 1 in 200 year plus climate change (2017 epoch) was also modelled'. Therefore the map only indicates the extent of 2005 breach; the absence of the extent of 2017 does not shown the breach would not occur in 2017; rather that modelling has not been undertaken. Clarification of the FRA is required in this respect.**

4.1.73 The text has been amended in Section 3.3.6 of the FRA.

Flood Emergency Plan

4.1.74 **Page 63: Although the site is elevated, there is the potential risk of an internal drainage failure on the site which has not been taken into account**

4.1.75 There is large contingency for any internal drainage failure through the flood storage provision of over 3,000 m^3 up to the defence level of 6.1 mAOD.

4.1.76 **Page 64: The Townhouses will not be at a safe level and only flood resistance and resilience measures will be provided for these (see comments re safe access/egress further above)**

4.1.77 See responses 4.1.14 and 4.1.35

4.1.78 **Page 65/66: If Broom Road will be closed normal access/egress is proposed to be via Teddington lock footbridge. Clarification is required on the practicalities and safety of the proposed "safe" route from the opposite bank of the river at Ham. There is no assessment of a "safe" route from the opposite bank, i.e. Ham Lands, into flood zone 1,**

particularly as the Ham end of the bridge is also in both flood zones 3 and then 2.

4.1.79 Figure 2-3 (Environment Agency flood mapping) shows that the Ham Bank is outside flood zone 3. This is further demonstrated in the photos in Figure B-16 in which the ground levels are shown to be above the 1% CC flood level.

4.1.80 **A Page 65/66: additional information is required to understand what the proposed informal shuttle arrangements for tractors, trailers etc. will be; are these supposed to tale residents over the bridge that is 'listed', consideration of its loading capabilities is required.**

4.1.81 The informal shuttle arrangements refer to Broom Road for conveying residents (and neighbours) from the site along Broom Road to areas that are flood-free. The Teddington footbridge would only be for the use of pedestrian traffic/cyclists.

4.1.82 **Page 66: It is not agreed that there "are no special hazards" as this discounts the risk of manhole covers being dispatched and any other underwater hazards and debris which may be invisible of through dirty flood water**

4.1.83 There is a risk of manhole covers becoming displaced and posing a hazard, though this is thought to be small on account of the low rate of rise of the floodwaters. Further, this is not the designated emergency access route – it is a route that is likely to be closely monitored by the emergency services and warnings put in place, or closed in the event of specific hazards such as exposed manholes or deep and/or fast flowing water.

4.1.84 **Page 67: Details on are the special provisions for the elderly/infirm residents to enable provision of food and access is required.**

4.1.85 It is anticipated that such residents would be known to Site Management staff, whose responsibility would include checking that they were provided for and if necessary ensuring delivery of food and other needs.

4.1.86 **Page 77: The RNLI station does not have 4 boats available; it only has space for two boats. In the addition the FEP should take account that the RNLI boats cannot and should not be relied upon to attend this as they cover long distances of the river and they may be required elsewhere.**

4.1.87 The FRA does not indicate any reliance on this facility – merely that *in extremis*, it is close at hand. The text has been amended to show two boats.

4.1.88 **Page 79: Rightly highlights the dangers of flood water, but the report mentions that people might have to use Broom Road under flood conditions to access the site. Details on warning notices, how many and where will they be places on the site is required. The FEP refers to Business Continuity support; details are required on who will provide this.**

4.1.89 Warning notices should be available for every property as part of the "residents' welcome pack". Notices should also be placed at the foot of the stairwells that give out onto the garden area. The business continuity support may be in the form of assistance for IT or of a courier service for those working from home. However, it is difficult to be specific in view of the varied businesses that residents may be engaged with and for which support may be required.

5.0 CHAPTER 6 – ECOLOGY

5.1.1 **Clarification is required on who will manage the riverside walk**

5.1.2 The development will have on site management and the communal areas therefore managed by the management company. The company will therefore manage the riverside walk, including habitats and features for wildlife.

5.1.3 **No examination on methods to enhance biodiversity by incorporating features into the design which are beneficial to wildlife such as green roof and floating marginal vegetation to sheet piling on the river edge to improve the connectivity of the river for wildlife etc**.

5.1.4 The proposed landscape plans already include some enhancements for biodiversity as they will provide areas of meadow grassland and native shrubs on a site that was previously mostly hard standing with small ornamental shrubberies.

5.1.5 In paragraph 6.13 of the submitted ecology report it was suggested that green roofs could further enhance biodiversity. Green roofs were shown on the application plans and they can be integrated with photovoltaic panels. The extent of the proposed Green Roofs has been significantly increased as part of revisions to the application proposal and now shown on Plan A9991 D0107 P2 (Appendix 6).

5.1.6 It is demonstrated that the riverside defences (sheet pilings) would need are to be increased in height as part of the future improvement of these so there may be opportunities to incorporate provision of riparian wildlife habitat as part of this. Environment Agency consent would also be needed for these works. For example:

- wooden panelling/timbers could be attached to the riverside of the metal piling to provide an inundated soft substrate for algae and invertebrates;
- the timbers could also be arranged to encourage silt accumulation and plant growth;

- coir rolls or other growing mediums could be attached to the timbers to provide floating or fixed platforms for emergent plants (dependent on variation in water levels);
- it may also be possible to install nest tunnels for sand martin and kingfisher into the wall/sheet pilings depending on construction.

6.0 CHAPTER 8 – NOISE

6.1.1 **There are existing sports facilities (hockey and football pitches) are located adjacent to the development site at the Lensbury and opposite at St Mary's College University Sports Ground. Experience of such facilities within the borough has indicated that their use can cause disturbance and loss of amenity. Therefore we will require specific assessment of the potential noise impact from the use of the existing facility at the Lensbury and St Mary's College to new occupants of the proposed dwelling.**

6.1.2 The relationship between the application site and these facilities were discussed in the ES Chapter and the noise reading data including from a position on the site frontage and opposite the sports fields are set out in ES Appendix 8.1 and Figure 8.1. Sports activities were in play at the time.

6.1.3 The text states as follows:

> 8.4.2 There are sports facilities in the form of football and hockey pitches and tennis courts opposite or in the vicinity of the development site. These are mainly used by a variety of education establishments. Their use is not limited to the daytime nor the weekday with plenty of activity taking place at weekends.

6.1.4 Table 8.4 of Chapter 8 of the ES then considers the impacts of these activities at the operational stage and considers that after mitigation the impact is moderate. In terms of the completed development the text states:

> 8.6.2 In relation to noise from the playing fields opposite and that from neighbouring commercial development, there would be no change post-development

6.1.5 The conclusion states:

> 8.8.2 The housing element of the scheme will experience noise from traffic and from the sports facilities opposite. The extent and degree will be similar to that experienced at 'The Lodge', Weir

Cottage and those dwellings on Broom Road just to the north of the sports facilities.

