Twickenham Riverside Development

Transport Assessment

September 2001

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Executive Summary

This report discusses the traffic growth, parking and access arrangements of a new development at Twickenham. It demonstrates that the access and parking designed by the architect MacCormac, Jamieson, Prichard (MJP) wherever possible complies with design standards and good practice.

There is a commitment by the LBRuT (London Borough of Richmond upon Thames) within the UDP to pedestrianise the Embankment between Wharf Lane and Water Lane. The closure of the Embankment to traffic is not deemed necessary for the operation of the development.

There is however an opportunity as part of the new development to pedestrianise the Embankment in accordance with UDP policy. Planning approval is sought for environmental improvements to the Embankment but this will be subject to pedestrianisation and the resolution of a number of areas relating to parking and loading provisions. This work will be progressed in parallel with the planning application; the closure can be carried out using Highways rather than Planning Act powers. The use of the Highways Act will enable a scheme to be implemented early using an experimental traffic order, this will respond to the request made by residents in the area.

A strategy for the development of an Embankment early implementation scheme will be progressed separately with the Twickenham Riverside – Traffic and Parking Working Group. The outline scheme to be developed is described in Section 2 of this report 'Riverside Parking Strategy'.

1. Introduction

FORM OF DEVELOPMENT

1.1 WS Atkins have been commissioned by the developer Dawnay Day to undertake a Transport Assessment for a residential and commercial development in Twickenham. The development is on a former open-air swimming pool site.

1.2 Twickenham town centre is identified in the LBRuT Interim Transport Plan as one of three district centres within the Borough. The Riverside site part of the centre is a development opportunity where traffic is not a deterrent. The site lies between King Street and the River and is bounded by Water Lane and Wharf Lane.

1.3 The objective is for the development to contribute to the revitalisation of the town centre with good access from King Street to new retail outlets and to provide views and access directly to the River. The location of the site is shown on Figure 1.1.

STATUS

1.4 The Architect MJP is designing the new development on behalf of the developer Dawnay Day. The new development will incorporate privately owned residential properties, a health and fitness centre and a cinema, as well as retail and leisure outlets. Parking spaces will be provided in a secure underground car park for private residents (46 number) and existing King Street tenants (19 number) that would otherwise have been lost as a result of the development.

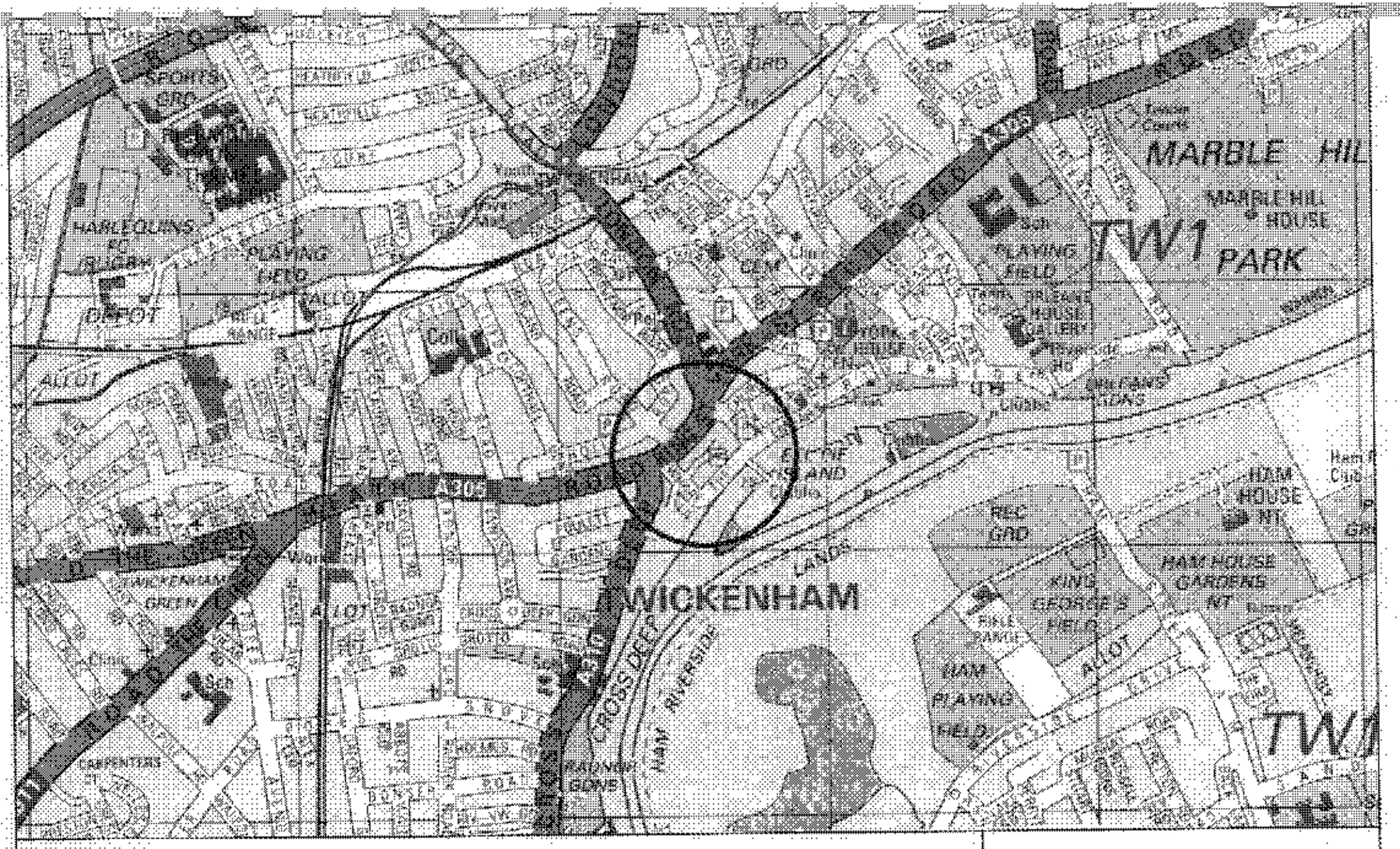
OBJECTIVES

1.5 This report aims to review:

- the traffic growth, impact on the area and the parking facilities required for the new development, and
- The access arrangements for residential and service vehicles into the area and the new development.

STRUCTURE OF THE REPORT

1.6 The report has been structured into two sections to address the two different areas of work.



LOCATION PLAN

Figure 1.1

Section 2 – Traffic Impact and Parking Requirements

1.7 This section considers traffic growth in the immediate area, and parking requirements for users of the new development. It presents ways to manage the traffic and utilise Twickenham's existing parking facilities. It considers systems to control and secure the car park, the standards and procedures adopted, the general layout of parking spaces in the car park, circulation and turning movements, AutoTrack tests, and other issues such as internal finishes that should be considered to provide a safe and user-friendly environment.

Section 3 – Access

1.8 This section considers matters in relation to access to the development for the various users. It shows the general layout for access into the service road and car park, the different users and vehicle types, the access arrangements at the junction with King Street, a range of AutoTrack turns, and other issues such as signing, road marking and ways of minimising potential vehicular conflict.

2. Traffic Impact and Parking

SCOPE OF DEVELOPMENT

2.1 Table 2.1 summarises the proposed residential and commercial development on this site. Figure 2.1 shows the layout of the new development.

