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**RIVER THAMES - TEDDINGTON WEIR TO PUTNEY BRIDGE
SURVEY OF WETLAND VEGETATION IN THE RIVER CORRIDOR**

A REPORT TO THAMES WATER

POND ACTION

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C O N T E N T S	PAGE
SUMMARY	2
1. INTRODUCTION	3
2. GENERAL DESCRIPTION OF THE SURVEY AREA	
2.1 Landuse in the river corridor	3
2.2 River bank features	3
3. VEGETATION OF THE SURVEY AREA	
3.1 General description	5
3.2 Location map	9
3.3 Key to symbols	10
3.4 Maps and descriptions of 500m lengths	11
4. REFERENCES	28
5. APPENDIX 1. List of plants recorded.	29

SUMMARY

Vascular wetland plants were surveyed in a tidal section of the R. Thames between Teddington Weir and Putney Bridge during August 1989. The river banks were predominantly artificial, being reinforced with stone blocks, concrete, brick, wood and steel, entirely natural banks being very limited in extent. Despite this, a wide variety of common marginal and emergent wetland species were recorded (48 species, excluding trees and shrubs), as well as a small number of less common species (eg tripartite bur-marigold, Bidens tripartita, and meadow rue, Thalictrum flavum). No nationally rare species were found.

A distinctive assemblage of plants was found growing on the reinforced banks of the river. The assemblage included true wetland marginal/emergent species, like purple loosestrife (Lythrum salicaria) and reed-grass (Phalaris arundinacea), and species associated with wet or dry disturbed ground, like common nettle (Urtica dioica) and broad-leaved dock (Rumex obtusifolius). The composition of this assemblage of 'typical marginal species', varied little throughout the survey area, although the abundance of individual species changed considerably.

Emergent vegetation in the river channel was very sparse, although a number of species were recorded. The most widespread stand-forming species was water pepper (Polygonum hydropiper), which was found on muddy gravel, (generally at the edge of the channel) in most lengths below Richmond. Emergent species growing in the channel were almost always submerged at high tide.

Floating-leaved and permanently submerged species were almost completely absent from the survey area, as might be expected in a tidal river. The only vegetation of this type recorded was a single stand of Nuphar lutea upstream of Richmond. Free-floating Lemna spp. were recorded in some lengths.

Areas of particular botanical interest were: Length 1 (Teddington Lock), the only site where Myosoton aquaticum was recorded; Length 2 (Teddington), the only site for Nuphar lutea in the survey area; Length 5 (Marble Hill Park), which supported several species of emergent plants which were very restricted in the survey area generally; Lengths 11 and 12, the natural banks adjacent to Syon Park Marsh; slipways at Grove Park (Length 16) and Barnes Bridge (Length 17), which supported particularly diverse, although sparse, communities of common marginal species; Chiswick Eyot (Length 22); Length 23 (Hammersmith Bridge) which supported one of two stands of Eleocharis palustris found in the survey area.

1. INTRODUCTION

This report describes the wetland vegetation of an 18km tidal section of the R. Thames between Teddington Weir and Putney Bridge. The work was undertaken between 12 and 23 August 1989.

Vegetation in 27 approximately 500m lengths of the river was surveyed from the banks and by boat. Submerged vegetation was sampled with a grapnel. Results have been reported in the form of maps and brief descriptions of each 500m length.

2. GENERAL DESCRIPTION OF THE SURVEY AREA

2.1 Land use in the river corridor

Land use in a corridor 500m wide on either side of the river is varied but predominantly urban (approximately 60%). Most of the remaining area is parkland (approximately 25%). The proportion of land use on the two banks is rather different. The Middlesex bank (left bank, see footnote) is more urbanised (about 60% urban) than the Surrey bank (about 30% urban). The Middlesex bank is adjoined by three large open spaces (Marble Hill Park, Syon Park and Dukes meadow), which, with the addition of a number of smaller areas occupy about 25% of the land adjacent to the river. In contrast about 50% of the Surrey bank is adjacent to parkland (Teddington to Petersham, Old Deer Park and the Royal Botanic Gardens, Kew).

2.2 River bank features

Throughout the survey area the banks of the river are mostly reinforced and between 2m and 7m high (typically about 4m). On the Surrey side the banks are mainly sloping (40-70 degrees) and reinforced with concrete or stone blocks. On the Middlesex bank reinforcement is more frequently vertical with a variety of concrete, stone, brick or steel reinforcements.

Only adjacent to Syon Park (left bank, Lengths 11 and 12) does the bank appear to be entirely unstrengthened. However, there is relatively little reinforcement on the Surrey side in Lengths 2 (Teddington) and 11 (Old Deer Park).

Several areas of semi-natural wetland adjacent to the river appear to depend on naturally high water tables. These include: a small area of wooded pools adjacent to the towpath in Length 2; the small lake used by Ham Sailing Club (Length 3); an area of Glyceria maxima swamp adjacent to Length 10 (Old Deer Park) and Syon Park Marsh (Lengths 11 and 12, a Site of Special Scientific Interest). These areas have not been investigated in this survey. In addition, man-made wetlands occur adjacent to Lengths 21 (disused reservoir) and 25 (Barn Elms Reservoirs).

NB. Right and left banks are viewed looking downstream.

Several sections of the Surrey bank, especially in the upper parts of the survey area, are regularly overtopped at high tide. These include parts of Lengths 2-6, 8 and 9.

Throughout the survey area gravel banks, of varying size, are exposed at low tide. These are generally largest in the lower sections of the survey area and around islands.

There are 12 islands in the survey area (excluding Teddington Lock): unnamed island in Length 3, Eel Pie Island, Glover's Island, Richmond Islands 1, 2 and 3 (unnamed), Isleworth Eyot, Lot's Eyot, Brentford Eyot (2 islands), Oliver's Island and Chiswick Eyot.

3. VEGETATION OF THE SURVEY AREA

3.1 General description

3.1.1 The flora of the survey area

The survey area supported a wide variety of common marginal and emergent plants with 48 wetland species (excluding trees and shrubs) recorded. Only one tall emergent plant, sea club-rush (Scirpus maritimus), formed moderately extensive stands throughout the survey area. All other tall emergents (eg bulrush, Schoenoplectus lacustris, common reed, Phragmites australis, sweet flag, Acorus calamus) were generally present in small or scattered stands.

In contrast the submerged/floating-leaved flora was very poor and only one species, yellow water lily (Nuphar lutea), was recorded (excluding Lemna spp. and small fragments of Canadian pondweed, Eloдея sp., which were probably washed down from upstream of the tidal section).

A small number of uncommon species were recorded (see Section 3.1.5).

3.1.2 Bank vegetation

A characteristic assemblage of species was found on the artificial banks throughout the survey area. This assemblage, termed 'typical marginal species' in this report, was particularly well-developed on older, unshaded, sloping banks faced with stone blocks (eg Teddington lock, Length 1, left bank downstream of Richmond Lock, Length 9). Generally the densest vegetation was found on the upper and middle slopes of the bank. The bottom 1-2m of stone-faced banks, especially downstream of Richmond where the tidal range was greater, were generally sparsely vegetated or bare. Recently renovated banks, or banks where the joints between stone blocks had been cemented over, also supported very sparse vegetation.

The bank assemblage contained a variety of wetland plants as well as a number of species typical of wet or dry disturbed ground. The following species were found throughout the survey area in varying proportions.

On the drier upper bank broad-leaved dock (Rumex obtusifolius), mugwort (Artemisia sp.), common nettle (Urtica dioica), hemlock water dropwort (Oenanthe crocata), cultivated angelica (Angelica archangelica), marsh ragwort (Senecio aquatica) and himalyan balsam (Impatiens glandulifera) were all typical, potentially dominant species. Aster sp. were also very frequent in this zone throughout the survey area. In the Barnes area (Lengths 18 and 19) Japanese knotweed (Reynoutria japonica) had become dominant, excluding all other upper bank vegetation. The stone-faced banks appeared to present an unsuitable habitat for woody plants and there was very little colonisation by bramble and other shrubs.

Although Impatiens glandulifera was present on the upper banks

throughout the survey area large stands of this species were most apparent on the natural, gently shelving and regularly flooded, upper banks. eg. on the right bank between Teddington and Ham House (Lengths 2-4) and on Chiswick Eyot (Length 22).

On the middle and lower parts of the banks, (ie those which are flooded for longer at each tide), reed-grass (Phalaris arundinacea), purple loosestrife (Lythrum salicaria), great yellow-cress (Rorippa amphibia) and gypsywort (Lycopus europaeus) were often dominant or frequent plants. In addition this area could also support water cress (Nasturtium officinale), blue water speedwell (Veronica anagallis-aquatica), creeping buttercup (Ranunculus repens), Festuca (?arundinacea), procumbent pearlwort (Sagina procumbens) and remote sedge (Carex remota).

