# DEAN VALLEY WALKWAY : First Phase Feasibility Study

for Dean Valley Regeneration Limited

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and **CBA** Chartered Quantity Surveyors

Final Report August 2017

## Contents

**Dean Valley Walkway : First Phase Feasibility Study 2017**

## 1.0 INTRODUCTION

The Dean Valley walkway is part of a wider historic designed landscape that includes the three adjacent gardens of Moray Bank Gardens, Dean Gardens and Belgrave Crescent Gardens. The designed landscape – falling within the Edinburgh World Heritage site – is the subject of a Conservation Statement (Peter McGowan Associates July 2015) and a Biodiversity Scoping Study (Sue Bell Ecology July 2016).

This 'Proposed Dean Valley Renovation: First Phase Feasibility Study' follows on from these two pieces of work and focuses on the Council-owned pathway (the gardens are not owned and accessed publicly) between Dean Village and St Bernard's Bridge (see Location Plan on page 4).

The path is an important walking route in north Edinburgh and has in more recent years become a shared cycle and pedestrian path and part of the city's cycle network.

As identified in the Conservation Statement, elements of the designed landscape are affected by reduced maintenance and management practices, especially within the council-owned area. In particular, self-seeded trees have caused damage to the retaining wall supporting the path, the railings and the footpath surface.

This feasibility study is based on condition surveys of walls, railings and surfacing - identifying damage and surface water drainage issues. Repairs and remedial works are recommended and costed. Costs are presented in a separate document.

**NOTE**: All plans/drawings included in this report are reduced in size to fit the page size and are not to the scale indicated on the drawing.

### 1.1 Issue of Final Report

During consultation at draft report stage, the extent of trees proposed for felling was looked at with the CEC Trees and Woodlands Officer in April 2017. The number of trees for felling was generally accepted but a couple of large elm trees were amended in status for this final report submission to be retained and managed rather than felled. It will be essential to physically mark trees proposed for felling and agree this with CEC at the appropriate stage prior to any felling work commencing.

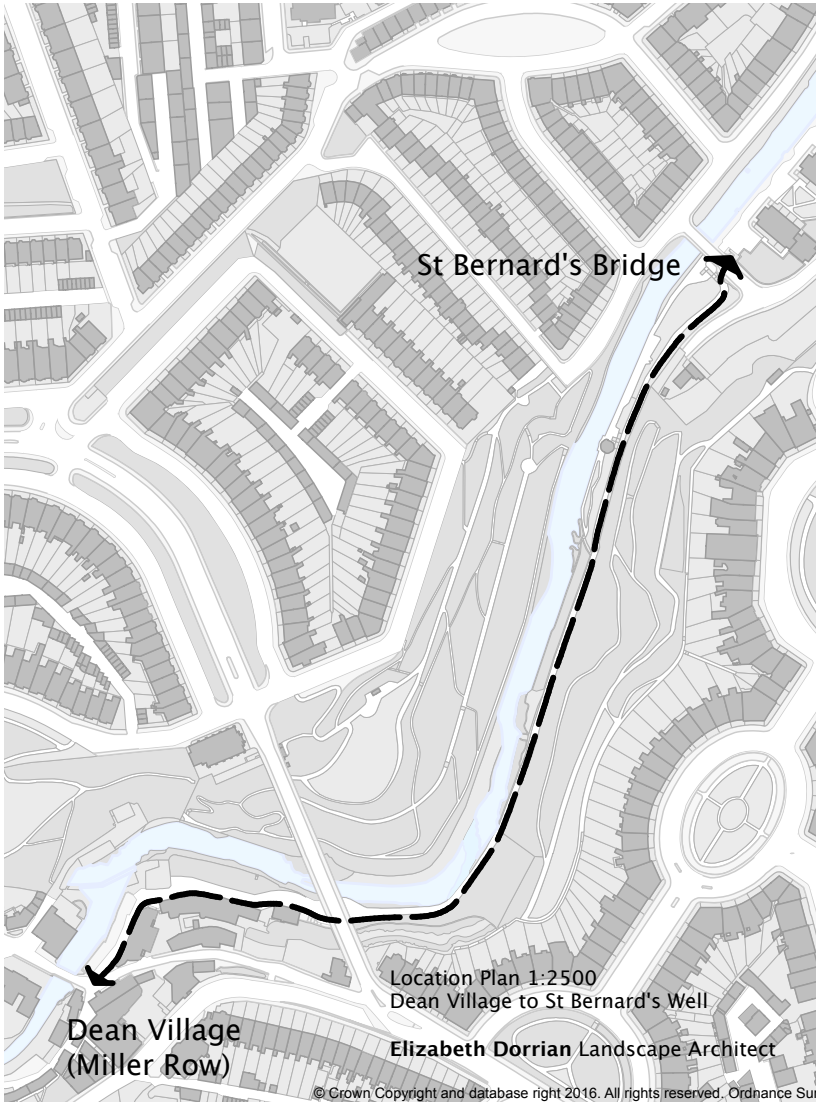
It was noted during the visit with the Trees and Woodland Officer (April 19th 2017) that since the survey associated with this report, felling had already occurred around St Bernard's Well with significant stumps left in place. It was not known who had done this work.

In addition, and since this visit with CEC, tree works have been carried out at the Dean Village end of the path, with ash trees severely cut. A damaged wall, noted for repair in this document, has also recently been pointed, apparently with cement and not lime mortar.

It is apparent that – whilst work is being done – a co-ordinated approach is urgently needed to avoid the further detriment of this World Heritage designed landscape.

Tree cutting carried out near Lindsay's Mill since this survey
(Photo June 16th 2017)

Wall repair carried out since this survey
(Photo June 16th 2017)


St Bernard's Bridge
Dean Village
(Miller Row)
Location Plan 1:2500
Dean Village to St Bernard's Well
**Elizabeth Dorrian** Landscape Architect
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## 2.0 SURVEYS

The site was visited four or five times between December 2016 and February 2017. The earliest time visited was 9am and the latest time approximately 2.30pm, all on weekdays.

Surveys were carried out to meet requirements of the brief but also informal observations on use of the pathway were made. During these times on site the path was in constant use but numbers of users varied with greater numbers in the period mid-morning to lunchtime. The users included cyclists – mostly single but at least one 'recreational' group – joggers, dog-walkers, adults with pre-school age children, recreational walkers and walkers obviously using the route to reach a destination. No conflicts of users were observed with the single exception of a cyclist entering the path below St Bernard's Bridge from Saunders Street and not being aware of pedestrians walking down from the upper path. This could be solved by placing an obstruction (bollard) below the bridge forcing cyclists to move out and away from the end of the upper footpath.

Since the surveys were conducted, some felling of trees has been carried out in the proximity of St Bernard's Well. The tree survey included in Appendix Four is therefore already out of date. Another tree (T2 in this study) has been severely cut since the survey and presents an ugly view. Clearance of ivy along the railing base has also been carried out in places since the survey period.

### 2.1 PARAPET AND LANDSCAPE WALLS

Natural stone walls are a feature of the path at the Dean Village end and they are of varied condition. Damage has occurred in places as a consequence of invasive tree roots and along some stretches pointing has deteriorated. Some repairs have been carried out previously with cement mortar and it is important that lime mortar is used in any future work. Survey information and recommended repairs are recorded in **Appendix One**.

### 2.2 RAILINGS

A survey of railings was carried out in terms of repairs needed and is presented later in this report (**Appendix Two**). It is confirmed that the height of the railings – 1.4m – meets the guidance for railing height beside a cycleway.

## 2.3 PATH ROUTE AND SURFACING

The pathway itself must function successfully in terms of facility to both cyclists and pedestrians. It is well-used because it works both as a practical route and as a picturesque route.

Problems with the walkway are currently down to, a) poor surface water drainage in specific locations, b) leaf litter building up and covering the surface which in turn holds more water, c) damage to the path surface by tree roots, and d) conflict between cyclists and pedestrians.

Guidance from SUSTRANS about shared cycle and pedestrian routes is summarised in **Appendix Six**.

### 2.3.1 Pathway width

The walkway currently meets the recommended minimum 3m width of a shared route along most of its length and averages 3.2m. The section where it is less than 3m is on the newest section of path linking upper and lower routes at St Bernard's Bridge. Here it is 2m, made to feel narrower by the inward curve of the railing. This link offers the barrier-free route to connect the path with Stockbridge and in this capacity has to be shared.

Grass verge to main path at St Bernard's Well

Link path

The only opportunity to widen the main path is in the location of St Bernard's Well where there is a grass verge on the side adjacent to the gardens (ref photo on previous page). It is advised however that the visual amenity of having a grass verge here outweighs the physical benefits of widening the path (which is still within the minimum recommendation) albeit that the grass suffers from overrun.

Recommended removal of ivy from the base of railings especially around St Bernard's Well (Appendix Two) will have the effect of making the pathway feel wider.

Guidance does not recommend that a shared route of the average 3.2m width available be segregated i.e. no surface demarcation for separating cyclists and walkers; the width would need to be a minimum of 7m for this to be successful.

With regard to the link path currently narrower than 3m – the least intrusive means of widening this section would be to re-position the handrail so that it sits approximately 300mm further from the path edge. The curve on the top rail means it would still function effectively, but it would physically increase the width of the pathway to some degree. With this option no increase on the actual surfacing would be necessary, simply a footing at each post. If the path were to be widened to 3m it would be a significant operation and the path would begin to look out of proportion at this location. Having a restricted width could be regarded as a benefit by reducing speeds on this sloped section of the path.

### 2.3.2 Pathway Surface

In terms of surfacing, the existing surface – black tarmac – is one of the most appropriate. Consideration has been given to some of the other recommended surfaces. For example, a lighter aggregate resin-bonded finish would lighten the feel of the path (already noted as having a dark, damp feel) but it has a high initial cost, would wear off in time leaving a patchy appearance and repairs would inevitably show up. In addition, a sensible means of maintaining and cleaning the footpath surface would be use of a pavement sweeper and this would reduce the lifespan of a resin-bonded aggregate finish. It is advised that the existing surface is in a good enough condition along its length to be subject to local repairs only where necessary. In time, more general re-surfacing may need to be carried out.

Cyclist feedback (1 email comment) advises that the link path at St Bernard's Bridge which is surfaced with resin-bonded aggregate is in fact more slippery than other sections of the path in icy conditions. It may be prudent to re-surface this section with tarmac to match the rest of the path when the existing surface reaches the end of its lifespan.

Sett surfacing at the Dean Village entrance was considered for alteration but it was concluded that it is in good enough condition to not require re-laying and that its localised settlement and potential slippery surface will in fact be advantageous in slowing cyclist speeds.

The section of pathway under the Dean Bridge and past Randolph Cliff is reported as being particularly slippery in winter conditions. Improved surface water drainage around Dean Bridge will alleviate this but signs warning of winter ice would be advisable (see section 3.0).

The area immediately below the Dean Bridge is very wide and more like a vehicle road space. Sketch proposals are included in **Appendix Five** illustrating an option for visually reducing the width of this space, tied in with improving the condition and appearance of the banking below the bridge. This has not been costed as part of this exercise.

Surface repairs recommended and costed as part of this study are outlined in **Appendix Three**.

## 2.4 SURFACE WATER DRAINAGE

Proposals for surface water drainage improvements are based on the use of whin sett channels, both improving those that are already there (re-laying or re-routing) and adding additional channels in. This is a low-intervention method that uses the existing palette of materials and open dished channels are easy to maintain – a pavement sweeper can be used effectively. This choice of approach also doubles up as a means of slowing cyclist speeds; a number of channels are introduced across the path at the Dean Bridge end thus introducing a 'rumble strip' effect on what is a straight length of path where speed could be built up.

Details of the proposals are included in the drawings in **Appendix Three**.

## 2.5 RETAINING WALLS

The condition of the main retaining walls supporting the path is affected in a number of places by trees growing within the structure. Remedial work is noted on drawings included in **Appendix Three**.

## 2.6 TREES

Old photographs and prints of the Dean Valley indicate that tree cover was confined to the valley sides with no trees growing in the river channel itself. This is a dramatic difference from today's landscape where many trees are growing on the water margin and within walls and structures along the river side. But today's landscape is important as wildlife habitat within the city, supported by council policy, so tree clearance to the extent required to restore the designed landscape is not an option and would not be desirable.

At present, City of Edinburgh Council have only a small number of existing trees along the pathway numbered and surveyed based on condition in relation to health and safety issues for trees growing in public places.

The Conservation Statement recommends that a comprehensive tree survey and management plan be carried out for the Dean Valley designed landscape to include all trees both in Council ownership and within the gardens.

The scope of this feasibility study does not cover the scale of tree survey required to meet this recommendation; instead, trees that are causing damage to structures and surfacing have been identified and noted for removal or management.