6.1.6 **The ES also indicates that a plant operated by the Lensbury may need attention in order to reduce noise emissions. Please can you clarify if the Lensbury has been approach and if there is an informal agreement for works/management to take place?**

6.1.7 The Lensbury has been consulted about the application proposal. The noise levels associated with the plant equate to around 61dBA at 3m distance from the plant, at the site boundary. The nearest residential units would be further from the boundary than the measurement position so that a doubling of the distance would give around 6dBA natural reduction. If the nearest dwelling were 10m or more from the existing fence, then the noise level would be reduced to below 50dBA – i.e. to around the background noise level during the day that would be acceptable without specific attenuation. The nearest dwellings are in fact some 17m from the boundary.

7.0 CHAPTER 9 - AIR QUALITY

7.1.1 No assessment on dispersion of exhaust emission from boiler and CHP flues to existing and proposed residential units (receptors).

7.1.2 The impacts of emissions from the gas-fired CHP and boilers on nitrogen dioxide concentrations have been modelled using the ADMS-5 detailed dispersion model. The impacts on both existing and proposed receptors have been considered at a range of heights to represent the various floor levels.

7.1.3 The model results have demonstrated that at all existing and proposed receptors, the impact of the CHP and boiler plant on annual mean and 1-hour nitrogen dioxide concentrations can be considered *insignificant*. These sources will not lead to any exceedences of the air quality objectives. Further information on the model methodology and results are set out below.

CHP and Boiler Assessment

Introduction

7.1.4 This section describes the assessment of the air quality impacts of the gas-fired CHP and boiler plant associated with the proposed residential development on Broom Road, London Borough (LB) of Richmond upon Thames.

Assessment Criteria

7.1.5 The significance of the impacts of the CHP and boiler plant has been assessed in relation to criteria used by the Environment Agency which has considered potential impacts from industrial and boiler emission in its H1 guidance (Environment Agency, 2010). This explains that regardless of the baseline environmental conditions, a process can be considered as insignificant if:

- the long-term (annual mean) process contribution is <1% of the long-term environmental standard; and
- the short-term (24-hour mean or shorter) process contribution is <10% of the short-term environmental standard.

7.1.6 It should be recognised that these criteria determine when an impact can be screened out as insignificant. They do not imply that impacts will necessarily be significant above these levels merely that above these levels there is a potential for significant impacts that should be assessed using a detailed assessment methodology such as detailed dispersion modelling (as has been carried out for this project in any event).

7.1.7 The approach taken in this assessment is to use detailed dispersion modelling in the first instance, and to apply the Environment Agency screening criteria to the model outputs. Where impacts are shown to be below these screening criteria, they are judged to be insignificant. Where this initial screening shows the potential for significant impacts, then an assessment of the predicted total concentrations needs to be carried out following the IAQM guidance described in Appendix 9.4 of the original ES.

7.1.8 The impact on total concentrations has been assessed in relation to the Air Quality Objectives, as provided in Table 9.2 of the Environmental Statement, using the impact descriptors and approach to assessment of significance set out in Appendix 9.4 of the original ES.

Sensitive Locations

7.1.9 Concentrations of nitrogen dioxide have been predicted at a number of locations both within, and close to, the proposed development. Receptors have been identified to represent worst-case exposure within these locations and have been modelled at a range of heights to represent various floor levels. The

receptors selected specifically for the CHP and boiler assessment are shown in

Figure A9.8.1. Impacts have also been predicted at the 18 receptors used in the assessment of road impacts as described in Figure 9.1.

Figure A9.8.1:Receptor Locations

Modelling Methodology

7.1.10 The impacts of emissions from the proposed CHP and boiler plant have been predicted using the ADMS-5 dispersion model. ADMS-5 is a new generation model that incorporates a state-of-the art understanding of the dispersion processes within the atmospheric boundary layer. The model has been run to predict the contribution of the proposed CHP and boiler plant emissions to annual mean and the 99.79th percentiles of 1-hour mean nitrogen dioxide concentrations.

7.1.11 The model input parameters have been provided by Cundall. The building dimensions and flue location have been obtained from drawings provided by TPBennett. The location of the flue is shown in **Figure A9.8.**2. The flue has been modelled at a height of 17.5 m (2 m above the roof level of Block A).

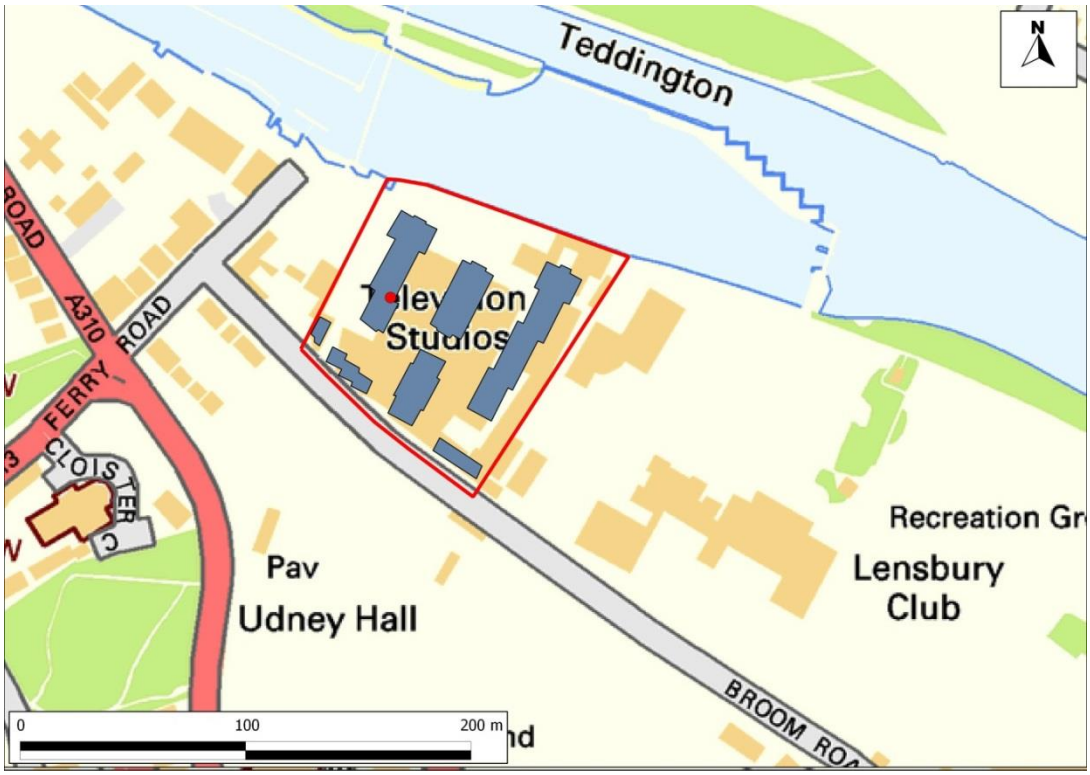


Figure A9.8.2:Flue Location

7.1.12 It has been assumed that the CHP and boilers will both operate continuously at 100% load throughout the year. This is a worst-case assumption, as in reality; there will be periods when the CHP and/or boilers are not operating.

