THE UNIVERSITY OF WESTERN AUSTRALIA

SURVEY OF THE PHYSICAL ENVIRONMENT

IN LOCAL NEIGHBOURHOODS

SPACES INSTRUMENT:

OBSERVERS MANUAL

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This manual has been prepared for observers to give specific information relating to the survey of the physical environment in local neighbourhoods using the Systematic Pedestrian and Cycling Environmental Scan (SPACES) instrument.

THE STUDY

This study is looking at what makes a good walking and cycling environment. The audit will collect information related to the physical environment in a 408-km^2 area of metropolitan Perth. Hepburn Avenue, Lord Street Beechboro, Point Resolution and the coast form the borders for the area.

Approximately 2,000 kilometres of road network will be audited during February and March 2000. It has been broadly estimated that an observer can collect information from 2 kilometres in approximately 40 minutes. Some areas will be audited twice to act as a quality control measure; these areas will be randomly selected at a later date.

STREET SEGMENTS

Each street or road in the study area is made up of a number of segments. A segment is a section of street or road between two intersections. Each segment has a unique number that is used to identify it.

For example, segment X-Y and Y-Z are in the same street (see below), but have different segment numbers and will have separate audit forms.
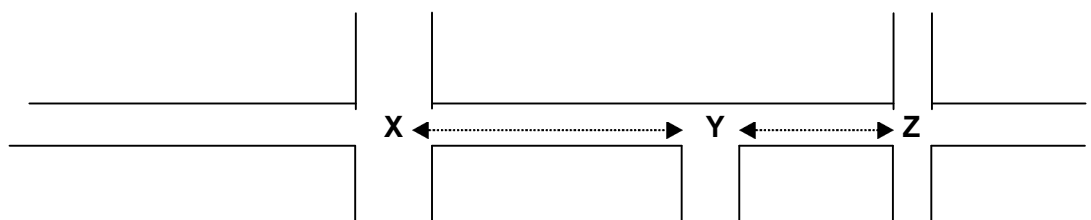
PREPARING FOR THE SPACES AUDIT

Before leaving home:

❖ Ensure that you are familiar with the SPACES audit form (See Appendix 1). This will assist in the completion of the form efficiently.

❖ Ensure that you have:

➢ Two maps – one with street names & one with segment numbers
➢ Audit forms – enough to complete the section
➢ Clip board
➢ Blue biros
➢ Identification badge
➢ Street directory
➢ Water bottle
➢ Comfortable shoes
➢ Sun protection (eg. hat, sun screen, sunglasses)

❖ Plan your work efficiently and take the most direct route to your start point.

❖ Always wear your ID badge where it can be clearly seen.

❖ Park your car in a safe location. Park carefully and avoid grass verges and driveways. If possible, park in a public car park or near a public venue such as a park or shopping centre. You will be reimbursed for any paid parking if you submit the relevant parking ticket.

THE SPACES AUDIT

Complete and correct coding of the audit forms is essential to achieve high quality results.

It is important that you are familiar and comfortable with the audit forms. See Appendix 1 for examples. Practice using the forms before you start auditing.

The following details are to be recorded clearly on the top, left-hand corner of SPACES FORM 1:

1. Auditor identification number – record the ID number that you were given for this study

2. Date – the date you conducted the audit

3. Suburb – record the name of the suburb

4. Street or road name – record the name of the street or road from the map provided

5. Segment identification number – record the number listed for each street or road segment from the map provided (see Appendix 2)

A separate form (SPACES FORM 2) is to be completed for an overall assessment of an area when the data for each map has been collected.

The following details are recorded on the top, left-hand corner of SPACES FORM 2:

1. Auditor identification number – record the ID number that you were given for this study

2. Date – the date you conducted the overall assessment

3. Suburb – record the name of the suburb

4. Map identification number – record the map number noted on the map provided and on the segment list (see Appendix 2)

GUIDELINES FOR COMPLETING THE SPACES FORM
Some Important Rules

❖ Maps: two maps for each area are provided – one with street names and the other with segment numbers (see Appendix 2). The map for each area has a unique identification number. Both maps will be required when assessing the areas. In addition, a list of the segment numbers, street names and segment length is provided for every map.