On the lowest parts of the sloping banks vegetation became sparse and, in addition to some of the species mentioned above, included jointed rush (Juncus articulatus), Callitriche sp. (particularly in downstream lengths of the survey area) and curled dock, Rumex crispus.

Amongst the most diverse areas of marginal vegetation were two gently shelving boatyard slipways at Grove Park (Length 16) and Barnes Bridge (Length 17). Although both were sparsely vegetated they offered a larger area for colonisation by marginal and emergent plants than the steeper banks.

Several members of the marginal/emergent assemblage were able to colonise crevices on vertical banks. Only steel sheet piling remained entirely bare of vegetation. However the cover on vertical walls was very sparse being typically less than 5% (eg on the left banks at Brentford, Length 14; and Hammersmith, Lengths 24 & 25). The commonest species were meadowsweet (Filipendula ulmaria), marsh yellow cress Rorippa palustris, Lycopus europaeus, Rorippa amphibia, Angelica archangelica and small saplings of trees and shrubs, particularly Buddleja davidii, ash and alder.

Natural banks generally supported vegetation with similar species to the artificial banks. The natural bank beside Syon Park (Lengths 11 and 12) differed from artificial banks most noticeably through having Phragmites australis as a co-dominant with the other 'typical marginal species'.

3.1.3 Island vegetation

Most of the 12 islands in the survey area were heavily shaded by trees and shrubs and several were sheet piled. For this reason they were generally unexceptional in the range of plants that they supported, with similar species to other artificially embanked areas.

Chiswick Eyot, in contrast, was not dominated by large trees and had less steeply embanked shores than most other areas. The centre of the island was dominated by a very dense mixed stand of osier (Salix viminalis) and Impatiens glandulifera. The right bank of the island

was fringed by stands of Lythrum salicaria, Phragmites communis and other typical marginal species.

3.1.4 Channel vegetation

The river channel (the area beyond the steeply sloping artificial or natural banks) was generally composed of gravel or pebbles with, in many areas, silt deposits. In general the channel supported very little vegetation with only scattered stands of emergent species. Small stands of emergent vegetation were found in most of the lengths below Richmond. Above Richmond emergent vegetation was very uncommon with the left bank of Length 5 showing the largest stands of emergent species.

The most widespread species in the channel was Polygonum hydropiper which formed stands in about half of the lengths (and occurred in small quantities in others). This species grew in areas of very gently shelving silty gravel and was completely submerged at high tide (by as much as 2m of water in some areas). Scirpus maritimus was the next most widespread stand-forming emergent, present in about 25% of 500m lengths (all below Richmond). Both species collectively occupied a very small proportion of the total area of the channel.

Several other emergent species were recorded in the gravel channel. Small stands of Acorus calamus, Schoenoplectus lacustris and Phalaris arundinacea were found in several areas (the latter was very common on the banks as well). Carex riparia (Length 5), and common spike-rush (Eleocharis palustris, Lengths 5 and 23) occurred in just one or two localities.

Several other species (eg water starwort, Callitriche sp., celery-leaved crowfoot, Ranunculus sceleratus and Rorippa amphibia), were also found on muddy shingle in various areas but none were restricted to this habitat.

Only one stand of Nuphar lutea was found, near the left bank in Length 3. No other permanently submerged or floating-leaved plants were recorded (all the Callitriche sp. recorded were growing on gravel or banks where they were exposed daily by the tide). Lemna minor and Lemna polyrhiza were particularly noticeable in Length 15, probably washed down following heavy rain of the previous days.

3.1.5 Distribution of local species

A small number of 'local' species were recorded during the survey. Their distribution and abundance in the survey area are noted briefly below. Information about their status is taken from Clapham, Tutin and Moore (1987) and Rose (1986).

Bidens tripartita (tripartite bur-marigold). 'Locally common'.
Recorded from two localities: Chiswick Eyot (Length 22); muddy gravel at Hammersmith Bridge (Length 24).




















Myosoton aquaticum (water chickweed). 'Locally common'.
In gravelly inlet on left bank below footbridge at Teddington Lock (Length 1).

Rorripa amphibia (great yellow-cress). 'Locally frequent'.
Frequent throughout the survey area on the middle to lower parts of artificial banks. Also on muddy gravel and natural banks.

Thalictrum flavum (meadow rue). 'Local'.
Recorded from top of stone-faced left bank on Isleworth Eyot.

One of the Lemna species (L. polyrhiza) is also locally common. However, it was not clear whether it was growing in the survey area or whether it had been washed in from upstream or from tributary streams.

3.3 KEY TO SYMBOLS

	Natural bank
	Natural cliff
	Vertical artificial bank
	Sloping, stone-faced bank
	Slipway
	Concrete-filled sandbags
	Gravel/pebbles
	Mud
	Mature trees
	Bankside tree spreading onto channel
	Conifer
	Young trees
	Thick scrub/shrubs
	Sparse scrub/shrubs
	Emergent plants
	Dense open wetland vegetation
	Sparse open wetland vegetation
	Submerged/floating-leaved wetland plants
	Water flow

3.4 Maps and descriptions of 500m lengths

Throughout this section the following terms are used:

Bank	The sloping edge of the channel, usually reinforced but occasionally natural, and supporting a mixture of true wetland species and species tolerant of damp ground or occasional inundation.
Channel	The area below the break of slope of the bank, mostly below the bank reinforcements.
Typical marginal species	See Section 3.1.2 for general description of marginal flora of the river between Teddington and Putney.

Only species of particular note are mentioned in the individual descriptions. These include: uncommon species (both species uncommon in the survey area and nationally uncommon species); particularly diverse stands of typical marginal species and stands of emergent plants in the channel.

3.4.1 LENGTHS 1 - 4. TEDDINGTON WEIR TO HAM HOUSE

LENGTH 1. Teddington Weir (TQ 16757150) to TQ 16357180

Right bank. (Downstream of Teddington Lock). Short length of sloping stone bank (30% tree cover) with typical marginal species.

Left bank. Mainly 2-4m sheet piling below suburban gardens and boatyards, with little marginal vegetation. Inlet under Teddington footbridge supported typical marginal species with Myosoton aquaticum, the only site for this species in the survey area.

Island. (i) Right bank non-tidal. Not described in this report. (ii) Left bank. Sloping natural bank with 50-90% tree cover. Tall herbs, grasses and scrub on upper bank with sparse to dense typical marginal vegetation below. Unshaded sloping stone banks of lock with dense, diverse stand of common marginal species.

Channel. Small stand of A. calamus adjacent to right bank below lock.

LENGTH 2. TQ 16357180 to Ham Sailing Club lock (TQ 16257239)

Right bank. (i) Natural bank with 1m earth cliff (occasionally re-inforced with concrete-filled sandbags), sloping gently up to footpath. 75-80% overhung by trees. The marginal vegetation was dominated by I.glandulifera, the density varying according to the degree of shading. (ii) Sloping stone bank for about 100m above Ham Sailing Club lock. 80% tree and shrub cover, with sparse stands of typical marginal species.

Left bank. Sheet piling (2-4m), with little marginal vegetation.

Channel. No submerged or floating-leaved species were recorded.

LENGTH 3. Ham Sailing Club lock to Eel Pie Island (TQ 16257230 - 16337295)

Right bank. Sloping stone-faced bank with natural, gently sloping, upper bank. 75% of the bank was overhung by trees and scrub. Bank with varying densities of typical marginal species. Dense stands of I.glandulifera dominated unshaded areas of the upper bank.

Left bank. Mainly sheet piling with little marginal vegetation. A small area of sloping stone bank supported typical marginal species.

Channel. One stand of Nuphar lutea, beside the left bank, was the only stand of submerged vegetation recorded between Teddington and Putney.

