5. Footway Capital Investment Strategy

5.1 Overview of the footway asset

The table below shows Cardiff's footway network area and length.

Material	Total Quantity
Bituminous	2,037,000m²
Concrete Slabs	516,000m²
Stone	87,000m²
Concrete	69,000m²
Concrete Blocks	206,000m²
Total Area	**2,915,000m²**
Total Length	**1,400km**

The footways asset will deteriorate with current funding. Additional funding of footways resurfacing works will assist to meet a need to

- Improve condition/reduce deterioration
- Improve safety by reducing reactive repairs
- Reduce 3rd party claims
- Improve customer satisfaction – the improvements above may contribute to improved customer satisfaction

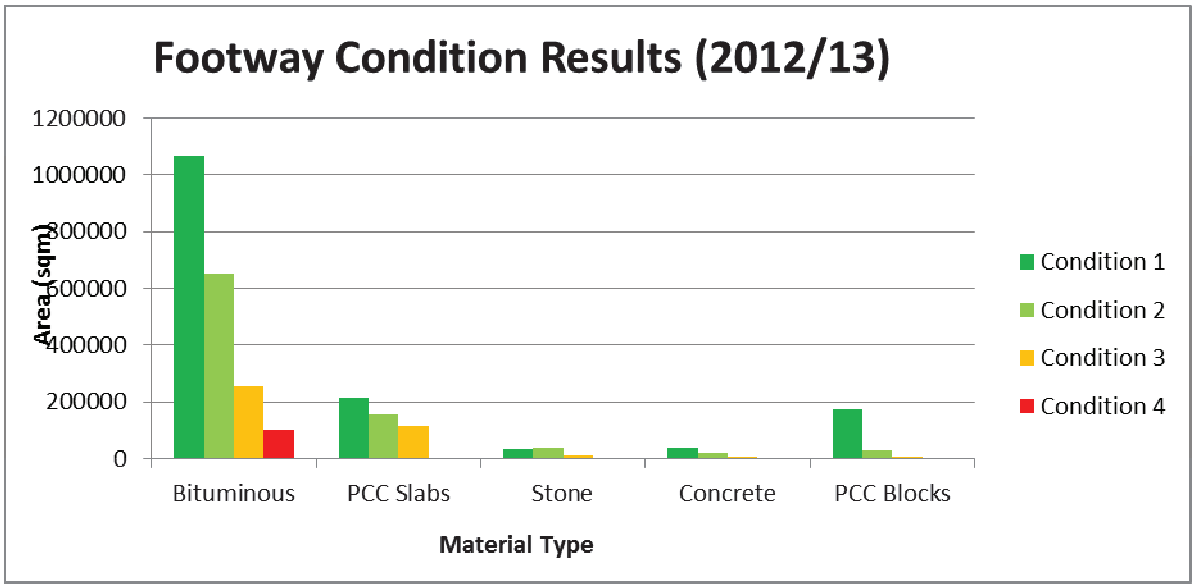
Areas of Footway Condition					
Year	Total Area (sqm)	Condition 1	Condition 2	Condition 3	Condition 4
Bituminous	2063461	1065688	650623	254304	101242
PCC Slabs	487260	213671	155807	114216	4697
Stone	89347	34587	39502	13338	2327
Concrete	69726	40948	22486	5108	1526
PCC Blocks	214278	175040	31230	6897	816

Note: condition rating explained in photos below

The Council will continue to target those areas of slabbed footway that are subject to vehicular cross over that are a burden on revenue repairs and pose higher third party claim possibilities. However, this approach will accompany ongoing reconstruction schemes and supplemented by the use of preventative treatments.

5.2 Asset Condition

The condition of the footway asset has been obtained from the footway network survey undertaken in 2013. The results in the graph below are from this survey.



The pictures below show the general on site condition of the footway relating to the condition classification of 1, 2, 3 and 4 as shown above.

a. b.

Photos showing condition 1 footway – As new

a. b.

Photos showing condition 2 footway – Aesthetically Impaired

a. b.

Photos showing condition 3 footway – Functionally Impaired

a. b.