City of Edinburgh Council's 'Trees in the City Action Plan' notes in policy 9 that the council will not carry out works to trees, or fell them unless it is necessary to do so. When works are carried out the reasons for the work shall be documented and recorded. Policy 14 allows for making safe unacceptable trip hazards.

A table noting the trees observed during this study records reasons for any proposed removal (Ref **Appendix Four**) i.e. whether the tree is causing damage to surfacing, railings and/or walls.

The resultant list of trees has been cross-referenced with recommendations in the Biodiversity Scoping Study and the Conservation Statement. Many of the trees noted for removal are small, sapling trees with the aim of preventing future damage and their contribution to habitat and landscape are currently limited due to their small size. Other, larger trees will have an impact on tree cover and habitat but their removal will not by any means result in a bald landscape; tree cover along the river corridor will be maintained, highlighted as beneficial to bats. No trees growing at lower levels on banking (as opposed to structures) have been identified for removal, thus maintaining the valuable habitat associated with these e.g. fish spawning sites amongst exposed tree roots; holts, resting sites and general cover for otters at water level, and; perches for kingfishers.

One tree listed for 'management' (T47) is noted in the Biodiversity Scoping Study target note 21 (photo location 31) as being a low-moderate potential bat roost and will need to be assessed more closely prior to any tree surgery work. Indeed, in line with recommendations in the Biodiversity Scoping Study, all trees noted for removal in this proposal should be assessed by an ecologist and considered in terms of habitat value, especially as potential bat roosts, before removal.

Removal of trees recommended within this report do not specifically address views in the designed landscape but will inevitably open up the river views and can be seen as a first phase to be followed by another assessment specifically about views.

Removal of the trees on this list will also help to 'lighten' the walkway which currently has a damp and dark feel all year round, but will not distract from the enjoyment of walking amongst trees.

CEC's Trees and Woodland Officer has looked at the list of trees proposed for removal and – after a couple of amendments included in this final version of the report – is in general agreement. They advise that it is essential that trees are physically marked at the time of any proposed felling and checked with the Woodland Officer prior to work commencing.

City of Edinburgh Council's 'Trees in the City Action Plan' notes in policy 40 that the Council will endeavour to maintain its tree stock. It would be possible to plant new trees in the area of the former Greenland Mill, introducing further native species.

Positioning of any new trees here would need to be considered in relation to the rock face of Randolph Cliff; this feature is important to the picturesque landscape and the ultimate aim would be to clear vegetation from the rock itself in order to re-reveal its dramatic nature. Trees planted near the base should not obscure this feature in the long term and species with a shorter ultimate height such as alder and wild cherry should be considered.

## 3.0 SIGNING

The main need for improved signing appears to be to make it clear that the path is for shared use by both pedestrians and cyclists. Simple signing at access points in the same style as other city-wide cycle/path route signing should be introduced (Directional Signs) and additional signing (Information Signs) along the route should be placed as reminders that the route is shared and for cyclists to use a bell as well as warning of icy winter conditions. Refer to Plan in **Appendix Seven.**


Existing sign at Dean Village access – no reference to cycle use


Standard signs used on shared cycle and pedestrian routes

## 4.0 STREET FURNITURE

There are a number of benches at the St Bernard's Well end of the path where there is more space and it would not be appropriate to introduce any more along the main length. There is the opportunity to replace a missing bench close to St Bernard's Well but it is not an ideal location and removing the remains of the tarmac plat would be more appropriate.

There are two different styles of bench in use. The standard Council-favoured style is located on the lower level by St Bernard's Well and when this area is looked at in more detail (recommendations in the Conservation Statement are for this area to be restored to the layout of 1888) the style of bench should be re-considered.

Bench on upper path

Standard Council-style bench on lower path

Litter bins are limited to each end of the path and this is appropriate given the impracticality of access for emptying. Likewise there are no specific dog waste bins along the length of the path. Despite this limited provision there was no sign of dog waste and minimal litter noted during the survey periods.

## 5.0 LIGHTING OF THE WALKWAY

The walkway is currently unlit and this has been the case throughout its history.

A recent, albeit limited, survey of local residents recorded the desire of some participants for lighting along the path and because the path is part of the cycling infrastructure of the city, SUSTRANS recommend lighting.

Any lighting proposals must take into consideration the following:

a) The path is part of a designed landscape within the Edinburgh World Heritage site and requires design sensitivity.

b) The woodland and river habitats are important in the biodiversity of the city and any intervention must not adversely affect habitat.

c) Introduction of power to this relatively remote landscape will be costly.

### 5.1 LIGHTING PROPOSALS

It can be argued that there is no place for lighting in terms of preserving the habitat and upholding the character of a very unique 'nature' experience in the heart of the city but also because this is a route of choice for users, rather than necessity, with no residential properties accessed from it.

A low-key solution and one requiring no electrical installation is that of solar-powered ground stud lighting (ref. **Appendix Eight**). These have been used on the Union Canal towpath in the west of Edinburgh by CEC. The towpath is a Heritage site also requiring similar sensitivity similar to the Dean Valley walkway. Here the ground studs are spaced at 10m intervals.

It is proposed that most of the length of the walkway has ground stud lights on both sides defining the edges of the path, and with red studs at the location of the raised sett crossings which prevent a potential hazard in the dark.

At the Dean Path end of the pathway lighting is proposed as recessed in to the existing stone boundary walls with power sourced from street lighting on Bells Brae.

It is also proposed that a light is fixed on the underside of St Bernard's Bridge, and that two are fixed on to the Dean Bridge; these will require planning/listed building consent.

### 5.2 LIGHTING SPECIFICATION

A specification and outline method of work can be found in **Appendix Eight**.

## 6.0 ST BERNARD'S BRIDGE TO STOCKBRIDGE

This stretch of the path is along Saunders Street, a residential no through road with limited traffic but significant numbers of parked vehicles.

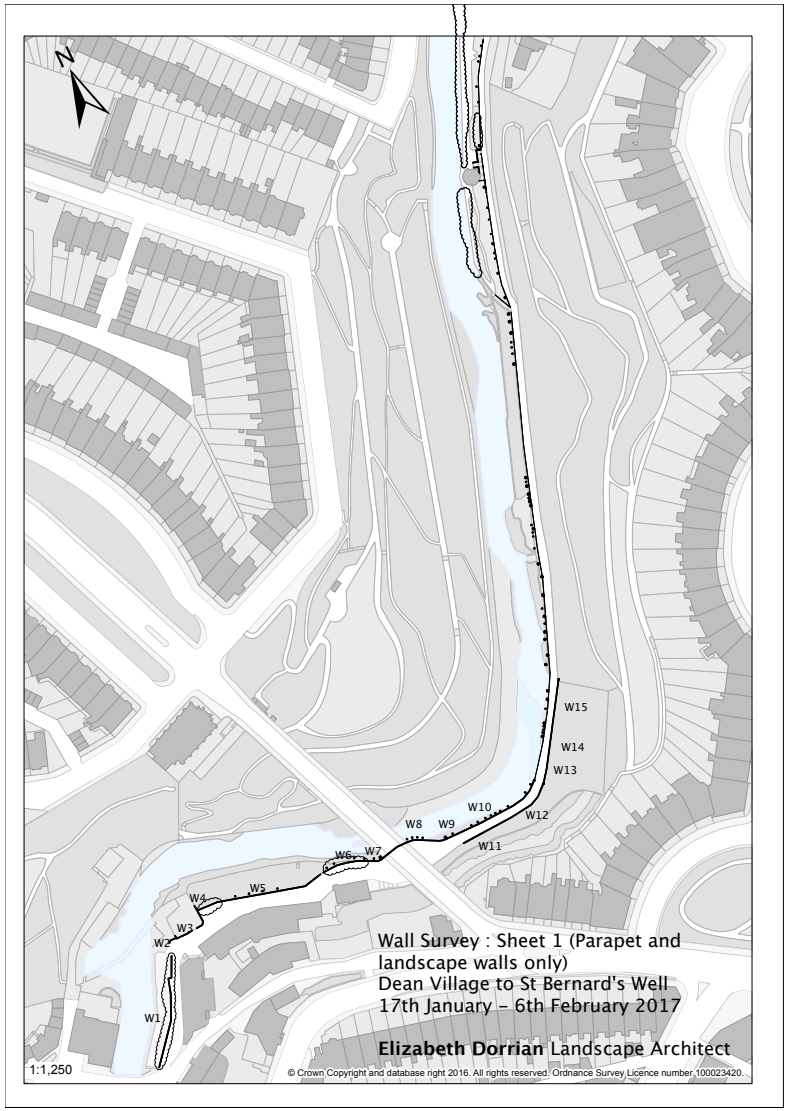
It would be desirable to keep cyclists on the road surface and not on the pavement.

The pedestrian experience on the pavement can be improved by re-locating large refuse hoppers on to the street side rather than the river side where they currently create an obstruction. Projections of the pavement between parking bays could be removed, a new street level surfacing such as setts put in place and bins located here, thus removing the obstruction but also avoiding the need to access the pavement for emptying the bins.

There is a pedestrian pinch point at the corner of Stockbridge where the pavement is relatively narrow. Widening the pavement here, and thus narrowing the vehicle junction width, would not be recommended as it will create difficulties for larger vehicles turning left from Saunders Street. A table junction i.e. 'wall to wall' surfacing at pavement level – taking away kerb lines - could be considered and designed in such a way that it would also benefit the weekly Sunday Market.

Tree removal from the river retaining wall is required along this stretch also, on both left and right bank.

**APPENDIX ONE: Parapet and Landscape Walls Survey**


N
W1
W2
W3
W4
W5
W6
W7
W8
W9
W10
W11
W12
W13
W14
W15
Wall Survey : Sheet 1 (Parapet and landscape walls only)
Dean Village to St Bernard's Well
17th January – 6th February 2017
Elizabeth Dorrian Landscape Architect
1:1,250
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**WALL SURVEY 17th January – 6th February 2017**

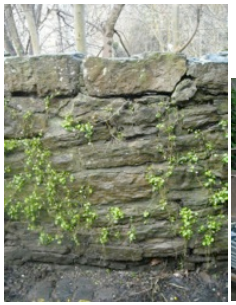
To be read in conjunction with **Wall Survey Sheet 1** and **Wall Survey Photo Sheet**

NOTE: All wall repairs to be carried out using lime mortar

| Ref. No | Comments | Proposals |
|---|---|---|
| W1 | Max 1.45m high. Patchy pointing. Live tree stumps damaging top of wall | Remove cope, clear stumps, replace cope and re-point east face of wall - approx 24 lm |
| W2 | Part of Lindsay's Mill, not included in survey. | - |
| W3 | Part of Lindsay's Mill, not included in survey. | - |
| W4 | Part of Lindsay's Mill, not included in survey but live tree stumps still in wall. | - |
| W5 | 42m of wall .85m- 1.1m high with rounded cope. | Re-point 9.5 lm within overall length |
| W6 | 12m of av. 1.1m high wall with rounded cope covered by vigorous ivy | Remove ivy and re-point as necessary |
| W7 | Wall .8m high lifted and damaged by adjacent tree. | Re-build 5m length |
| W8 | Wall .94m high lifted and damaged by adjacent tree. | Re-build 2m length |
| W9 | Wall 1.03m highlifted and damaged by adjacent tree. | Re-build 3.5m |
| W10 | Wall 1.15m high lifted and damaged by adjacent tree & generally poor pointing | Re-build 2m length and re-point along 35 lm |
| W11 | Retaining wall 1.07m high with missing cope over 11m | Fit rounded cope to match existing |
| W12 | 38m retaining wall 1.34m high with cope. Patchy pointing. | Re-point |
| W13 | 17m retaining wall .65m high with no cope and lower than adjacent wall | Build up to 1.15m incl. rounded cope |
| W14 | Retaining wall 1.15m high with cope | - |
| W15 | 31m retaining wall .65m high, flat concrete cope and lower than adjacent wall. | Build up to 1.15m incl. rounded cope |

**WALL SURVEY AND REPAIRS** – parapet and landscape walls. For retaining walls refer to Engineer's drawings.
To be read in conjunction with **Wall Survey Sheet 1** and **Wall Survey and Repairs**