LENGTH 4. Eel Pie Island to car park at Ham House (TQ 16337295 - 16957320)

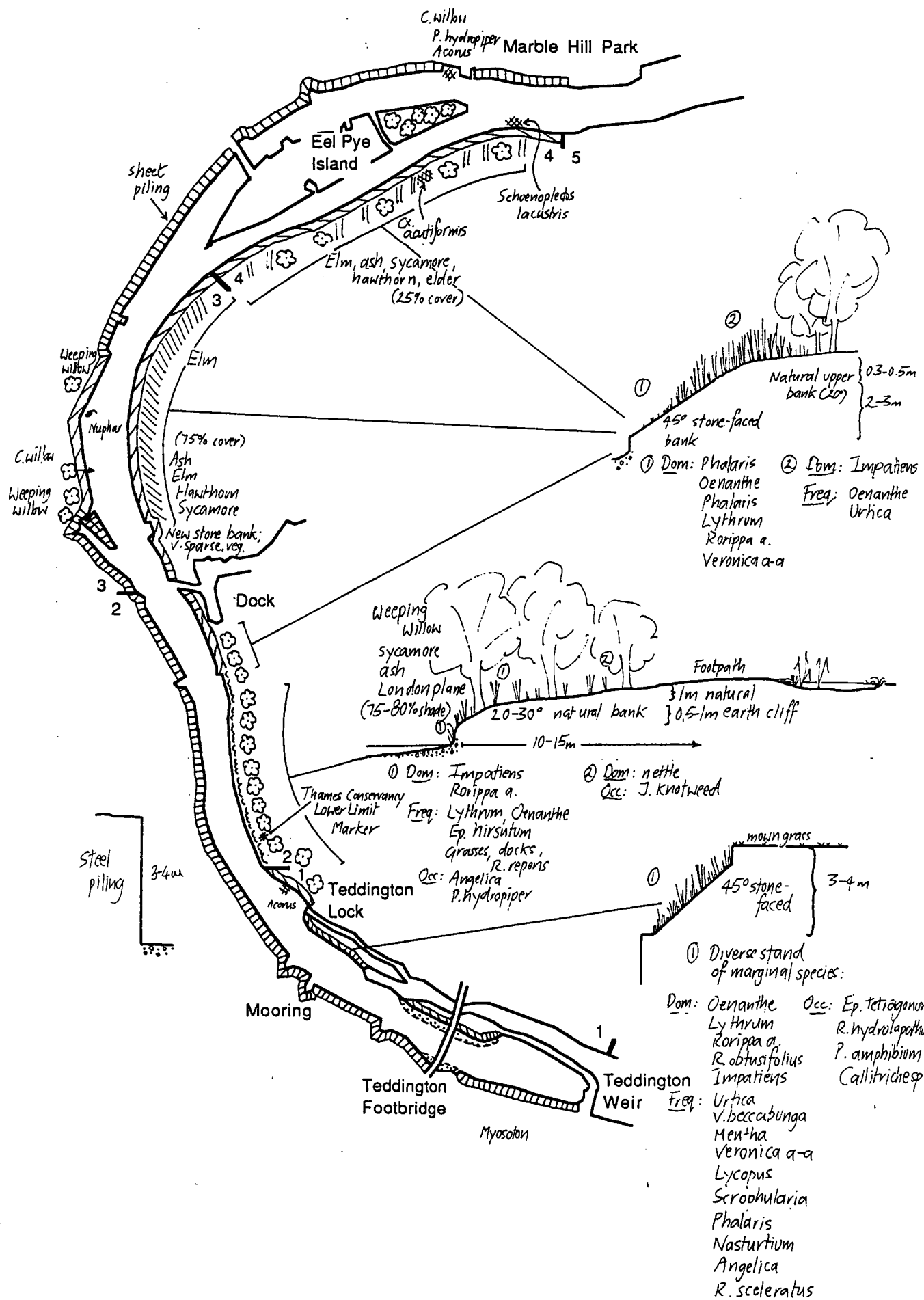
Right bank. Sloping stone-faced bank with natural, gently sloping, upper bank. Lightly shaded, with about 25% of bank overhung. Typical marginal species on the stone bank. Vegetation of upper bank dominated by I.glandulifera and including Carex acutiformis, the only site for this species in the survey area.

Left bank. Vertical stone banks with occasional colonising marginal plants. Slipway at Twickenham with variety of typical marginal species.

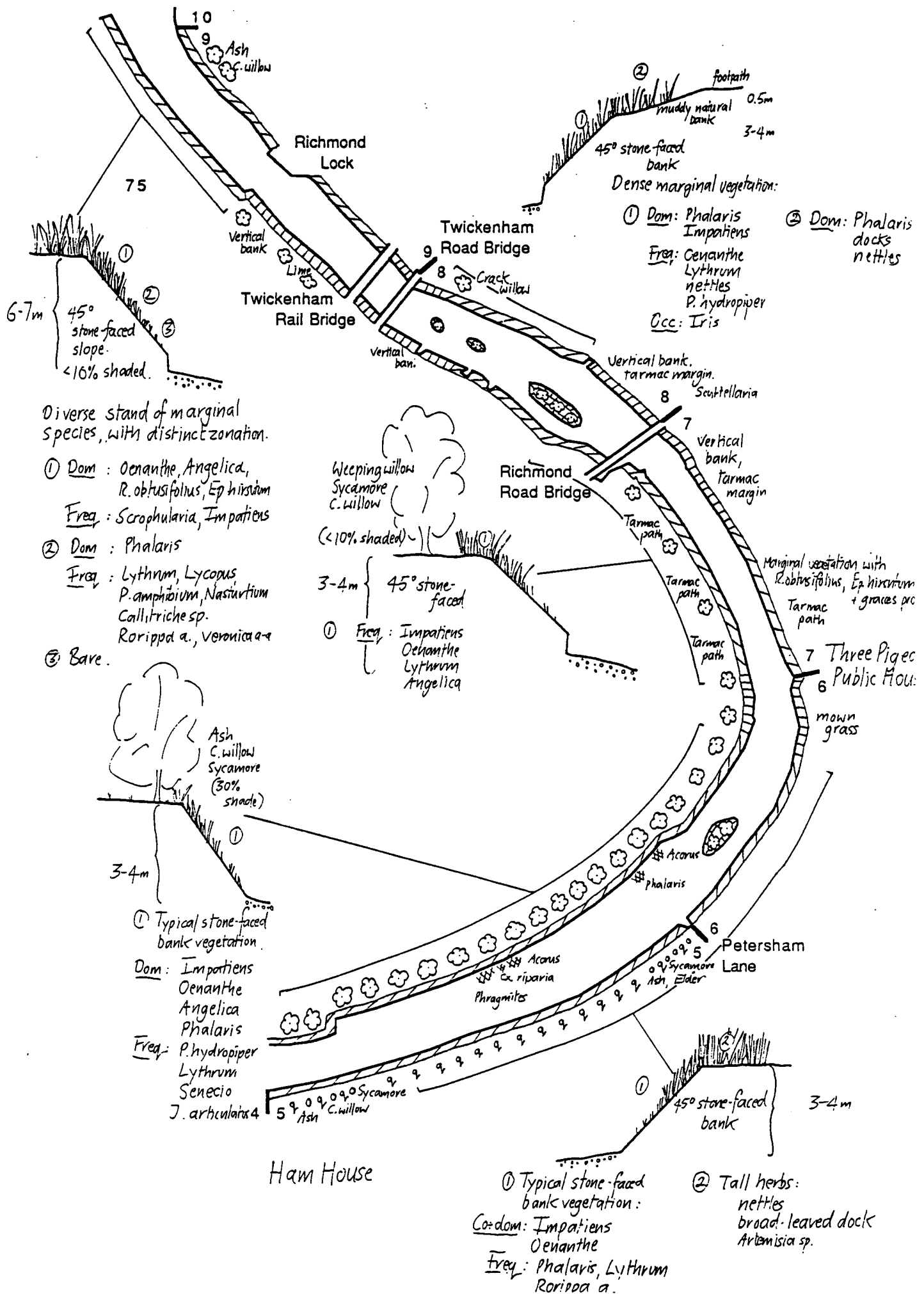
Eel Pie Island. (i) Left bank. Mixture of wooden piling and sloping stone banks, with little marginal vegetation. (ii) Right bank. Sheet piling with little marginal vegetation. East and west ends of island shaded by crack willow.

Channel. Small stand of Schoenoplectus lacustris beside right bank downstream of Eel Pie island. No submerged vegetation.

LENGTHS 1 - 4 (Teddington Weir to Ham House)



Lengths 5 - 9 (Ham House to Isleworth Eyot)



3.4.2 LENGTHS 5 - 9. HAM HOUSE TO ISLEWORTH EYOT

LENGTH 5. Car park at Ham House to Petersham Lane (TQ 16957320 - 17837332)

Right bank. Sloping, mainly unshaded, stone bank with sparse to dense stands of typical marginal species. Non-wetland tall herbs and grasses growing on the bank top.

Left bank. Sloping stone-faced bank, lightly shaded, with sparse to dense stands of typical marginal species.

Channel. Gravel beside left bank with stands of Phragmites australis, Carex riparia, P.arundinacea, Eleocharis palustris and A.calamus.

LENGTH 6 Petersham Lane to The Three Pigeons PH (TQ 17837332 - 18057047)

Right bank. Sloping stone bank with vertical piling beginning about 2/3 of the way down the length. Unshaded. Sparse to dense stands of typical marginal species growing on the sloping bank. Bank top regularly flooded at high tides and supporting tall herbs and grasses. Mown grass above vertical piling.

