SP11 Walking and cycling facilities

Introduction

This procedure provides a method of evaluating the economic efficiency of walking and cycling facility improvements, with the exception of signalised crossings over roads.

This simplified procedure assumes that:

1. An 8 percent discount rate and 30 year analysis period are used.
2. Construction will be completed in the first year and will be in service by the end of year 1.
3. All costs are exclusive of GST.
4. In cases where the above assumptions are not appropriate, either the simplified procedure should be modified or full procedures used.

The simplified procedure is designed to consider one option at a time. Where it is logical to do so, consider other suitable options in order to select the optimal solution. If there is more than one option, the evaluation will involve incremental analysis of the costs and benefits of the different options. In particular, where a separate dedicated cycleway is proposed the alternative option of providing wider sealed shoulders or cycle lanes on the carriageway must be considered. The preferred option shall have a minimum incremental BCR of 1.0 and shall be sensitivity tested using a target incremental BCR that is 1.0 higher than the ratio used for choosing the preferred option (refer to appendix A12 of volume 1).

For walking and cycling facilities, the worksheets for all the options must be submitted together with a summary of the incremental analysis.

To use the worksheets, it is necessary to determine both the current numbers, and growth rate of cycle/pedestrian traffic for the activity. These must be based on local counts and realistic projections or for cyclists, and can be obtained for cyclists using worksheet 7.

Note: All walking and cycling proposals will potentially be subject to a safety audit to help ensure that safety is improved as a result of the proposal.

Worksheet	Description
1	Evaluation summary
2	Cost of the do minimum
3	Costs of the do option
4	Travel time cost savings
5	Quality benefits
6	Accident cost savings
7	Cycle demand
8	BCR and incremental analysis

SP11 Walking and cycling facilities, continued

Explanation for worksheet 1 **Evaluation summary**

Worksheet 1 provides a summary of the general data used for the evaluation as well as the results of the analysis.

The information required is a subset of the information required for the funding allocation process.

1. Evaluator(s)/reviewer(s): Enter the full name, contact details, name of organisation, office location, etc, of the evaluator(s) and reviewer(s).
2. Proposal details: Provide a general description of the proposal (and package where relevant), describe the problems with the existing facilities and the problems to be addressed.
3. Location: Provide brief description of the proposal location including:
   - a location/route map
   - a layout plan of the proposal.
4. Alternatives and options: Describe the do minimum that is usually the least cost option to maintain the current facility in an unimproved state. Describe the options assessed and how the preferred option will improve the road section.
5. Timing: The construction start is assumed to be 1 July of the financial year in which the project is submitted for a commitment to funding.
6. Economic efficiency: Enter the timeframe information, identify the expected duration of construction (months) and identify whether land designation is required.
7. Enter the applicable data to your request into the appropriate spaces provided.
8. PV cost of do minimum: Use worksheet 2 to calculate the PV cost of the do minimum. This should be the lowest cost option that will keep the road in service. It will provide no improvements.
9. PV cost of preferred option: Use worksheet 3 to estimate the preferred option PV cost
10. Enter the benefits values from worksheets 4 (travel time savings), 5 (walking and cycling facility benefits) and 6 (accident cost savings). To bring the benefits up to the base date values, use the appropriate update factors supplied in appendix A12.3.
11. The national benefit cost ratio is calculated by dividing the PV of the net benefits (PV benefits of the do minimum subtracted from the PV benefits of the option) by PV of the net costs (PV costs of the do minimum subtracted from the PV costs of the option).