W1


W1


W2


W3


W4


W5


W6


W7

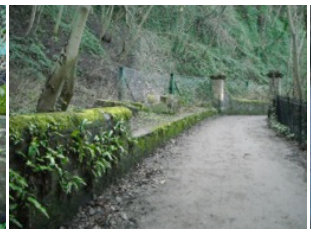

W8


W9


W10

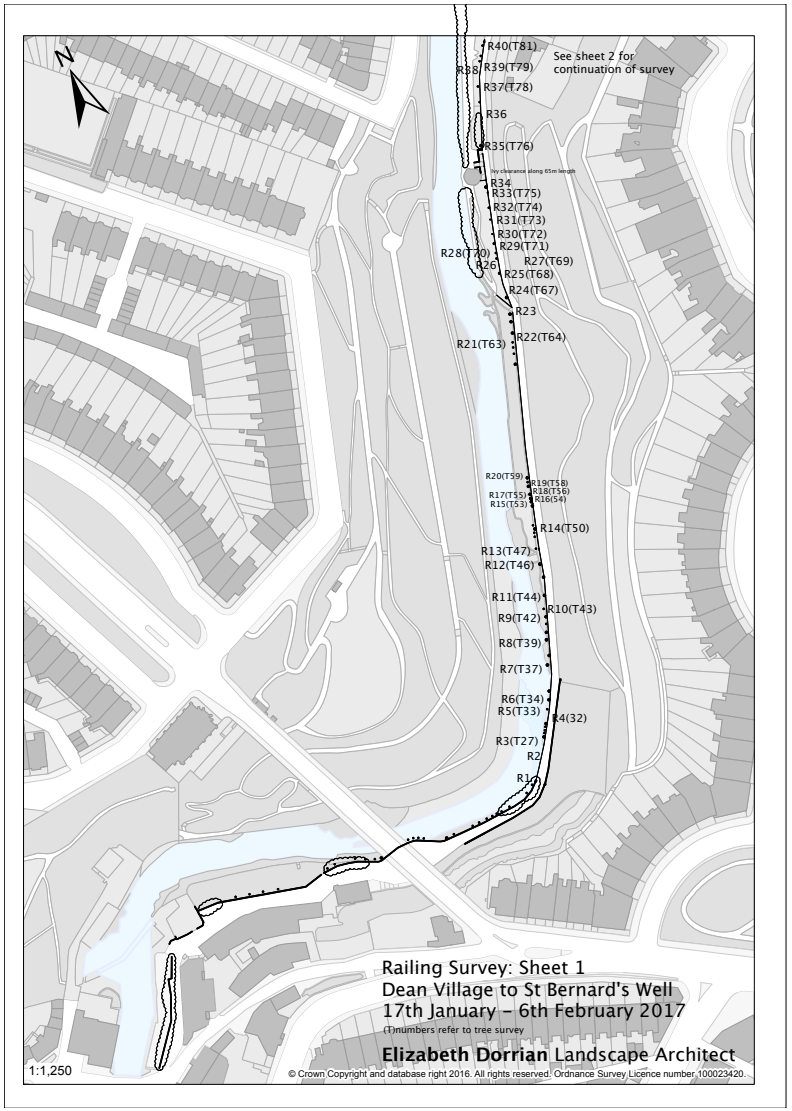

W11


W12


W13 and 14


W15

**APPENDIX TWO: Railing Survey**


R40(T81)
R38
R39(T79)
R37(T78)
R36
R35(T76)
See sheet 2 for continuation of survey
R34
R33(T75)
R32(T74)
R31(T73)
R30(T72)
R29(T71)
R28(T70)
R26
R27(T69)
R25(T68)
R24(T67)
R23
R22(T64)
R21(T63)
R20(T59)
R19(T58)
R18(T56)
R17(T55)
R16(54)
R15(T53)
R14(T50)
R13(T47)
R12(T46)
R11(T44)
R10(T43)
R9(T42)
R8(T39)
R7(T37)
R6(T34)
R5(T33)
R4(32)
R3(T27)
R2
R1
Railing Survey: Sheet 1
Dean Village to St Bernard's Well
17th January – 6th February 2017
(T)numbers refer to tree survey
Elizabeth Dorrian Landscape Architect
1:1,250
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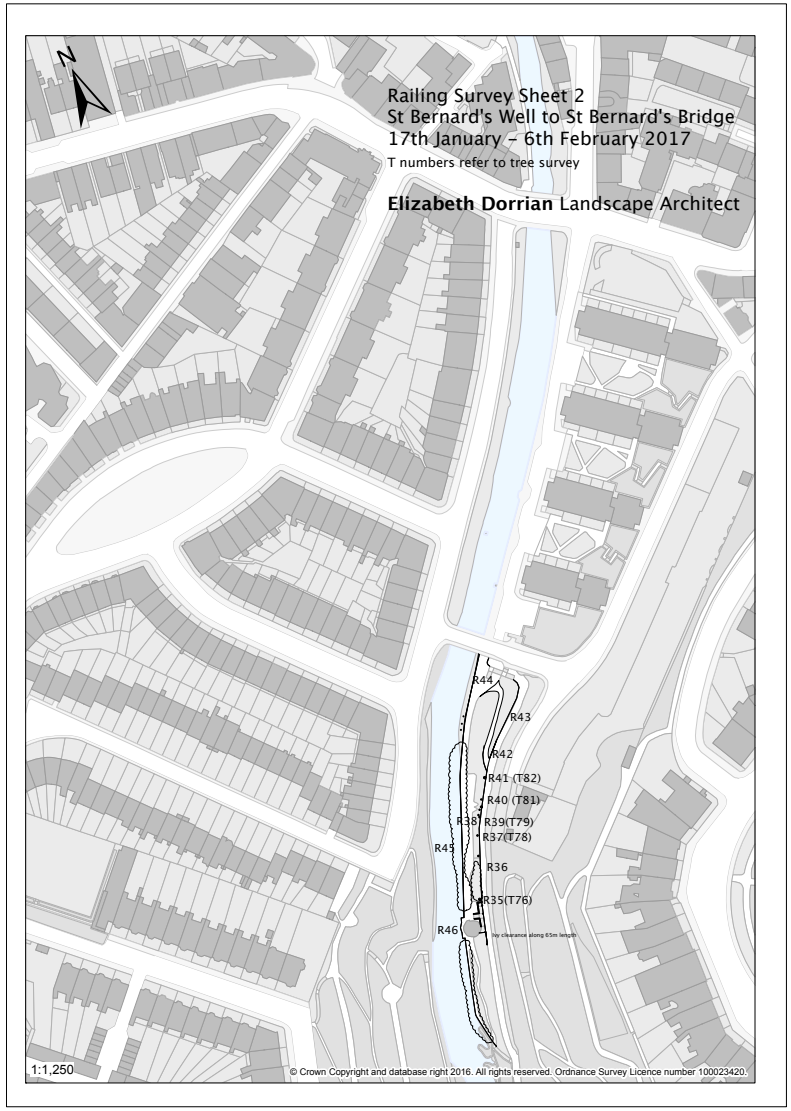
Railing Survey Sheet 2
St Bernard's Well to St Bernard's Bridge
17th January – 6th February 2017
T numbers refer to tree survey
Elizabeth Dorrian Landscape Architect
R44
R43
R42
R41 (T82)
R40 (T81)
R38
R39(T79)
R37(T78)
R45
R36
R35(T76)
R46
1:1,250
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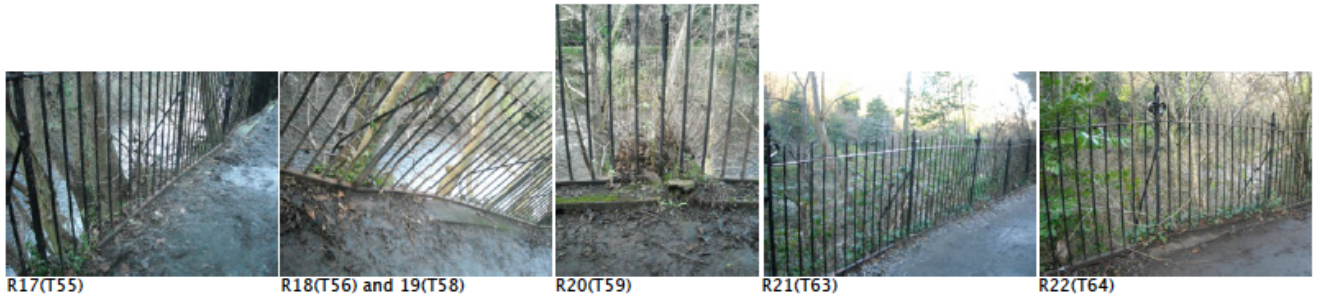
**RAILING SURVEY 17th January - 6th February 2017**
To be read in conjunction with Railing Survey Sheets 1 and 2, Railing Survey Photo Sheet and Tree Survey

Standard railing panel is 1.84m long (See photos of other styles)
Uprights are 20mm diam with pointed top @ 103mm centres and 1400mm high
Posts and rails are 50mm flat bar with decorative finial
Base rail is 50mm angle bar
Panels are bolt-fixed to uprights, allowing dismantling for repair/re-setting
Following repair, all railings to be cleaned and re-painted

| Ref. No | Comments | Proposals |
|---|---|---|
| R1 | Broken bolt at fixing with pillar | Re-place bolt |
| R2 | 5no unmatched uprights | Re-place uprights with new to match |
| R3 | 2 no panels lifted Ash tree (T27)close to railings | Remove tree and re-align railings |
| R4 | 1 panel lifted Ash tree (T32) in base of railings | Remove tree and re-align railings |
| R5 | Beginning to lift 1 panel. Elm(T33) in base of railings | Remove tree and re-align railings |
| R6 | No damage but sappling (T34) in base of railing | Remove sappling |
| R7 | 4no panels lifted. Large elm (T37) close by. | Remove tree and re-align railings |
| R8 | 2 panels lifting. Elm (T39) growing in base. | Remove tree and re-align railings |
| R9 | 2 panels and base lifting. Elm tree (T42) growing in to railings. | Remove tree and re-align railings |
| R10 | Elm (T43) growing through back support | Remove one trunk affecting railing |
| R11 | Sycamore (T44) growing on rail support stone | Remove tree & stabilise support stone |
| R12 | 2 panels lifting. Caused by large elm tree with basal growth (T46) | Retain tree and re-align railings |
| R13 | 2 panels lifted by large sycamore (T47) | Tree to be managed, re-align railings |
| R14 | 3 panels lifted. Caused by Elm (T50) | Remove elm tree (retain ash tree growing with elm) and re-align railings |
| R15 | 3 panels lifted. Caused by Elm (T53) | Remove tree and re-align railings |
| R16 | Elm (T54) growing in base; no current damage to railings | Remove tree to prevent future damage |
| R17 | Elm (T55) growing in base; no current damage to railings | Remove tree to prevent future damage |

| | | |
|---|---|---|
| R18 | 3 panels lifted and bowed towards river caused by Ash (T56) and | Remove tree and re-shape railings |
| R19 | Sycamore (T58) damaging base of railing; part of damage as R18 | Remove tree and re-shape railings |
| R20 | Base and 1 panel lifted caused by re-sprouting elm stump (T59) | Remove tree and re-align railings |
| R21 | 2 panels lifted. Caused by Ash (T63) | Remove tree and re-align railings |
| R22 | Re-sprouting elm stump (T64) causing 2 panels to lift | Remove tree and re-align railings |
| R23 | Railings beside river access in good condition | |
| R24 | Elm (T67) beginning to lift 1 panel | Remove tree and re-align railings |
| R25 | Support post base dislodged and causing two unstable panels | Repair stonework below base (ref. Engineer's dwg) |
| R26 | Part of finial lost and 1 complete panel mis-matched | Repair finial and replace uprights |
| R27 | Elm (T69) beginning to lift railing base and bending top rail | Remove tree and re-align railings |
| R28 | Elm tree (T70) lifting 2 panels | Remove tree and re-align railings |
| R29 | Elder (T71) growing at base of railing | Remove tree |
| R30 | Elder (T72) lifting one panel | Remove tree |
| R31 | Elder (T73) growing at base of railing | Remove tree |
| R32 | Elder (T74) growing through railings | Remove tree |
| R33 | Elder (T75) growing at base of railing | Remove tree |
| | Base of railings covered in ivy growth, holding moisture against metalwork | Clear ivy along 65m length |
| R34 | Railings between stone pillars in good condition | |
| R35 | Re-growth from tree stump (T76) pushing up rail | Remove stump |
| R36 | Single upright bent | Replace 1 upright |
| R37 | Elder (T78) growing into railing - no damage yet | Remove tree |
| R38 | Concrete base broken away at rear | Repair base (ref. Engineer's dwg) |
| R39 | Sappling ash(T79) and sycamore (T80) lifting 1 panel | Remove trees and re-align railings |
| R40 | Multi-stemmed elm (T81) lifting path and concrete railing base | Remove tree & repair base (ref. Engineer's dwg) |
| R41 | Ash tree (T82) growing through railings | Remove tree and repair uprights/re-align panel |
| R42 | 6 new panels in good condition | |
| R43 | Railings in good condition | |
| R44 | 4no missing finials on 'feature' railings | Replace finials with copy of original |
| R45 | Horizontal tubular style railings in good condition. | Ivy removal from river-side over 30m total length |
| R46 | Decorative railing panels in good condition | |


R1
R2
R3(T27)
R4(T32)
R5(T33)
R6(T34)
R7(T37)
R8(T39)
R9(T42)
R10(T43)
R11(T44)
R12(T46)
R13(T47)
R14(T50)
R15(T53)
R16(T54)