Left bank. Sloping stone and concrete-faced banks and sheet piling. Lightly shaded with sparse stands of typical marginal species.

Glovers Island. Sheet piling on both banks of island.

Channel. Gravel beside the left bank supported a stand of A. calamus.

LENGTH 7. The Three Pigeons PH to Richmond Bridge (TQ 18057407 - 17757450)

Right bank. (i) sloping stone-faced bank unshaded, dense stands of typical marginal species, with non-wetland species prominent.

(ii) vertical piling and piers beginning 1/2 of the way down the length. Bank top with tarmac footpath.

Left bank. Sloping stone-faced bank, lightly shaded (less than 10% overhung) and with typical marginal species.

Channel. No emergent or submerged vegetation.

LENGTH 8. Richmond Bridge to Twickenham Rail Bridge (TQ 17757450-17257480)

Right bank. (i) 250m of vertical stone walls. Unshaded, with occasional colonising marginal species. (ii) 250m with lower bank sloping stone-faced and natural upper bank (flooded at high tides) gently sloping up to tarmac path. Unshaded, with dense stands of typical marginal species.

Left bank. Predominantly vertical banks with typical marginal species on bank tops. A small length of stone-faced bank immediately above Richmond Bridge supported dense stands of typical marginal species.

Channel. No emergent or submerged species.

Islands. (i) Island 1: sloping stone-faced banks, heavily shaded by crack willow. Very sparsely vegetated with typical marginal species.

(ii) Islands 2 & 3: banks sheet-piled and shaded by sycamore.

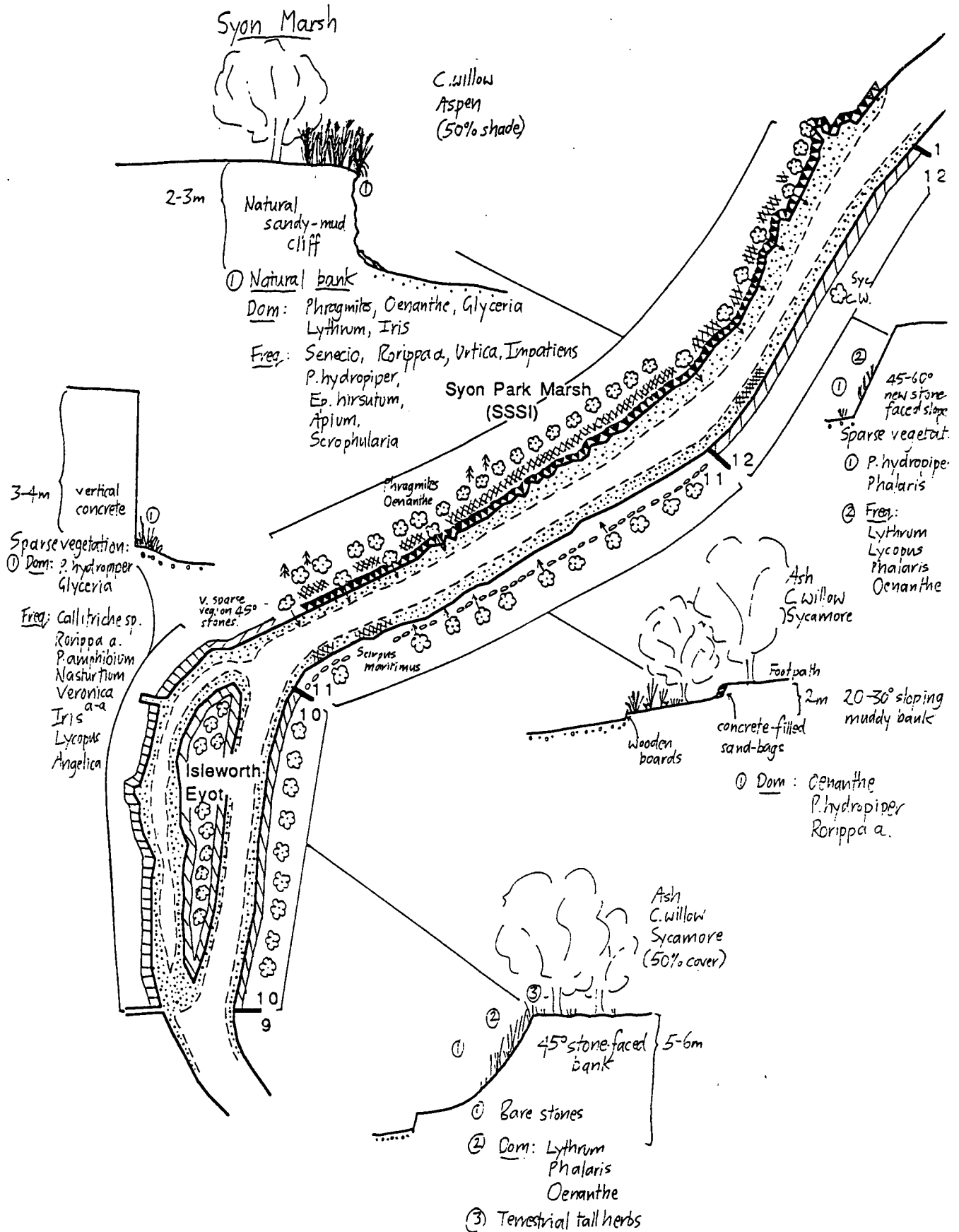
LENGTH 9. Twickenham Rail Bridge to Isleworth Eyot (TQ 17257480 - 16807540)

Right bank. (i) Twickenham Bridge to Richmond Lock: sloping stone-face bank, vegetation sparse with mainly non-wetland species. (ii) Richmond Lock to Isleworth Eyot: sloping stone-face bank with vertical concrete wall at base, 25% shaded with varying density of typical marginal species.

Left bank. (i) Twickenham Bridge to Richmond Lock: vertical bank, very lightly shaded, with occasional colonising plants. (ii) Richmond Lock to Isleworth Eyot: sloping stone bank, very lightly shaded with dense stands of typical marginal species. Distinctive vertical zonation of vegetation, presumably reflecting the greater tidal range below Richmond Lock.

Channel. No emergent or submerged vegetation.

LENGTHS 10 - 12 (Isleworth Eyot to Kew Gardens)



3.4.3 LENGTHS 10 - 12. ISLEWORTH EYOT TO KEW GARDENS

LENGTH 10. Isleworth Eyot to Syon Park (TQ 16807540 - 16917611)

Right bank. Sloping stone-faced bank, 50% shaded. Sparse to dense stands of typical marginal species growing on the sloping bank. Bottom 1m of bank bare of vegetation.

Left bank. Vertical banks with sheet piling and concrete walls. No data about vegetation.

Isleworth Eyot. (i) Left bank: no data. (ii) Right bank: sloping stone-faced bank with typical marginal species. Vegetation becoming sparser at northern end of island.

Channel. Northern end of reach with marginal species (especially Polygonum hydropiper) growing on muddy shingle adjacent to left bank.

LENGTH 11. Syon Park and Kew Gardens (TQ 16917611 - 17467628)

Right bank. Gently sloping, low, muddy bank with protection from concrete-filled sandbags. 40% shaded. Typical marginal species dense above in unshaded areas, becoming sparser lower down the bank.

Left bank. Bank with natural, sandy-mud cliff, part of the only extensive area of completely unprotected bank in the survey area. Marginal vegetation dominated by Phragmites australis with other typical marginal species. Banks about 50% shaded. Willows also growing out over the gravel bank.

Channel. Extensive gravel banks mainly unvegetated but with two stands of Scirpus maritimus at the western end of the length adjacent to the right bank.