SP11 Walking and cycling facilities, continued

Evaluation summary **Worksheet 1**

1	Evaluator(s)	[redacted]
	Reviewer(s)	
2	**Proposal details**	
	Approved organisation name	NZTA
	Proposal/package name	Kahikatea Dr/Greenwood St Walking and Cycling
	Your reference	
	Proposal description	Provide safe pedestrian/cyclist facilities along Kahikatea Drive and Greenwood Street.
	Describe the problem to be addressed	
3	**Location**	
	Brief description of location	SH1 between the Greenwood Street / Killarney Road intersection and Kahikatea Drive / Ohaupo Road intersection.
4	**Alternatives and options**	
	Describe the do minimum	
	Summarise the options assessed	
5	**Timing**	
	Time zero (assumed construction start date)	March 2010
	Expected duration of construction (months)	2.5
	Period of analysis	
6	**Economic efficiency**	
	Date economic evaluation complete (mm/yyyy)	4 Feb 2009
	Base date for costs and benefits	1 July
	Land designation required	No
7	**Data (only fill in the applicable data)**	
	Existing pedestrian/cycling volumes	60/60 AADT in 20 08
	Estimated new pedestrian/cyclist volume	40/50 AADT
	Estimated motor vehicle volumes	22651 AADT
	Estimated motor vehicle speed	50 km/h
	Pedestrian/cyclist growth rate	3 %
	Width available for walking/cycling before	0 m
	Width available for walking/cycling after	3 m
	Length walked/cycled before works	0.000 km
	Length walked/cycled after works	3.030 km
	Expected reduction in private vehicle travel	km per day
8	**PV cost of do minimum**	0 **A**
9	**PV cost of the preferred option**	1,311,530 **B**
10	**Benefit values from worksheets 4, 5 and 6**	
	PV travel time cost savings	$ 0 C x Update factor [TT] 1.19 = $ 0 **X**
	PV facility benefits	$ 4,094,293 D x Update factor [WCB] 1.19 = $ 4,872,209 **Y**

PV accident cost savings $ 0 E x Update factor ^{AC} 1.09 = $ 0 **Z**

11 BCR_N = PV net benefits / PV economic costs = **X + Y + Z** / **B - A** = 3.7

SP11 Walking and cycling facilities, continued

Explanation sheet for worksheet 2 **Costs of do minimum**

Worksheet 2 is used for calculating the PV cost of the do minimum. The do minimum is the minimum level of expenditure necessary to keep a facility open and generally consists of maintenance work.

1. Enter the historic maintenance cost data. The annual and periodic maintenance costs should be obtained from maintenance records.
2. Calculate the PV of annual maintenance costs **(a)** for the do minimum by multiplying the annual cost by the discount factor of 11.70.
3. Schedule any periodic maintenance, according to the year in which this work is expected to be undertaken. Apply the appropriate single payment present worth factor (SPPWF) from table 1 below to determine the PV at time zero. Sum the PV of the periodic costs to determine the PV of total periodic maintenance costs **(b)**.
4. Calculate the PV of the annual costs associated with operating the facility **(c)** for the do minimum by multiplying the annual cost by the discount factor 11.70. Note: operating costs must be distinct from, and in addition to, maintenance costs.
5. Sum **(a)** + **(b)** + **(c)** to get PV of total costs of option **A**. Transfer total do minimum costs **A,** to **A** in worksheet 1.

Table 1 Single payment present worth factors — for 8 percent discount rate

Year	SPPWF	Year	SPPWF
1	0.93	16	0.29
2	0.86	17	0.27
3	0.79	18	0.25
4	0.74	19	0.23
5	0.68	20	0.21
6	0.63	21	0.20
7	0.58	22	0.18
8	0.54	23	0.17
9	0.50	24	0.16
10	0.46	25	0.15
11	0.43	26	0.14
12	0.40	27	0.13
13	0.37	28	0.12
14	0.34	29	0.11
15	0.32	30	0.10

SP11 Walking and cycling facilities, continued

Costs of do minimum **Worksheet 2**

1 Historic maintenance cost data (indicate whether assessed or actual)

Maintenance costs for the site over the last 3 years
Year 1 $ 0
Year 2 $ 0
Year 3 $ 0

Maintenance costs for the site this year $ 0

Assessed future maintenance costs $ 0

2 PV of annual maintenance and inspection costs following the work

Annual cost = $ 0 × 11.70 = $ 0 **(a)**

3 PV of periodic maintenance costs

Periodic maintenance will be required in the following years:

Year	Type of maintenance	Amount $	SPPWF	Present value

Sum of PV of periodic maintenance costs = $ 0 **(b)**

4 PV of annual operating costs

Annual cost = $ 0 × 11.70 = $ 0 **(c)**

5 PV of total do minimum costs

(a) + (b) + (c) = $ 0 **A**

Transfer total do minimum costs **A,** to **A** in worksheet 1.