R17(T55)

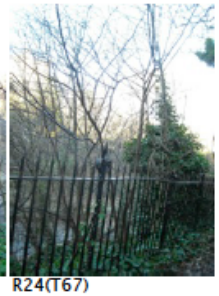

R18(T56) and 19(T58)


R20(T59)


R21(T63)


R22(T64)


R23


R24(T67)


R25


R26


R27(T69)


R28(T70)


R29(T71)

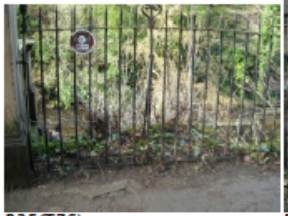

R30(T72)

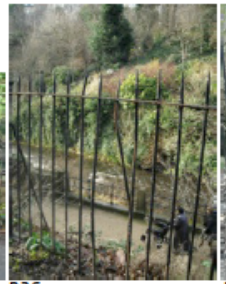

R31 (T73)


R32(T74)


R33(T75)


R34


R35(T76)


R36


R37(T78)


R38


R39 (T79 and T80)


R40(T81)


R41(T82)

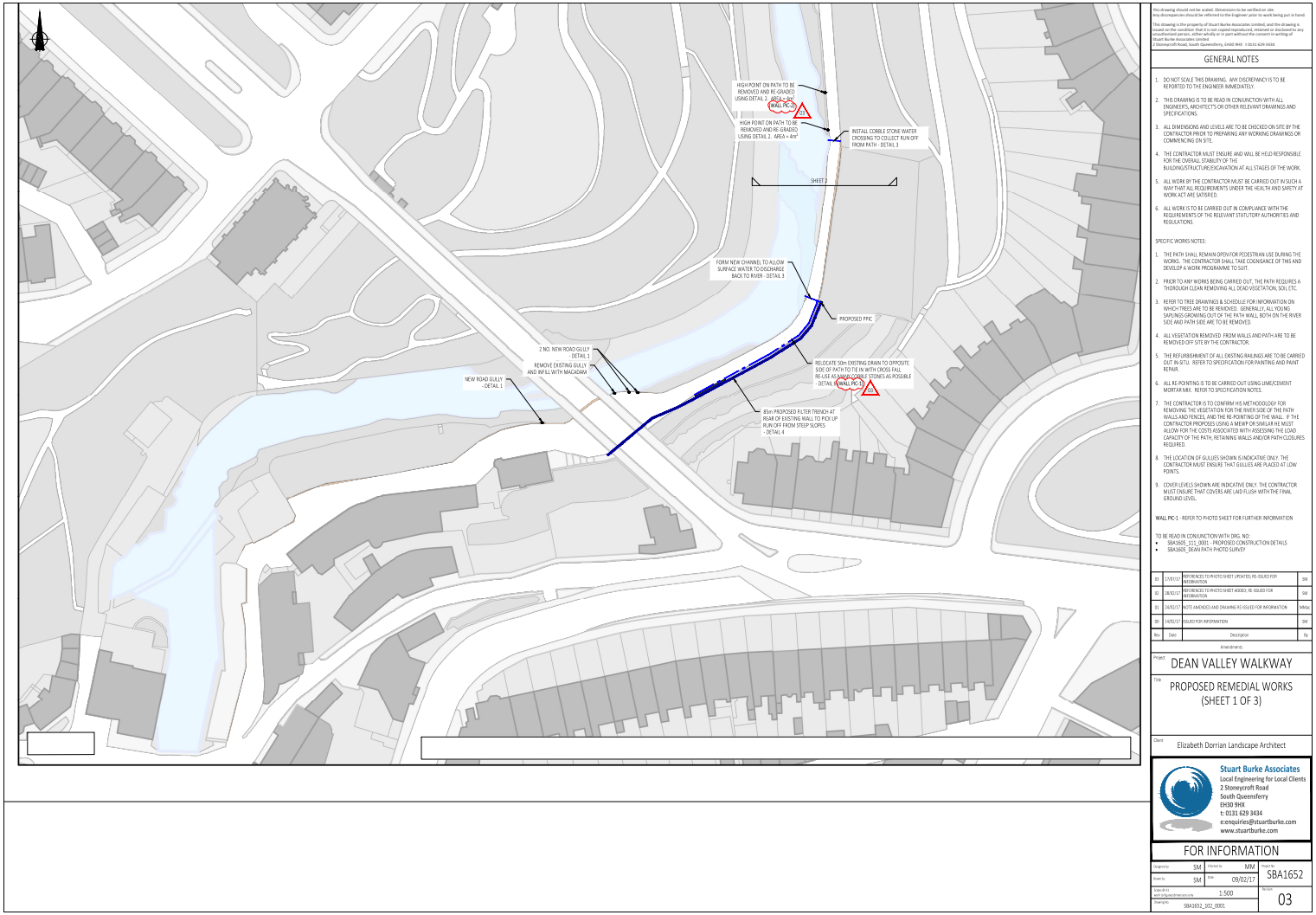

R42 and 43


R44


R45


R46

**APPENDIX THREE: Surfacing, Drainage and Structural Walls**




This drawing should not be scaled. Dimensions to be verified on site. Any discrepancies should be referred to the Engineer prior to work being put in hand.



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6. ALL WORK IS TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES AND REGULATIONS.

SPECIFIC WORKS NOTES:

1. THE PATH SHALL REMAIN OPEN FOR PEDESTRIAN USE DURING THE WORKS. THE CONTRACTOR SHALL TAKE COGNISANCE OF THIS AND DEVELOP A WORK PROGRAMME TO SUIT.
2. PRIOR TO ANY WORKS BEING CARRIED OUT, THE PATH REQUIRES A THOROUGH CLEAN REMOVING ALL DEAD VEGETATION, SOIL ETC.
3. REFER TO TREE DRAWINGS & SCHEDULE FOR INFORMATION ON WHICH TREES ARE TO BE REMOVED. GENERALLY, ALL YOUNG SAPLINGS GROWING OUT OF THE PATH WALL BOTH ON THE RIVER SIDE AND PATH SIDE ARE TO BE REMOVED.
4. ALL VEGETATION REMOVED FROM WALLS AND PATH ARE TO BE REMOVED OFF SITE BY THE CONTRACTOR.
5. THE REFURBISHMENT OF ALL EXISTING RAILINGS ARE TO BE CARRIED OUT IN SITU. REFER TO SPECIFICATION FOR PAINTING AND PAINT REPAIR.
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WALL PIC-1 - REFER TO PHOTO SHEET FOR FURTHER INFORMATION

TO BE READ IN CONJUNCTION WITH DRG. NO:
- SBA1605_111_0001 - PROPOSED CONSTRUCTION DETAILS
- SBA1605_DEAN PATH PHOTO SURVEY

| Rev | Date | Description | By |
|---|---|---|---|
| 05 | 17/03/17 | REFERENCES TO PHOTO SHEET UPDATED, RE-ISSUED FOR INFORMATION | SM |
| 04 | 28/02/17 | REFERENCES TO PHOTO SHEET ADDED, RE-ISSUED FOR INFORMATION | SM |
| 03 | 24/02/17 | NOTE AMENDED AND DRAWING RE-ISSUED FOR INFORMATION | MMcG |
| 02 | 14/02/17 | ISSUED FOR INFORMATION | SM |

Amendments

Project: DEAN VALLEY WALKWAY

Title: PROPOSED REMEDIAL WORKS (SHEET 1 OF 3)

Client: Elizabeth Dorrian Landscape Architect

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| | | | |
|---|---|---|---|
| Designed by: SM | Checked by: MM | Project no: SBA1652 | |
| Drawn by: SM | Date: 09/02/17 | | |
| Scale @ A1 (with 10 figured dimensions only) | 1:500 | Revision: 03 | |
| Drawing No. | SBA1652_102_0001 | | |


SHEET 2
APPROXIMATELY 6m OF WALL TO BE REPAIRED, RAILING AND PATH TO BE REINSTATED - DETAIL 2 & 5
HIGH POINT ON PATH TO BE REMOVED AND RE-GRADED USING DETAIL 2 (WALL PIC-2)
INSTALL COBBLE STONE WATER CROSSING TO COLLECT RUN OFF FROM PATH USING DETAIL 3
HIGH POINT ON PATH TO BE REMOVED AND RE-GRADED USING DETAIL 2 (WALL PIC-3)
INSTALL COBBLE STONE WATER CROSSING TO COLLECT RUN OFF FROM PATH USING DETAIL 3
HIGH POINT ON PATH TO BE REMOVED AND RE-GRADED USING DETAIL 2 (WALL PIC-4)
INSTALL COBBLE STONE WATER CROSSING TO COLLECT RUN OFF FROM PATH USING DETAIL 3
HIGH POINT ON PATH TO BE REMOVED AND RE-GRADED USING DETAIL 2
HIGH POINT ON PATH TO BE REMOVED AND RE-GRADED USING DETAIL 2
HIGH POINT ON PATH TO BE REMOVED AND RE-GRADED USING DETAIL 2 (WALL PIC-5)
CLEAN OUT ACO DRAIN TO ENSURE THAT IT IS WORKING EFFECTIVELY AND MAINTAIN AT 6 MONTH INTERVALS
REPAIR SURFACING, REMOVE EXISTING SURFACE COURSE, SCARIFY AND RE-APPLY SURFACE COURSE. AREA = 2m²
HIGH POINT ON PATH TO BE REMOVED AND RE-GRADED USING DETAIL 2 AREA = 4m² (WALL PIC-6)
HIGH POINT ON PATH TO BE REMOVED AND RE-GRADED USING DETAIL 2 AREA = 4m² (WALL PIC-7)
HIGH POINT ON PATH TO BE REMOVED AND RE-GRADED USING DETAIL 2 AREA = 4m²
INSTALL COBBLE STONE WATER CROSSING TO COLLECT RUN OFF FROM PATH - DETAIL 3
SHEET 1
GENERAL NOTES
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WALL PIC-1 - REFER TO PHOTO SHEET FOR FURTHER INFORMATION
TO BE READ IN CONJUNCTION WITH DRG. NO:
SBA1656_111_0001 - PROPOSED CONSTRUCTION DETAILS
SBA1656_DEAN PATH PHOTO SURVEY
02 13/02/17 REFERENCES TO PHOTO SHEET UPDATED. RE-ISSUED FOR INFORMATION SM
01 09/02/17 REFERENCES TO PHOTO SHEET ADDED. RE-ISSUED FOR INFORMATION SM
00 14/01/17 ISSUED FOR INFORMATION SM
Rev Date Description By
Amendments
Project DEAN VALLEY WALKWAY
Title PROPOSED REMEDIAL WORKS (SHEET 2 OF 3)
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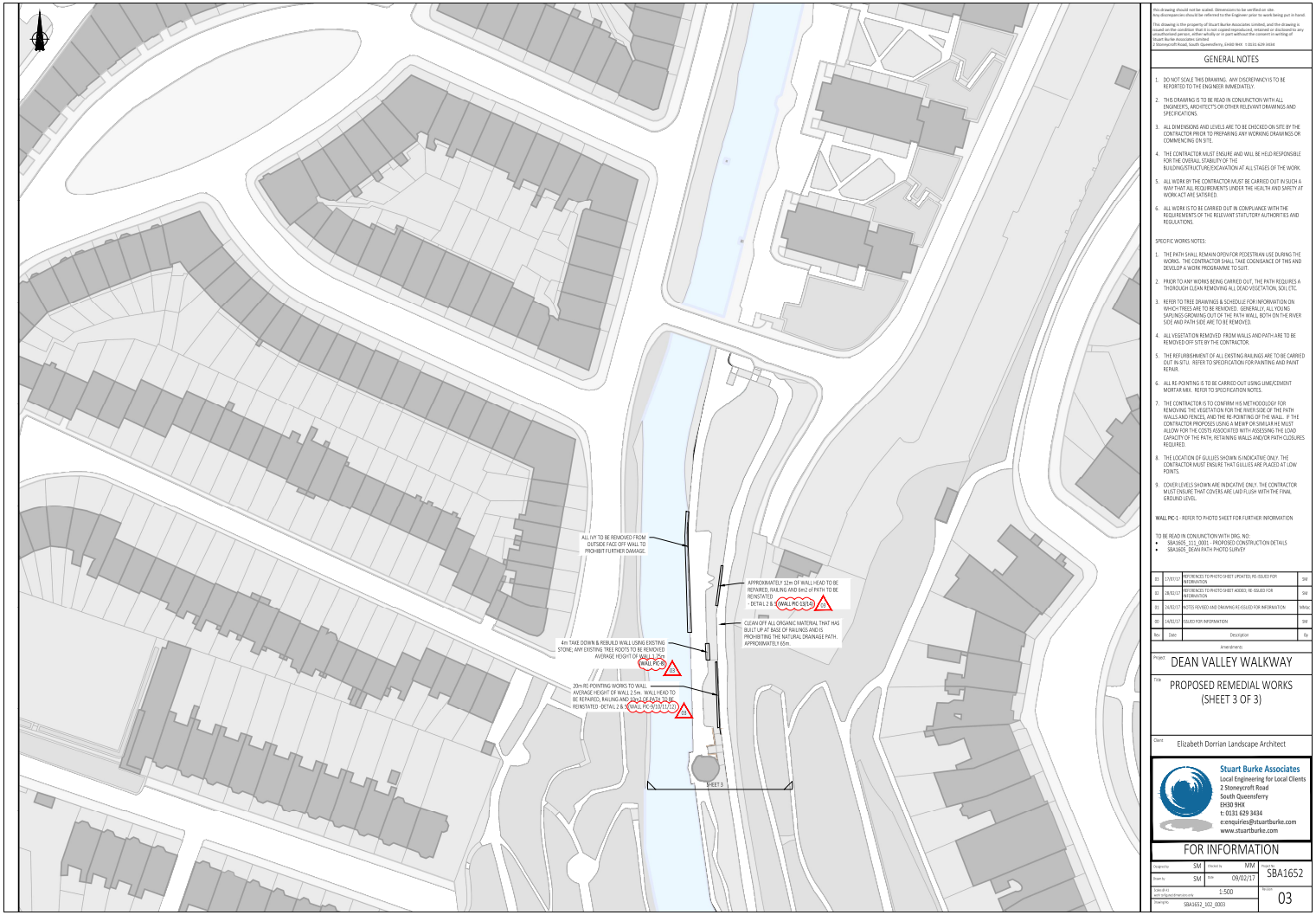
FOR INFORMATION
Designed by SM Checked by MM Project no. SBA1652
Drawn by SM Date 09/02/17
Scale @ A1 1:500
Drawing No. SBA1652_102_0002
Revision 02