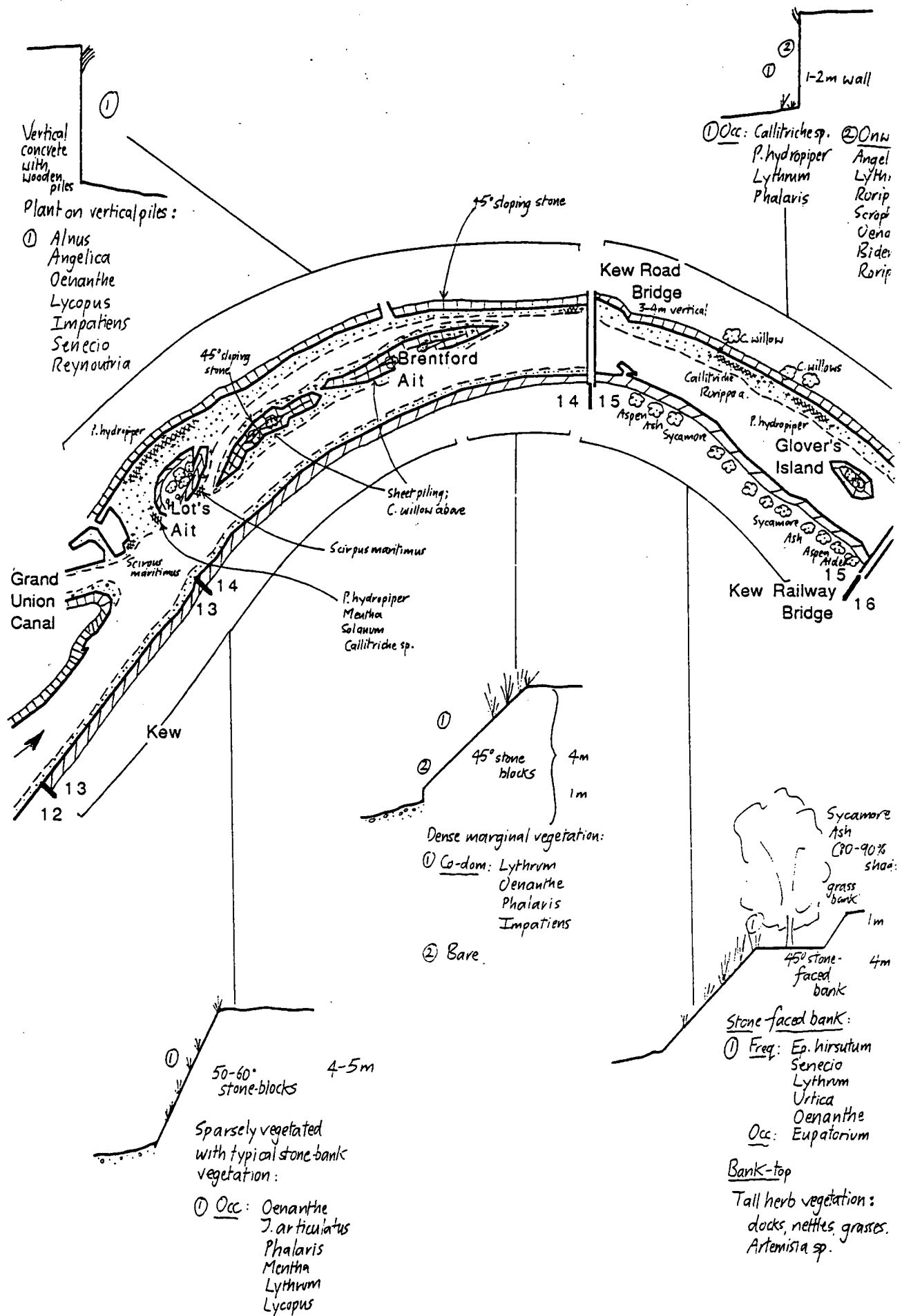
LENGTH 12. Syon Park and Kew Gardens (TQ 17467628 - 17807702)

Right bank. Steeply sloping, unshaded, stone-faced bank with sparse stands of typical marginal species.

Left bank. Bank with natural, sandy-mud cliff, part of the only extensive area of completely unprotected bank in the survey area). Marginal vegetation dominated by Phragmites australis with other typical marginal species. Banks about 50% shaded. Willows also growing out over the gravel bank.

Channel. One medium-sized mixed stand of Polygonum hydropiper and Phalaris arundinacea. No floating-leaved vegetation.

LENGTHS 13 - 15 (Kew Gardens to Kew Railway Bridge)



3.4.4 LENGTHS 13 - 15. KEW GARDENS TO KEW RAILWAY BRIDGE

LENGTH 13. Kew Gardens to Lot's Eyot (TQ 17807702 - 18357746)

Right bank. Steeply sloping, unshaded, stone-faced bank with sparse stands of typical marginal species.

Left bank. Predominantly vertical sheet piling, little wetland vegetation. Small area of sloping stone-faced bank at junction with Grand Union Canal.

Channel. No emergent vegetation.

LENGTH 14. Lot's Eyot to Kew Road Bridge (TQ 18357746 - 19007780)

Right bank. Steeply sloping, unshaded, stone-faced bank with sparse stands of typical marginal species.

Left bank. Vertical concrete banks with regular wooden piles, sparsely colonised by a variety of typical marginal species. Some Reynoutria japonica growing on wooden piles.

Lot's Eyot. Partly derelict urban development with some stands of typical marginal species.

Brentford Eyot. Two islands, sheet piled on the right bank, sloping stone-faced on the left bank. Heavily shaded by crack willow. Typical marginal species; also single plant of meadow rue (Thalictrum flavum, the only site from which this local plant recorded) on the left bank of downstream island.

Channel. Large areas of muddy gravel exposed at low tide with stands of Polygonum hydropiper and Scirpus maritimus. Also Mentha aquatica, Callitriche sp. and bittersweet (Solanum dulcamara).

LENGTH 15. Kew Road Bridge to Kew Railway Bridge (TQ 19007780 - 19537745)

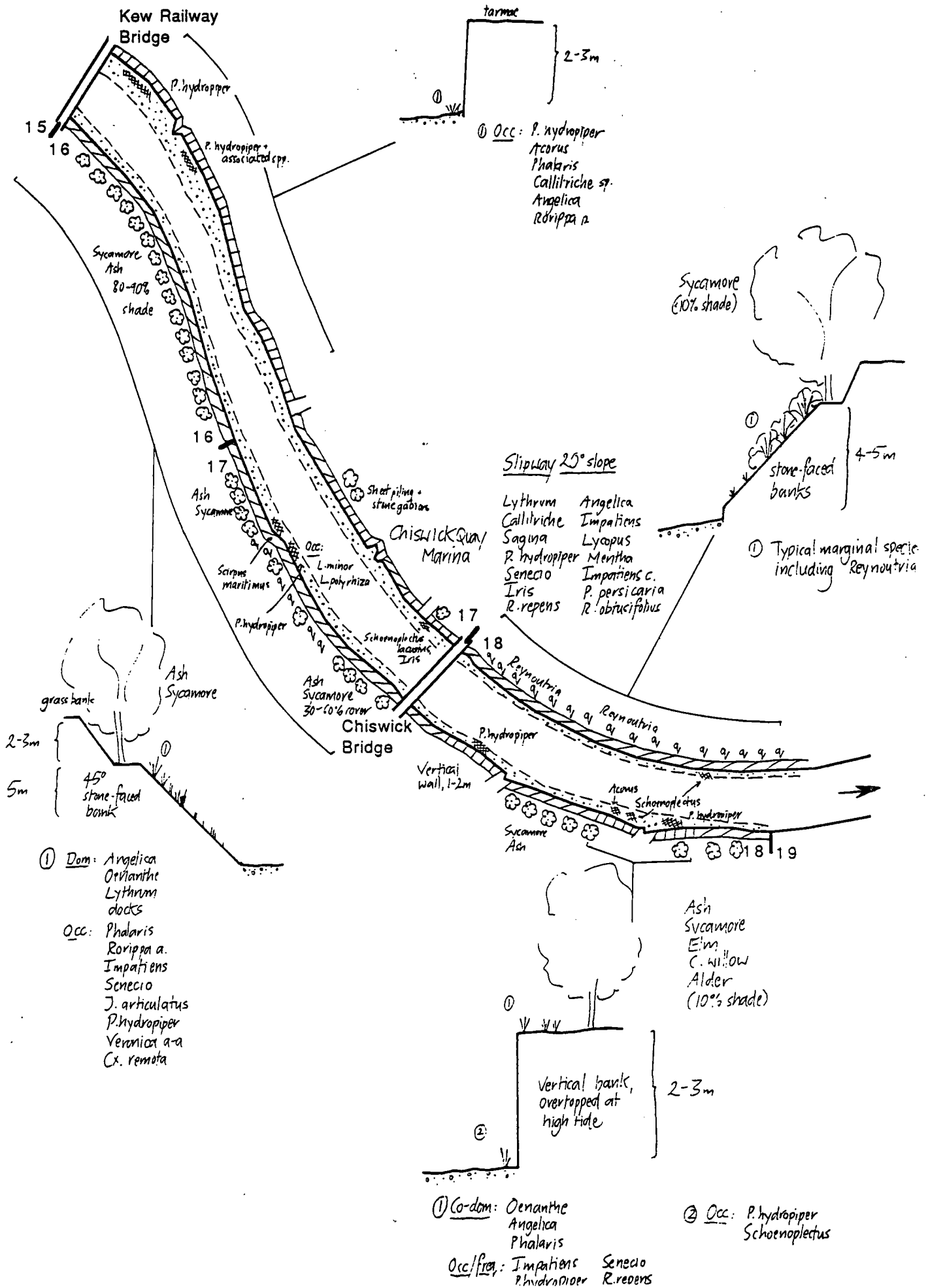
Right bank. Sloping, heavily shaded stone-faced bank. Sparse stands of typical marginal species.