SP11 Walking and cycling facilities, continued

Explanation sheet for worksheet 3 **Costs of the option**

Worksheet 3 is used for calculating the PV cost of the walking or cycling facility.

1. Enter the capital cost (including professional services for design and supervision) of the proposed option. The cost is estimated separately on an estimate sheet, which should be attached to this worksheet. Multiply the cost by the discount factor 0.93 and enter at **(a)**.
2. Enter the cost of maintenance for year 1 at **(b)**. As this is assumed to be the year that the proposed option facility is constructed.
3. Enter the cost for annual maintenance and inspections following completion of the facility. Multiply by 10.74 to get the PV of annual maintenance costs **(c)** for years 2 to 30 inclusive.
4. Enter the costs of periodic maintenance. Determine which years this maintenance will be required (if at all) and enter the year, estimate cost and SPPWF (from table 1 of worksheet 2). Calculate the present value (estimate cost × SPPWF) for each cost and sum these to obtain the PV of the total periodic maintenance cost **(d)**.
5. The annual costs (for years 2 to 30) associated with the improved facility, but not maintaining capital assets, are specified and multiplied by the discount factor 10.74 to get **(e)**.
6. The sum of **(a)** + **(b)** + **(c)** + **(e)** gives the PV total cost of option, **B**. Transfer **B** for the preferred option to **B** on worksheet 1.

SP11 Walking and cycling facilities, continued

Costs of the option(s) **Worksheet 3**

1 PV of estimated cost of proposed work (as per attached estimate sheets)

$ 1,385,000 × 0.93 = $ 1,288,050 **(a)**

2 PV of maintenance cost in year 1

= $ 2,000 **(b)**

3 PV of annual maintenance and inspection costs following the work

(years 2 to 30 inclusive) $ 2,000 × 10.74 = $ 21,480 **(c)**

4 PV of periodic maintenance costs

Year	Type of maintenance	Amount $	SPPWF	Present value

Sum of PV of periodic maintenance costs = $ 0 **(d)**

5 PV cost of additional annual maintenance

$ 0 × 10.74 = $ 0 **(e)**

6 PV of total costs of option

PV total costs **(a)** + **(b)** + **(c)** + **(d)** + **(e)** = $ 1,311,530 **B**

Transfer PV of total costs **B** for the preferred option to **B** on worksheet 1.

SP11 Walking and cycling facilities, continued

Explanation for worksheet 5 **Benefits for walking and cycling facilities**

Worksheet 5 is used to calculate the walking and cycling facility benefits for the various options. Only one category for walking and one category for cycling may be used in an evaluation of a project. If a project contains more categories, they must be submitted as separate evaluations.

Projects that combine walking and cycling may claim benefits for both modes but safety issues arising from pedestrian/cycle conflicts must be addressed, and if there are additional accident costs these must be accounted for in worksheet 6. Make sure the estimates of the new number of pedestrians and/or cyclists generated by the facility are realistic.

1. Circle the option(s) being considered.
2. Fill in the appropriate information into the blank fields then calculate the present value of the category by multiplying along the line. The basis of the composite health, safety and environmental benefits used in worksheet 4 is described in chapter 8.
3. Transfer the total(s) **(a)**, **(b)**, **(c)** or **(d)** to **D** on worksheet 1 and **(e)** or **(f)** to **E** on worksheet 1 in the absence of a specific accident analysis.