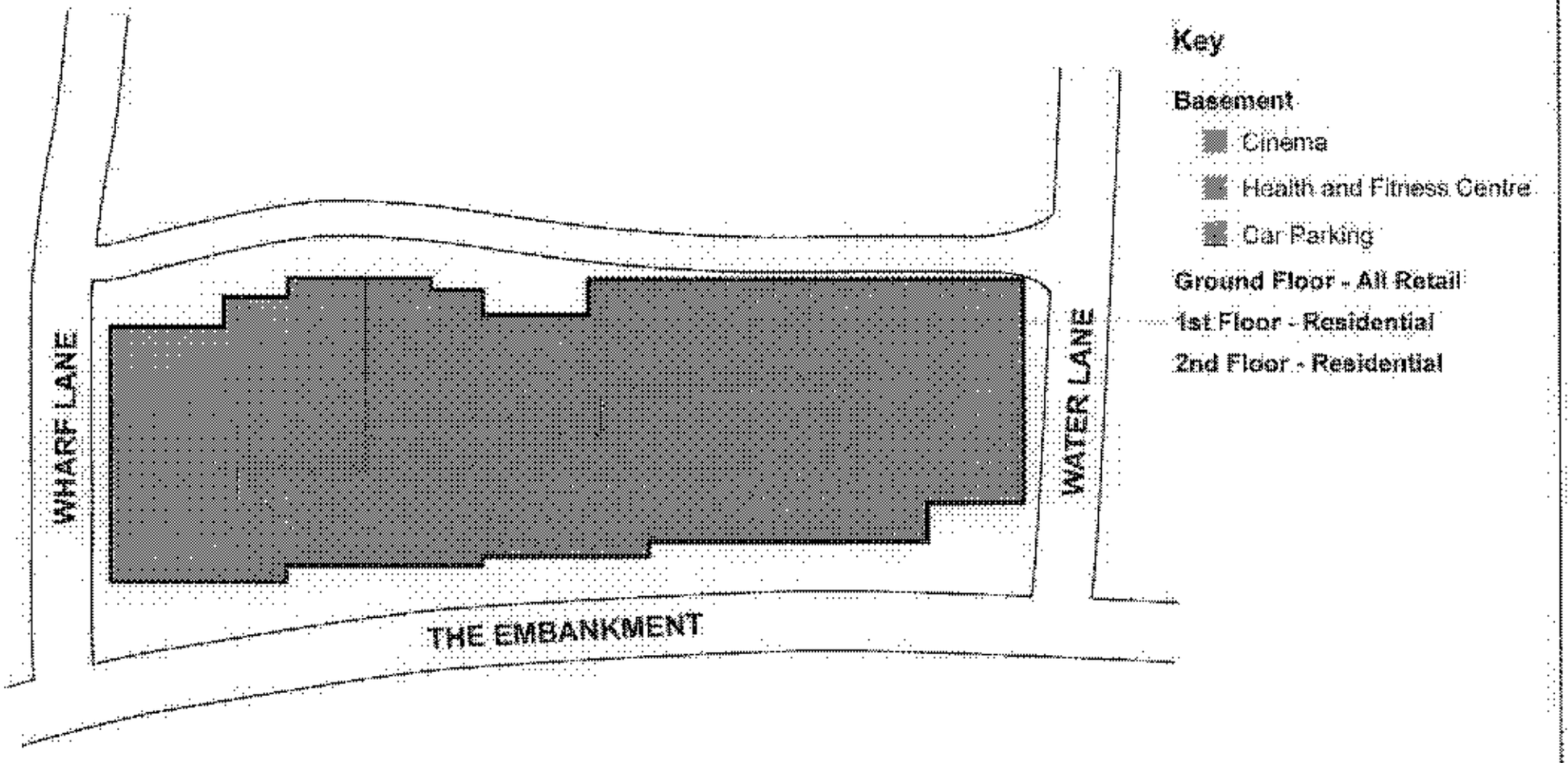
Table 2.1 - Land Use Areas

Land Use	Floor Area	Comments
Cinema	2103 m^2	550 seats. 3 screens. One screen will be available for performances and community events.
Residential	4183 m^2	46 residential units. Mixture of single, double and three bedroom units, over two levels.
Retail	1945 m^2 (Assume 70 / 30 split between retail / rest)	Plan to enliven waterfront area with restaurants and cafes with outdoor seating around a 'town square' area, with views towards the river. Retail is mainly planned along an 'avenue' linking King Street retail area with the Embankment.
Health and Fitness Centre	3157 m^2	Facilities include a 25m long swimming pool, aerobics/dance studio, weights area and café. Access to the pool will be offered to the community at a discounted rate at off peak times.

2.2 Table 2.2 indicates the expected level of employment to be generated by the new development.

Table 2.2 - Employment Generated by Development

Type of Use	Floor Space	Employment Estimate	Number of Staff
Cinema	2103 m^2	Control Room (2) Reception (1) Management (2) Ushers (3)	8
Retail	1945 m^2	Restaurant assume 4 units, and 8 staff per unit Shops assume 8 units, and 2 staff per unit	48
Health and Fitness	3157 m^2	Reception (1) Maintenance (1) Management / administration (2) Trainers (6)	10
TOTAL EMPLOYEES			**66**



DEVELOPMENT LAND USE

Figure 2.1

2.3 The development is seen as an opportunity to revitalise the town centre in Twickenham, and attract local residents to these facilities in preference to travelling to other local centres such as Richmond or Kingston. It also aims to draw people from King Street via the connecting thoroughfare lined by retail outlets, to the river. The Town Square, at the edge of the embankment is intended to be a focal point for the community, perhaps to be used for open-air markets and community performances. The cinema has one screen available for use as an auditorium.

TRAFFIC GENERATED BY DEVELOPMENT

2.4 The traffic flow generated by the new development has been calculated for each user group using the TRICS and TRAVL databases. These databases have both been established from surveys of existing development. The sites have been sorted in terms of location, size and usage to find the most appropriate survey, similar to the proposed development. The TRAVL analysis contains additional parameters to assess the extent of public transport in the area and makes allowances for the degree of on-site parking available. Appendix B contains TRICS outputs and Appendix C has TRAVL output data.

Shops / Restaurants

2.5 The results of the TRICS analysis are based on survey data for 2 sites in the Southeast and include data for a Saturday. The peak hour traffic flow generated is 150 vehicles between 6pm and 7pm. This traffic flow accounts for visitors and service traffic. If we assume that service traffic accounts for 10 percent of the 150 vehicles then the total flow in the peak hour will be 15 vehicles.

2.6 The TRAVL analysis is based on surveys conducted at 15 locations in greater London. The peak hour traffic flow generated is 63 vehicles between 1pm and 2pm. The TRAVL analysis for restaurants includes a cross visitation factor of 30% to reflect the fact that restaurants do not generate all of their business independently of their environment. For example, people visiting the cinema, or shopping in the area may also choose to visit a restaurant as part of their trip.

Residential

2.7 The TRICS results are based on a week of survey data for a site in greater London. The peak hour traffic flow generated is 9 vehicles between 5pm and 6pm.

2.8 The TRAVL results indicate a peak hour traffic flow of 8 vehicles between 6pm and 7pm.

Leisure - Health and Fitness Centre

2.9 The TRICS survey data for leisure covers a multitude of leisure facilities, so in order to provide more accurate information on the cinema and Health and Fitness centre, additional surveys were undertaken for facilities in Richmond. The two survey sites were selected because of their comparable level of public transport access to Twickenham. This data has been used in place of the TRICS surveys to provide a more suitable comparison with TRAVL survey data. Interestingly, the leisure centre

had a private car park but despite this, a large number of people walk or use public transport.

2.10 A 1-day survey was undertaken at Spring Health Leisure Club, Twickenham Road, Richmond. The survey results are shown below for the various modes of travel.

Table 2.3 - Traffic Survey Results – Leisure Centre

Time Period	Number of trips by mode				
	Cyclist	Motor-Cycle	Car	Walk / Public Transport	Total
1.30 – 2.30 p.m.	5	5	**39**	69	118
4 – 5 p.m.	6	2	**41**	47	96
5 – 6 p.m.	11	3	**31**	37	82
6 – 7 p.m.	2	1	**29**	35	67

2.11 TRAVL data, obtained from 6 health and leisure centres in Greater London, indicates a peak hour flow of 27 vehicles between 7pm and 8pm.

Leisure - Cinema

2.12 A 1-day interview survey was carried out at the 3-screen Odeon cinema, Hill Street, Richmond. This cinema is similar to the 3 screens proposed as part of the development. The survey asked visitors their mode of travel.

Table 2.4 – Traffic Survey Results – Cinema

Time Period	Number of trips by mode						
	Cyclist	Motor-Cycle	Car	Walk	Bus	Train	Total
12 –1 p.m.	0	0	**4**	4	5	0	13
1 – 2 p.m.	0	0	**0**	4	4	0	8
2 – 3 p.m.	0	0	**2**	7	0	0	9
3 – 4 p.m.	0	0	**5**	9	0	5	19
4 – 5 p.m.	0	0	**7**	4	5	0	16
5 – 6 p.m.	4	0	**7**	5	9	8	33
6 – 7 p.m.	0	0	**9**	11	11	7	38
7 – 8 p.m.	0	0	**21**	0	5	0	26
8 – 9 p.m.	0	0	**16**	11	2	2	31

2.13 TRAVL analysis, using data collected from 11 cinema sites in the greater London area with similar seating capacities, indicates that the proposed 3-screen cinema complex would generate a peak hour flow of 30 vehicles between 8pm and 9pm.

Summary

2.14 Table 2.5 below summarises the results of the TRICS analysis for the various land use categories. The highlighted numbers indicate the anticipated additional parking demand. It would appear that the peak hour would be between 6-7pm.

Table 2.5 - Traffic Generated by Development – TRICS Analysis

Type of Parking/Journey	Peak Period	Total Number of Vehicles	Number of Vehicles Service Road	Type of Vehicle
Retail Shops/Restaurants	6 – 7 p.m.	**150**	15	Van/Lorry
Flats Privately Owned	5 – 6 p.m.	**9**	9	Car
Health and Fitness Centre	4 – 7 p.m.	**30-40**	1	Car
Cinema	7 – 9 p.m.	**16-21**	1	Car/Van
Totals	**6 – 7 p.m.**	**190**	**16**	**Van/Lorry**

2.15 Table 2.6 summarises the results of TRAVL analysis. The peak hour appears to be between 7 p.m. and 8 p.m. with a peak flow of 99 vehicles.

Table 2.6 – Traffic Generated by Development – TRAVL Analysis

Time Period	Total Number of Vehicles per hour					
	Retail		Residential	Health and Fitness Centre	Cinema	**Totals**
	Retail (70%)	Restaurant (30%)				
12–1 p.m.	50	8	3	14	6	**81**
1-2 p.m.	50	13	3	14	8	**88**
2-3 p.m.	50	11	3	19	11	**94**
3-4 p.m.	48	13	5	22	6	**94**
4-5 p.m.	45	12	5	19	11	**92**
5-6 p.m.	31	14	5	20	6	**76**
6-7 p.m.	20	10	8	23	14	**75**
7-8 p.m.	21	22	7	27	22	**99**
8-9 p.m.	20	2	6	14	30	**72**

2.16 The peak flows generated by the TRAVL analysis are generally comparable with those anticipated using the TRICS database. The TRAVL data does indicate a slightly lower number of trips than TRICS. This reflects the fact that TRAVL takes account of the influence of accessible public transport and the degree of parking available in the area. TRICS predications have been used in this report as a worst case scenario as they indicate the larger predicted peak hour flow.

EXISTING TRAFFIC FLOW AND PARKING

2.17 The existing and proposed traffic flow around the site is shown on Figure 2.2.

2.18 Twickenham Town Centre is part of a Controlled Parking Zone, operating between 8.30am and 6.30pm, Monday – Saturday. The LBRuT manages the provision of parking spaces on street within the CPZ and off-street in the public car parks. Parking in this area in 1997 was as follows

- 1680 on-street spaces, and
- 708 public off-street spaces.