Table 9.8.1: Proposed CHP and Boiler Plant Model Input Parameters

Parameter	CHP	Boilers (combined)	CHP + Boilers
NOx Emission factor for 1-hour mean calculations (g/s)	0.015	0.019	0.034
Temperature (deg C)	90	40	62
Flue height above ground (m)	N/A	N/A	17.5
Volumetric flow rate (m^3/s)	0.417	0.687	1.104

7.1.13 The model has been run both with and without taking into consideration entrainment of the plume into the wake of the buildings (the so-called building downwash effect).

7.1.14 Hourly sequential meteorological data from Heathrow for 2012 have been used in the model.

7.1.15 The model has been run using the ADMS chemistry module. To take account of the chemistry in the plume, background concentrations of nitrogen oxides, nitrogen dioxide and ozone have been taken from the rural background Lullington Heath AURN site for 2012. In order to determine the process contributions from the proposed plant, the model has been run once with a zero emission rate and once using the emissions shown in Table 9.8.1. The process contributions have then been calculated by taking the difference between the two scenarios.

7.1.16 The calculation of short-term means has been carried out on an hour-by-hour basis. The Lullington Heath data have only been used to inform the chemistry routine, and as such, using a rural site (with relatively high ozone concentrations) provides a worst-case assessment. Thus, the use of background data from Lullington Heath should not be taken to imply that the local background concentrations have been underestimated.

Post-Processing

7.1.17 ADMS-5 has been run to predict the contribution of the proposed CHP and boiler emissions to annual mean and 1-hour mean nitrogen dioxide concentrations for every hour of the year. The 1-hour concentrations with the plant for each hour, have been subtracted from the model results when run with no emission to determine the process contribution in each hour of the year. The 99.79th percentile of these concentrations has been calculated to determine the 99.79th percentile of 1-hour process contributions.

Impacts

Initial Screening assessment

7.1.18 The predicted nitrogen dioxide concentrations associated with emission from the CHP and boiler plant are summarised in Table 9.8.2. The maximum predicted concentrations at any of the modelled receptors are provided.

Table 9.8.2:Predicted Maximum Pollutant Concentrations associated with CHP and Boiler Emissions at any Receptor (µg/m^3)

Pollutant/Averaging Period	Maximum Process Contribution		Objective
	µg/m^3	% of Objective	
Annual Mean NO_2	0.8	2.0	40
99.79th %ile of 1-hour NO_2	15.6	7.8	200

7.1.19 These predicted maximum concentrations can be compared with the screening criteria recommended by the Environment Agency, as previously described in paragraph 7.1.5, and the following conclusions can be drawn:

- the predicted maximum annual mean nitrogen dioxide concentration (2% of the objective) is above the screening criterion (1%);

- the predicted maximum 99.79th percentile of 1-hour mean nitrogen dioxide concentrations (7.8% of the objective) is below the screening criterion (10%).

7.1.20 The predicted impacts exceed the screening criteria for the annual mean nitrogen dioxide objective and therefore require further detailed assessment for some on-site receptors. No further assessment is required for the 1-hour mean objective or off-site receptors.

Detailed assessment

7.1.21 An analysis of the receptor by receptor results has shown that the predicted annual mean process contributions exceed the screening criteria at a small number of receptors in Block B (5th and 6th floors) and one receptor in Block A (4th floor). The receptors in Block B are higher than the flue and the receptor in Block A is directly downwind of the prevailing wind direction.

7.1.22 In order to consider the impact of the CHP and boiler plant in relation to the air quality objectives, process contributions have been added to the worst-case predicted annual mean concentrations for the relevant blocks, presented in Table 9.15 of the Environmental Statement. The concentrations presented in the Environmental Statement include both background and modelled road contributions.

7.1.23 **Table 9.8.3** demonstrates that the impact of the CHP and boiler plant at worst-case locations would be small. Total annual mean concentrations at these on-site receptors would be well below the air quality objective.

Table 9.8.3: Total Nitrogen Dioxide Concentrations at Worst-case Receptors (µg/m^3)

Receptor	Maximum Process Contribution[a]	Background+Road[b]	Background+Road+ CHP and Boiler plant
AJ		26.9	26.5
BA		26.1	26.7
BB		26.1	26.9
BC		26.1	26.8
BD		26.1	26.5
BE		26.1	26.5
		40	

[a] Maximum from range of modelled heights, and modelled with and without building downwash

[b] From Table 9.15 of the ES. ES receptors RH and RI representative of Blocks A and B respectively.

Significance

7.1.24 The operational air quality impacts of both the CHP and boilers, and the scheme as a whole are judged to be *insignificant*. This professional judgement is made in accordance with the methodology set out in Appendix 9.4 of the Environmental Statement, taking into account the factors set out in

7.1.25 **Table 9.8.4**, and also taking into account the uncertainty over future projections of traffic-related nitrogen dioxide concentrations, which may not decline as rapidly as expected. The latter has been addressed by using the modelled results for nitrogen dioxide without reductions in traffic emissions.

7.1.26 More specifically, the judgement that the air quality impacts will be *insignificant* takes account of the assessment that concentrations will be well below the air quality objectives where impacts are expected to be *small*. Elsewhere the impacts are predicted to be *negligible*.

Table 9.8.4:Factors Taken into Account in Determining the Overall Significance of the Scheme on Local Air Quality

Factors	Outcome of Assessment

Factors	Outcome of Assessment
Number of people affected by increases and/or decreases in concentrations and a judgement on the overall balance.	A small number of people within the proposed development are predicted to be exposed to a *small* increase in concentrations. For most people the increase will be *imperceptible*.
The magnitude of the changes and the descriptions of the impacts at the receptors.	The impacts at the receptors are all *negligible*.
Whether or not an exceedence of an objective is predicted to arise in the study area where none existed before or an exceedence area is substantially increased.	No new areas of exceedence of the objective are predicted.
Uncertainty, including the extent to which worst-case assumptions have been made.	Worst-case emissions, as assumed that the CHP and boilers would be running at full load continuously throughout the year.
The extent to which an objective is exceeded and whether or not the study area exceeds an objective and this exceedence is removed or the exceedence area is reduced.	Where the objective is being exceeded, predicted impacts are imperceptible. The objectives are not exceeded, where the CHP and boiler plant would have small impacts. No new areas of exceedence would be created.

Summary and Conclusions

7.1.27 The impacts of emissions from the gas-fired CHP and boilers on nitrogen dioxide concentrations have been modelled using the ADMS-5 detailed dispersion model. The impacts on both existing and proposed receptors have been considered at a range of heights to represent the various floor levels.