❖ Starting point: each map will have a start point indicated. It is important that you always start at this point.

❖ Which side to walk : if there is NO PATH, walk on the LEFT SIDE of the verge or road; if there is a PATH ON BOTH SIDES of the road, walk on the LEFT; if there is a PATH ONLY ON ONE SIDE of the road, walk along THAT PATH irrespective of what side it is on.

❖ SIDE 1 is the side you are walking; SIDE 2 is the side opposite.

❖ IGNORE vacant lots and building sites, ie do not record on the audit form.

❖ Each section should be able to be completed in one shift. If you are unable to complete a section in one shift, mark your stopping point on the map and start in that place when you are next in the field.

Recording Answers

❖ Always use blue biro when recording answers.

❖ Tick the boxes clearly to avoid misunderstandings later.

❖ If you accidentally tick the wrong box, clearly cross-out the incorrect answer and tick the correct one eg,

Side 1	Side 2
1	1
2	2
3	3
4	4

❖ If a question is to be skipped, cross the question through, to indicate that you have missed the question deliberately.

❖ Record any additional information on the reverse side of the audit form. This can include such things as "several dogs barking", "no trees – very hot", "friendly people"

Important Points

❖ When you have completed collecting data for all of the segments in an area, please complete SPACES FORM 2 to provide an overall assessment of the section.

❖ At the end of each segment, ensure that all questions on the audit form have been answered and your responses are <u>clear</u> and <u>legible</u>.

❖ At the end of each day, please go through each audit form to make sure that everything is <u>complete</u> and is <u>clear</u> and <u>legible</u>. Mark on the segment list that the segment has been completed.

❖ Please place the completed audit forms in segment number order (numerical order) and the overall assessment audit forms in map number order (numerical order).

❖ Please ensure that time sheets, travel forms and audit forms are completed correctly.

❖ Deliver all paperwork to UWA once a week for checking and processing. This will also give you a chance to discuss any problems and to catch-up with any news or updates.

❖ Please phone at any time if there are problems. Contact Terri Pikora on 9380 1791.

DETAILED INFORMATION ABOUT EACH QUESTION

Q1a. Type of buildings/features – includes both built and natural features. Indicate

ALL buildings/features present on the street/road. Ignore vacant blocks.

Transport infrastructure – includes car parks, freeways and highways, off and on ramps, railway tracks, and bus and railway stations that are a major feature on the road/street.

Housing includes all residential dwelling types – such as single house, a duplex, housing units, and flats. If there is mixed zoning with residential dwellings above offices and shops, then all applicable boxes would be checked – ie, housing, office, and retail.

Office – includes any type of office, such as accountant, bank, real estate agent. Also includes offices that are located in houses.

Convenience Stores – includes any shop that sells household products, such as corner store, newsagent, chemist, delicatessen, supermarket.

Other Retail – includes other businesses not included in convenience store category. Includes petrol station, a tyre centre, car repair, car yard.

Industrial – includes any industries, such as engineering, manufacturing.

Educational – includes schools, universities, and colleges.

Services – includes any doctor or dentist surgeries, child health clinics, child care centres.

Natural features – includes such things as parks, the river, the beach, bushland, golf course, outdoor sporting centres.

Q1b.   Predominant buildings/features – indicate which of the above buildings/features is the most predominant for each side of the street.

Q1c.   Are the predominant buildings or features the same on both sides of the segment?

YES/NO

SECTION A. WALKING AND CYCLING PATHS.

Q2. Path type – *if there is no path on either side, tick first box and go to SECTION B.*

<u>Footpath</u> – a man-made surface (such as brick, stone, concrete slabs, continuous concrete) designed for pedestrians to use. (See Fig. 1) Also includes any naturally created or occurring walking surfaces. (See Fig. 2)

<u>Shared path with markings</u> – path used by a range of users, including pedestrians, cyclists, small-wheeled vehicle users, with centre line, logos and other pavement markings included for safety or convenience. (See Fig 3.)

<u>Shared path with no markings</u> – path used by a range of users, including pedestrians, cyclists, small wheeled vehicle users with no markings. (See Fig. 4)

If the path is under repair of under construction record as no path present.