Photos showing condition 4 footway – Structurally unsound

Current Footway Condition					
Footway Class	**Length (km)**	**% in Condition 1**	**% in Condition 2**	**% in Condition 3**	**% in Condition 4**
All Footways Combined	1285km	52.48%	30.71%	13.39%	3.76%
Prestige Walking Zones (1a)	4.5km	75.00%	22.50%	2.00%	0.50%
Primary Walking Routes (1)	15km	64.59%	30.35%	5.13%	0.00%
Secondary Walking Routes (2)	47km	51.45%	36.18%	3.88%	7.74%
Link Footways (3)	347km	48.23%	40.05%	8.88%	2.96%
Local Access Footways (4)	871km	53.65%	26.52%	16.38%	3.97%

5.3 Current Asset Investment

Based on anticipated capital investment levels (i.e. £470k pa) an approximation of footway maintenance frequencies has been calculated. It should be noted that depending on the footway material its anticipated lifespan would be between 20 and 40 years (max):

Footway Class	Approx. Length (km)	Approx. Width (m)	Treatment Cost (£/m.sq)	Network Maintenance Frequency[b]
1A	4.5km	4.5m	£70m²	60yrs[b]
1	15km	4.5m	£50m²	72yrs[b]
2	47km	2.9m	£50m²	356yrs[b]
3	347km	2.3m	£40m²	356yrs[b]
4	871km	2.2m	£40m²	356yrs[b]

Notes:

b – The Maintenance Frequency is based on anticipated annual investment of **£470k split between each category of footway** as shown below:
Class 1A = 5% of budget = £23.5k
Class 1 = 10% of budget = £47k
Class 2,3, & 4 = 85% of budget = £399.5k
Note: Treatment costs were based on lower cost surfacing options and depending on split of allocation these frequencies will alter.

e.g for 1 class Frequency:
Area = 15,000m x 4.5m = 67,500m²
Annual treatment area = £47,000 / £50m² = 940m² p.a
Therefore 67,500m² / 940m² = 72 i.e. the entire network treated over a 72 year period

5.4 Asset Investment Options

The table below show the condition targets for the footway network.

Footway Class	Current % of condition 3 & 4 (considered poor)	Target (% of network in category 3 & 4 condition)	Acceptable tolerance
Prestige Walking Zones (1a)	2.5%	2%	+/- 0.5%
Primary Walking Routes (1)	5.1%	2%	+/- 0.5%
Secondary Walking Routes (2)	11.6%	10%	+/- 1%
Link Footways (3)	11.8%	15%	+/- 2%
Local Access Footways (4)	20.3%	15%	+/- 2%

The investment options (graphs) illustrated below have been developed utilising the CSS HAMP project tools. This is an all Wales project managed via the County Surveyors Society (CSS) Wales and supported by Welsh Government.
In order to help compare the various investment options, a SWOT analysis has been provided for each.