Required information:

L Length of new facility in km

NPD Number of new pedestrians per day

NTD Number of new and existing cycle trips per day

DF Discount factor (from table 1). The discount factor will be different between walking and cycling categories depending on their individual growth rate

Table 1 Discount factors (DF) for different growth rates for years 2 to 30 inclusive

Growth rate	0%	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	4.0%
Discount factor (DF)	10.74	11.30	11.87	12.43	13.00	13.50	14.13	14.69	15.25

SP11 Walking and cycling facilities, continued

Proposal benefits for walking facility **Worksheet 5**

1 Health and environment benefits for footpaths and other pedestrian facilities

Benefit = number of new pedestrians/day × length of new facility in km × 365 × $2.70

L 3.030 x NPD 40 × 365 × $2.70 × DF 14.13 = $ 1,687,724 **(a)**

2 Health and environment benefits from improvements at hazardous sites

(provision of overbridges, underpasses, bridge widening or intersection improvements for pedestrians)

Benefit = number of new pedestrians/day × 365 × $2.70

NPD _____ × 365 × $2.70 × DF _____ = $ _____ **(b)**

Proposal benefits for cycling facility

3 Health and environment benefits for cycle lanes, cycleways or increased road shoulder widths

Benefit = number of new and existing cycle trips/day × length of new facility in km × 365 × $1.40

L 3.030 x NTD 110 × 365 × $1.40 × DF 14.13 = $ 2,406,569 **(c)**

4 Health and environment benefits from improvements at hazardous sites

(provision of overbridges, underpasses, bridge widening or intersection improvements for pedestrians)

Benefit = number of new and existing cycle trips/day × 365 × $1.40

NTD _____ × 365 × $1.40 × DF _____ = $ _____ **(d)**

Transfer total **(a)**, **(b)**, **(c)** or **(d)** to **D** on worksheet 1

5 Safety benefit for cycle lanes, cycleways or increased road shoulder widths in the absence of a specific accident analysis

Benefit = number of new and existing cycle trips/day × length of new facility in km × 365 × $0.05

L _____ x NTD _____ × 365 × $0.05 × DF _____ = $ _____ **(e)**

6 Safety benefit from improvements at hazardous sites in the absence of a specific accident analysis

(provision of overbridges, underpasses, bridge widening or intersection improvements for pedestrians)

Benefit = number of new and existing cycle trips/day × 365 × $0.05

NTD _____ × 365 × $0.05 × DF _____ = $ _____ **(f)**

Transfer total **(e)** or **(f)** to **E** on worksheet 1.

SP11 Walking and cycling facilities

Introduction

This procedure provides a method of evaluating the economic efficiency of walking and cycling facility improvements, with the exception of signalised crossings over roads.

This simplified procedure assumes that:

1. An 8 percent discount rate and 30 year analysis period are used.
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3. All costs are exclusive of GST.
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For walking and cycling facilities, the worksheets for all the options must be submitted together with a summary of the incremental analysis.

To use the worksheets, it is necessary to determine both the current numbers, and growth rate of cycle/pedestrian traffic for the activity. These must be based on local counts and realistic projections or for cyclists, and can be obtained for cyclists using worksheet 7.

Note: All walking and cycling proposals will potentially be subject to a safety audit to help ensure that safety is improved as a result of the proposal.

Worksheet	Description
1	Evaluation summary
2	Cost of the do minimum
3	Costs of the do option
4	Travel time cost savings
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7	Cycle demand
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SP11 Walking and cycling facilities, continued

Explanation for worksheet 1 **Evaluation summary**

Worksheet 1 provides a summary of the general data used for the evaluation as well as the results of the analysis.

The information required is a subset of the information required for the funding allocation process.