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WALL PIC-1 - REFER TO PHOTO SHEET FOR FURTHER INFORMATION

TO BE READ IN CONJUNCTION WITH DRG. NO:
- SBA1652_111_0001 - PROPOSED CONSTRUCTION DETAILS
- SBA1652_DEAN PATH PHOTO SURVEY

| Rev | Date | Description | By |
|---|---|---|---|
| 03 | 17/03/17 | REFERENCES TO PHOTO SHEET UPDATED, RE-ISSUED FOR INFORMATION | SM |
| 02 | 28/02/17 | REFERENCES TO PHOTO SHEET ADDED, RE-ISSUED FOR INFORMATION | SM |
| 01 | 24/02/17 | NOTES REVISED AND DRAWING RE-ISSUED FOR INFORMATION | MMcG |
| 00 | 14/02/17 | ISSUED FOR INFORMATION | SM |

Amendments

Project: DEAN VALLEY WALKWAY

Title: PROPOSED REMEDIAL WORKS (SHEET 3 OF 3)

Client: Elizabeth Dorrian Landscape Architect

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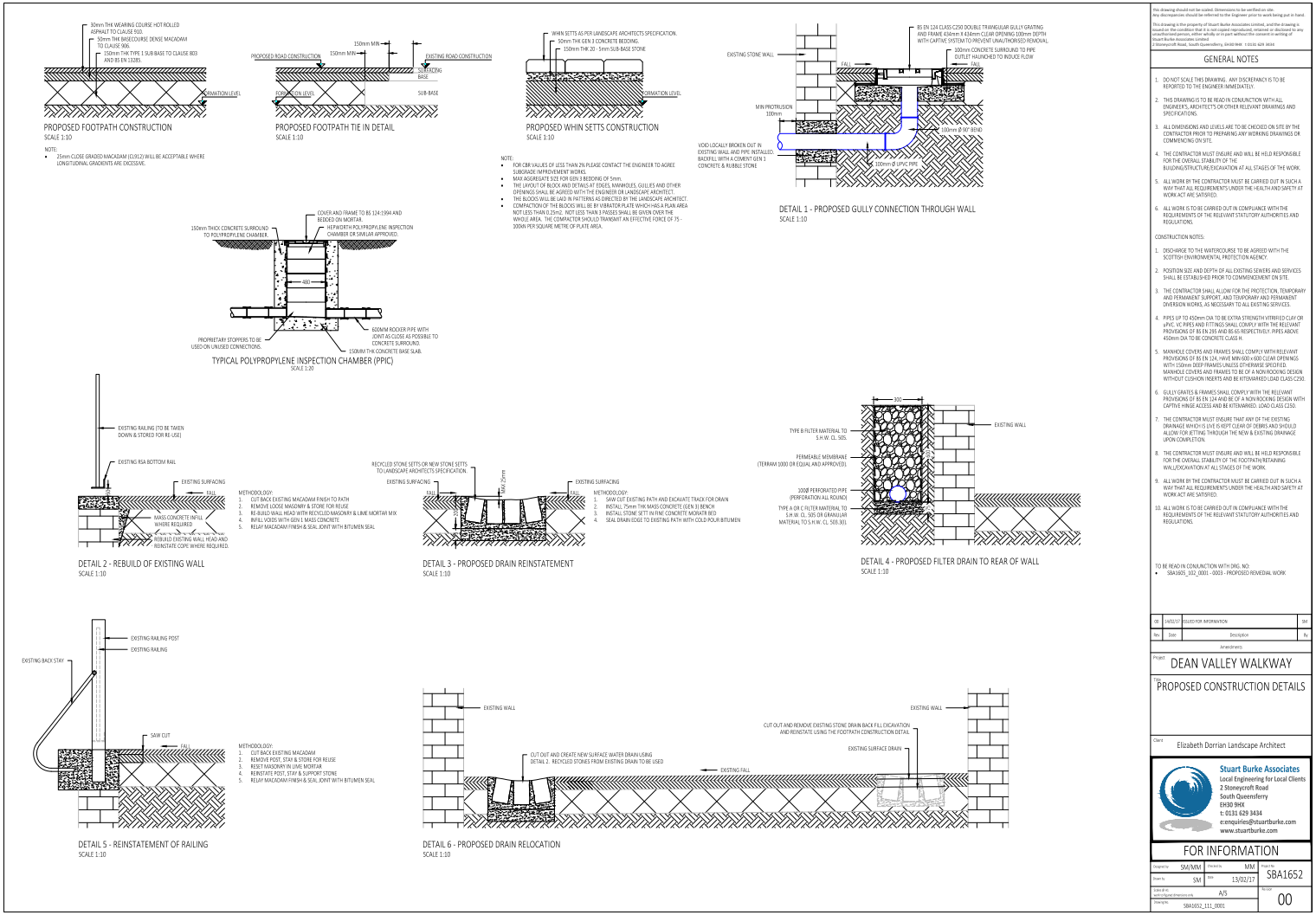
| | | | |
|---|---|---|---|
| Designed by | SM | Checked by | MM |
| Drawn by | SM | Date | 09/02/17 |
| Scale @ A1 | 1:500 | Project No. | SBA1652 |
| Drawing No. | SBA1652_102_0003 | Revision | 03 |


30mm THK WEARING COURSE HOT ROLLED ASPHALT TO CLAUSE 910.
50mm THK BASECOURSE DENSE MACADAM TO CLAUSE 906.
150mm THK TYPE 1 SUB BASE TO CLAUSE 803 AND BS EN 13285.
FORMATION LEVEL
PROPOSED FOOTPATH CONSTRUCTION
SCALE 1:10
NOTE:
• 15mm CLOSE GRADED MACADAM (CL912) WILL BE ACCEPTABLE WHERE LONGITUDINAL GRADIENTS ARE EXCESSIVE.
PROPOSED ROAD CONSTRUCTION
150mm MIN
150mm MIN
EXISTING ROAD CONSTRUCTION
SUITABLE EXISTING BASE
SUB-BASE
FORMATION LEVEL
PROPOSED FOOTPATH TIE IN DETAIL
SCALE 1:10
WHIN SETTS AS PER LANDSCAPE ARCHITECTS SPECIFICATION.
50mm THK GEN 3 CONCRETE BEDDING.
150mm THK 20 - 5mm SUB-BASE STONE
FORMATION LEVEL
PROPOSED WHIN SETTS CONSTRUCTION
SCALE 1:10
NOTE:
• FOR CBR VALUES OF LESS THAN 2% PLEASE CONTACT THE ENGINEER TO AGREE SUBGRADE IMPROVEMENT WORKS.
• MAX AGGREGATE SIZE FOR GEN 3 BEDDING OF 5mm.
• THE LAYOUT OF BLOCK AND DETAILS AT EDGES, MANHOLES, GULLIES AND OTHER OPENINGS SHALL BE AGREED WITH THE ENGINEER OR LANDSCAPE ARCHITECT.
• THE BLOCKS WILL BE LAID IN PATTERNS AS DIRECTED BY THE LANDSCAPE ARCHITECT.
• COMPACTION OF THE BLOCKS WILL BE BY VIBRATOR PLATE WHICH HAS A PLAN AREA NOT LESS THAN 0.25m2. NOT LESS THAN 3 PASSES SHALL BE GIVEN OVER THE WHOLE AREA. THE COMPACTOR SHOULD TRANSMIT AN EFFECTIVE FORCE OF 75 - 100KN PER SQUARE METRE OF PLATE AREA.
BS EN 124 CLASS C250 DOUBLE TRIANGULAR GULLY GRATING AND FRAME 634mm X 434mm CLEAR OPENING 100mm DEPTH WITH CAPTIVE SYSTEM TO PREVENT UNAUTHORISED REMOVAL.
100mm CONCRETE SURROUND TO PIPE OUTLET HAUNCHED TO INDUCE FLOW
EXISTING STONE WALL
MIN PROTRUSION 100mm
VOID LOCALLY BROKEN OUT IN EXISTING WALL AND PIPE INSTALLED. BACKFILL WITH A CEMENT/ GEN 1 CONCRETE & RUBBLE STONE
100mm Ø 90° BEND
100mm Ø UPVC PIPE
DETAIL 1 - PROPOSED GULLY CONNECTION THROUGH WALL
SCALE 1:10
COVER AND FRAME TO BS 124:1994 AND BEDDED ON MORTAR.
HEPWORTH POLYPROPYLENE INSPECTION CHAMBER OR SIMILAR APPROVED.
150mm THICK CONCRETE SURROUND TO POLYPROPYLENE CHAMBER.
PROPRIETARY STOPPERS TO BE USED ON UNUSED CONNECTIONS.
600MM ROCKER PIPE WITH JOINT AS CLOSE AS POSSIBLE TO CONCRETE SURROUND.
150MM THK CONCRETE BASE SLAB.
TYPICAL POLYPROPYLENE INSPECTION CHAMBER (PPIC)
SCALE 1:20
EXISTING RAILING (TO BE TAKEN DOWN & STORED FOR RE-USE)
EXISTING RSA BOTTOM RAIL
EXISTING SURFACING
FALL
MASS CONCRETE INFILL WHERE REQUIRED
REBUILD EXISTING WALL HEAD AND REINSTATE COPE WHERE REQUIRED.
METHODOLOGY:
1. CUT BACK EXISTING MACADAM FINISH TO PATH
2. REMOVE LOOSE MASONRY & STONE FOR REUSE
3. RE-BUILD WALL HEAD WITH RECYCLED MASONRY & LIME MORTAR MIX
4. INFILL VOIDS WITH GEN 1 MASS CONCRETE
5. RELAY MACADAM FINISH & SEAL JOINT WITH BITUMEN SEAL
DETAIL 2 - REBUILD OF EXISTING WALL
SCALE 1:10
RECYCLED STONE SETTS OR NEW STONE SETTS TO LANDSCAPE ARCHITECTS SPECIFICATION.
EXISTING SURFACING
FALL
EXISTING SURFACING
FALL
METHODOLOGY:
1. SAW CUT EXISTING PATH AND EXCAVATE TRACK FOR DRAIN
2. INSTALL 75mm THK MASS CONCRETE (GEN 3) BENCH
3. INSTALL STONE SETT IN FINE CONCRETE MORATR BED
4. SEAL DRAIN EDGE TO EXISTING PATH WITH COLD POUR BITUMEN
DETAIL 3 - PROPOSED DRAIN REINSTATEMENT
SCALE 1:10
EXISTING WALL
TYPE B FILTER MATERIAL TO S.H.W. CL. 505.
PERMEABLE MEMBRANE (TERRAM 1000 OR EQUAL AND APPROVED).
100Ø PERFORATED PIPE (PERFORATION ALL ROUND)
TYPE A OR C FILTER MATERIAL TO S.H.W. CL. 505 OR GRANULAR MATERIAL TO S.H.W. CL. 503.3(1).
DETAIL 4 - PROPOSED FILTER DRAIN TO REAR OF WALL
SCALE 1:10
EXISTING RAILING POST
EXISTING RAILING
EXISTING BACK STAY
SAW CUT
FALL
METHODOLOGY:
1. CUT BACK EXISTING MACADAM
2. REMOVE POST, STAY & STONE FOR REUSE
3. RESET MASONRY IN LIME MORTAR
4. REINSTATE POST, STAY & SUPPORT STONE
5. RELAY MACADAM FINISH & SEAL JOINT WITH BITUMEN SEAL
DETAIL 5 - REINSTATEMENT OF RAILING
SCALE 1:10
EXISTING WALL
CUT OUT AND CREATE NEW SURFACE WATER DRAIN USING DETAIL 2. RECYCLED STONES FROM EXISTING DRAIN TO BE USED
EXISTING FALL
EXISTING WALL
CUT OUT AND REMOVE EXISTING STONE DRAIN BACK FILL EXCAVATION AND REINSTATE USING THE FOOTPATH CONSTRUCTION DETAIL
EXISTING SURFACE DRAIN
DETAIL 6 - PROPOSED DRAIN RELOCATION
SCALE 1:10
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GENERAL NOTES
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CONSTRUCTION NOTES:
1. DISCHARGE TO THE WATERCOURSE TO BE AGREED WITH THE SCOTTISH ENVIRONMENTAL PROTECTION AGENCY.
2. POSITION SIZE AND DEPTH OF ALL EXISTING SEWERS AND SERVICES SHALL BE ESTABLISHED PRIOR TO COMMENCEMENT ON SITE.
3. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT, AND TEMPORARY AND PERMANENT DIVERSION WORKS, AS NECESSARY TO ALL EXISTING SERVICES.
4. PIPES UP TO 450mm DIA TO BE EXTRA STRENGTH VITRIFIED CLAY OR uPVC. VC PIPES AND FITTINGS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 295 AND BS 65 RESPECTIVELY. PIPES ABOVE 450mm DIA TO BE CONCRETE CLASS H.
5. MANHOLE COVERS AND FRAMES SHALL COMPLY WITH RELEVANT PROVISIONS OF BS EN 124, HAVE MIN 600 x 600 CLEAR OPENINGS WITH 150mm DEEP FRAMES UNLESS OTHERWISE SPECIFIED. MANHOLE COVERS AND FRAMES TO BE OF A NON ROCKING DESIGN WITHOUT CUSHION INSERTS AND BE KITEMARKED LOAD CLASS C250.
6. GULLY GRATES & FRAMES SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS EN 124 AND BE OF A NON ROCKING DESIGN WITH CAPTIVE HINGE ACCESS AND BE KITEMARKED. LOAD CLASS C250.
7. THE CONTRACTOR MUST ENSURE THAT ANY OF THE EXISTING DRAINAGE WHICH IS LIVE IS KEPT CLEAR OF DEBRIS AND SHOULD ALLOW FOR JETTING THROUGH THE NEW & EXISTING DRAINAGE UPON COMPLETION.
8. THE CONTRACTOR MUST ENSURE AND WILL BE HELD RESPONSIBLE FOR THE OVERALL STABILITY OF THE FOOTPATH/RETAINING WALL/EXCAVATION AT ALL STAGES OF THE WORK.
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TO BE READ IN CONJUNCTION WITH DRG. NO:
• SBA1605_102_0001 - 0003 - PROPOSED REVISIONAL WORK
DR 14/02/17 ISSUED FOR INFORMATION SM
Rev Date Description By
Amendments
Project DEAN VALLEY WALKWAY
Title PROPOSED CONSTRUCTION DETAILS
Client Elizabeth Dorrian Landscape Architect
Stuart Burke Associates
Local Engineering for Local Clients
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www.stuartburke.com
FOR INFORMATION
Designed by SM/MM Checked by MM Project No SBA1652
Drawn by SM Date 13/02/17
Scales @ A1 Refer to figured dimensions only A/S Revision 00
Drawing No SBA1652_111_0001