Fig 1. Footpath

Fig. 2. Footpath

Fig. 3 Shared path with markings

Fig. 4 Shared path with no markings

Q3. Path location – how close is the path to the edge of the street/road?

Estimate the distance between the path and the edge of the road.

Next to the road/street (see Fig. 6)

Within 1m of kerb (see Fig. 7)

Between 1 and 2m of kerb (see Fig. 8)

Between 2 and 3m of kerb

More than 3m from kerb (see Fig. 9)

If the path varies in location, indicate the distance for the majority of the segment

Fig. 6 Next to road

Fig. 7 Within 1m of kerb

Fig. 8 Between 1 & 2m of kerb

Fig. 9 More than 3m from kerb

Q4. Path material – what material is the path made of?

Continuous concrete (see Fig. 10)

Concrete slabs (see Fig. 11)

Paving bricks (see Fig. 12)

Gravel

Bitumen (see Fig. 13)

Grass or sand (see Fig. 14)

Path is under repair

If the path varies in material, indicate the material that the majority of the path is made of.

Fig. 10 Continuous concrete

Fig. 11 Concrete slabs

Fig. 12 Paving bricks

Fig 13 Bitumen

Fig. 14 Grass or sand

Q5. Slope – how steep is the path?

Assess the slope based on the gradient of the <u>majority</u> of the segment. For example, if the beginning of a segment has a moderate slope but the majority is flat, score it as 'flat'.

If the segment is evenly divided between two gradients, then score it based on the <u>biggest</u> gradient. For example, if the segment has both a slight and a moderate slope, then score it as 'moderate'.

A <u>flat</u> or <u>gentle slope</u> is when the path has no slope or a slight or gradual incline. (See Fig. 14)

A <u>moderate slope</u> is one with a medium incline. (See Fig. 15)

A <u>steep slope</u> is one with a sharp or rapid incline. (See Fig. 16 & 17)

Fig. 14. Flat or gentle slope

Fig. 15 Moderate slope

Fig. 16 Steep slope

Fig. 17 Steep slope

Q6. Path condition and smoothness – is the path well maintained? Are the crossovers smooth?

A <u>poor path</u> is one with a lot of bumps, cracks, holes and weeds growing in the surface or between the cracks. The crossover from the path to the street is rough, with large gaps or holes. (See Fig. 18)

A <u>moderate path</u> is one with some bumps, cracks, holes and weeds growing in the surface or between the cracks but not as many as a poor path. The crossover from the path to the street is mostly smooth although there are some crossovers with holes or gaps. (See Fig. 19)

A <u>good path</u> is one with very few bumps, cracks, holes and weeds growing in the surface or between the cracks. The crossover from the path to the street is smooth with no holes or gaps. (See Fig. 20)

If path is under repair, mark as <u>under repair</u>

Fig. 18 Poor path

Fig. 19 Moderate path

Fig. 20 Good path

Q7. Permanent path obstructions – are there any poles, signs, table and chairs that permanently obstruct the path? These are considered permanent only if they can not be moved, such as when they are fixed to the ground.

<u>Poles</u>

<u>Signs</u>

<u>Tables & chairs</u>

<u>None</u>

SECTION B. STREET ASSESSMENT. *Complete this section for each segment.*

Q8. Lane type (for on-road cycling) –

<u>On-road cycle lane that has been marked</u> – provision of lane markings, signs and/or bicycle logos to identify a space allocated for cycling on the street or road.

<u>On-road cycle lane with no markings</u> – provision of a wider lane allowing a cyclist to ride on the street or road but has no markings.

Q9. Slope – how steep is the street/road? <u>*Only complete if there is no path*</u>.

Assess the slope based on the gradient of the <u>majority</u> of the segment. For example, if the beginning of a segment has a moderate slope but the majority is flat, score it as 'flat'.

If the segment is evenly divided between two gradients, then score it based on the <u>biggest</u> gradient. For example, if the segment has both a slight and a moderate slope, then score it as 'moderate'.