7.1.28 The model results have demonstrated that at all existing and proposed receptors, the impact of the CHP and boiler plant on annual mean and 1-hour nitrogen dioxide concentrations can be considered *insignificant*. These sources will not lead to any exceedences of the air quality objectives.

7.1.29 **No assessment on dispersal of exhaust emissions from mechanical ventilation for underground car park to existing and proposed residential units (receptors).**

7.1.30 This response provides further information on the emissions from the underground car park.

Calculations

7.1.31 There is a basement car park that lies below much of the site. It has the majority of the car parking spaces on site and will be accessed, for vehicles entering, by a ramp on the western end of the development, with vehicles leaving by a ramp on the eastern end. The traffic data provided for the assessment show that the Annual Average Daily Traffic (AADT) flow will be 150 vehicles entering and leaving. The car park will be ventilated with air being exhausted through two grills located within the walls of both the down and up ramps. These exhaust locations lie around 4 m from the nearest flats.

7.1.32 The emissions from the car park have been calculated using the Emission Factor Toolkit (EFT) v5.2c. This has used 2010 emission factors to help make the assessment worst case. The emissions have been calculated for an average speed of vehicles of 5 kph, the lowest speed allowable with the EFT. The average distance travelled by a vehicle has been calculated taking account of the layout of the car park. This is 246 m, which has been rounded up to 250 m. The emissions have been calculated as grammes per hour (g/h), to be dispersed into the 134,840 m^3/h emission of car park air (as provided by Cundall). The results are expressed as annual mean concentrations in $\mu g/m^3$ for three pollutants nitrogen oxides, $PM_{2.5}$ and PM_{10}. The nitrogen oxides concentrations are converted into nitrogen dioxide concentrations using approximations.

Assessment

7.1.33 The additional concentrations in the exhaust air are presented in Table 5 below:

Table 5: Annual Mean Concentrations ($\mu g/m^3$) in the Exhaust Air and at the Nearest Flat

Pollutant	Background[a]	Increment	Exhaust Air	At Nearest Flat[b]	Objective
Nitrogen Dioxide	29.0	3.0[c]	32.0	30.5	40
$PM_{2.5}$	12.3	0.5	12.8	12.6	25
PM_{10}	17.4	0.6	18.0	17.7	40

[a] Background from Table 9.15 in the Air Quality Chapter of the Environmental Statement for the sites RG, RH and RI.

[b] Fall-off with distance calculator shows a 50% reduction in the increment over a distance of 4 m.

[c] Based on 50% of the nitrogen oxides being present as nitrogen dioxide.

Conclusions

7.1.34 Concentrations for the flats nearest to the exhaust ventilation grills will be below those predicted for receptors along Broom Road (see Table 9.15 in the Air Quality Chapter of the original Environmental Statement) and will be below the air quality objectives. The emissions from the car park will therefore not give rise to any significant air quality concerns for nearby residents.

8.0 CHAPTER 10 – LANDSCAPE, TOWNSCAPE AND VISUAL QUALITY

8.1.1 **No assessment on the potential impact on the adjacent/nearby Thames pathway National Trail has been undertaken. Appropriate mitigation measures should be incorporated for any adverse impacts.**

8.1.2 An additional assessment has been undertaken from the Middlesex side of the Thames Path and is identified as VR5a. The location of VR5a is shown on the updated Appendix 1.6 plan and photographs from two original viewpoints along the route (C & M) are included in Appendix 7.

8.1.3 The baseline conditions and prediction of effects from this receptor are:

BASELINE CONDITIONS

Additional visual receptor

VR5a: Thames Path – Middlesex side (Viewpoints C & M)

The Thames Path runs on both sides of the river north of Teddington Lock with the Middlesex section passing close to the site along Ferry Road by the footbridge. There are glimpsed views of the existing studio buildings on the site from the road that are represented by two viewpoints. The first being across the garden of The Anglers public house through the boundary vegetation (Viewpoint C) and, the second, by the junction with Broom Road where the studio frontage and block beyond form part of the wider streetscape looking south down Broom Road (Viewpoint M). Views of the site are otherwise blocked by intervening built form.

Visual receptor type: A

Quality of view: High

Susceptibility to change: Low

Value: Medium

Visual receptor sensitivity: **Moderate**

PREDICTING THE EFFECTS OF DEVELOPMENT

Description of proposed development and mitigation – height and massing

The proposals replace the massing of the existing buildings with a more physically and visually permeable layout, which will allow views through the site towards the river and the undeveloped bank beyond and follows the design principles in the Richmond Public Space Design Guide. The proposed buildings do not exceed the height of the existing buildings and the new rooflines will not be more intrusive on the skyline. The existing continuous building frontage to the river will be replaced with a more fragmented frontage.

Assessment of magnitude and significance of visual effects

This section sets out the assessment of effects of the development on the additional visual receptor VR5a. The effects of the development are considered at both the temporary (construction) phase and the operational phase (years 1-15).

VR5a: Thames Path (Middlesex side)

Views through the boundary vegetation of the public house will be partially obscured by proposed boundary fencing (Viewpoint C). Although glimpses of the upper floors of the proposed apartment blocks and the railings of the raised walkway will be possible, the view will be largely unchanged. From Ferry Road the proposed residential properties on Broom Road will be visible in views down Broom Road (Viewpoint M) but these will be in keeping with the scale of surrounding residential properties, providing an improvement to the streetscape in this area and no deterioration in the visual amenity of users of the Thames Path.

Magnitude of Change - Construction: Low

Magnitude of Change – Operational: Neutral

Significance of effects – Construction: Minor adverse

Significance of effects – Operational: None

SUMMARY AND CONCLUSIONS

The scale of the proposed residential buildings are considered to be in keeping with the appearance of the area. They do not exceed the height of existing buildings on site, which are generally well integrated within the existing townscape, and their orientation, massing, material finishes and setback from the river will successfully address their relationship with the surrounding area. It is considered that the development will be more in keeping with the surrounding character of the riverside than the existing complex of institutional buildings and associated infrastructure, which they replace, and would not represent an increase in urbanisation of the riverside setting.

The views from the Thames Path will change but the new development will not create any more prominent visual elements than the existing studio buildings they replace. There will be greater visual permeability through the site and the new planting will enhance both the river frontage and adjacent street scene. The proposed development will be of a scale and design that will complement the setting and will not harm or adversely affect the visual amenity of users of the Thames Path.

8.1.4 **Further justification on the overall heights of the blocks, particularly the tallest block, is required.**

8.1.5 Notwithstanding the greater flexibility introduced by the NPPF in its approach to greenfield and brownfield land use and re-use, it remains a fundamental principle of sound policy that as a society we continue to make more effective use of previously developed land (PDL) in general and in particular PDL, that constitutes a windfall site as in the case of the application site. This overarching approach is, even so, always to be set within the context of making this more effective use while at the same time safeguarding local amenity and enhancing local character.