2.19 There is very limited parking on the through routes of King Street, Cross Deep and York Street. In the vicinity of the development on-street meters are heavily biased to the needs of visitor/residents parking bays.

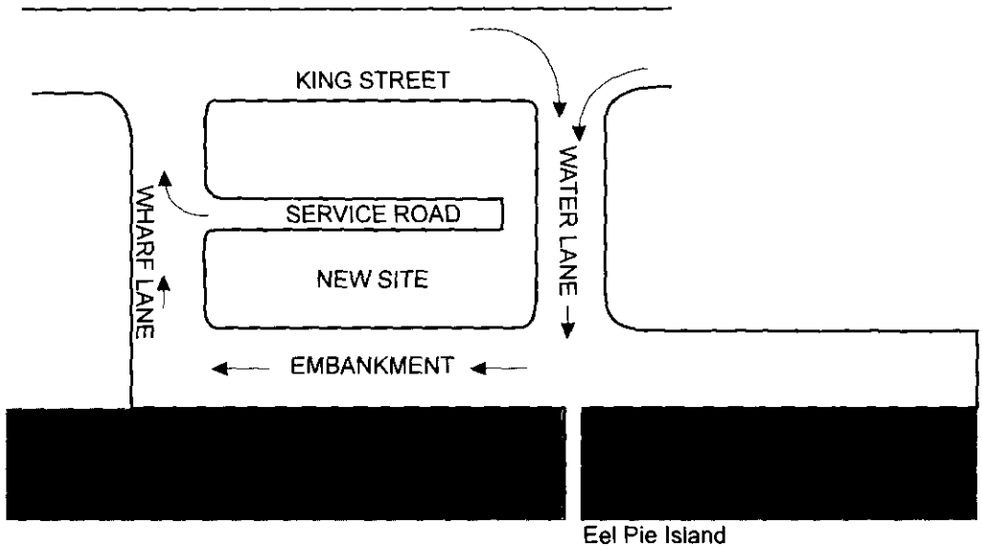
2.20 The existing traffic flow in the development area is created from service traffic, residential or visitor parking.

2.21 The existing parking that can be accessed via Water Lane is shown below.

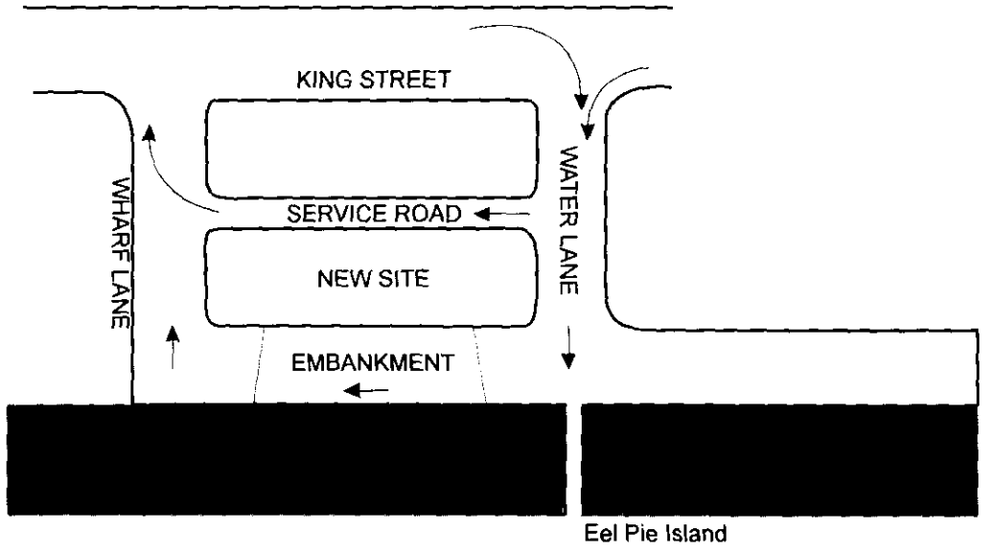
Table 2.7 – Existing On-Street Parking

Location	Disabled	Resident / Business	Resident / Visitor	Meter	Total
Wharf Lane	0	0	9	4	13
Water Lane	0	0	0	15	15
Embankment - West Water Lane	0	17	42	0	59
Embankment - East Water Lane	0	7	29	5	41
Total	0	24	80	24	128

Existing business/tenants in the service road (19) will be relocated to the new underground car park.



Existing Traffic Flow



Proposed Traffic Flow

Note: As part of the 'Riverside Parking Strategy' the bottom of Water Lane and Wharf Lane between the service road and the Embankment will become 2 way flow.

Existing and Proposed Traffic Flow

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Scale: NTS

Figure 2.2

PROPOSED DEVELOPMENT PARKING

2.22 An increase in parking demand will arise from the new development, which cannot be accommodated within the existing parking provision and proposed car park. This would add to the existing environmental problems associated with vehicles searching for spaces and reduce the availability of parking for local residents and businesses.

2.23 An obvious solution would be to provide sufficient space in the underground car park of the development to accommodate all parking generated. However, there are a number of reasons for not providing such a facility.

- The additional traffic that would be attracted to this environmentally sensitive area would be against LBRuT Interim Transport Plan (ITP) policies.
- More economically and environmentally viable to use existing off-street car parks that have reserve capacity. These are public car parks managed by LBRuT.
- The increase in construction cost associated with additional excavation to provide a larger basement would limit viable development options for the site.

2.24 The proposed development car park will accommodate 65 parking spaces. There will be 46 spaces available for the residential units within the development, one space per unit. The additional parks will provide some recompense for those lost on Water Lane.

2.25 The LBRuT has a number of policies within their ITP that seek to discourage the use of private vehicles. These policies include

- to reduce the need to travel especially by car
- to minimise the need for car parking
- to promote better integration of land use and transport planning and
- To protect and enhance sustainable accessibility to town centres for people and goods vehicles.

2.26 There are a number of tools that are available to LBRuT as the highway authority to implement these policies including the careful consideration of planning applications, traffic management improvements, and parking.

2.27 The development will seek to utilise the reserve capacity of existing neighbouring off-street car parks to accommodate visitor parking. This will benefit the site by

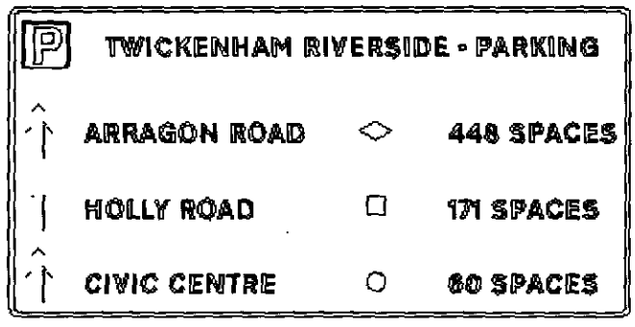
- Minimising the additional traffic entering Water Lane, maintaining the pedestrian friendly environment that is intended to be enhanced, and
- Retaining the existing controlled parking zones (CPZ) residential parking and hours of operation. There are a number of concerns from residents about existing parking demands and any additional traffic is likely to raise concerns.

PARKING STRATEGY

2.28 Information signs will be placed on the approach roads to Twickenham advising visitors of the location and spaces available within off-street car parks. The signs can be coded to avoid size problems within the town centre.

2.29 A possible sign type can be seen in Figure 2.3.

Figure 2.3 - Typical Information Parking Sign



2.30 Figure 2.4 shows the location of the public off-street car parks closest to the development. It also indicates possible pedestrian routes between the car parks and the development. Table 2.8 summarises distances and approximate walking times from car park to development. It indicates that a pedestrian walking from one of the off-street car parks would take approximately 5 minutes to reach the site.