A <u>flat</u> or <u>gentle slope</u> is when the street/road has no slope or a slight or gradual incline. (See Fig. 21)

A <u>moderate slope</u> is one with a medium incline. (See Fig. 22)

A <u>steep slope</u> is one with a sharp or rapid incline. (See Fig. 23 & 24)

Fig. 21. Flat or gentle slope

Fig. 22 Moderate slope

Fig. 23 Steep slope

Fig. 24 Steep slope

Q10. Street/road condition – how well maintained is the street/road?

A <u>poor street/road</u> is one with a lot of bumps, cracks, and holes.

A <u>moderate street/road</u> is one with some bumps, cracks, and holes but not as many as a poor street/road.

A <u>good street/road</u> is one with very few bumps, cracks, and holes.

If the street is having repairs, record as <u>under repair</u>.

Q11. Number of lanes on the street/road – the total number of traffic lanes. For example, Clifton Street has 2 lanes, while Stirling Highway has 4.

Q12. Vehicle parking restriction signs – are there any vehicle parking restrictions indicated?

<u>No parking allowed</u> – signs indicating parking restrictions.

<u>Parking allowed</u> – no parking restrictions are shown.

Q13. Kerb type – what type of kerb is in the section?

If the kerb is different on each side of the road, then record the type on the <u>side that you are walking</u>.

Assess the kerb type based on the <u>majority</u> of the segment. For example, if the beginning of a segment has a mountable kerb but the majority has a non-mountable kerb, score it as 'non-mountable'.

<u>Mountable</u> – the kerb is flush or mountable by a bicycle. (See Fig. 25)

<u>Non-mountable</u> – the kerb is high and is not easily mountable by a bicycle. (See Fig. 26)

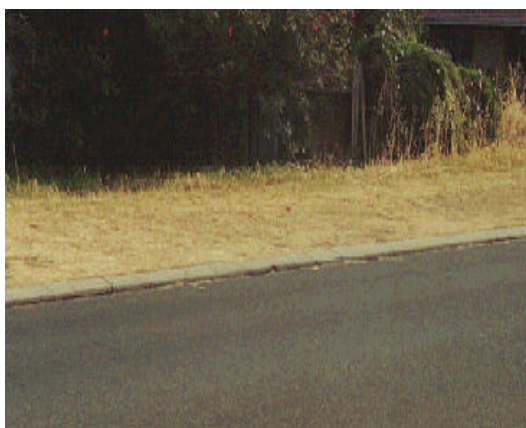<u>No kerb</u> – there is no kerb aligning the street/segment.

Fig. 25. Mountable kerb

Fig. 26. Non-mountable kerb

Q14. Traffic control devices – devices that slow or restrict traffic flow through an area. Tick <u>ALL</u> in the segment.

Record any traffic control devices at the beginning of the segment or along the segment. devices at the end of the segment are NOT RECORDED for that segment, but are recorded for the next segment.

<u>Roundabouts</u> – traffic circles designed to slow traffic speed through an intersection. (See Fig. 27)

<u>Ramps or speed humps</u> – short raised sections along the road to slow traffic. (See Fig. 28)

<u>Chicanes, chokers, kerb extensions or lane narrowing</u> – these narrow the lane width, and create a perception that vehicles need to travel at a slower speed. (See Fig. 29)

<u>Traffic signals</u> – these ensure that vehicles will stop for a certain period of time, to allow pedestrians to cross the street and cyclists to wheel their bikes across.

Fig. 27 Roundabout

Fig. 28 Ramp or speed hump

Fig. 29 Chicane

Q15. Other routes available – these provide alternative ways of walking or cycling in the neighbourhood.

Tick ALL that are applicable to the segment

Lane – a narrow local street located along the rear and/or side property boundary. Lanes are often found in dense residential areas when rear parking or where alternative vehicle access is necessary. (See Fig. 30). Can also be a path between buildings. (See Fig. 31)

Access lane through cul-de-sac or no through road – a path or lane that allows easy access through a cul-de-sac or no through road. (See Fig. 32 & 33)

Path through park – a designated path through a park or open space.

Fig. 30 Lane

Fig. 31 Lane

Fig. 32 Access lane through cul-de-sac

Fig. 33 Access lane for no through road

Q16. Type of crossings – tick ALL that are in the segment

Zebra or children's – specifically marked crossings.