8.1.6 This application site embraces the very eastern edge of Teddington Lock Conservation Area and would involve the demolition of all current on site buildings with the exception of Weir Cottage, and the provision of a significant number of new homes as described in the application. The Conservation Area Character Appraisal by LBRuT informs us that such developments have come to increasingly characterise the ongoing character evolution of the Conservation

Area, such that the proposed development is very much just a simple continuation of this emerging ongoing evolution, recognised as an increasing component of local character in the CACA.

8.1.7 This site is poorly developed at present with circa 56% plus plot ratio of footprint to plot compared to 28% as proposed. It is self-shadowing, is devoid of public open space access and has a riverside car park described by the LBRuT 2000 Development Brief as *'inappropriate*" with an incoherent mix of form and expression. This 2000 document also acknowledges that the "*river infrastructure*" is "*robust"* and capable of supporting "*robust and innovative modern architecture*", that "*should not exceed existing heights"* on the site.

8.1.8 The proposal now brought forward has been based on careful examination of context, is entirely compliant with that 2000 Design Brief providing public access through the site to the riverside. The new buildings are low slung, longer than they are high, and developed in line with the best principles of urban design and By Design. They do not exceed the height of current development, they provide two broad sunlit public boulevards to the river and echo the best practice of Character, Continuity and Enclosure, Public Realm Quality, Ease of Movement, Legibility, Adaptability and Diversity.

8.1.9 Buildings are set back from the boundaries with neighbouring properties by private communal residents' garden courts. Buildings are well set back from the waterside to given green ambience onto the waterside, enhance the public riverside walk, improve all views into the site from the bridge, the island and the far bank and enhance the setting of the listed bridge and the Conservation Area.

8.1.10 Onto Broom Road, the scale responds to the streetscape, although the existing frontages along Broom Road beyond the Conservation Area, are diverse and intermittent with only limited continuity and enclosure. The streetscape form employed by the application responds to the more cohesive streetscape of the Conservation Area.

8.1.11 Balanced alongside these context driven influences on mass, form and layout is the influence of optimising the effective re-use of brownfield land and providing much needed residential accommodation for the borough. A further relevant

key driver and respected urban design concept is therefore the principle of *The Intensity Pyramid* whereby the greatest mass is located centrally, either as regards linear two-dimensional streetscape or indeed three-dimensional plotscape. This is not the sole criteria for the location of greatest mass however; other principles can apply too, such as gateway, corner emphasis and indeed the overlooking of open space, whether it is wet or dry. Building B is a case in point with the greatest mass and height centrally with lesser mass flanking to the sides.

8.1.12 The Urban Design Compendium goes into this in some detail as does By Design with its Seven Pillars of Best Practice. This is ample justification for the greatest mass and height where we have located it, but still a mass flanked by much lower forms and still a mass, not only lower than the mass it would replace, as required by the 2000 Design Brief, but at right angles to the mass it would replace. This reorientation facilitates light and sunlight penetration and a much less amorphous expression than the current building in the same position.

8.1.13 This is further accentuated by the use of wharf side references in the two flanking buildings A & C, with a quite distinctly different aesthetic for the taller central buildings where the southernmost of the two is lower again than the taller northern central form. This wharf side reference is entirely appropriate at a point where industrial locks and weirs meet at the furthest point of tidal influence.

8.1.14 There has been a suggestion for the designs to echo the "bucolic" yesteryear sentiment. This would not only be to employ a distinctly under-utilising, less effective re-use of PDL, but would contradict the Design Brief of 2000 which encouraged a robust connotation in the Urban Design approach.

8.1.15 **Further justification is required on the proposed massing and scale of Block C.**

8.1.16 A suggestion has been made to elaborate on the length of Building C. What has been created are two north south running boulevards, giving a strong and sunlit vista and sense of direction leading towards the riverside. The Conservation Area is characterised by many traits but one of the best qualities is a strong continuity in much of the streetscape. This takes many forms and is illustrated in the DAS extensively, but east of the application site it breaks

down and so its use for both buildings A & C, reinforces an established character and even more beneficially turns it through 90 degrees to emphasise the routing to the riverside. This chimes extensively with the Seven Pillars of By design, which champions public realm, continuity, enclosure, legibility and ease of movement. There are very few wayfinding routes to the riverside in the vicinity and where these can be provided in regeneration, they require the greatest clarity of expression. So compositionally we again reinforce *The Intensity Pyramid*, with lower elegant flanking continuous emphasis alongside contrasting central forms which are separated to provide permeability by means of a central piazza, between the publically accessible avenues.

8.1.17 This composition has the raised central piazza at its heart. It is the means by which the movement patterns defines a local destination and sense of local distinctiveness and it is the means by which we provide a neat and considered response to flood risk access and egress in what is a comprehensive and carefully crafted piece of proposed urban regeneration.

8.1.18 We have also been asked why we have not broken Building C to give greater east-west permeability. The explanation is partially in the preceding narrative; the continuation of a strong linear route, so characteristic of the Conservation Area and signalling a 90 degrees change of direction to a north-south axis from the east west Broom Road, giving clear impetus of the route to the waterside. Building C is also articulated into a series of stepped changes of plane, adding variation in light and shade and facilitating dual aspect.

8.1.19 A change either in block A and/or C to introduce east-west permeability leading to the blank dead boundary with adjacent sites would however be illogical and confusing; cul-de-sacs leading nowhere, going nowhere, in constant shadow, diluting the clarity of expression currently provided to the public realm, the principle of continuity and enclosure, legibility and ease of movement. Even if this were not the case, such an east-west permeation could not be done for one flank "C", without being done for the same other flank "A", certainly not without creating an imbalance to the urban composition. It would be contrary to the best principles of "Secure by Design"; heavily shadowed with in some cases north single aspect units, a potential "honey spot" cul-de-sac, increasing the risk of antisocial activity, making the car park access ramps and indeed the neighbouring Lensbury vulnerable to higher crime risk. It would introduce

incongruous movement. Lifetime Homes vehicular proximity would be compromised or unfortunate hammerheads introduced to such cul de sacs and of course it would be making less effective use of previously developed land while detracting from local character and amenity.

8.1.20 The scheme has been recognised by The Teddington Society at a well-received presentation at their Annual General Meeting recently and we believe the proposal responds positively to the Design Brief with its urban design emphasis on relating to what it describes as a robust riverside infrastructure.

8.1.21 **A plan is required that highlighting where the proposed increase or decrease in volume would be in comparison with the existing massing and scale, accompanied with a breakdown representing the percentage change at each level.**

8.1.22 The DAS submitted with the application included massing models that enabled a comparison to be made between the existing massing and that proposed. In response to this comment further plans are provided in Appendix 8 to address this point.