Stuart Burke Associates

Local Engineering for Local Clients

**N.B To be read in conjunction with Stuart Burke Associates drawing SBA1652_102_0001 – 0003 – Proposed Remedial Works**

Wall Pic-1

Wall Pic-2

Wall Pic-3

Wall Pic-4

Wall Pic-5

Wall Pic-6

Wall Pic-7

Wall Pic-8

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**N.B To be read in conjunction with Stuart Burke Associates drawing SBA1652_102_0001 – 0003 – Proposed Remedial Works**

**Wall Pic-9**

**Wall Pic-10**

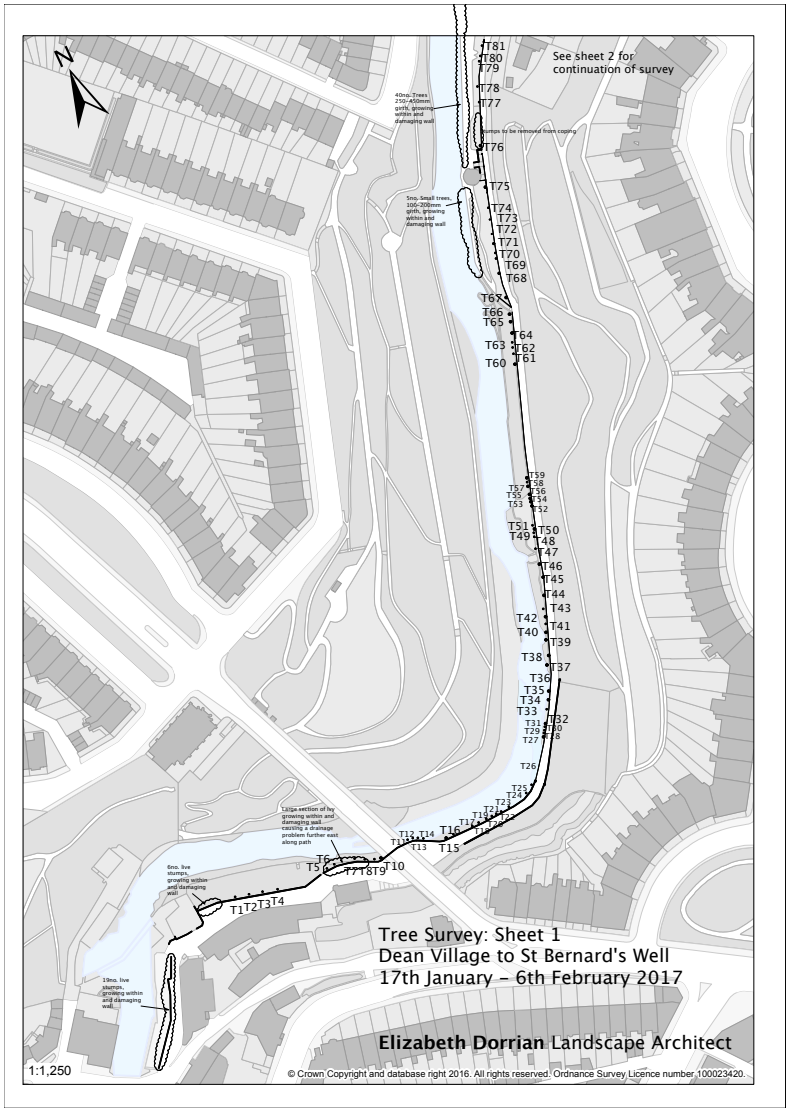
**Wall Pic-11**

**Wall Pic-12**

**Wall Pic-13**

**Wall Pic-14**

**APPENDIX FOUR: Trees**


N
See sheet 2 for continuation of survey
Tree Survey: Sheet 1
Dean Village to St Bernard's Well
17th January – 6th February 2017
Elizabeth Dorrian Landscape Architect
1:1,250
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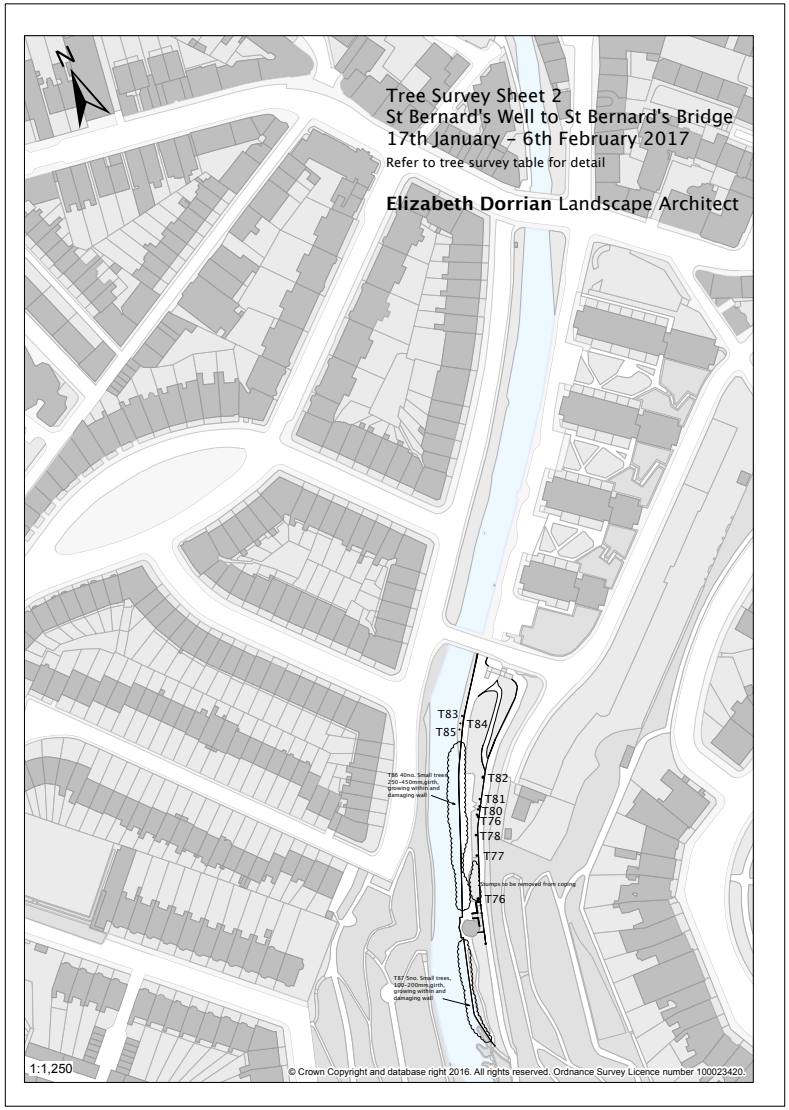
N
Tree Survey Sheet 2
St Bernard's Well to St Bernard's Bridge
17th January – 6th February 2017
Refer to tree survey table for detail
Elizabeth Dorrian Landscape Architect
1:1,250
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**TREE SURVEY 17th January – 6th February 2017**
To be read in conjunction with **Tree Survey Sheets 1 and 2**
**NOTE : No trees were physically numbered or tagged and when works are to be carried out this exercise must be done and agreed by City of Edinburgh Council prior to any felling**