Traffic signals with pedestrian push buttons.

Bridge/overpass – facilities that are physically separated to allow crossing above the traffic.

Underpass – facilities that are physically separated to allow crossing below the traffic.

Q17. Crossing aids – tick <u>ALL</u> that are in the segment

<u>Median refuge and traffic island</u> – these provide a safe place for pedestrians or cyclists where it is difficult to cross the full width of a road in one stage. (See Fig. 34 & 35)

<u>Kerb extensions</u> – these minimise the width of the road to be crossed and are commonly placed at intersections and mid-block.

Fig. 34 Median refuge

Fig. 35 Traffic island & median refuge

Q18. Presence of streetlights – are streetlights present in the segment?

If NO, go to Q 20.

Q19. Does the lighting cover the path area – are the lights positioned to shine over the path area? (See Fig. 36 & 37) Are there any obstructions from trees?

Fig. 36 Lights over path

Fig. 37 Lights over path

Q20. Are destinations present in the segment – are there any destinations that people may walk or cycle to such as shops, a school, park, etc.

If NO, go to Q 23.

Q21. Number of car parking facilities at destinations – estimate the number of car parking spaces that are at each of these destinations.

0

1-20

21-50

51-70

71-100

100+

Q22. Bike parking facilities –

Bike locker or enclosure – allows bikes and personal equipment to be locked in individual lockers or communal enclosures.

Bike parking or U rails – standard bike parking rail or U rail parking. (See Fig. 38)

Rack or stand – 'toast rack' bike parking racks. (See Fig. 39)

Fig. 38 Bike parking rail   Fig. 39 'Toast rack' parking

Q23. Driveway crossovers – estimate the number of driveways per building in the segment.

Most buildings have one driveway

Approximately ½ buildings have one driveway

Approximately ¼ buildings have one driveway

No driveways

Q24. Surveillance (or "eyes on the street") – the enhancement of personal safety or the perception of personal safety through the opportunity for a person to be seen by other people.

Can a pedestrian be observed from a window, verandah, porch, etc?

Fig. 40 Good surveillance

Fig. 41 Good surveillance

Fig. 42 Good surveillance

Fig. 43 Poor surveillance

Estimate the proportion of houses where there is the opportunity for surveillance of the street.

If there is only a glimpse of a window, garden, etc. then there would be no surveillance from this building.

Can be observed from more than 75% of buildings

Can be observed from between 50 – 74% of buildings

Can be observed from less than 50% of buildings

Not applicable

Q25. Garden maintenance – well-maintained gardens look trim and clean; any lawn appears to be regularly mowed. The gardens look kept up.

How well maintained are the gardens in the segment?

Fig. 44 Well maintained garden

Fig. 45 Well maintained garden

Fig. 46 Poorly maintained garden

Fig. 47 Poorly maintained garden

Estimate the proportion of gardens that are well maintained.

If there is only a glimpse of a garden, then this garden would not be rated.

More than 75% well-maintained

Between 50 – 74% well-maintained

Less than 50% well-maintained

Not applicable

Q26. Verge maintenance – well-maintained verges look trim and clean; grass appears to be regularly mown. The verge looks kept up.

How well maintained are the verges in the segment?

Fig. 48 Well maintained verge

Fig. 49 Well maintained verge

Fig. 50 Poorly maintained verge

Fig 51 Poorly maintained verge

Estimate the proportion of verges that are well maintained.

More than 75% well-maintained

Between 50 – 74% well-maintained

Less than 50% well-maintained

Not applicable

Q27. Number of verge trees – estimate the number of trees that are planted along the verge.

1 or more trees per house block.

Approximately 1 tree for every 2 house blocks.

Approximately 1 tree for every 3 or more house blocks.

No trees at all.

Q28. Average height of the trees – estimate the height of the trees along the verge.

<u>Small</u> – the majority of the trees are head high or less. (See Fig. 52 & 53)

<u>Medium</u> – the majority of the trees are between head and ceiling height. (See Fig. 54)

<u>Large</u> – the majority of the trees are higher than ceiling height. (See Fig. 53, 54 & 55)

Fig. 52 Small & medium trees

Fig. 53 Small & large trees

Fig. 54 Large trees

Fig. 55 Large trees

Q29. Cleanliness – is there any litter, rubbish, graffiti, broken glass, discarded items in the segment?