1.4.1 Capital Investment Option 1: *Managed Decline* based on a continuation of historic investment levels

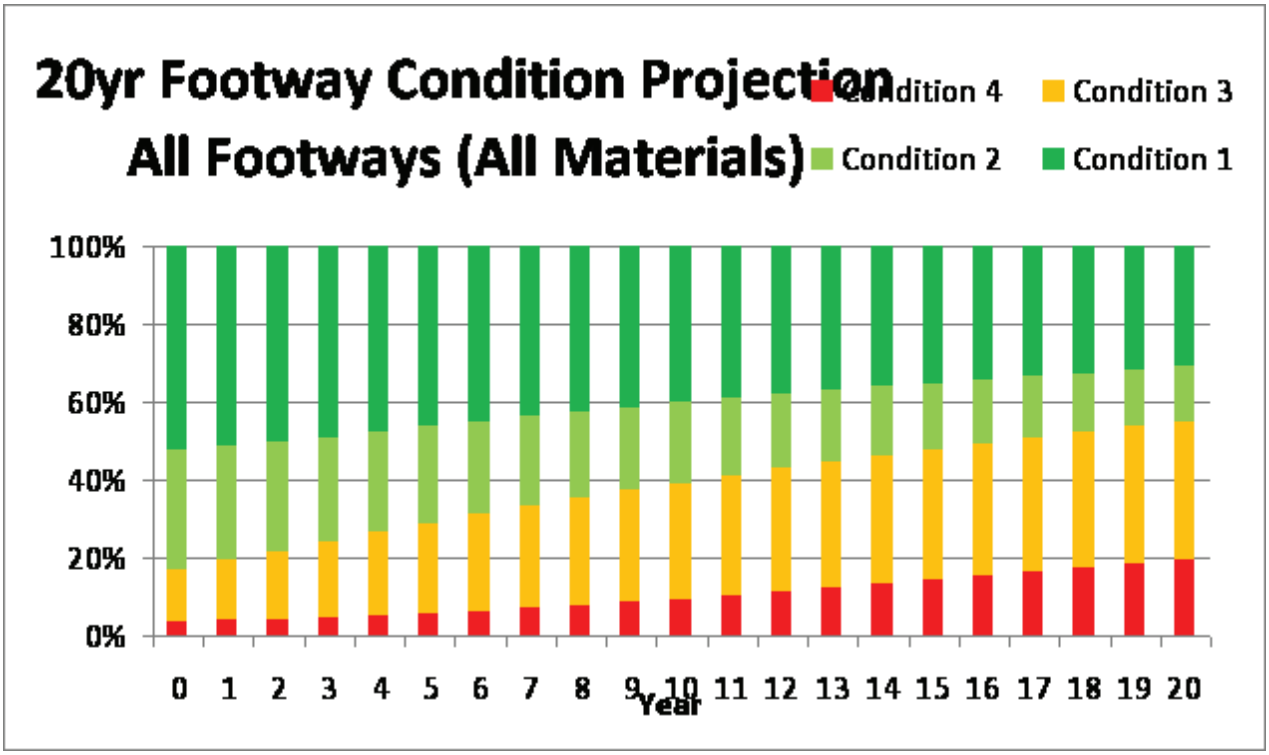
The table below illustrates the funding profile over the LGBI investment period (2012-15) then reverting to anticipated historical capital funding levels up to year 20.

	2011/12	2012/13	2013/14	2014/15	2015 to 32
LGBI funding	n/a	£0	£107k	£881k	n/a
Council Funding	£562k	£937k	£403k	£487k	£470

Based on the funding profile illustrated above the graph below shows a continued deterioration of footway condition over time. This results in the percentage of footway in need of maintenance (condition 3 + 4) increasing from the current 18% (3.76% condition 4 & 13.39% condition 3) to 55% (19.6% condition 4 & 35.55% condition 3) in 20 years.

Therefore the backlog of maintenance on footways in condition 4 will increase from £4.5m to £23m in year 20. The table below illustrates this backlog affecting the network over a 20yr period

Footway Class	Condition 4 in Year 1	Backlog £	Condition 4 in Year 10	Backlog £	Condition 4 in Year 20	Backlog £
1A	0.5%	£5k	0.5%	£5k	0.5%	£5k
1	0	£0	4.1%	£140k	13.11%	£450k
2	7.74%	£540k	10.16%	£705k	16.77%	£1.1m
3	2.96%	£950k	8.32%	£2.6m	18.69%	£6m
4	3.97%	£3m	10.26%	£7.8m	20.62%	£15.8



SWOT Analysis	
Option: Managed Decline based on continuation of historic funding levels	
Objective: Adequately maintain the footway network at a consistent level over a 20yr period	
Strengths	**Weaknesses**
1. Reduced short term capital cost compared to other higher cost investment strategies	1. Condition deteriorates 2. Reduced safety by increasing reactive repairs 3. Higher long term maintenance costs 4. Road closures 5. Does not support an asset management approach
Opportunities	**Threats**
1. Short term Council savings made through reallocation of funding	1. Unable to satisfy WG LGBI borrowing requirements (i.e. maintaining fw for 20yr period) on WG asset investment enhancements. 2. Increasing 3rd party claims / serious injury 3. Increasing customer dissatisfaction 4. Could hinder the Councils social and economic agendas