8.1.23 **For the houses a breakdown of space per units is required.**

8.1.24 The amenity space for the proposed houses is set out in the Table below:

Townhouses , Schedule of Amenity Space
Teddington Riverside

House	GIA(sqm) Front Garden	GIA(sqm) Rear/Side Garden	GIA(sqm) Patio deck	GIA(sqm) Total
E1	30.1	65.3	23	118.4
E2	26.7	21.8	23	71.5
E3	20.4	35.3	23	78.7
E4	26.5	38	23	87.5
E5	19.9	50.23	23	93.13
E6	25.7	41.7	11.6	79

8.1.25 **While a number of key receptors have been identified (section 10.3.15) and assessed in written form, graphic representation is required to assess the impact. Outlines of the proposal superimposed on photographs of the existing situation would be sufficient.**

8.1.26 Following exchange of correspondence with the Council it is understood that this point seeks the provision of 'wireframe' imposition of the scheme into all of the 17 VR views rather than just that at section 10.3.15. Additional information is provided to support the assessment of the impact from each of the VR's (see Appendix 9).

9.0 CHAPTER 11 TRANSPORTATION

9.1.1 **Details of the inter-visibility between vehicles from the garages belonging to the residential units fronting Broom Road and vehicles on the vehicle ramps are required.**

9.1.2 The spaces referred to as garages are in fact low level walls used to delineate between car parking spaces. The walls will be no more that 600mm high, meaning that they are below the visibility splay as defined in Manual for Streets. In visibility terms therefore these spaces are no different to other rows of parking within the development. We have checked the Manual for Street visibility however and can confirm that a 2m x 9m visibility splay can be achieved, which is suitable for a vehicle speed of 10mph in the car park.

9.1.3 **Confirmation on whether the garages to the residential units fronting Broom Road have doors, which would have implications in required dimension**

9.1.4 It is assumed that this is reference to the parking spaces to the rear of the terrace of houses to Broom Road. These are not garages but car ports and therefore they do not have doors.

9.1.5 **The transport assessment states that there is a car club bay on site. This is not made clear in the plans nor has any evidence submitted that car club operators have agreed to this provision.**

9.1.6 One of the surface level car parking spaces can be given over to a car club space. There have been discussions with Zipcar. They been operating in the Borough of Richmond since 2005 and are now working in partnership with the Council to provide car clubs on-street to residents. They currently have 60 vehicles in the borough and over 3,000 members. The cars are performing well, being used approximately 8 hours a day.

9.1.7 They have suggested the provision of 1 x Medium sized vehicles (either the VW Golf or BMW 1 Series or equivalent) would be appropriate here.

9.1.8 **Further details are require on how the publically accessible riverside walk connects with adjacent sites, whether cyclists can use the route, lighting, hours of access etc.**

9.1.9 The walkway cannot connect to other sites as this time there is no public access on these sites; the Anglers Public House and the Lensbury. The route will lead to the boundaries of the site to enable connectivity at a future date.

9.1.10 Cyclists will be able to use the link to access the riverside. Lighting is referred to in the Design and Access Statement on pages 36 and 39. In terms of hours of access the draft S106 Heads of Terms states:

> Riverside Pedestrian Walkway
>
> 5.1 HGPL shall provide a pedestrian walkway from Broom Road to the frontage of the Site with the River Thames, and along the Site's frontage with the River Thames.
>
> 5.2 On completion of the development of the Site, HGPL shall allow the public to use the pedestrian walkway (but not to dedicate the same as a public highway) Subject to the right of HGPL:
>
> 5.2.1 to erect gates and exclude the public from the pedestrian walkway: at all times overnight; and, in addition, where there is persistent disturbance/nuisance to residents caused by users of the pedestrian walkway, or anti-social behaviour on the part of users of the pedestrian walkway; and
>
> 5.2.2 to close the whole or any part of the pedestrian walkway:
>
> 5.2.2.1 for carrying out works associated with the residential development on the Site;
>
> 5.2.2.2 for the purpose of repair, maintenance and renewal of the pedestrian walkway, including the river wall/embankment; or
>
> 5.2.2.3 on grounds of safety, for reasons of security, in case of emergency and/or for other reasons of good estate management.
>
> 5.3 If the Council secures the provision of a pedestrian walkway along the frontage of the River Thames across the immediately adjoining land:

5.3.1 of the Anglers Public House to the north-west of the Site, which shall connect to the existing pedestrian footbridge; and

5.3.2 of the Lensbury Club to the east of the Site, which shall connect to a public highway (or cross further adjoining land and then connect to a public highway) then HGPL shall be entitled to close the existing access from Broom Road through the Site to the River Thames (but not the pedestrian walkway along the frontage of the River Thames).

10.0 CHAPTER 12 – WIND

10.1.1 We note that the Council has not yet received the final issue of the review of the wind assessment.

10.1.2 **It is stated that a desk based study was considered sufficient to determine the likely effects on the wind environment. There is no information on what basis this decision was made on.**

10.1.3 The heights of the proposed buildings are in the range of 3 to 7 storeys and the development is located in a suburban setting in one of the less windy parts of the UK. It is acknowledged that the desk- study is a qualitative assessment based on professional experience but this is considered an appropriate and proportionate assessment for the scheme.

10.1.4 **In relation to Figure 12.2 from the Environmental Statement (same as Figure 4 in Technical Report), Block A ground level passageway is shown as an area of yellow (Leisure Walking) near to the south of that block. It is agreed that windy conditions area likely to occur in this passageway from west winds, but not for the approaching wind direction as shown on the figure.**

10.1.5 Figure 12.2 shows the predicated wind environment for all wind directions in the windiest season. The plot is NOT for a particular wind direction. From the comment it appears that what Figure 12.2 was intended to convey has been understood. [If it helps think of it as the windiest season dot plot that might be obtained (say) a wind tunnel test].

10.1.6 **The localised accelerated areas of flow shown as areas of yellow at some of the building corners area generally shown as emanating from the North and/or South corners of some buildings (namely Block D). There is no explanation given as to why these localised regions of wind occur. It is expected that the exposed South-West corners of the buildings to the South-West of the site to have accelerated wind conditions.**

10.1.7 The comment is referring to what would be the windward corner of the buildings when the prevailing winds blow. In our experience this corner would not be as windy as the 'adjacent' corners which are exposed to winds that

channel along the two facades that emanate from the windward corner. Consequently, the SE and NW corners tend to be windier in our experience.

10.1.8 **In relation to the above, there are entrance-doors located at South-West corners of some of the Blocks (e.g. Block E to the South-East of the site). If such entrance doors are more windy than shown on the figure then this will probably change adversely the assessment of the doorway wind conditions. This in turn could affect the findings and conclusions of the Technical Report (e.g. Items 5 and 6 in the concluding remarks in the technical report) which link directly to the resulted presented in the Environmental Statement.**

10.1.9 Acknowledged but as indicated in the previous response, the SW corners are not expected to be windier than shown in the assessment.