1. Evaluator(s)/reviewer(s): Enter the full name, contact details, name of organisation, office location, etc, of the evaluator(s) and reviewer(s).
2. Proposal details: Provide a general description of the proposal (and package where relevant), describe the problems with the existing facilities and the problems to be addressed.
3. Location: Provide brief description of the proposal location including:
   - a location/route map
   - a layout plan of the proposal.
4. Alternatives and options: Describe the do minimum that is usually the least cost option to maintain the current facility in an unimproved state. Describe the options assessed and how the preferred option will improve the road section.
5. Timing: The construction start is assumed to be 1 July of the financial year in which the project is submitted for a commitment to funding.
6. Economic efficiency: Enter the timeframe information, identify the expected duration of construction (months) and identify whether land designation is required.
7. Enter the applicable data to your request into the appropriate spaces provided.
8. PV cost of do minimum: Use worksheet 2 to calculate the PV cost of the do minimum. This should be the lowest cost option that will keep the road in service. It will provide no improvements.
9. PV cost of preferred option: Use worksheet 3 to estimate the preferred option PV cost
10. Enter the benefits values from worksheets 4 (travel time savings), 5 (walking and cycling facility benefits) and 6 (accident cost savings). To bring the benefits up to the base date values, use the appropriate update factors supplied in appendix A12.3.
11. The national benefit cost ratio is calculated by dividing the PV of the net benefits (PV benefits of the do minimum subtracted from the PV benefits of the option) by PV of the net costs (PV costs of the do minimum subtracted from the PV costs of the option).

SP11 Walking and cycling facilities, continued

Evaluation summary

Worksheet 1

1	Evaluator(s)	[redacted]
	Reviewer(s)	
2	**Proposal details**	
	Approved organisation name	NZTA
	Proposal/package name	Kahikatea Dr/Greenwood St Walking and Cycling
	Your reference	
	Proposal description	Provide safe pedestrian/cyclist facilities along Kahikatea Drive and Greenwood Street.
	Describe the problem to be addressed	
3	**Location**	
	Brief description of location	SH1 between the Greenwood Street / Killarney Road intersection and Kahikatea Drive / Ohaupo Road intersection.
4	**Alternatives and options**	
	Describe the do minimum	
	Summarise the options assessed	
5	**Timing**	
	Time zero (assumed construction start date)	March 2010
	Expected duration of construction (months)	2.5
	Period of analysis	
6	**Economic efficiency**	
	Date economic evaluation complete (mm/yyyy)	4 Feb 2009
	Base date for costs and benefits	1 July
	Land designation required	No
7	**Data (only fill in the applicable data)**	
	Existing pedestrian/cycling volumes	60/60 AADT in 20 08
	Estimated new pedestrian/cyclist volume	40/50 AADT
	Estimated motor vehicle volumes	22651 AADT
	Estimated motor vehicle speed	50 km/h
	Pedestrian/cyclist growth rate	3 %
	Width available for walking/cycling before	0 m
	Width available for walking/cycling after	3 m
	Length walked/cycled before works	0.000 km
	Length walked/cycled after works	3.030 km
	Expected reduction in private vehicle travel	km per day
8	**PV cost of do minimum**	0 **A**
9	**PV cost of the preferred option**	1,311,530 **B**
10	**Benefit values from worksheets 4, 5 and 6**	
	PV travel time cost savings	$ 0 C x Update factor ^{TT} 1.19 = $ 0 **X**
	PV facility benefits	$ 4,094,293 D x Update factor ^{WCB} 1.19 = $ 4,872,209 **Y**

PV accident cost savings $ 0 E x Update factor ^{AC} 1.09 = $ 0 **Z**

11 BCR_N = PV net benefits / PV economic costs = **X + Y + Z** / **B - A** = 3.7

SP11 Walking and cycling facilities, continued

Explanation sheet for worksheet 2 **Costs of do minimum**

Worksheet 2 is used for calculating the PV cost of the do minimum. The do minimum is the minimum level of expenditure necessary to keep a facility open and generally consists of maintenance work.