Table 2.8 - Pedestrian Walking Time Estimates

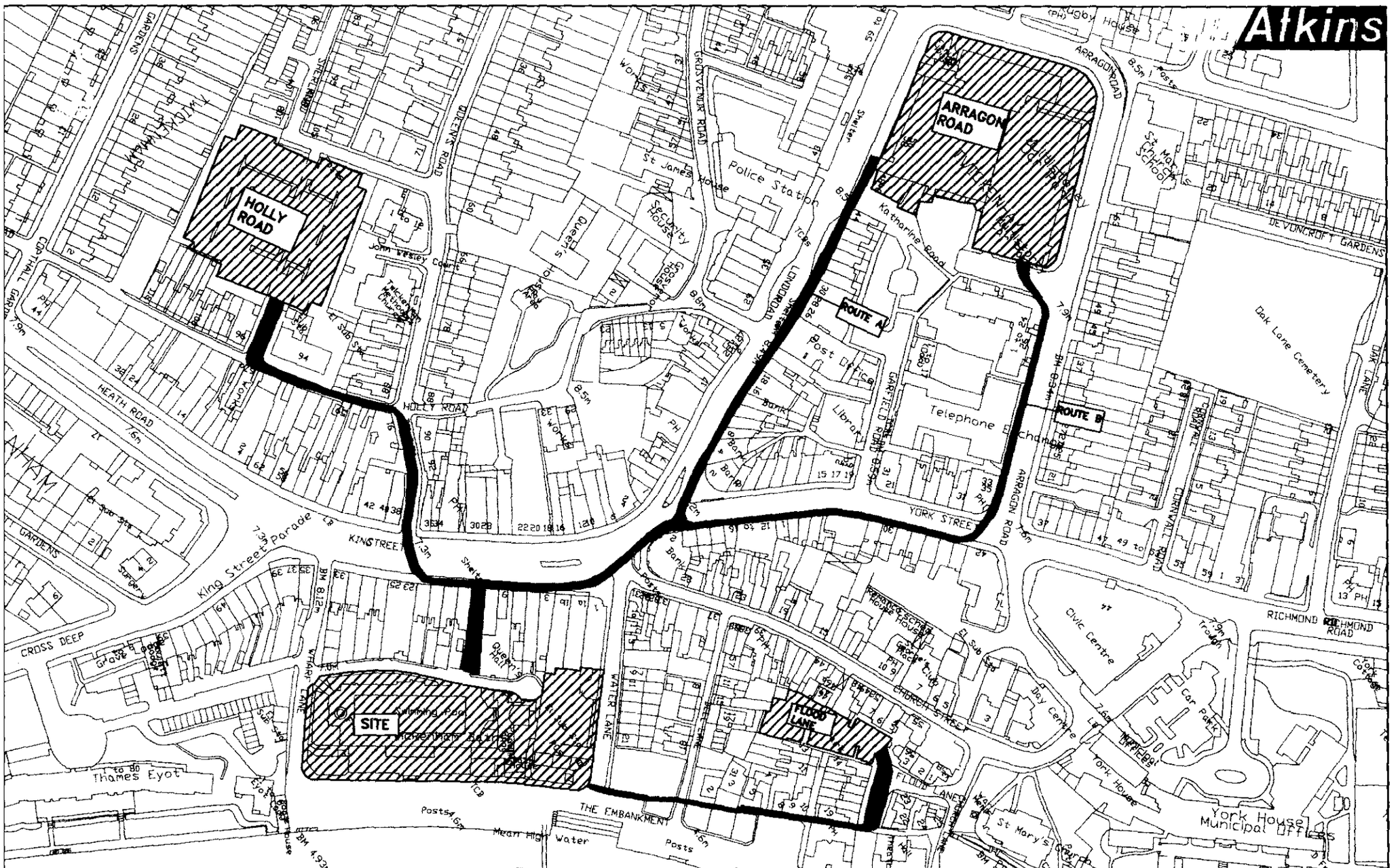
Car Park	Distance	Approximate walking time
Holly Road	230 m	3 minutes
Arragon Road - Route A	260 m	3.5 minutes
Arragon Road - Route B	340 m	4.5 minutes
Flood Lane	160 m	2 minutes

Walk speed - 5 minutes / 400m

2.31 Parking in the immediate vicinity of Water Lane, Wharf Lane and the Embankment will continue to be managed by the CPZ and include the residential and business visitor permits that are provided by LBRuT.

2.32 Controlled hours of CPZ in Richmond centre have recently been extended to cover Sunday and evening parking. This was intended to improve facilities for residents during these time periods. This may be something that the Borough would wish to consider in the Twickenham Riverside area should conflicts occur between residents and visitors outside the current controlled hours.

2.33 Modification to the location of on street parking in Water Lane is required to accommodate the new access road. It is possible to accommodate the four existing bays in other areas of Water Lane without restricting turning movements.



Notes:-

Client	MJP
Project Title	TWICKENHAM RIVERSIDE
Drawing Title	EXISTING PARKING PROVISION
Sheet	
Scale	N.T.S.
Surveyed	SURVEYED
Drawn	WV
Date	SEP/2001
Drawing Status	PRELIMINARY
Drawing Number	FIGURE:2.4
ACAD file:	BV6846/002/02

OFF STREET CAR PARK RESERVE CAPACITY

2.34 The reserve capacities of two off-street car parks closest to the proposed development have been calculated based on surveys conducted by LBRuT since September 1998. The survey results are shown in Table 2.9.

Table 2.9 – Off-Street Parking Reserve Capacity

Location	Time Period	Reserve Capacity (vacant spaces)			
		Friday		Saturday	
		AM	PM	AM	PM
Holly Road	March 2001	37	55	90	85
	December 1999	28	34	55	65
	June 1999	35	22	15	88
	March 1999	51	56	80	96
	December 1998	60	48	90	6
	September 1998	61	75	88	86
Arragon Road	March 2001	148	170	358	340
	December 2000	130	143	278	336
	October 2000	179	188	327	349
	July 2000	166	179	399	412

Source: London Borough of Richmond upon Thames

2.35 Table 2.10 shows the results of a 1-day survey of the off-street car parks, conducted in June 2001. It indicates the variations in reserve capacity during a typical day, and provides a comparison with the surveys shown in Table 2.9.

Table 2.10 – Off-Street Parking Reserve Capacity – One Day Survey

Location	Time Period	Total Spaces	Reserve Capacity (vacant spaces)		
			One day survey (June 2001)	Borough survey (March 2001)	
				Weekday	Weekend
Arragon Road	12 – 2 p.m.	448	158	148	358
	2 – 4 p.m.		156		
	4 – 6 p.m.		215	170	340
	6 – 8 p.m.		336		
	8 – 10 p.m.		392		
Holly Road	12 – 2 p.m.	171	29	37	90
	2 – 4 p.m.		47		
	4 – 6 p.m.		28	55	85
	6 – 8 p.m.		121		
	8 – 10 p.m.		117		

Flood Lane	12 - 2 p.m.	28	0	No information available	No information available
	2 – 4 p.m.		3		
	4 – 6 p.m.		7		
	6 – 8 p.m.		17		
	8 – 10 p.m.		18		
Total	**4 – 6 p.m.**	647	270	225	425
	6 – 8 p.m.	647	474		

2.36 The LBRuT weekday survey from March 2001 shows a slightly lower reserve capacity than indicated by the one-day survey conducted in June 2001. However, weekend survey data indicates a very high reserve capacity in both Arragon Road and Holly Road car parks.

2.37 This suggests that the high percentage of season tickets allowed for local businesses leaves the car parks largely under utilised at weekends. The proposed development, focussed as it is on leisure activities, is most likely to prove popular at these times. Therefore it is suggested that season tickets be limited to weekdays, and these spaces utilised by visitors to the development during evenings and weekends. However, it would be premature to implement these changes prior to the new development without assessing whether visitors utilise the off-street facilities as intended.

2.38 Table 2.5 identified that 190 vehicles would need to be accommodated within off-street car parks between 6 and 7pm. Table 2.10 shows a reserve capacity of 474 spaces.

RIVERSIDE PARKING STRATEGY

2.39 As mentioned previously, the new development will generate an increase in demand for car parks. Additional vehicles searching for spaces could create environmental problems in the Twickenham Riverside area. It is anticipated that the off-street parking information signs will resolve the problem.

2.40 As a further safe guard for residents and businesses in the riverside area, discussions are on-going with local residents to provide a comprehensive parking strategy for Twickenham Riverside and to pedestrianise the western Embankment. Further data is required to resolve a number of issues but an outline scheme is considered favourable for further investigation. Early implementation of parking schemes could be undertaken, but access along the Embankment would have to remain until the service road is constructed.

2.41 Figure 2.5 shows the layout and traffic flow arrangement following the closure of the Embankment.

Atkins

PROPOSED 2 WAY TRAFFIC FLOW

RAISED PEDESTRIAN CROSSOVER

18.0m ARTICULATED VEHICLE

REMOVABLE BARRIER / BOLLARD FOR EMERGENCY ACCESS

EXISTING JUNCTION REALIGNED

CONTRA-FLOW CYCLE FACILITY

RAISED PEDESTRIAN CROSSOVER

EXISTING CONTRAFLOW CYCLE LANE REMOVED

PROPOSED 2 WAY TRAFFIC FLOW

LANDSCAPING AND LANDSCAPE STRATEGY TO BE DEVELOPED

KEY – PROPOSED PARKING

- Residents Parking
- Resident & Business Loading Bays
- Motor Cycle Bays
- Disabled Bays

Notes:-

No.	Revision	Drawn	Date	Chk'd	App'd	

Client: DAWNAY DAY

Project Title: TWICKENHAM RIVERSIDE

Drawing Title: PROPOSED PARKING PROVISION

Scale: 1:750 | Arranged: GS | Drawn: FD

Designed | Date: JUNE 2001 | Checked | Approved

Drawing Status: PRELIMINARY

Drawing Number: FIGURE 2.5

Rev

Atkins Ref: BV6946/002/01

2.42 The key issues that need to be resolved are as follows:

- To encourage an 'Access Only' policy to the area, by restricting parking to residents, planned visitors and delivery vehicles only
- To remove metered parking and encourage use of neighbouring off-street car parks
- To designate 8 bays within Flood Lane car park for residential use only,
- To provide some system of loading / unloading for the Yacht Club and Rowing Club and allow parking within the Civic Centre off-street car park during evenings and weekends.
- To allow preferential access to the Civic Centre for Yacht and Rowing Club members.

2.43 Table 2.11 provides a summary of the proposed parking arrangements, showing the street and type of parking.

Table 2.11 - Riverside Parking Strategy - On-Street Parking Provision

Location	Disabled	Resident	Resident/Visitor	Meter	Total
Wharf Lane	0	9	0	0	9
Water Lane	1	10	0	0	11
Embankment – West Water Lane	2	5	0	0	7
Embankment – East Water Lane	2	40	0	0	42
Flood Lane Car Park	0	8*	0	(20)	8
Service Road	2	0	0	0	2
Total	7	72	0	(20)	79

** Flood Lane car park is not accessed via Riverside but 8 bays can be converted for sole use of residential*

(20) Metered bays have not been totalled.

2.44 When compared with Table 2.7 – Existing On-street Parking, it can be seen that a total of 49 bays in the area will be lost.

- The metered bays (24) will be accommodated within off-street car parks.
- There is a gain of 48 residents/business bays.
- There is a loss 80 dual use residents/visitor bays

2.45 It is thought that when visitors are removed there will be no net loss to residents. There may even be flexibility to reduce the number of residential parking and increase business bays.