10.1.10 **Clarification is required on why an area of accelerated flow that is shown immediately to the South-East of Block B has been identified as a windy area.**

10.1.11 This is present because winds from the prevailing sector are expected to be steered towards this corner of the building, whilst the building is not particularly tall, there is a narrow space between it and the neighbour which differentiates it from the other end of the building. There is also potential for wind from the north east sector to contribute to the overall conditions in this area. Consequently, this area was assigned with a leisure walking classification.

10.1.12 **In the technical report or environment statement it is not stated whether the 'standard' surrounding upstream blockage (for all approaching directions) option of BREVe3 was used or whether the upstream blockage associated with the 'actual surrounds' was used. It is considered that 'actual surroundings' blockage should be used in wind assessments of this type as the difference can be significant, especially near to the ground.**

10.1.13 BREVe3 was used based on the actual surrounding conditions.

10.1.14 In our experience, obtained from many wind tunnel tests of masterplans containing areas of low-rise buildings interspersed with taller buildings, it would be unusual for the wind environment amongst a series of 3 to 7-storey

buildings, in the southeast of England, exhibiting conditions that were windier than shown in Figure 12.2 of the ES chapter. On this basis, it is considered that the general magnitude of the wind environment is appropriate.

10.1.15 **Confirmation is required on the set back of the entrances to support the assertion that with the set-back conditions are expected to be suitable for an entrance in the windiest season. A distance of 1.5 (or 2 steps) is needed to ensure that an exiting person has sufficient time to adjust to the external wind conditions.**

10.1.16 The technical report and the original ES chapter clearly state that all the building entrances are located in areas where the wind environment is expected to be suitable for an entrance. This means that they are in blue areas on the shaded submitted plan of the Site (Figure 13.2). The Broom Road elevation of the proposed development comprises the lowest buildings on the site and the two sets of buildings (Blocks E) are also not particularly long, so there is limited opportunity for wind to be channelled towards the east and west corners of each terrace. This is justified because to prevailing south westerly winds the Broom Road elevation of the terraced buildings is considered to be aerodynamically squat, which means that the height is low compared with the horizontal extent (i.e. the length of the Broom Road elevation). The wind tends to blow over aerodynamically squat buildings rather than around them. This would reduce the strength of wind at the corners of the Broom Road elevation.

10.1.17 The 'set-back' referred to in the original ES chapter, actually relates to the fact that the entrance is not located on the corner of the building but is on the Broom Road elevation. This is not therefore referring to the creation of a 'buffer zone/cavity' outside the entrance, but the orientation of the entrance to the Broom Road elevation. Nevertheless, as stated in the report the wind environment outside the entrances to the buildings is considered to be compatible with the conditions needed to meet the Lawson Criterion for an entrance.

10.1.18 It has previously been acknowledged that the assessment is based upon professional experience. This experience is borne of more quantifiable forms of assessment, such as wind tunnel testing, of hundreds of larger, more complex schemes, where buildings are exposed to strong winds that occur tens or even hundreds of metres above ground level. From the perspective of wind

microclimate, the buildings of the Teddington Riverside development are relatively low-rise and so unlikely to generate strong downdraughts or accelerated winds that would be notably different to those which already occur in the neighbouring urban streetscape. It would be expected that the wind microclimate summarised in the shaded plan of the development (Figure 13.2 of the original ES chapter) represents the results that would be obtained if another more quantifiable form of assessment was carried out. (Noting that the consultant have only ever carried out wind tunnel tests on buildings as small as those at Teddington Riverside when there was perhaps a 15 to 40-storey building/s as part of the development).

10.1.19 **Section 12.4.1 of the environmental statement should be corrected from 'important' to 'importance'.**

10.1.20 Acknowledged, this is a typo and 'important' should be changed to 'importance'.

10.1.21 **Section 6.1, para. 1 of the technical report should read 'at head height above ground level'.**

10.1.22 Acknowledged, we would usually state around 1.5m to 2m above ground level or at pedestrian level, implying chest or head height above ground level.

11.0 CHAPTER 13 – DAYLIGHT

11.1.1 **In the policy context, no reference is made to Development management Plan policy DC5, SPD: Design Quality and SPD: Residential Design Standards.**

11.1.2 The daylight and sunlight report incorporates reference assessment methodologies and target values set out in BRE 209: Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice 2011 and British Standard 8206 Part II. These are the standards upon which the Local Policies are founded. A revised daylight and sunlight assessment will be issued incorporating references to Development Management Plan and relevant SPD's.

11.1.3 **The sunlight and daylight report by Savills states that the scheme has changed since assessment, but the changes are not identified to establish whether re-assessment is justified.**

11.1.4 There are no material external massing changes and the latest internal arrangements of the units have been assessed. The up-to-date drawings will be referenced in the revised Daylight and Sunlight assessment.

11.1.5 **In the application of BRE guidelines the word 'aspirational' is used in the Savills report. Clarification is required to the context of the word in this application. While the BRE guidelines are not mandatory and have no statutory weight, the values quoted are minimum values.**

11.1.6 The revised Daylight and Sunlight assessment will provide explanation where necessary and remove the word 'aspirational' where useful for clarity.

11.1.7 **The report states that the BRE guidance uses Average Probable Sunlight Hours (APSH) as the methodology for calculating sunlight levels. This should read Annual Probable Sunlight Hours.**

11.1.8 This will be amended in the revised Daylight and Sunlight assessment (Appendix 10).

11.1.9 **The report seeks to exclude the Anglers Pub and Lensbury Lodge from consideration as dwellings. Valuation Office Agency records indicate that council tax is payable at both addresses, possible for staff**

accommodation. It is not accepted that these properties should be excluded in consideration.

11.1.10 We do not believe that any residential element of the Anglers faces the proposal given the various vents and extract elements at first floor overlooking the current entrance to the application site. There is no residential use in Lensbury Lodge the building having been converted to office use in late 2013.

11.1.11 **Data is presented for loss of Average daylight Factor (ADF) in external receptors, which is not an approach recommended by British Research Establishment (BRE) for assessing loss of light of existing properties and there is no guidance provided on how to use it in this context.**

11.1.12 The Average Daylight Factor results in respect of external receptors are presented as a further tool to enable an assessment of the overall retained daylight conditions. In any event the primary Vertical Sky Component and Daylight Distribution (No-Sky Contour) results illustrate the non-material nature of external amenity impacts.

11.1.13 **A particular room and associated window appears to have a very low ADF compared to the other windows in the existing building and a substantial relative change in ADF given the moderate changes in VSC and no-sky line. It is recommended that calculations for room R2/520 and associated windows W2/520 are checked or explanation given.**

11.1.14 We have reviewed the Average Daylight Factor (ADF) results in relation to the room R2/520 within the 'flats to southwest of site northwest facing'. This anomaly result occurs as this window (W2/520) belonging to this room is a small letter box shaped window which serves this room. Due to the size of this window, the glazing area element of the ADF calculation is very low thus leading to a particularly sensitivity in ADF levels when compared with the percentage reduction in Vertical Sky Component to this window.