1. Enter the historic maintenance cost data. The annual and periodic maintenance costs should be obtained from maintenance records.
2. Calculate the PV of annual maintenance costs **(a)** for the do minimum by multiplying the annual cost by the discount factor of 11.70.
3. Schedule any periodic maintenance, according to the year in which this work is expected to be undertaken. Apply the appropriate single payment present worth factor (SPPWF) from table 1 below to determine the PV at time zero. Sum the PV of the periodic costs to determine the PV of total periodic maintenance costs **(b)**.
4. Calculate the PV of the annual costs associated with operating the facility **(c)** for the do minimum by multiplying the annual cost by the discount factor 11.70. Note: operating costs must be distinct from, and in addition to, maintenance costs.
5. Sum **(a)** + **(b)** + **(c)** to get PV of total costs of option **A**. Transfer total do minimum costs **A,** to **A** in worksheet 1.

Table 1 Single payment present worth factors — for 8 percent discount rate

Year	SPPWF	Year	SPPWF
1	0.93	16	0.29
2	0.86	17	0.27
3	0.79	18	0.25
4	0.74	19	0.23
5	0.68	20	0.21
6	0.63	21	0.20
7	0.58	22	0.18
8	0.54	23	0.17
9	0.50	24	0.16
10	0.46	25	0.15
11	0.43	26	0.14
12	0.40	27	0.13
13	0.37	28	0.12
14	0.34	29	0.11
15	0.32	30	0.10

SP11 Walking and cycling facilities, continued

Costs of do minimum **Worksheet 2**

1 Historic maintenance cost data (indicate whether assessed or actual)

Maintenance costs for the site over the last 3 years

Year 1 $ 0

Year 2 $ 0

Year 3 $ 0

Maintenance costs for the site this year $ 0

Assessed future maintenance costs $ 0

2 PV of annual maintenance and inspection costs following the work

Annual cost = $ 0 × 11.70 = $ 0 **(a)**

3 PV of periodic maintenance costs

Periodic maintenance will be required in the following years:

Year	Type of maintenance	Amount $	SPPWF	Present value

Sum of PV of periodic maintenance costs = $ 0 **(b)**

4 PV of annual operating costs

Annual cost = $ 0 × 11.70 = $ 0 **(c)**

5 PV of total do minimum costs

(a) + (b) + (c) = $ 0 **A**

Transfer total do minimum costs **A,** to **A** in worksheet 1.

SP11 Walking and cycling facilities, continued

Explanation sheet for worksheet 3 **Costs of the option**

Worksheet 3 is used for calculating the PV cost of the walking or cycling facility.

1. Enter the capital cost (including professional services for design and supervision) of the proposed option. The cost is estimated separately on an estimate sheet, which should be attached to this worksheet. Multiply the cost by the discount factor 0.93 and enter at **(a)**.
2. Enter the cost of maintenance for year 1 at **(b)**. As this is assumed to be the year that the proposed option facility is constructed.
3. Enter the cost for annual maintenance and inspections following completion of the facility. Multiply by 10.74 to get the PV of annual maintenance costs **(c)** for years 2 to 30 inclusive.
4. Enter the costs of periodic maintenance. Determine which years this maintenance will be required (if at all) and enter the year, estimate cost and SPPWF (from table 1 of worksheet 2). Calculate the present value (estimate cost × SPPWF) for each cost and sum these to obtain the PV of the total periodic maintenance cost **(d)**.
5. The annual costs (for years 2 to 30) associated with the improved facility, but not maintaining capital assets, are specified and multiplied by the discount factor 10.74 to get **(e)**.
6. The sum of **(a)** + **(b)** + **(c)** + **(e)** gives the PV total cost of option, **B**. Transfer **B** for the preferred option to **B** on worksheet 1.

SP11 Walking and cycling facilities, continued

Costs of the option(s) **Worksheet 3**

1 PV of estimated cost of proposed work (as per attached estimate sheets)

$ 1,385,000 × 0.93 = $ 1,288,050 **(a)**

2 PV of maintenance cost in year 1

= $ 2,000 **(b)**

3 PV of annual maintenance and inspection costs following the work

(years 2 to 30 inclusive) $ 2,000 × 10.74 = $ 21,480 **(c)**

4 PV of periodic maintenance costs

Year	Type of maintenance	Amount $	SPPWF	Present value

Sum of PV of periodic maintenance costs = $ 0 **(d)**

5 PV cost of additional annual maintenance

$ 0 × 10.74 = $ 0 **(e)**

6 PV of total costs of option

PV total costs **(a)** + **(b)** + **(c)** + **(d)** + **(e)** = $ 1,311,530 **B**

Transfer PV of total costs **B** for the preferred option to **B** on worksheet 1.