2.46 A list of key benefits and disbenefits of this proposal has been prepared and is shown in Table 2.12.

Table 2.12 – Benefits and Disbenefits of Proposed Riverside Parking Strategy

Benefit	Disbenefit
Pedestrianisation of the western Embankment in accordance with the UDP	30 on-street bays are lost. Sufficient capacity exists in off-street car parks to accommodate this loss.
72 on-street bays are available to residents at all times.	Wharf Lane western footway is lost due to parking bays. Wharf Lane is narrow for 2-way flow but access is minimal.
7 disabled bays are provided and are evenly distributed throughout the site.	Enforcement of parking outside CPZ hours is difficult; an extension to the hours, signing and or barriers could be investigated.
Pedestrian and cyclist safety is improved throughout the area	A parking system is required for visitors to the Yacht and Rowing club.
A reduction in residential spaces that will be lost or become inaccessible when flooding occurs.	
The pedestrianised Embankment allows markets, performances etc to take place.	
This solution will minimise traffic using the area.	

RIVERSIDE PARKING STRATEGY – THE WAY FORWARD

2.47 The Borough and residents would like to implement a scheme in the next few months to address concerns associated with parking. The Borough Resources Committee has approved, in principal, an early implementation scheme.

2.48 A key concern from residents is that a balanced approach and solution is achieved for the area. To address this issue supporting information needs to ensure that there is a viable solution.

2.49 The general consensus at meetings with the Twickenham Working Party indicates that we should take the opportunity to implement an early implementation scheme, which should include surveys before and post implementation to enable the scheme to be evaluated fully.

2.50 The programme for developing and implementing an early implementation scheme would be as follows

- Before surveys, analysis and report — September
- Develop proposed scheme — August
- Report to Borough Transportation Sub-Com for approval — November
- Advertise experimental traffic orders (LB Richmond) 6-8 weeks — November

- Implement scheme (LB Richmond) January
- After surveys, analysis and report April

2.51 The before survey would need to be carried out in September to ensure that seasonal traffic (visitors to the riverside) do not influence the results. Similarly the after surveys would need to be completed before June 2002 for the same reason.

2.52 The areas of the Riverside Strategy that require development and further liaison with the Twickenham Working Party are the

- Allocation of parking - subject in part to survey results
- Management of business and planned visitor permits
- Opening hours of the Civic Centre and access arrangements for the Yacht Club and Rowing Club
- Use of the Embankment for markets and special events, and
- Particular changes to the system to cater for Rowing Sculls or special seasonal events

PROPOSED CAR PARK CONTROL AND SECURITY

2.53 The development includes an underground residential car park, with bays being secured by means of a controlled gate (65 bays). These bays will be divided between 46 new dwellings and 19 relocated bays for existing King Street tenants.

2.54 Planning guidance states that 1 parking bay per dwelling can be provided. Residents in the new development will be excluded from the on-street residential parking permit scheme, and would not add to the on-street parking demand in the area.

2.55 The car park will have a secure gate at the entrance at the top of the access ramp where it joins the service road. The type of system that is adopted has not been decided but is likely to require residents to have a key or swipe card to gain access. On a typical day residents will use the car park exclusively.

LAYOUT

Car Parking and Circulation

2.56 The layout of the car park and allocation of spaces has been developed by the architect MJP while considering the number of residential dwellings. The allocation for parking is based on 1 space per new dwelling (46) and the agreed relocation by the developer of 19 bays for King Street tenants.

2.57 The design that has been adopted seeks to maximise the space available for residential parking and minimise the space for running lanes (aisle). The aisle widths comply with guidance documents. The turning movement of private vehicles is shown on Figure 2.6.

2.58 The layout of both the standard and disabled parking bays have been checked, and the latter were found to comply with Development Standards, in relation to the bay width and positioning.

Aikins

Notes: –

Job No.
B16846/002/003

Client
DAWNAT DAY

Project Title
TWICKENHAM RIVERSIDE

Drawing Title
CAR PARK LAYOUT
TURNING TRACK

Scale
1:500

Designed
DS

Drawn
PG

Date
JUNE 2001

Checked

Approved

Drawing Status
PRELIMINARY

Drawing Number
FIGURE 2.6

Rev

2.59 The disabled bays within the car park account for 5% of the operational spaces (65 * 5% = **3** disabled bays within the car park). They have also been positioned near to the lifts to ensure easy access.

Refuse Storage

2.60 Refuse will be stored near the loading bays along the service road outside the secure car park. This position will ensure easy collection of the waste and maintain the security of the car park area for residents.

Cycle Parking

2.61 In 1992 a shopping survey recorded that cycle travel to Twickenham accounted for 6 percent of journeys.

2.62 To encourage cycling, it is proposed to provide 46 cycle spaces within the car park for residential use and 40 spaces around the development for visitor use. These numbers are in accordance with UDP Policy. 1 space per residential dwelling and 1 per 75m^2 of retail/restaurant use. The spaces around the site would make use of the pedestrianised Embankment, however a minimum of 26 spaces will be provided regardless of the Embankment closure.

2.63 Figure 2.7 shows Sheffield cycle stands within the underground car park. The walls surrounding these storage rooms should be minimised as far as possible, to increase security of the users and bicycles.

2.64 The proposed location will allow a total provision of 8 Sheffield stands, or 16 bicycle spaces.

Figure 2.7 –Existing Cycle Stands Within a Car Park

FINISHES

2.65 Although this is a secure residential car park a welcoming atmosphere should be created to allay any fear of crime. Lighting and floor finishes should be considered in some detail to create such an environment.

2.66 Based on Section 6 'Lighting, heating and ventilation' of the Design Recommendations for multi-storey and underground car parks, the following general recommendations have been made:

- "As significant contrast ratios may exist between well lighted access routes and the less well lighted parking bays, it is important in the interests of recognition to maintain a good colour contrast between the columns, floor and ceiling. This will avoid veiling glare arising either directly from luminaries or by reflection from hard glossy surfaces, and to provide, as far as is practicable, light coloured surfaces in order to improve reflection and hence background luminance."
- "An analysis of some installations indicates the lighting load will be generally between 47-65 W per car space and 2.5-3.3 W/m^2 of floor area."

2.67 At the entrance to the car park there will be a contrast between internal and external lighting, which may create viewing difficulties. Reduced interior lighting or improved exterior lighting may be necessary at night. During the day increasing the interior lighting in this area should reduce the contrast.

RECOMMENDATIONS

2.68 It is recommended that the existing off-street car parks within Twickenham be utilised to accommodate visitors to the Health and Fitness centre, cinema and retail facilities. The opening hours of these car parks may need to be extended to satisfy demand outside existing operating hours, this is a Borough facility and an extension to hours will be considered subject to demand and hence viability. Information signs on the approach roads to Twickenham are required to ensure that maximum awareness and utilisation of these car parks is achieved.

2.69 The layout and provision of the off-street residential parking within the development complies with planning guidance. Residents within the development should be excluded from the street schedule in the CPZ Parking Places Order and so prevent them from joining the Borough wide (on-street) residential permit scheme.

2.70 Discussions with the Residents Working Party to progress early implementation of the pedestrianisation of the Embankment.

2.71 The more detailed considerations in relation to finishes should not affect the planning approval of the development but should be considered during the development of the project to ensure that the car park meets the needs of the residents and is a safe and user friendly environment.

3. Access

GENERAL ARRANGEMENT

3.1 The development will attract traffic from visitors, residents and service vehicles. Through the use of information signing, access to the site via Water and Wharf Lanes will not be signed. Existing access and parking provisions will be maintained for residents and delivery vehicles. Visitors will be encouraged to use the neighbouring off-street car parks.

STANDARDS

3.2 Designing for deliveries – Freight Transport Association Ltd

USERS

3.3 Table 3.1 shows the total traffic entering Water Lane, deliveries and residential vehicles, and the increase as a result of the new development. Delivery frequency is based on information supplied by residents and estimates based on experience.

Table 3.1 –Traffic Entering Water Lane

Type of Parking/Journey	Number of Parking Spaces	Frequency of Deliveries	Type of Vehicle
Residents (underground)	65 **(46 new)**	2 per day / bay	Car
Retail Shops/Restaurants	**3***	15 per day	3.5 t– 7.5t van/lorry
Health Centre/Cinema	**3***	2 per day	3.5 t– 7.5t van/lorry
King Street businesses	**3***	5 per day	10m rigid lorry
CPZ on-street bays	128	8 per day / bay	Car
Businesses Eel Pie Island	Use of (128)	60 per week	3.5 t– 7.5t van/lorry
Building Maintenance Vehicles		1 per month	Van
Refuse Vehicle		2 per week	Refuse
Ambulance		1 per week	Ambulance
Fire Engine		Unknown	Fire Engine
Through traffic searching for spaces		100 per day	Cars

* Denotes total number of loading bays in service road. Numbers in bold represent development traffic.

3.4 The total number of daily vehicular trips in Water Lane is in the order of 1250. It is probable that the peak hour accounts for 200 vehicles. The new development accounts for 100 of these trips daily - 80 residents and approximately 20 vehicles loading.

3.5 The results of a traffic survey carried out in May 1999 show that the volume of traffic along Water Lane between 9.20am and 1.20pm totalled 428 vehicles. The peak hour frequency was 125 vehicles. This survey concurs with Table 3.1 and trip assumptions.

3.6 It is noticeable that there are a large number of trips generated by the mixed use residential, business and visitor bays. This is because on-street parking time restrictions encourage short-term use. The Riverside Parking Strategy and pedestrianisation of the Embankment would remove casual visitor parking from the area and reduce trips.