| Tree (No.) | Species | Approx Girth (mm) | Corresponding ref no. on CEC Easytreev Survey | Damaging Wall | Damaging Railing | Damaging Footpath | Comments | Action |
|---|---|---|---|---|---|---|---|---|
| T1 | Elm (Ulmus glabra) | 500 | | ✓ | | | Growing within and causing damage to wall | To be removed |
| T2 | Ash (Fraxinus excelsior) | 550 | | | | | Ivy covered, leaning towards building | Main limb leaning towards building to be removed Since survey, tree has been severely cut back by others |
| T3 | Ash (Fraxinus excelsior) Sapling | 150–200 | | ✓ | | | Growing within and causing damage to wall | To be removed |
| T4 | Ash (Fraxinus excelsior) Sapling | 150–200 | | ✓ | | | Growing within and causing damage to wall | To be removed |
| T5 | Ash (Fraxinus excelsior) | 200 | | ✓ | | | Not growing within wall, but in close proximity | Retain tree |
| T6 | Ash (Fraxinus excelsior) | 200 | | ✓ | | | Not growing within wall, but in close proximity | Retain tree |
| T7 | Ash (Fraxinus excelsior) | 800–900 | | ✓ | | | Blocking views of bridge and damaging wall. Ivy could cause wind sail effect. | To be removed |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| T8 | Elm (Ulmus glabra) multi-stem | 250 | | ✓ | | | Not growing within wall, but in close proximity | Retain tree |
| T9 | Elm (Ulmus glabra) | 700 | | ✓ | | | Growing within and causing damage to wall | To be removed |
| T10 | Elm (Ulmus glabra) Multi-stem | 850 | | ✓ | | ✓ | Growing within wall and lifting kerb **(W7)** | To be removed |
| T11 | Elm sapling (Ulmus glabra) | 150 | | ✓ | | | Growing within wall **(W8)** | To be removed |
| T12 | Alder (Alnus glutinosa) multi-stem 3 x limbs | 350 | | ✓ | | | Growing within and damaging wall **(W8)** | To be removed |
| T13 | Elm (Ulmus glabra) | 300 | | ✓ | | | Growing within and damaging wall **(W8)** | To be removed |
| T14 | Elm (Ulmus glabra) | 250 | | ✓ | | | Growing within and damaging wall **(W8)** | To be removed |
| T15 | Elm (Ulmus glabra) | 900 | | ✓ | | | Growing within and damaging wall **(W9)** | To be removed |
| T16 | Elm (Ulmus glabra) | 450-500 | | ✓ | | | Growing within and damaging wall | To be removed |
| T17 | Elm (Ulmus glabra) Double trunk | 600 750 | | ✓ | | | Growing within and damaging wall | To be removed |
| T18 | Elm (Ulmus glabra) | 200 | | ✓ | | | Growing within and damaging wall | To be removed |
| T19 | Ash (Fraxinus excelsior) | 550 | | ✓ | | | Growing within and damaging wall | To be removed |
| T20 | Ash (Fraxinus excelsior) 2 saplings | 100 | | ✓ | | | Growing within and damaging wall | To be removed |
| T21 | Elm (Ulmus glabra) | 750 | | ✓ | | | Growing within and damaging wall | To be removed |
| T22 | Ash (Fraxinus excelsior) | 900 | | ✓ | | | Growing within and damaging wall | To be removed |
| T23 | Ash (Fraxinus excelsior) | 700 | | ✓ | | | Growing within and damaging wall | To be removed |
| T24 | Sycamore (Acer pseudoplatanus) | 400 | | ✓ | | | Growing within and damaging wall | To be removed |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| T25 | Sycamore (Acer pseudoplatanus) | 350 | | ✓ | | | Growing within and damaging wall | To be removed |
| T26 | Saplings | 200 | | ✓ | | | 7No.saplings growing within and damaging wall | To be removed |
| T27 | Ash (Fraxinus excelsior) Double-stem | 900 at base before split | | ✓ | ✓ | | Growing within and damaging wall and lifting 2no. railings **(R3)** | To be removed |
| T28 | Ash (Fraxinus excelsior) | 650 | | ✓ | | | Growing within wall, but not a concern | Retain tree |
| T29 | Ash (Fraxinus excelsior) | 650 | | ✓ | | | Growing within wall, but not a concern | Retain tree |
| T30 | Ash (Fraxinus excelsior) | 650 | | ✓ | | | Growing within wall, but not a concern | Retain tree |
| T31 | Sycamore (Acer pseudoplatanus) Multi-stem | 650 | | | | | Growing within the embankment and not a concern | Retain tree |
| T32 | Ash (Fraxinus excelsior) | 200-250 | | | ✓ | ✓ | Damaging base of railing and lifting 1no. panels **(R4)** | To be removed |
| T33 | Elm (Ulmus glabra) | 200 | | | ✓ | | Damaging railings, beginning to lift 1no. panel **(R5)** | To be removed |
| T34 | Sappling | 100 | | | ✓ | | Growing within base of railing **(R6)** | To be removed |
| T35 | Sycamore (Acer pseudoplatanus) Multi-stem, 6-7 limbs | 4550 | | ✓ | | | Growing within wall | To be removed |
| T36 | Elm (Ulmus glabra) | 200 | | ✓ | | | Growing within and damaging wall | To be removed |
| T37 | Elm (Ulmus glabra) | 1500 | 18 | | ✓ | ✓ | Lifting 4no.panels **(R7)** | To be retained and worked round (important tree). Re-assess in 10yrs. |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| T38 | Elm (Ulmus glabra) | 650 | | ✓ | | | Growing within and damaging wall | To be removed |
| T39 | Elm (Ulmus glabra) | 450 | | | ✓ | ✓ | Growing in base of railings and lifting 2no. panels **(R8)** | To be removed |
| T40 | Elm (Ulmus glabra) | 550 | 17 | ✓ | | | Growing within wall | Tree to be retained, remove 1No. limb |
| T41 | Sycamore (Acer pseudoplatanus) Multi Stem | 650 | | ✓ | | | Growing within wall, but not a concern | Tree to be retained and managed |
| T42 | Elm (Ulmus glabra) | 1250 | | | ✓ | ✓ | Lifting 2no. panels and growing into railings **(R9)** | To be removed |
| T43 | Elm (Ulmus glabra) | 550 | | | ✓ | | Limb growing through railing **(R10)** | Limb to be removed |
| T44 | Sycamore (Acer pseudoplatanus) | 650 | | | ✓ | | Growing on railing stone support **(R11)** | To be removed |
| T45 | Elm (Ulmus glabra) | 550 | | ✓ | | | Growing within and damaging wall | To be removed |
| T46 | Elm (Ulmus glabra) multi-stem | 500-800 | | | ✓ | ✓ | Lifting 2no.panels **(R12)** | To be retained and worked around. Important tree. |
| T47 | Sycamore (Acer pseudoplatanus) | 1650 | 16 | | ✓ | | Damaging railing and lifting 2no.panels **(R13)** Noted as potential bat roost (Biodiversity Scoping Study 2016) | Tree to be retained and managed |
| T48 | Sycamore (Acer pseudoplatanus) | 500 | | ✓ | | | Growing within and damaging wall | To be removed |
| T49 | Elm (Ulmus glabra) | 550 | | ✓ | | | Growing within and damaging wall | To be removed |
| T50 | Elm (Ulmus glabra) Intertwined with Ash | 800 | | | ✓ | ✓ | Lifting 3no.panels **(R14)** | Elm to be removed Retain Ash |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| T51 | Elm (Ulmus glabra) | 1200 | | ✓ | | ✓ | Growing within and damaging wall | To be removed |
| T52 | Sycamore (Acer pseudoplatanus) | 550 | | ✓ | | ✓ | Growing within and damaging wall | To be removed |
| T53 | Elm (Ulmus glabra) | 650 | | | ✓ | ✓ | Damaging railings and lifting 3no.panels **(R15)** | To be removed |
| T54 | Elm (Ulmus glabra) | 400 | | ✓ | ✓ | | Growing within potential future damage to railing **(R16)** | To be removed |
| T55 | Elm (Ulmus glabra) | 350 | | ✓ | ✓ | | Growing within potential future damage to railing **(R17)** | To be removed |
| T56 | Ash (Fraxinus excelsior) | 600 | 15 | | ✓ | ✓ | Damaging railings lifting 3no. Panels **(R18)** | To be removed |
| T57 | Elm (Ulmus glabra) Multi-stem | 500 | | ✓ | | | Growing within and damaging wall | Tree to be retained and managed. Upper trunk to be removed, lower to be retained |
| T58 | Sycamore (Acer pseudoplatanus) | 200 | | | ✓ | | Damaging base of railing **(R19)** | To be removed |
| T59 | Elm (Ulmus glabra) Re-sprouting stump | 250 | 13 | | ✓ | ✓ | Damaging base and lifting 1no. Panels **(R20)** | To be removed |
| T60 | Ash (Fraxinus excelsior) | 250 | | ✓ | | ✓ | | To be removed |
| T61 | Ash (Fraxinus excelsior) | 200 | | ✓ | | ✓ | | To be removed |
| T62 | Elm (Ulmus glabra) | 500 | 112 | ✓ | | | Growing within and damaging wall | To be removed |
| T63 | Ash (Fraxinus excelsior) | 350-400 | 14 | | ✓ | ✓ | Lifting 2no. Panels **(R21)** Damaging base and | To be removed |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| T64 | Elm (Ulmus glabra) Sprouting stump | 300 | | ✓ | ✓ | | Lifting panels **(R22)** | To be removed |
| T65 | Ash (Fraxinus excelsior) | 150 | | ✓ | ✓ | | Sapling | To be removed |
| T66 | Ash (Fraxinus excelsior) | 150 | | ✓ | ✓ | | Sapling | To be removed |
| T67 | Elm (Ulmus glabra) | 250 | | ✓ | ✓ | | **R24** | To be removed |
| T68 | Elm (Ulmus glabra) | 200 | | | ✓ | | | To be removed |
| T69 | Elm (Ulmus glabra) | 350 | | ✓ | ✓ | | **R27** | To be removed |
| T70 | Elm (Ulmus glabra) | 300 | | ✓ | ✓ | | **R28** | To be removed |
| T71 | Elder (Sambucus nigra) | 200 | | ✓ | | | **R29** | To be removed |
| T72 | Elder (Sambucus nigra) | 200 | | ✓ | | | **R30** | To be removed |
| T73 | Elder (Sambucus nigra) | 250 | | ✓ | | | **R31** | To be removed |
| T74 | Elder (Sambucus nigra) | 200 | | ✓ | | | **R32** | To be removed |
| T75 | Elder (Sambucus nigra) | 150–200 | | | ✓ | | Between stone pillars in the railing **R33** | To be removed |
| T76 | Sycamore (Acer pseudoplatanus) Resprouting Stump | 500 | | ✓ | | | **R35** | To be removed |
| T77 | Sycamore (Acer pseudoplatanus) | 350 | | | ✓ | | | To be removed |
| T78 | Elder (Sambucus nigra) | 150 | | | ✓ | | Damaging railings **R37** | To be removed |
| T79 | Ash (Fraxinus excelsior) | 250 | | | ✓ | | Damaging railings **R39** | To be removed |
| T80 | Sycamore (Acer pseudoplatanus) | 200 | | | ✓ | | | To be removed |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| T81 | Elm (Ulmus glabra) Multi stem | 350 | | | ✓ | | Damaging railings **R40** | To be removed |
| T82 | Ash (Fraxinus excelsior) | 350–400 | | | ✓ | ✓ | Growing on path and into railings **R41** | To be removed |
| T83 | Elm (Ulmus glabra) | 200 | | ✓ | | | Growing within and damaging wall | To be removed |
| T84 | Ash (Fraxinus excelsior) | 200 | | ✓ | | | Growing within and damaging wall | To be removed |
| T85 | Ash (Fraxinus excelsior) | 200 | | ✓ | | | Growing within and damaging wall | To be removed |
| T86 | 40 No. Saplings | 250–450 | | ✓ | | | Growing within and damaging wall | To be removed |
| T87 | 5No. Saplings | 100–200 | | ✓ | | | Growing within and damaging wall | To be removed |

**APPENDIX FIVE: Proposals below Dean Bridge**

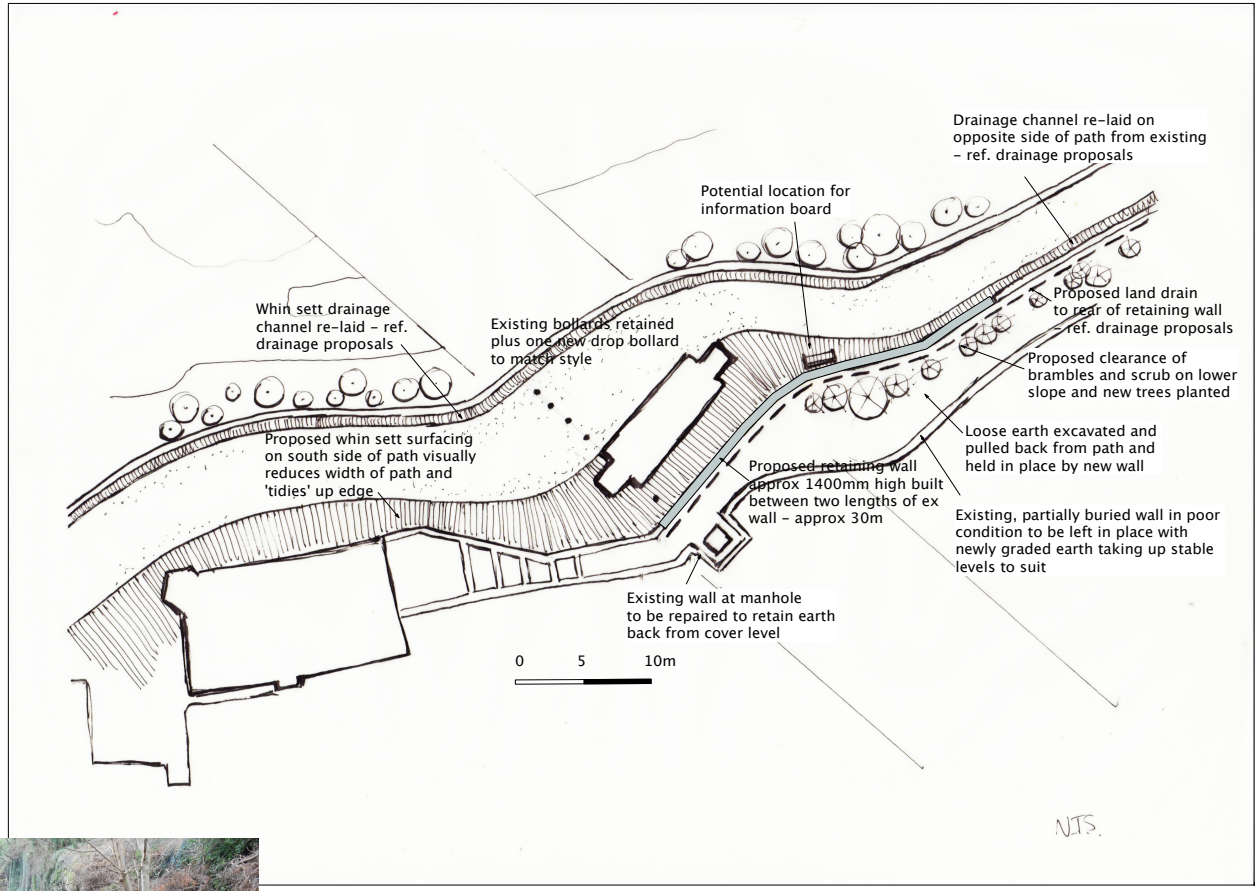
Path appears more like vehicle space due to extent of tarmac

Bollards to be retained, plus one drop bollard. New surface follows joint line in tarmac.