SP11 Walking and cycling facilities, continued

Explanation for worksheet 5 **Benefits for walking and cycling facilities**

Worksheet 5 is used to calculate the walking and cycling facility benefits for the various options. Only one category for walking and one category for cycling may be used in an evaluation of a project. If a project contains more categories, they must be submitted as separate evaluations.

Projects that combine walking and cycling may claim benefits for both modes but safety issues arising from pedestrian/cycle conflicts must be addressed, and if there are additional accident costs these must be accounted for in worksheet 6. Make sure the estimates of the new number of pedestrians and/or cyclists generated by the facility are realistic.

1. Circle the option(s) being considered.
2. Fill in the appropriate information into the blank fields then calculate the present value of the category by multiplying along the line. The basis of the composite health, safety and environmental benefits used in worksheet 4 is described in chapter 8.
3. Transfer the total(s) **(a)**, **(b)**, **(c)** or **(d)** to **D** on worksheet 1 and **(e)** or **(f)** to **E** on worksheet 1 in the absence of a specific accident analysis.

Required information:

L Length of new facility in km

NPD Number of new pedestrians per day

NTD Number of new and existing cycle trips per day

DF Discount factor (from table 1). The discount factor will be different between walking and cycling categories depending on their individual growth rate

Table 1 Discount factors (DF) for different growth rates for years 2 to 30 inclusive

Growth rate	0%	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	4.0%
Discount factor (DF)	10.74	11.30	11.87	12.43	13.00	13.50	14.13	14.69	15.25

SP11 Walking and cycling facilities, continued

Proposal benefits for walking facility **Worksheet 5**

1 Health and environment benefits for footpaths and other pedestrian facilities

Benefit = number of new pedestrians/day × length of new facility in km × 365 × $2.70

L 3.030 x NPD 40 × 365 × $2.70 × DF 14.13 = $ 1,687,724 **(a)**

2 Health and environment benefits from improvements at hazardous sites

(provision of overbridges, underpasses, bridge widening or intersection improvements for pedestrians)

Benefit = number of new pedestrians/day × 365 × $2.70

NPD _____ × 365 × $2.70 × DF _____ = $ _____ **(b)**

Proposal benefits for cycling facility

3 Health and environment benefits for cycle lanes, cycleways or increased road shoulder widths

Benefit = number of new and existing cycle trips/day × length of new facility in km × 365 × $1.40

L 3.030 x NTD 110 × 365 × $1.40 × DF 14.13 = $ 2,406,569 **(c)**

4 Health and environment benefits from improvements at hazardous sites

(provision of overbridges, underpasses, bridge widening or intersection improvements for pedestrians)

Benefit = number of new and existing cycle trips/day × 365 × $1.40

NTD _____ × 365 × $1.40 × DF _____ = $ _____ **(d)**

Transfer total **(a)**, **(b)**, **(c)** or **(d)** to **D** on worksheet 1

5 Safety benefit for cycle lanes, cycleways or increased road shoulder widths in the absence of a specific accident analysis

Benefit = number of new and existing cycle trips/day × length of new facility in km × 365 × $0.05

L _____ x NTD _____ × 365 × $0.05 × DF _____ = $ _____ **(e)**

6 Safety benefit from improvements at hazardous sites in the absence of a specific accident analysis

(provision of overbridges, underpasses, bridge widening or intersection improvements for pedestrians)

Benefit = number of new and existing cycle trips/day × 365 × $0.05

NTD _____ × 365 × $0.05 × DF _____ = $ _____ **(f)**

Transfer total **(e)** or **(f)** to **E** on worksheet 1.