IMPACT ON SURROUNDING HIGHWAY NETWORK

3.7 The development is expected to generate an increase in traffic of approximately 190 vehicles during the peak hour (6 p.m. - 7 p.m.) to the site. These vehicles will use King Street, Heath Road and Cross Deep to access the site.

3.8 Approximately 1300 vehicles currently use King Street during the peak hour, according to data supplied by LBRuT. The traffic generated by the site would therefore increase this flow in the order of 15% at the peak hour.

3.9 The leisure uses proposed for the site will have an active local catchment and will provide locals that currently drive to Richmond for similar services with an attractive alternative. The site is serviced well with good public transport links and will be within walking and cycling distance for many locals. With no additional parking provided in the immediate vicinity, locals should be encouraged to use greener modes of transport and discourage trips on King Street, offsetting some of the traffic generated by the development.

VEHICULAR ACCESS TO SITE

3.10 This section of the report focuses on retaining the existing traffic flow around the site and the one-way system formed by Water Lane the Embankment and Wharf Lane. The closure of the Embankment proposed as part of the Riverside Parking Strategy will result in changes to traffic movements.

3.11 The service road at the rear of King Street has been extended to Water Lane and will be used as the primary link for service traffic between Water Lane and Wharf Lane. It is intended that this road is adopted as public highway and parking then controlled as part of the existing CPZ. The service road will operate one-way from Water Lane to Wharf Lane.

3.12 The junction of King Street / Water Lane and King Street / Wharf Lane will continue to operate as a give way arrangement. Vehicles entering and exiting the site will give way to traffic along King Street, minimising disruption to the priority traffic movement.

3.13 A number of checks have been made to assess visibility for vehicular movements around the site:

- Visibility distance along the footpath to view pedestrians when exiting Wharf Lane and underground car park; and
- Visibility distance along the carriageway to identify oncoming vehicular traffic at Wharf Lane and the underground car park.

3.14 These checks have identified that the existing junction alignment at Wharf Lane is suitable and meets current design guidance for a priority junction.

PEDESTRIAN ACCESS TO SITE

3.15 The existing pedestrian access to the development site from King Street, along Wharf and Water Lanes is poor, with minimal footway widths and signing to attract passers-by to the site.

3.16 The proposed pedestrian access to the development will be provided directly from King Street via a knock through at ground level. The 'Avenue' is intended to provide a visual, as well as physical link between King Street and the development, and will be lined with kiosks, and attractive street furniture.

3.17 The existing pelican crossing on King Street is to remain in its current location. The relocation of the crossing closer to the entrance of the 'Avenue' was considered but discounted because of

- Proposals to split bus stops
- Junction capacity, and
- Cost

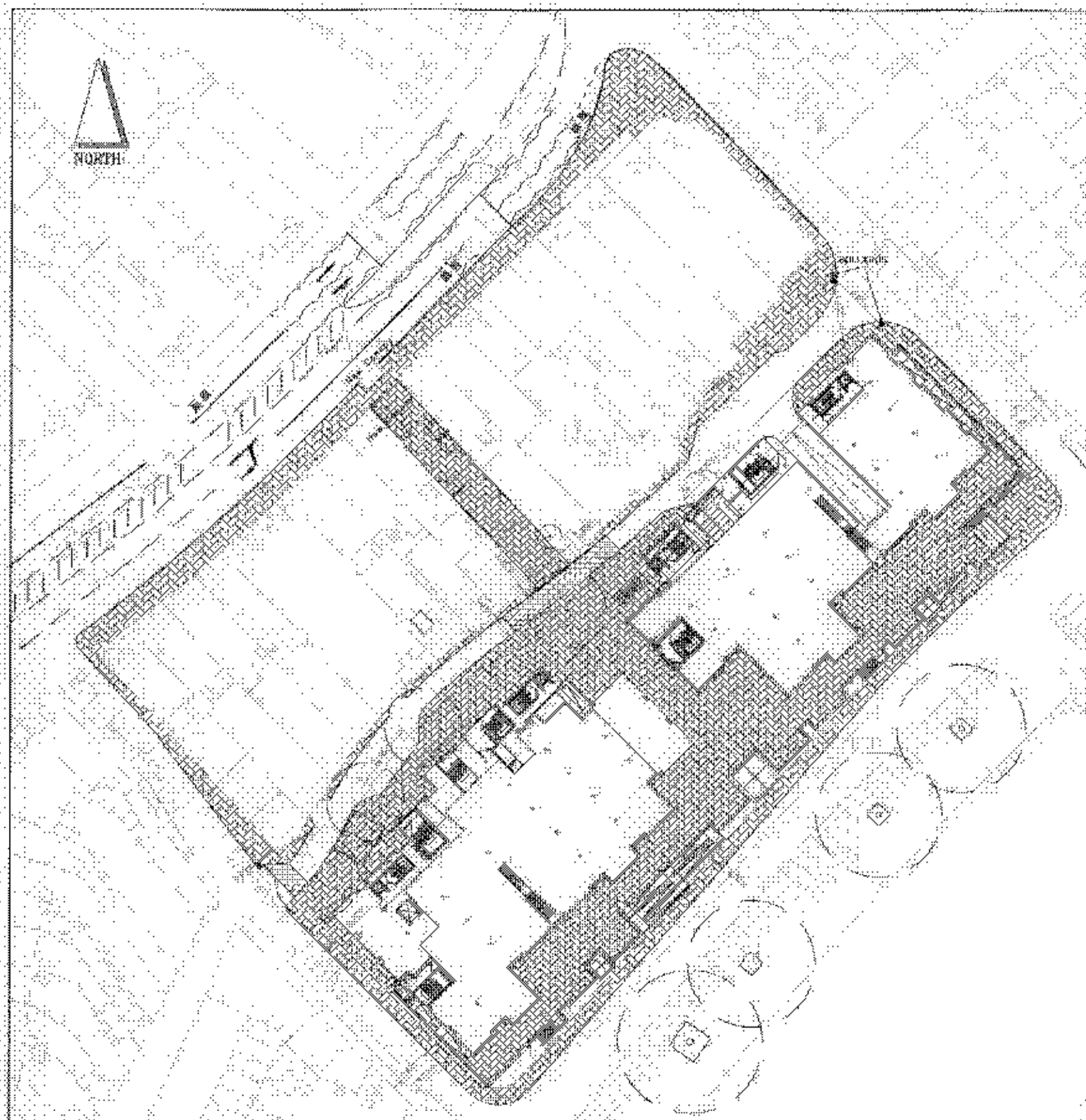
3.18 Figure 3.1 shows the pedestrian access from King Street and the public areas around the development. It also shows the anticipated pedestrian flow through the site and the major pedestrian routes between local off-street car parks and the site.

3.19 It is anticipated that most pedestrians will use the Avenue in preference to either Wharf or Water Lanes and the service road to access the site. A raised crossover, shown in Figure 3.2, will be provided to give pedestrians priority across the service road. The development has been designed to provide views of the river from the Avenue, drawing visitors through the complex towards the Town Centre area, where, it is envisaged, there will be live performances, open air market stalls and cafes with outdoor seating.

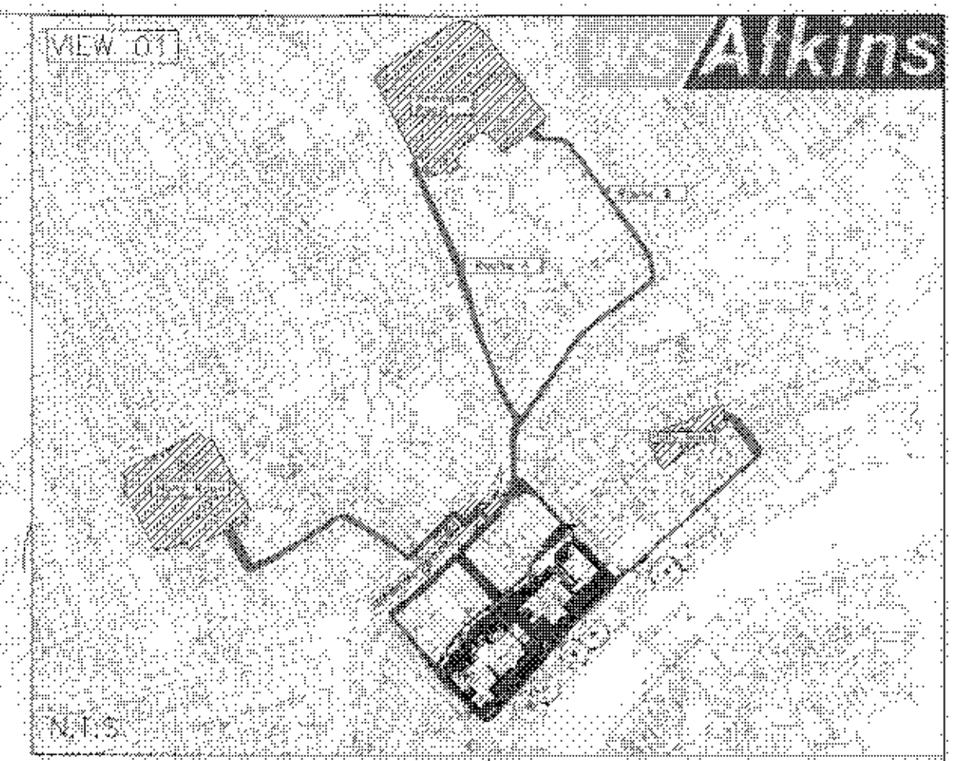
3.20 Pedestrian visibility splays have been considered in detail to ensure that sight lines are not obscured and traffic movements are detected in time to avoid accidents at the raised crossover points.

3.21 Tactile paving will be provided on either side of the crossing to highlight, particularly to partially sighted pedestrians, the conflict with traffic. The layout of the tactile paving will be in accordance with the DETR 'Guidance on use of tactile paving surfaces'.