1.4.2 Capital Investment Option 2: Steady State Investment Level

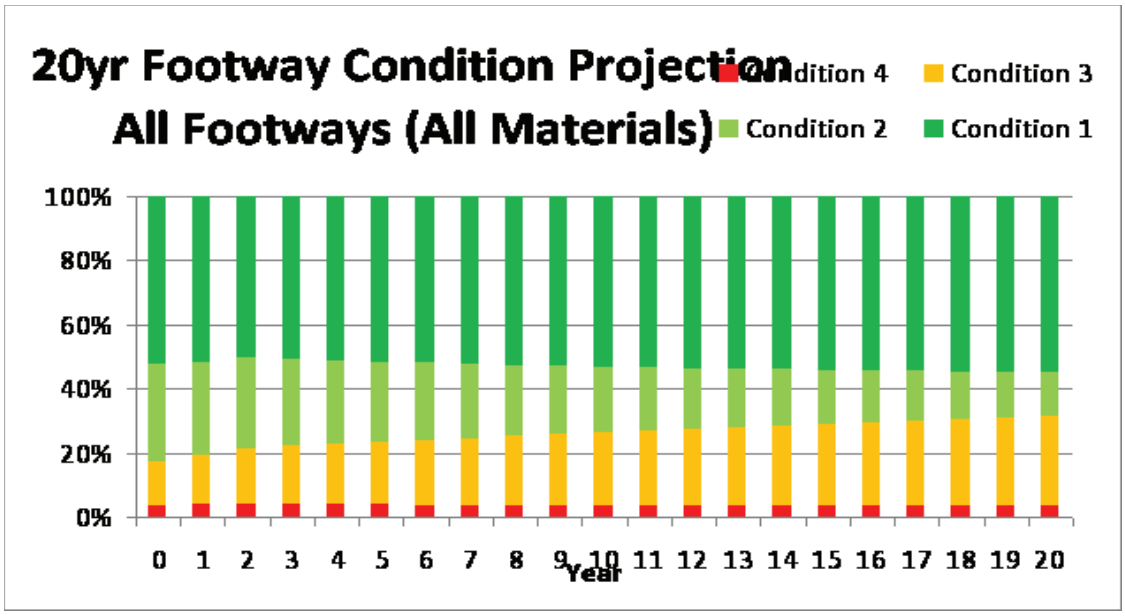
The table below illustrates the funding profile over the LGBI investment period (2012-15) with an increased level of Council Capital Funding to achieve steady state up to year 20.

	2011/12	2012/13	2013/14	2014/15	2015 to 32
LGBI funding	n/a	£0	£107k	£881k	n/a
Council Funding	£562k	£937k	£403k	£487k	£2.36m

Based on the funding profile illustrated above the graph below shows little or no deterioration over time resulting in the percentage of footway in need of maintenance (red + amber condition) remaining constant over the 20 year period. That is, the current condition of 18% (3.76% condition 4 & 13.39% condition 3) remains generally consistent for the 20 year period

Therefore the backlog of maintenance on footways in condition 4 will generally remain in the region of £4.5m for the entire 20 year period. The table below illustrates this backlog affecting the network over a 20yr period

Footway Class	Condition 4 in Year 1	Backlog £	Condition 4 in Year 10	Backlog £	Condition 4 in Year 20	Backlog £
1A	0.5%	£5k	0.5%	£5k	0.5%	£5k
1	0%	£0	0.11%	£4k	0.11%	£4k
2	7.74%	£540k	7.77%	£540k	8.39%	£580k
3	2.96%	£950k	2.64%	£850k	4.31%	£1.4m
4	3.97%	£3m	3.77%	£2.9m	3.12%	£2.4m



SWOT Analysis	
Option: Steady State Investment Levels	
Objective: Adequately maintain the footway network at a consistent level over a 20yr period	
Strengths	**Weaknesses**
1. Prevent increase in backlog and reduce revenue costs 2. Halt ongoing deterioration 3. Improve safety by reducing reactive repairs 4. Reduce 3rd party claims 5. Improve customer satisfaction **6.** Supports an asset management approach	1. Increased cost on existing capital investment levels 2. No ongoing improvement of condition
Opportunities	**Threats**
1. Satisfy WG LGBI borrowing requirements (i.e. maintaining fw for 20yr period) 2. Employment opportunities to satisfy increased investment 3. Improves social and economic agendas of the council	1. Budgets increasing in highways when overall decrease in Council funding