Left bank. Predominantly vertical concrete and brick walls. Brick walls sparsely colonised by typical marginal species but concrete walls more-or-less bare. Sloping stone or concrete faced bank also sparsely vegetated.

Oliver's Island. Sloping stone-faced banks, about 50% shaded. Sparse stands of typical marginal species on banks, generally bare below.

Channel. Large areas of muddy gravel exposed at low tide with stands of Polygonum hydropiper and Rorippa amphibia adjacent to vertical walls.

LENGTHS 16 - 18 (Kew Railway Bridge to Mortlake Church)



3.4.5 LENGTHS 16 - 18. KEW RAILWAY BRIDGE TO MORTLAKE CHURCH

LENGTH 16. Kew Railway Bridge to Grove Park (TQ 19537745 - 19857685)

Right bank. Sloping, heavily-shaded stone-faced bank with sparse stands of typical marginal species.

Left bank. Predominantly vertical concrete and brick walls with some sheet piling. Unshaded. Sparsely colonised by typical marginal species.

Channel. Muddy gravel exposed at low tide with stands of Polygonum hydropiper and associated species adjacent to banks.

LENGTH 17. Grove Park to Chiswick Bridge (TQ 19857685 - 20227629)

Right bank. Sloping, moderately shaded, stone-faced bank with stands of varying density of typical marginal species.

Left bank. Sloping stone bank and vertical bank (stone gabions and sheet piling) in equal proportions. Varying densities of typical marginal species on very lightly shaded sloping bank. Slipway at downstream end of length sparsely vegetated with a wide variety of typical marginal species.

Channel. Gravel exposed at low tide supporting Polygonum hydropiper and Scirpus maritimus on the right bank and Schoenoplectus lacustris on the left bank.

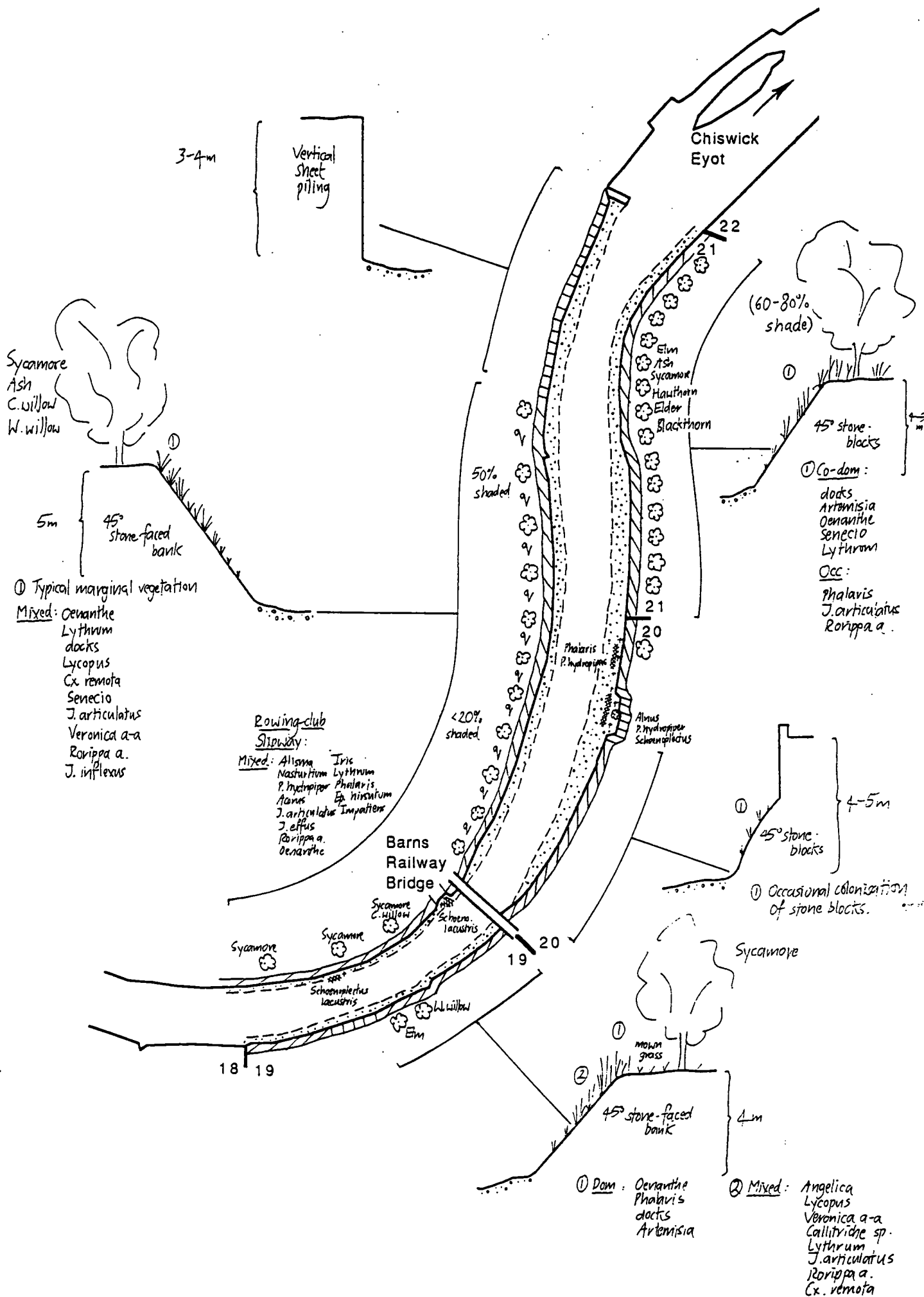
LENGTH 18. Chiswick Bridge to Mortlake Church (TQ 20227629 - 20837605)

Right bank. Approximately equal proportions of vertical and sloping stone faced bank, light to heavy shade. Both bank types regularly overtopped at high tide along the length so typical marginal species, in varying densities, both on the face and the top of the banks.

Left bank. Sloping stone-faced bank, very lightly shaded, with stands of typical marginal species. Large stands of Reynoutria japonica dominating the upper bank in the upstream half of the length.

Channel. Small stands of Schoenoplectus lacustris and Acorus calamus growing on muddy shingle with more extensive stands of Polygonum hydropiper.

LENGTHS 19 - 21 (Mortlake Church to Chiswick Mall)



3.4.6 LENGTHS 19 - 21. MORTLAKE CHURCH TO CHISWICK MALL

LENGTH 19. Mortlake Church to Barnes Bridge (TQ 20837605 - 21407628)

Right bank. Sloping stone-faced bank, lightly shaded, overtopped at high tide in some areas. Typical marginal species in varying densities both on the face and top of the bank.

Left bank. Sloping stone-faced bank, very lightly shaded, with stands of typical marginal species. Large stands of Reynoutria japonica dominating the upper bank in the downstream half of the length. The slipway adjacent to Barnes Bridge with a sparse but diverse flora of typical marginal species.

Channel. Gravel exposed at low tide on left bank with two stands of Schoenoplectus lacustris.

LENGTH 20. Barnes Bridge to Barnes (TQ 21407628 - 21567683)

Right bank. Lower part of bank sloping and stone-faced with vertical wall above. Unshaded. Very occasional colonisation by typical marginal species.

Left bank. Sloping stone-faced bank, lightly shaded, with stands of typical marginal species.

Channel. Exposed gravel on left bank unvegetated. Muddy gravels adjacent to right bank with stands of Polygonum hydropiper and Phalaris arundinacea and a small quantity of Schoenoplectus lacustris.