NORTH



VIEW 01



N.T.S

Pedestrian walking times

Corner	Distance	Approximate walking time
Holly Road	230m	2.9min
Arragon Road–Route A	262m	3.3min
Arragon Road–Route B	341m	4.3min
Road Lane	160m	2min

KEY :– PROPOSED PARKING

- Footpath around the site
- Raised crossover
- Pedestrian walking routes
- Off street car parks

1:750

Notes:–

Client: DAWNAY DAY

Project Title: TWICKENHAM RIVERSIDE

Drawing Title: Pedestrian Access to Site

WYG Aitkins Consultancy Ltd.
Berkeley House
196 - 198 High Holborn
LONDON
WC1V 7AA
Telephone 0171 242 0866
Fax 0171 242 0867

Scale: 1:750 | Drawn: | Checked: GS | Issued: MV | Approved: | Date: JUNE 2001

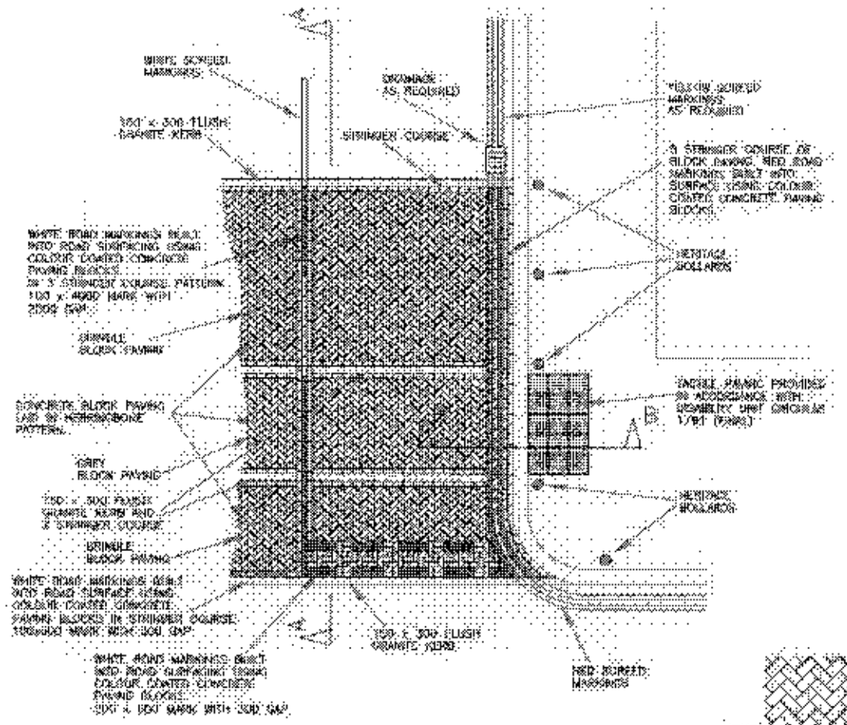
Drawing Status: PRELIMINARY

Drawing Number: FIGURE 3.1

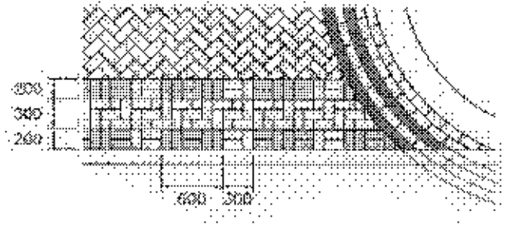
Rev:

ACAD file: B/8846/802/603

Rev	Revision	Drawn	Date	Check	Approved



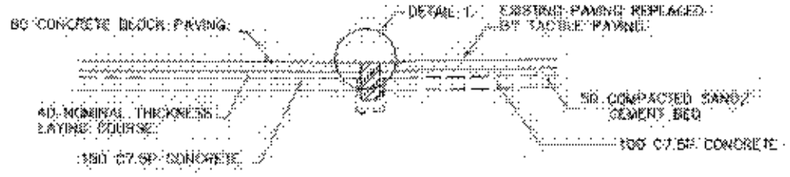
PLAN



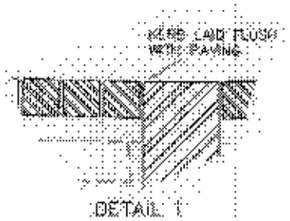
BLOCK MARKING SPECIAL BOND DETAIL

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. THE PLAN AND SECTIONS SHOWN ARE TYPICAL ONLY.
3. KERB LINES MAY VARY FROM THE POSITION SHOWN. KERBS SHALL BE LAID IN THE POSITIONS INDICATED ON THE DRAWINGS.
4. FOR SECTION A – A SEE DRAWING No. D00.
5. DRAINAGE OR LAYING COURSE MAY BE REQUIRED IN ACCORDANCE WITH LAYOUT DRAWINGS.
6. WHERE INDICATED ON THE LAYOUT DRAWINGS WORDS SUCH AS "STOP" AND DIRECTION ARROWS MAY BE INLAID INTO ROAD SURFACING USING WHITE COLOUR COATED CONCRETE PAVING BLOCKS CUT TO SIZE. THE PATTERN TO BE PLANNED AND AGREED IN ADVANCE WITH THE ENGINEER.



SECTION B – B



DETAIL 1

Notes:

Client: DAWNAY DAY

Project Title: TWICKENHAM RIVERSIDE

Drawing Title: RAISED TABLE ENTRY TREATMENT

Atkins

Scale: NTS | Surveyed: | Drawn: HM

Designed: | Date: 30/9 | Checked: | Approved:

Drawing Status: FIGURE 3.2 | Drawing Number: | Rev:

3.22 The carriageway width (3m) and the raised paving at the pedestrian cross over will indicate to vehicular traffic that there are pedestrians crossing. The ramp will have the added traffic calming benefit of slowing vehicles.

Traffic Management: Signing and Road Markings

3.23 The proposed layout of the site and the new service road will separate vehicles accessing the development from residential, business and service traffic serving the Embankment and Eel Pie Island. The closure of the Embankment (currently being investigated) will reduce traffic and change the flow and movements around the site.

3.24 Where the service road joins Wharf Lane the vehicular priority will remain with Wharf Lane traffic, this will inevitably be the larger movement.

3.25 The road markings and signing for the site are shown on Figure 3.3. This plan does not show the position of the car park information signs referred to Section 2 of this report.

3.26 The access ramp to the new residential car park will operate in much the same way as a public road. Hence, the inclusion of road markings (centre line), and direction arrows emphasising two-way vehicle movements.

3.27 The service road will not be restricted but is unlikely to be used other than by service vehicles and residential vehicles accessing the car park.

3.28 Two parking bays have been provided at the western end of the service road to provide additional facilities for disabled visitors to the site. Three 2.5m wide loading bays have been provided for service traffic. Two of these bays are 10m and the third is 16.5m long.

3.29 The layout of the service road has been designed to accommodate the anticipated volume of 22 loading vehicles per day. Parking in the service road will be prevented at all times. Loading will be permitted in the designated bays and enforced by Borough parking attendants.

CIRCULATION

Vehicle Track Design

3.30 The proposed layout of the new car park and access roads has been developed based on design standards and by analysing the turning movements of refuse and other service vehicles, and their access requirements.

3.31 The following vehicles have been tracked on the proposed basement and ground floor drawings. These represent the maximum rigid and articulate vehicles that are likely to use the site.

- Large refuse vehicle 9.86m x 2.45m
- Bus 12m long 8.01m x 2.1m
- Articulated Lorry 16.5 tonne

Atkins

VIEW 01 – VISIBILITY

VIEW 02 – VISIBILITY

1:250

1:250

1:250

Notes:—

Client	DAWNAY DAY	Drawing Title	ROADMARKING AND SIGNING LAYOUT	Scales	1:750
Project Title	TWICKENHAM RIVERSIDE			Surveyed	OS
				Designed	Date JUNE 2001
				Drawn	Checked
				Drawing Status	PRELIMINARY
				Drawing Number	FIGURE 3.3

ACAD File: BV6846/D02/003

3.32 Table 3.2 presents the AutoTrack analysis, relating each vehicle type and movement to a figure number and the out-coming results.

3.33 The vehicle dimensions are taken from 'Designing for Deliveries' published by the Freight Transport Association Ltd. It should be noted that there are a large number of minor model variations.

3.34 The vehicles used in the analysis are the largest models commonly used. In some instances, these vehicles run over footways. However, it is very unlikely that these vehicles will commonly use the service road.

Table 3.2 – AutoTrack Analysis

Figure Number	Vehicle Type	Movement	Comments
3.4	Large Refuse Vehicle	Right turn from Water Lane into service road. Right turn exit from service road into Wharf Lane	No turning difficulties or conflict points with vehicles.
3.5	Largest Rigid Vehicle	Right turn from Water Lane into service road. Right turn exit from service road into Wharf Lane	Turning difficulty on exit from service road to Wharf Lane. Northeastern kerb has been realigned.
3.6	Largest Articulated Vehicle	Right turn from Water Lane into service road. Right turn exit from service road into Wharf Lane	Turning difficulty on entry and exit to service road. Kerbs have been realigned to accommodate movement.

Vertical Clearance

3.35 There is a difference of 1.5m between the existing service road level and Water Lane. The carriageway will be ramped at a maximum gradient of 1:10 to accommodate this height differential. Although not ideal, traffic will be turning from a down slope to an incline, which will slow vehicles and minimise any vehicular or pedestrian conflicts.

3.36 A refuse vehicle has a clearance of 450mm from the floor to the its undercarriage. The vehicles commonly used are 9.8m long with three axles. The overhang at the back of the vehicle is approximately 1.7 metres.