11.1.15 **The overshadowing summary suggests that if the centre of the amenity area can receive 2 hours of sunlight on March 21st that if the space can be considered 'well lit'. The guidance relating to the centre point of a simple shape is given for when a detailed calculation cannot be carried out, therefore detailed calculations of the proportion of space receiving two hours of direct sun is required.**

11.1.16 The overshadowing study submitted illustrates compliance with the BRE tests and is considered appropriate given the uniform shape of the amenity spaces. A further detailed study has been prepared and will be presented as part of the revised Daylight and Sunlight assessment. In any event it should be noted that the site layout maximises sunlight penetration to the amenity spaces due to the north / south orientation of the blocks. Alternative arrangements of units aligned on a west to east axis would lead to significant overshadowing to the north of the units adversely affecting the sunlight availability to amenity spaces.

11.1.17 **The interior finishes used are stated to be light coloured, which give a best base scenario for ADF. However, the values are not given and it cannot be assured that residents will continue to use them.**

11.1.18 In terms of the Average Daylight Factor calculations we have utilised parameters of 0.5 for room reflectance and 0.68 for window transmittance.

11.1.19 These parameters are drawn directly from the BRE guide and are used as a matter of course when assessing the daylight provision within new-build proposals having 'fairly light-coloured' finishes and double glazing. It is unfeasible to design for all future finishes which residents may change. The analysis completed demonstrates that the proposal provides a good level of internal amenity, based on the parameters specifically set out in the BRE document, by which such new-build units are to be assessed.

11.1.20 **The drawings for the proposals indicate that there will be balconies, and their contribution needs to be taken into account when assessing how much light the rooms within building will receive. The discussion of balconies in the report is not presented as only relevant to existing properties, and the drawings containing the room diagrams show the following text 'Internal ADF results, proposed scheme dated 12/12/13 without balconies'. The assessment for daylight provision therefore appears to have been carried out without the presence of balconies. Analysis excluding balcony impact is only recommended for loss of light of existing premises where the presence of balconies in some scenarios can make the window heavily dependent on light from the lower part of the sky. Exclusion of balcony impact when assessing daylight provision in new buildings is not recommended by the BRE and the balconies should be in place for this assessment in order to identify**

the amount of incoming daylight received by a window (part of the calculation of ADF). ADF values presented for rooms where there are balconies planned in the vicinity are therefore considered incorrect.

11.1.21 We confirm that the study submitted in respect of Internal Daylight to the proposed units did not take into account the effect of balconies. The BRE Guidelines acknowledge that daylight / sunlight is 'only one of many factors in site layout design' and goes on to stress, although principally in relation to external receptors, that 'windows with balconies above them typically receive less daylight'.

11.1.22 The provision of balconies affects the sky view of the windows below them and therefore is a trade-off between the provision of internal daylight amenity throughout a living space and the valuable private amenity provided by balconies and terraces. In respect of the current proposals this is however addressed through a considered design response which 'staggers' the arrangement of balconies such that every window serving sensitive rooms are not obstructed.

11.1.23 In order to address the concerns raised we are undertaken a further assessment with the balconies in position. A full technical appraisal has been submitted as part of the revised Daylight and Sunlight assessment and there remains a very high level of compliance with the Average Daylight Factor targets with the balconies on place.

11.1.24 **With respect to sunlight, all windows have been analysed for sunlight, when only main living rooms facing within 90° of due south would have been required. However, the additional data does no harm. One window on the first floor of Building A does not achieve the guidelines for winter hours but receiving plenty of year round sunlight is not unreasonable in a development of this size. However, can clarification on why the window does not achieve the guideline when the ground floor window in the same position below it does?**

11.1.25 We have reviewed our analysis and are comfortable that the Annual Probable Sunlight Hour results are correct. At first floor there are more rooms which have been assessed and, as such, the room references cannot be directly compared to the same room references at ground floor level. In addition the

fenestration size and design at first floor level is different to that at ground floor and, where reductions occur when compared to similar areas at ground floor, it is clear from our plots that this is due to a reduced window size.

12.0 CHAPTER 14 - SUSTAINABILITY

12.1.1 **The green roofs on Buildings A and D are very limited in comparison to the overall roof surfaces. Demonstration on why more green roofs cannot be provided on the development site, including combining green roofs and PV panels, as they can be used together; living roofs increase the efficiency of solar photovoltaic panels by regulating temperature. Evidence and justification is required if no further green roofs will be incorporated into this proposal.**

12.1.2 It was proposed that green roofs will be used on Buildings A and D with a combined area of 150sqm. Policy DM SD 5 states that "Living roofs should be incorporated into new developments where technically feasible and subject to considerations of visual impact" and "The aim should be to use at least 70% of any potential roof plate area as a living roof".

12.1.3 Having reviewed the proposal in the context of the extent of the overall roof surfaces provision can be made for more green roofs as part of the development. These can be combined with PV panels. No further justification is required.

12.1.4 The plan provided at Appendix 6 shows the extent of the areas that can be provided as Green Roofs.

12.1.5 **Clarification is required on the regulated emissions at each stage of the energy hierarchy expressed either as a site-wide total or in terms of CO2/M2.**

12.1.6 The table below details the Regulated CO2 emissions at each stage of the hierarchy:

Regulated CO_2 Emissions	Absolute ($kgCO_2$)	per sqm	Reduction
Baseline (TER)	403,714	16.1	
Be Lean (BER)	349,266	14.0	13.5%
Be Clean (+ CHP)	219,651	8.8	45.6%
Be Green (+PV)	207,320	8.3	48.6%

12.1.7 **Further details on the solar PV panels: a) total capacity of panels (kWp) and b) Electricity generated by panels (kWh).**

12.1.8 The proposal makes provision for 200m^2 of Polycrystalline as detailed in the Chapter. This would provide a) a total capacity of approximately 29kWp and b) generate approximately 23,300kWh of electricity per annum.

12.1.9 **Clarification on the proposed location of the cycle storage is required to achieve the credits awarded in the Code for Sustainable Homes pre-assessment. An amended site drawing demonstrating this would be sufficient**.

12.1.10 Application drawing A9991D0099 showed the basement area of the proposed development. Cycle storage is shown on this application drawing in the basement, located around the lift/stair cores. This is also detailed in the Architect's Design and Access Statement (pages 29, 42, 49). Whilst this drawing has now been revised provision is still shown here.

12.1.11 We therefore do consider that an amended site drawing is required.

12.1.12 **No consideration of the other sources of information alongside the BRE's Green guide such as the Greenspec PASS endorsement and natureplus has been submitted.**

12.1.13 It is a requirement of the Code for Sustainable Homes (CfSH) assessment that the Green Guide is used to rate the environmental impact of the key elements of the building envelope. Therefore it has been used in the pre-assessment provided as part of the overall submission. Consideration will be given to other sustainability rating systems in the specification of materials and products in the development.