<u>Yes, lots</u> – there is a large amount of litter, rubbish, etc. in the segment.

<u>Yes, some</u> – there is a very small amount of litter, rubbish, etc. in the segment but not a great amount.

<u>None or almost none</u> – there is no or very little litter, rubbish, graffiti, etc in the segment.

Q30. Types of views –

Urban – houses and household gardens. (See Fig. 56 & 58)

Commercial – includes shops, offices, light industrial, schools, etc. (See Fig. 57 & 59)

Water – river, ocean, lake, etc. (See Fig. 58 & 59)

Tended nature – parks and community gardens that are "looked after" and are well maintained. (See Fig. 50)

Nature – parks, community gardens where the level of care differs. An example of nature is Kings Park where there are natural bush areas as well as lawns and gardens that are well maintained. (See Fig. 59, 60 & 61)

Fig. 56 Urban view

Fig. 57 Commercial view

Fig. 58 Urban & water view

Fig. 59 Water, commercial & tended nature view

Fig. 60 Nature & tended nature view

Fig. 61 Nature view

Q31. How alike are the building designs –

All are similar

Range of different designs

Not applicable

Q32. How attractive would you rate this segment for walking?

Very attractive – segment was aesthetic pleasing to walk in; there were no aspects that were not pleasing.

Attractive – segment was mostly aesthetic pleasing to walk in; there were a few aspects that were not pleasing.

Not attractive at all – segment was aesthetically unpleasant to walk in; there were many aspects that were unpleasant, such as a large amount of rubbish, the majority of gardens and verges not well maintained, all buildings of the same or very similar design.

Q33. How physically difficult would you rate this segment for walking?

Easy – segment was physically comfortable and easy to walk in; there were no physical aspects that were a problem for walking.

Moderately difficult – there were some difficulties walking in the segment; there were a few physical aspects that were a problem for walking

Very difficult – segment was physically uncomfortable and difficult to walk through; there were many aspects that were a problem, such as no path or a path that was uneven or cracked, steep slope, no verge trees for shade, a busy street with no way to cross.

Q34. How attractive would you rate this segment for cycling?

Very attractive – segment was aesthetic pleasing to cycle in; there were no aspects that were not pleasing.

Attractive – segment was mostly aesthetic pleasing to cycle in; there were a few aspects that were not pleasing.

Not attractive at all – segment would be aesthetically unpleasant to cycle in; there were many aspects that would be unpleasant such as a large amount of rubbish, the majority of gardens and verges not well maintained, all buildings of the same or very similar design.

Q35. How physically difficult would you rate this segment for cycling?

Easy – segment would be physically comfortable and easy to cycle in; there were no physical aspects that were a problem for cycling.

Moderately difficult – there would be some difficulties cycling in the segment; there were a few physical aspects that would be a problem for cycling.

Very difficult – segment would be physically uncomfortable and difficult to cycle in; there were many aspects that were a problem, such as a steep slope, a busy street with no cycle lane, the road is in poor condition, there are many traffic control devices in the segment.

SECTION C. OVERALL ASSESSMENT. *Complete for each section when the data for all of the individual segments have been collected.*

Q36. Continuity of the path

Is the path continuous?

Yes – the <u>path forms a useful, coherent and direct route</u> to a destination.
No – the <u>path is disjointed</u>. It does not form any useful way to any destinations.

Q37. Neighbourhood legibility – how easy was it to find your way around the neighbourhood? How easy was it to figure out where you were at any given moment or to find your way back to any given point?

<u>Very easy</u> – there were no problems with getting around the neighbourhood. At no time were you confused about which direction to take.

<u>Fairly easy</u> – there were times when you were somewhat confused but this was for less than half the time.

<u>Not easy at all</u> – if you had turned around twice you would have been lost. There were many confusing aspects in the neighbourhood.

APPENDIX 1

Sample SPACES audit form

APPENDIX 2

Sample Maps

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