3.37 Figure 3.7 demonstrates that at the bottom of the service road the vehicle and proposed gradient will still provide a clearance of 280mm between Water Lane and the vehicle undercarriage.

Aikins

VIEW 01

VIEW 02

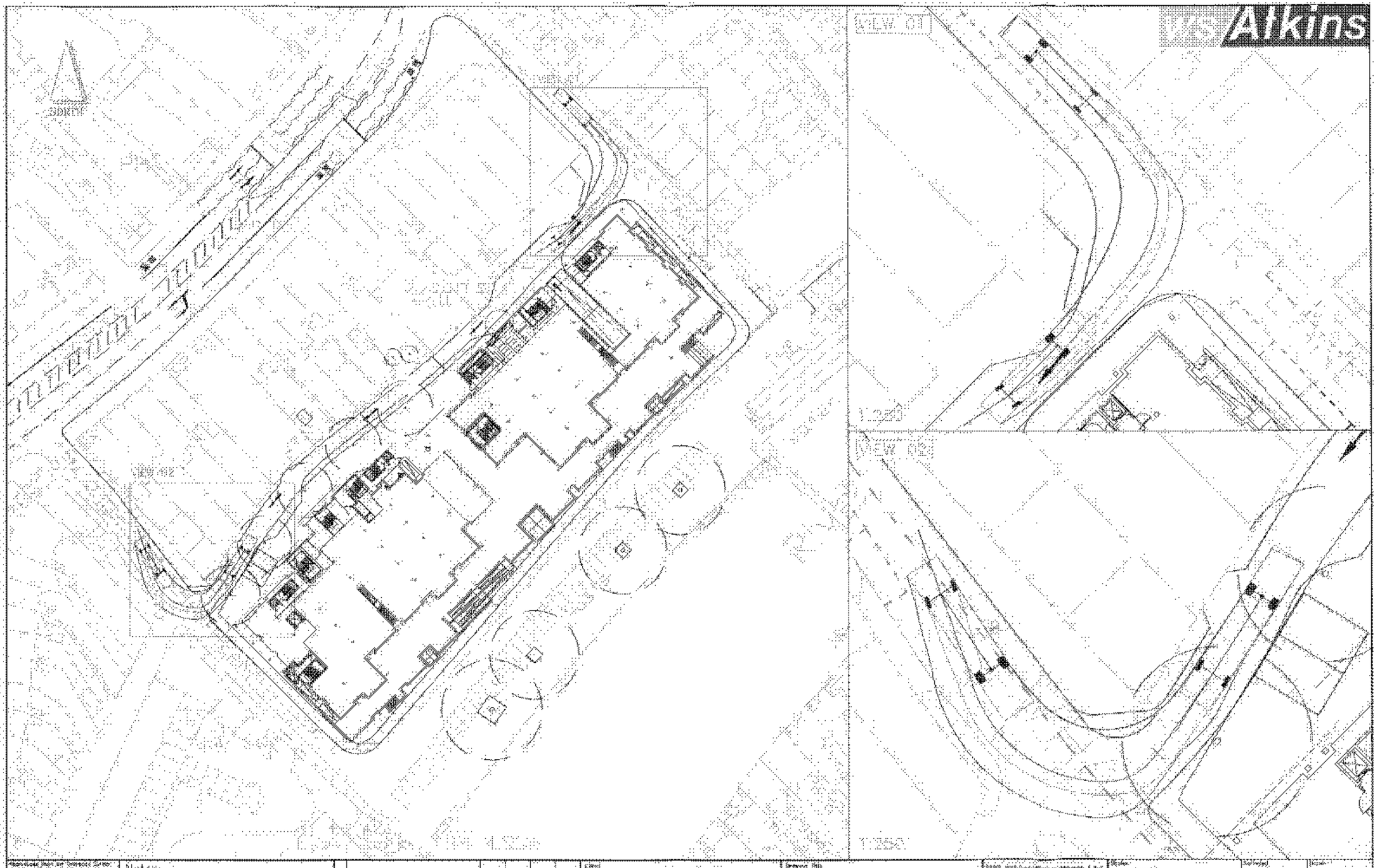
VIEW 03

1:250

Notes:-

Client:	DAWNAY DAY
Project Title:	TWICKENHAM RIVERSIDE
Drawing Title:	ACCESS TO SERVICE ROAD 16.5M ARTICULATED VEHICLE
Scales:	1:250
Date:	JUNE 2013
Drawn:	DS
Checked:	RG
Approved:	
Drawing Status:	PRELIMINARY
Drawing Number:	FIGURE 3.6
Rev:	

ACAD File: 0V6634C/302/003



WYG Aikins

Notes: -

DAWNAY DAY

TWICKENHAM RIVERSIDE

ACCESS TO SERVICE ROAD
12M RIGID (BUS)

WYG Aikins Consultants Ltd

1:250 | A3 | PG

JUNE 2016

PRELIMINARY

FIGURE 3.5

WYG Ref: BY06846/002/003

VIEW 01

VIEW 02

1:250

1:250

Atkins

Notes:-

Rev	Revision	Drawn	Date	Chkd	Approved

AOR file: 5106648/002/003

Client: DAWNAY DAY

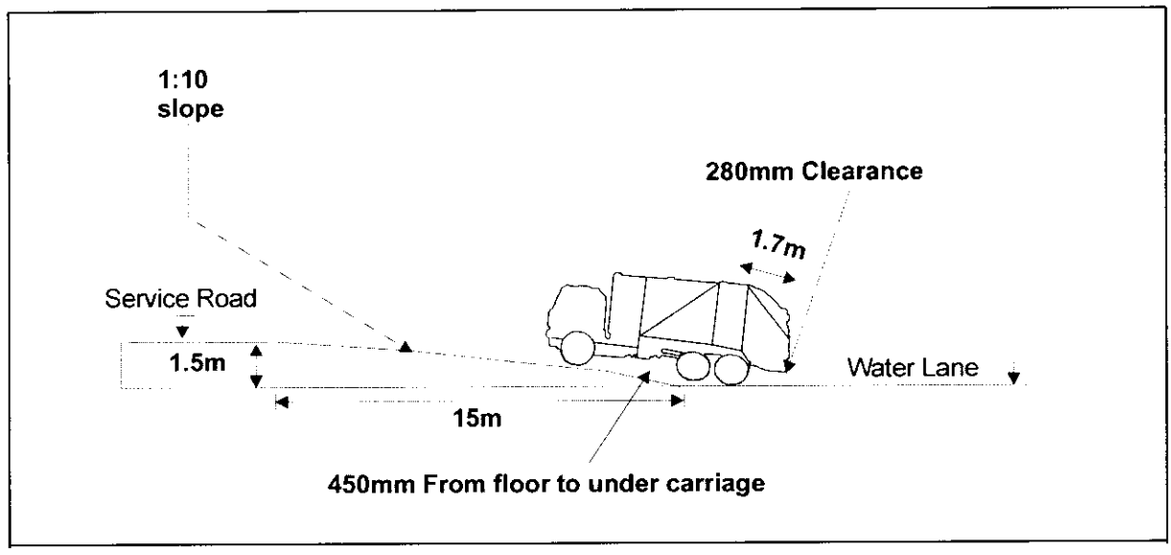
Project title: TWICKENHAM RIVERSIDE

Drawing title: ACCESS TO SERVICE ROAD LARGE REFUSE VEHICLE

WS Atkins Consultants Ltd

Scale: 1:750		Surveyed: QS	Drawn: PG
Original:	Date: JUNE 2004	Checked:	Approved:
Drawing Status: PRELIMINARY	Drawing Number: FIGURE 3.4		Rev:

Figure 3.7 – Refuse Vehicle Vertical Clearance



3.38 The car park ramp has been designed in accordance with design guideline 'New Metric Handbook Planning and Design Guidance'. The maximum gradient will be 1:5 with a transition of 1:10 top and bottom (2.4m long).

3.39 Access into the underground car park will be restricted to residents and vehicles servicing the building. The car park height restriction will be displayed above the access before entering the residential car park area.

RECOMMENDATIONS

3.40 It is recommended that the service road be utilised for the new development and where possible to serve King Street properties. The growth in traffic in the Riverside area will represent an increase of approximately 15 percent of the current daily total. This traffic will predominantly be service vehicles, but the use of the metered visitor parking may also increase. This traffic will occur outside normal peak hour commuting periods and should not, require changes to the junctions of Wharf Lane / King Street or Water Lane / King Street.

3.41 The detailed design, when developed, should ensure that sight lines and vertical alignment are carefully considered

3.42 A safety audit should be undertaken on the final design.

4. Conclusions

4.1 There are good public transport links in the vicinity of the new development, provisions have been made for secure cycle parking facilities, and improved pedestrian access arrangements provide viable alternatives to private vehicle trips to the site.

4.2 The development will provide a small number of car parks for residents and businesses accommodated in the development but it is recommended that the majority of visitor parking for the site be provided in the existing Borough run off-street car parks in Twickenham. These car parks have been shown to have sufficient reserve capacity to accommodate the traffic generated by this new development. The existing CPZ will be maintained, perhaps with extended hours, to provide for existing residents and businesses in the area.

4.3 Currently the off-street car parks have a high percentage of season ticket spaces for local businesses that are not used during evenings and weekends. By limiting the season ticket hours of operation, this spare capacity could be better utilised outside working hours by visitors to the development.

4.4 Because of the leisure activities proposed for the new development, additional traffic will be generated mainly around peaks during evenings and weekends, rather than during normal peak commuting periods. Junctions at King Street / Wharf Lane and King Street / Water Lane are unlikely therefore, to experience an increase in traffic beyond their current capacities. Therefore, no alterations will be required to these intersections.