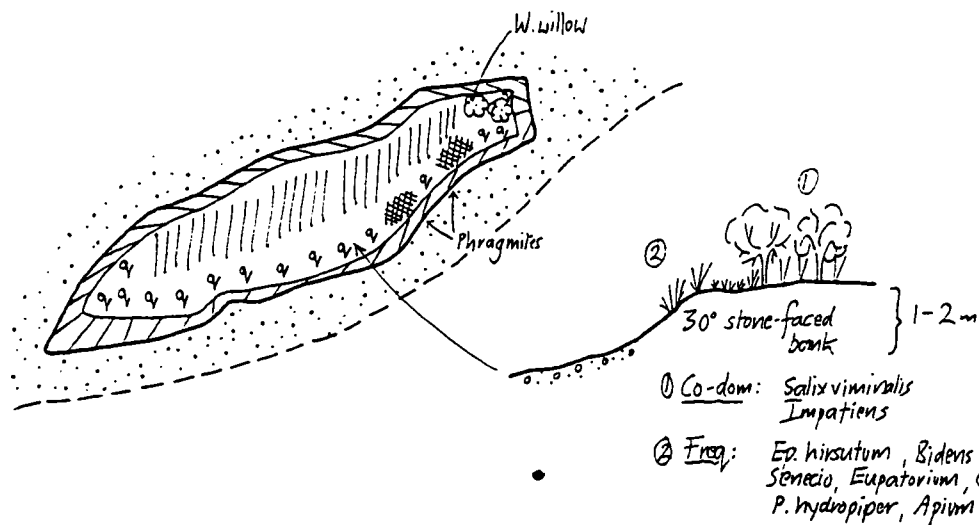
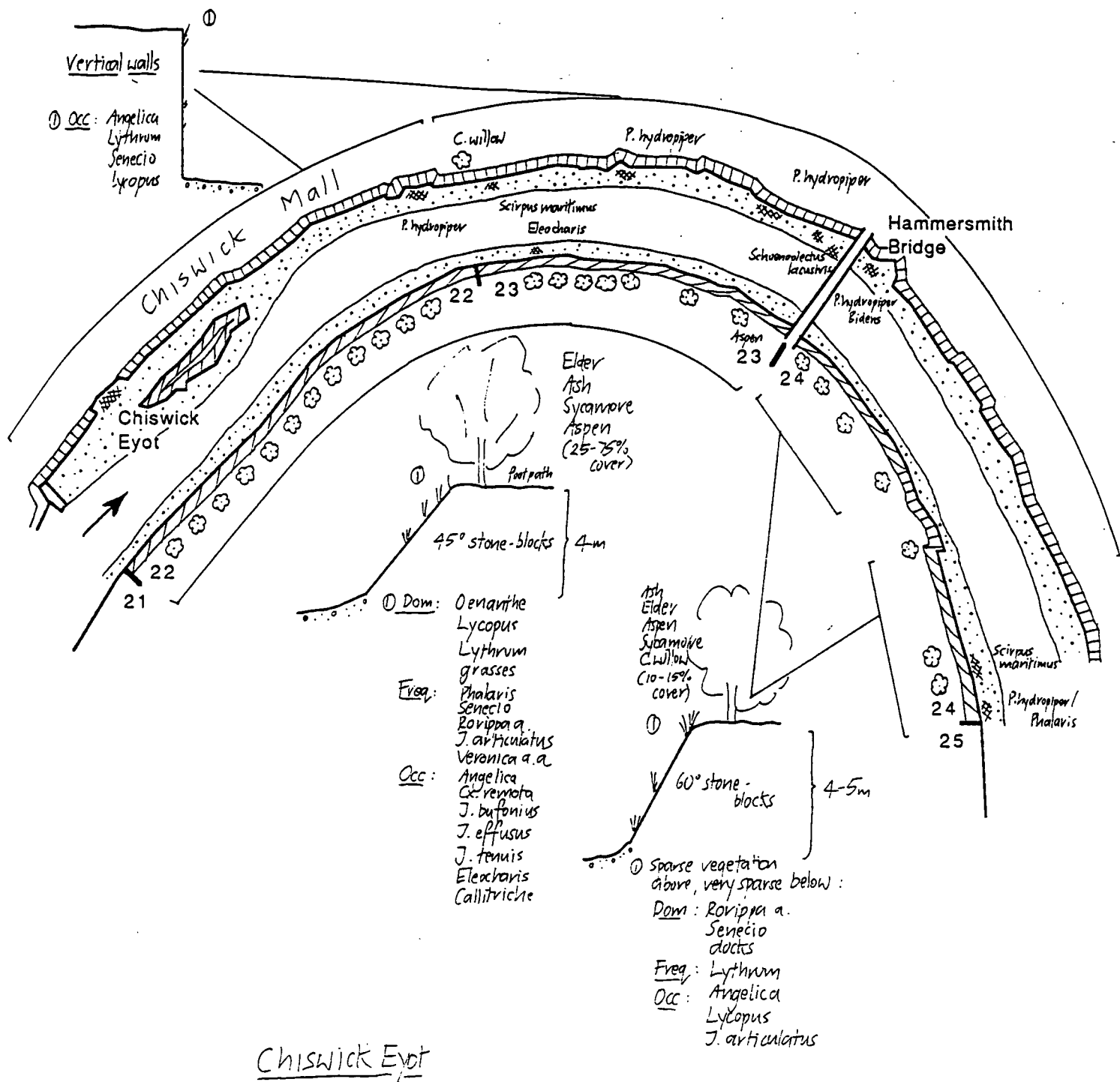
LENGTH 21. Barnes to Chiswick Mall (TQ 21567683 - 21657763)

Right bank. Sloping stone-faced bank, heavily shaded, with sparse stands of typical marginal species.

Left bank. (i) First half of length: sloping stone-faced bank, lightly shaded, with stands of typical marginal species. (ii) Second half of bank: vertical concrete and sheet piling, unvegetated.

Channel. No emergent vegetation in the channel.

LENGTHS 22 - 24 (Chiswick Mall to Barn Elms)



3.4.7 LENGTHS 22 - 24. CHISWICK MALL TO BARN ELMS

LENGTH 22. Chiswick Mall (TQ 21657763) to slipway at TQ 22457812

Right bank. Sloping stone-faced bank, heavily shaded, with sparse stands of typical marginal species.

Left bank. Vertical banks with brick, concrete and sheet piling. Occasional colonisation by typical marginal species.

Chiswick Eyot. Low sloping stone-faced bank (with stonework of varying ages). Centre of island dominated by Salix viminalis and Impatiens glandulifera. Right bank with dense stands of typical marginal species, including Phragmites australis. Left bank shaded and sparsely vegetated. Some parts of the island flooded at high tide.

Channel. Stands of Polygonum hydropiper on silty gravel adjacent to left bank.

LENGTH 23. Slipway at TQ 22457812 to Hammersmith Bridge (TQ 22907810)

Right bank. Sloping stone-faced bank, moderately shaded, with varying densities of typical marginal species. Two common rushes, toad rush (Juncus bufonius) and slender rush (J. tenuis), recorded on the lower bank in this length, were not found at any other sites.

Left bank. Vertical concrete-faced and brick banks. Colonising vegetation on the vertical surfaces.

Channel. Several stands of Polygonum hydropiper and Schoenoplectus lacustris growing on muddy gravel adjacent to bank. Also single stands of Eleocharis (probably palustris) growing at channel edge adjacent to right bank.

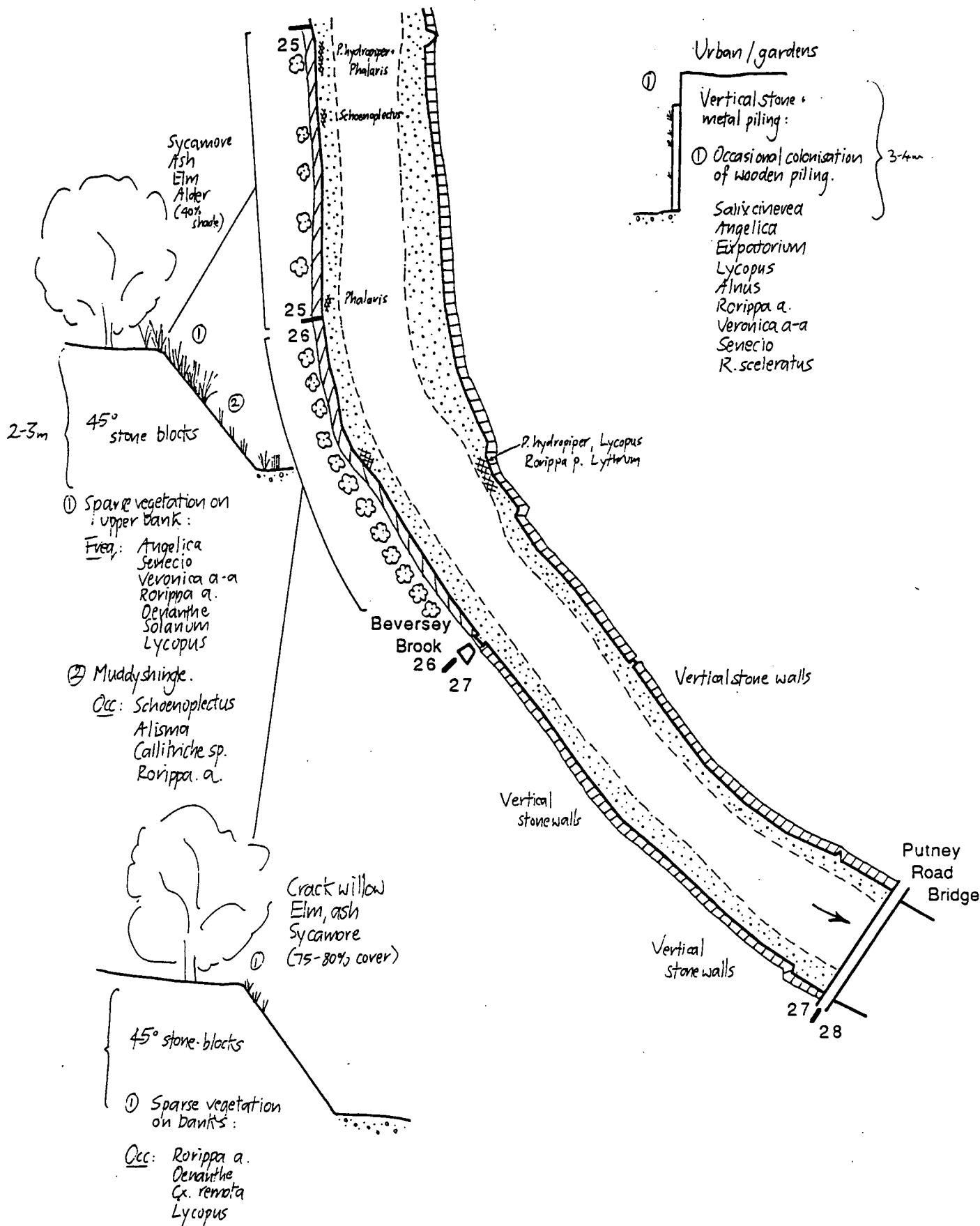
LENGTH 24. Hammersmith Bridge to Barn Elms (TQ 22907810 - 23207740)