5.4.3 Capital Investment Option 3: Enhanced / Ideal State Investment Level

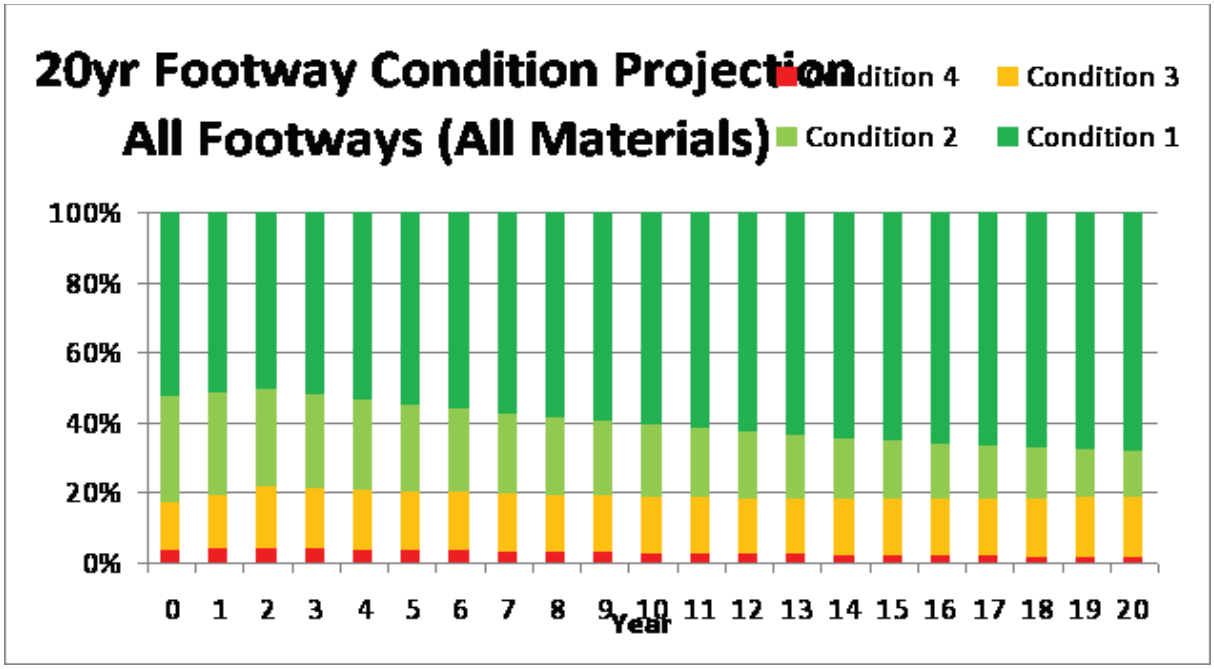
The table below illustrates the funding profile over the LGBI investment period (2012-15) with an increased level of Council Capital Funding to achieve an improvement in overall condition up to year 20.

	2011/12	2012/13	2013/14	2014/15	2015 to 32
LGBI funding	n/a	£0	£107k	£881k	n/a
Council Funding	£562k	£937k	£403k	£487k	£3.81m

Based on the funding profile illustrated above the graph below shows an improvement in overall condition over time resulting in the percentage of footway in condition 4 decreasing from the current 3.76% to 1.47% in 20 years.

Therefore the backlog of maintenance on footways in condition 4 will reduce from £4.5m to £1.7m over the 20 year period. The table below illustrates this backlog affecting the network over a 20yr period

Footway Class	Condition 4 in Year 1	Backlog £	Condition 4 in Year 10	Backlog £	Condition 4 in Year 20	Backlog £
1A	0.5%	£5k	0.5%	£5k	0.5%	£5k
1	0%	£0	0.11%	£4k	0.11%	£4k
2	7.74%	£540k	2.39%	£165k	0.06%	£4k
3	2.96%	£950k	1.98%	£630k	0.64%	£205k
4	3.97%	£3m	3.21%	£2.5m	1.99%	£1.5m



SWOT Analysis	
Option: **Enhanced / Ideal State Investment Level**	
Objective: Adequately maintain the footway network at a consistent level over a 20yr period	
Strengths	**Weaknesses**
1. Prevent increase in backlog and reduce revenue costs 2. Ongoing Improvement of condition 3. Halt deterioration 4. Improve safety by reducing reactive repairs 5. Reduce 3rd party claims 6. Improve customer satisfaction 7. Supports an asset management approach	1. Increased cost on existing capital investment
Opportunities	**Threats**
1. Satisfy WG LGBI borrowing requirements (i.e. maintaining fw for 20yr period) 2. Employment opportunities to satisfy increasing investment over time 3. Improves social and economic agendas of the council	1. Budgets increasing in highways when overall decrease in Council funding