Right bank. Predominantly sloping stone-faced bank, lightly shaded. Varying densities of typical marginal species.

Left bank. Vertical concrete-faced and brick banks. Colonising vegetation on the vertical surfaces.

Channel. Small stands of Scirpus maritimus, Polygonum hydropiper and Phalaris arundinacea growing on muddy gravel adjacent to banks. A few plants of Bidens tripartita were growing with P. hydropiper in inlet at Hammersmith Bridge.

LENGTHS 25 -27 (Barn Elms to Putney Bridge)



3.4.8 LENGTHS 25 - 27. BARN ELMS TO PUTNEY BRIDGE

LENGTH 25. Barn Elms (TQ 23207740 - 23257674)

Right bank. Sloping stone-faced bank, moderately shaded. Varying densities of typical marginal species.

Left bank. Vertical concrete-faced and brick banks. Colonising vegetation on the vertical surfaces.

Channel. Small stands of Polygonum hydropiper, Schoenoplectus lacustris and Phalaris arundinacea growing on muddy shingle adjacent to right bank.

LENGTH 26. Barn Elms to Beverley Brook (TQ 23257674 - 23507625)

Right bank. Sloping stone-faced bank, moderately shaded. Varying densities of typical marginal species.

Left bank. Predominantly vertical concrete-faced and brick banks. Colonising vegetation on the vertical surfaces. Sparse stand of typical marginal species on sloping stone-faced bank adjacent to Fulham FC.

Channel. Single stand of Polygonum hydropiper, Scirpus maritimus and other typical marginal species growing on muddy gravel.

LENGTH 27. Beverley Brook to Putney Bridge (TQ 23507625 - 24157563)

Right bank. Vertical walls and sloping concrete slipways. Occasional colonising plants on vertical walls.

Left bank. Vertical stone-faced banks with occasional colonising plants.

Channel. No emergent plants recorded in the channel.

4. REFERENCES

Clapham, A.R., Tutin, T.G. and Moore, D.M. (1987). Flora of the British Isles (3rd edition). Cambridge University Press, Cambridge.

Rose, F. (1981). The wild flower key. Frederick Warne (Publishers) Ltd, London.

5. APPENDIX 1: LIST OF PLANTS RECORDED

WETLAND PLANTS RECORDED ON THE RIVER THAMES BETWEEN TEDDINGTON WEIR AND PUTNEY BRIDGE

		Abbreviation on maps
Angelica archangelica	Cultivated angelica	Angelica
Acorus calamus	Sweet flag	Acorus
Alisma plantago-aquatica	Water-plantain	Alisma
Alnus glutinosa	Alder	
Apium nodiflorum	Fool's watercress	Apium
Bidens tripartita	Tripartite bur-marigold	Bidens
Callitriche platycarpa agg.	Water starwort	Callitriche
Carex acutiformis	Lesser pond-sedge	Cx. acutiformis
Carex otrubae	False fox sedge	Cx. otrubae
Carex riparia	Great pond-sedge	Cx. riparia
Eleocharis palustris	Common spike-rush	Eleocharis
Epilobium hirsutum	Great hairy willow-herb	Ep. hirsutum
Eupatorium cannabinum	Hemp agrimony	Eupatorium
Filipendula ulmaria	Meadowsweet	Filipendula
Glyceria maxima	Reed sweet-grass	Glyceria
Hypericum tetrapterum	Square-stemmed	Hypericum
	St-John's wort	
Impatiens capensis	Orange balsam	Imp. capensis
Impatiens glandulifera	Himalayan balsam	Impatiens
Iris pseudacorus	Yellow flag	Iris
Juncus articulatus	Jointed rush	J. articulatus
Juncus effusus	Soft rush	J. effusus
Juncus inflexus	Hard rush	J. inflexus
Juncus tenuis	Slender rush	
Lemna minor	Common duckweed	L. minor
Lemna polyrhiza	Great duckweed	L. polyrhiza
Lycopus europaeus	Gipsywort	Lycopus
Lythrum salicaria	Purple loosestrife	Lythrum
Mentha aquatica	Water mint	Mentha
Myosotis scorpioides	Water forget-me-not	Myosotis
Myosoton aquaticum	Water chickweed	Myosotis
Nasturtium officianale	Watercress	Nasturtium
Nuphar lutea	Water-lily	Nuphar
Oenanthe crocata	Hemlock water-dropwort	Oenanthe
Phalaris arundinacea	Reed-grass	Phalaris
Phragmites australis	Common reed	Phragmites
Polygonum amphibium	Amphibious bistort	P. amphibium
Polygonum hydropiper	Water pepper	P. hydropiper
Polygonum persicaria	Redshank	
Ranunculus sceleratus	Celery-leaved crowfoot	R. sceleratus
Rorippa amphibia	Great yellow-cress	R. amphibia
Rorippa palustris	Marsh yellow-cress	R. palustris
Rumex hydrolapathum	Water dock	R. hydrolapathum
Sagina procumbens	Procumbent pearlwort	Sagina

APPENDIX 1 (cont): LIST OF PLANTS RECORDED

WETLAND PLANTS RECORDED ON THE RIVER THAMES BETWEEN TEDDINGTON WEIR AND PUTNEY BRIDGE

<i>Salix fragilis</i>	Crack willow	<i>S. fragilis</i>
<i>Salix viminalis</i>	Osier	<i>S. viminalis</i>
<i>Scirpus maritimus</i>	Sea clubrush	<i>Scirpus</i>
<i>Schoenoplectus lacustris</i>	Bulrush	<i>Schoenoplectus</i>
<i>Scutellaria galericulata</i>	Skullcap	<i>Scutellaria</i>
<i>Scrophularia auriculata</i>	Water figwort	<i>Scrophularia</i>
<i>Senecio aquatica</i>	Marsh ragwort	<i>Senecio</i>
<i>Solanum dulcamara</i>	Bittersweet	<i>Solanum</i>
<i>Urtica dioica</i>	Common nettle	<i>Urtica</i>
<i>Veronica anagallis-aquatica</i>	Blue water-speedwell	<i>Veronica a-a</i>
<i>Veronica beccabunga</i>	Brooklime	<i>V. beccabunga</i>

NON-WETLAND SPECIES MENTIONED IN THE TEXT

<i>Acer pseudoplatanus</i>	Sycamore
<i>Artemisia</i> sp.	Mugwort and Chinese Mugwort
<i>Buddleja davidii</i>	<i>Buddleia</i>
<i>Carex hirta</i>	Hairy sedge
<i>Carex remota</i>	Remote sedge
<i>Festuca</i> sp. (?arundinacea)	
<i>Frangula alnus</i>	Ash
<i>Populus tremula</i>	Aspen
<i>Reynoutria japonica</i>	Japanese knotweed
<i>Rumex crispus</i>	Curled dock
<i>Rumex obtusifolius</i>	Broad-leaved dock
<i>Ulmus</i> sp.	Elm