Vegetation requires clearing and earth pulled back and retained

Existing retaining wall to be extended beyond base of bridge

Existing manhole requires wall to be built around to retain earth




**Dean Valley Renovation Project**
Proposals for area below Dean Bridge

**Elizabeth Dorrian** Landscape Architect

**APPENDIX SIX: Summary of SUSTRANS Technical Advisory Notes**

**Dean Valley Restoration Project** 20.01.17
Notes from list of source material thought relevant to the project
**Sustrans Design Guidance Ref:**
*Connect2: project set up to overcome and change people's thoughts on shared surface and the benefits it brings.*
**Key Areas of Guidance Relevant to Dean Valley**:

- Design to the 5 core principles of Coherence, Directness, Safety, Comfort and Attractiveness
- Design for cyclists of all abilities with particular emphasis on those less confident
- Provide adequate space for cyclists
- Design for a non-standard cyclists
- Reallocation of space from the carriageway rather than from pedestrians
- Critical Lane widths/pinch point widths to be avoided
- Coherent signage of routes
- Importance of funding for maintenance and management of routes

**Cycle By Design**
Minimum width for two way cycle track – 2.5m
Traffic free cycle path – minimum width 3m (Where cyclists pass each other or 2 abreast, 0.5m separation is recommended)
Clearance when passing fixed objects-

- 0.5m from vertical feature over 600mm
- 0.25m from vertical feature between 150mm – 600mm
- 0.2m from kerb up to 150mm high
- Flush (nil)

Design Speed
A design speed of 12mph is appropriate for a local access route where there is likely to be significant interaction with pedestrians.

**Scottish Government – Designing Streets**

Key Considerations

| | |
|---|---|
| Distinctive | Street design should respond to local context to deliver places that are distinctive |
| Safe & Pleasant | Streets should be designed to be safe and attractive places |
| Easy to Move Around | Streets should be easy to move around for all users and connect well to existing movement networks |
| Welcoming | Street layout and detail should encourage positive interaction for all members of the community |
| Adaptable | Street networks should be designed to accommodate future adoption |
| Resource Efficient | Street design should consider orientation, the integration of sustainable drainage and use attractive, durable materials that can be easily maintained |
| Safe & Pleasant | Pedestrian & Cyclists:<br>Street use hierarchy should consider pedestrian first and private motor vehicle last<br><br>Reduce Clutter:<br>Signs & street markings should be kept to a minimum and considered early in the design<br><br>Street lighting should be as discreet as possible, But provide adequate illumination |
| Drainage | Drainage:<br>Streets should use appropriate SUDS techniques relevant to the context in order to |

| | |
|---|---|
| | minimise environmental impacts<br><br>Planting:<br>Street design should aim to interact natural landscape features and foster positive biodiversity<br><br>Materials:<br>Materials should be distinctive, easily maintained, provide durability and be of a standard and quality to appeal visually within the specific context |

**Street Design**

Surface Water Drainage:

When considering the management of surface water, designers, developers and authorities need to take account of PAN 6: Planning and Urban Drainage, Scottish Planning Policy and the Water Environment & Water Service and the Flood Risk Management Act 2009.

**Planting:**

If possible, semi mature trees should be planted. Slow growing species with narrow trunks and canopies above 2m should be considered. Maintenance agreements for all planted areas need to be established.

**Materials:**

- Easy to maintain
- Safe for purpose
- Durable
- Sustainable
- Appropriate to context
- Provide clear street definition and hierarchy

**Aggregates**

Specification Foe Highway Works (SHW) Spec:

Sustrans generally supports the use of recycled aggregates or materials that would otherwise be considered waste – only done however when aggregate has been chosen carefully and the delivery route is no longer than the quarried aggregate.

**Path Surfaces**

Standard Surface Options:

| | |
|---|---|
| Asphalt | Combination of bitumen and aggregate – tends to deform rather than break, should base subside or wash out. |
| Bitumen - Macadam | Combination of Bitumen & aggregate. (DBM Dense Bitumen Macadam) |

Thickness of each layer of path construction needs to be adapted to each individual location.

**Alternative Surface Options**

| Path Surface Problem | Possible Alterative Surface |
|---|---|
| Appearance/ Colour of Blacktop not suitable | • Coloured bitumac/ asphalt<br>• Clear bitmac/ asphalt<br>• Foamed bitumen products<br>• Resin bounded surface<br>• Some self-binding surfaces |
| Sealing of ground is undesirable, creating more impermeable surface, additional runoff ect. | • Path side drains<br>• Porous Asphalt<br>• Some self-binding surfaces<br>• Reinforced Grass |
| Sustainable sources are desirable/ environmental concerns | • Blacktop with recycled contents<br>• Foamed bitumen products<br>• Some self-binding surface<br>• Vegetable based binders in blacktop |

| | |
|---|---|
| No easy Access for trucks carrying hot asphalt/extended laying time is needed | • Coldlay asphalt/cutback bitumen asphalt<br>• Foamed bitumen products<br>• Self-binding products |
| Path close to trees or other reasons that prevent excavation | • Realign further from trees<br>• No dig construction |

Sealed surfaces are more expensive to construct, but their future maintenance to costs are appreciably lower than unsealed surfaces. Unbound surfaces are at least 50% more expensive than bound surfaces, based on a whole life comparison.
Sustrans default surface is machine laid DBM or HRA

**Segregation of Shared Use Routes**

Definitions:

- **A segregated shared use path** is a facility used by pedestrians and cyclists with some form of infrastructure of delineation in places designed to segregate the two modes
- **An unsegregated shared use path** is a facility used by pedestrians and cyles without any measure of segregation between modes. It is designed to enable pedestrians and cyclists to make use of the entire available width of the path.

**Widths**

Unsegregated – min 3m
Segregated – min 7m ( 3.5m cyclist – 3.5m pedestrian)
Benefits for Unsegregated Paths (Sustrans):

- Pedestrians walk in groups and more likely to ignore segregation unless widths are adequate
- More considered behaviour is observed
- Segregation routes can encourage territorial behaviour
- Narrow segregation routes have high levels of non-compliance
- Unsegregated routes may be cheaper to construct and maintain due to less complex engineering
- Unsegregated routes require fewer signs and markings

**A Guide to Controlling Access**

Definition of route according to highway users rights:

Type of highway along Water of Leith – Foot/path & Bridleway, Access to Land, Cycle Way (Pedestrains may or may not have right of way over a cycle track – in this case they do)

Access control to slow cyclists can be inappropriate, other techniques to achieve the same outcome include – signage, markings on path, putting a wiggle (chicane) into the path and speed bumps.

| | |
|---|---|
| **Speed Bumps** | • Makes a route less attractive to motorcycles<br>• Encourages cyclists to reduce speed, a hazard |
| Design Issues | • Wear and tear issues<br>• Users may pass round the outside causing wear<br>• Drainage |
| **Single Row of Bollards** | • Use to prevent access to path by cars and vans.<br>• Also used as mounting point for any necessary traffic signs |
| Design Issues | • The clear space between the bollards is important to their efficence<br>• Important that bollards contrast in colour with its surroundings with reflective strips<br>• Min 1000mm high<br>• At least one is removable for safety access<br>• Choice of materials to suit location<br>• Robust enough |

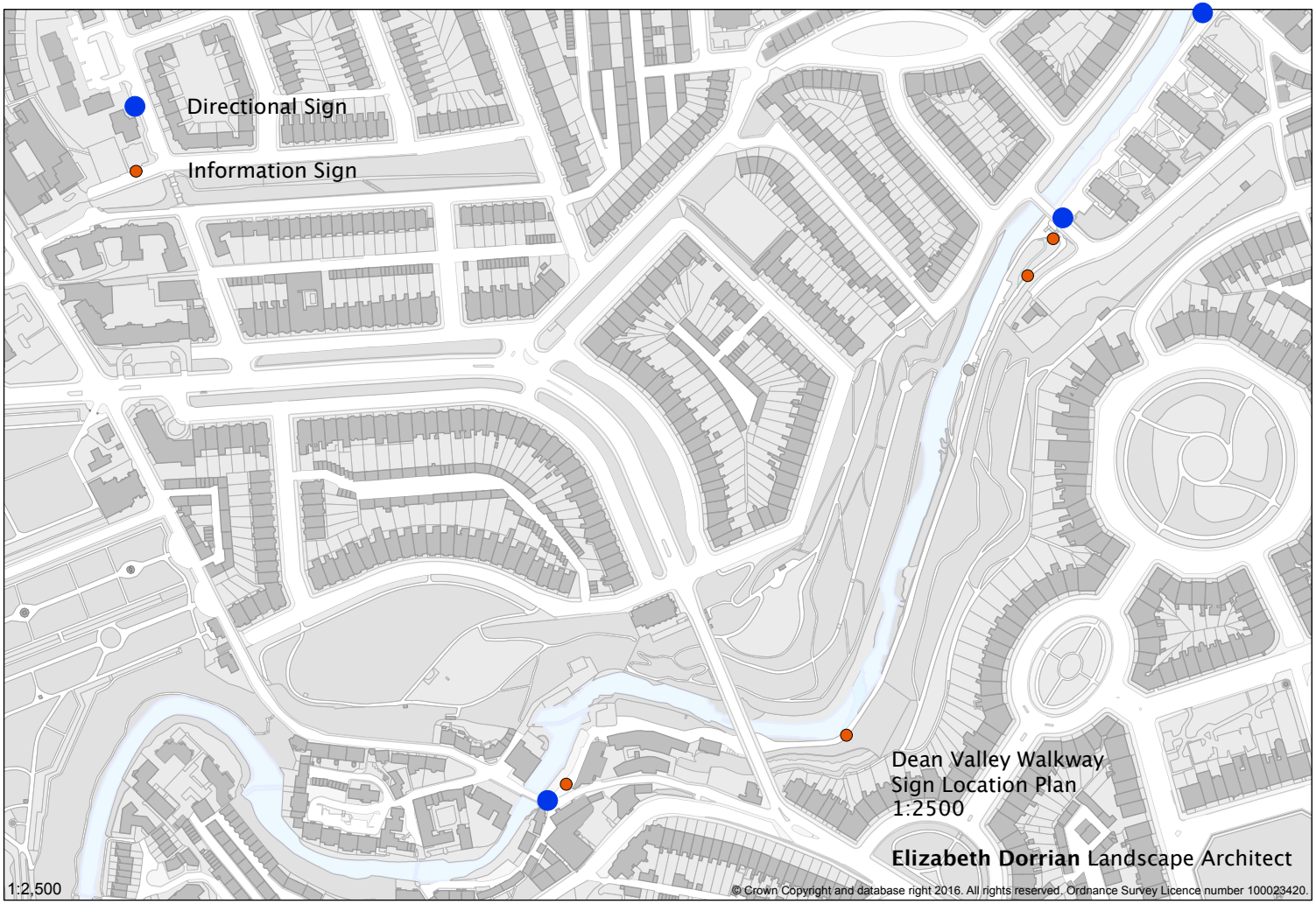
| | |
|---|---|
| **Staggered Bollards** | • Used to act as a deterrent to motorcycle use and to encourage cyclists to slow down |
| Design Issues | • As single row bollards<br>• Spacing to allow for movement and still be affective |
| **Chicane** | • To act as a deterrent to motorcycle use and to encourage cyclist to reduce speed<br>• Opportunity to introduce elements (art ect) into the structure |
| Design Issues | • Depth of chicane to be considered to restrict different users<br>• Best practice to havethe first barrier of the chicane on the nearside of the path, encourages users to slow down before entering<br>• Be aware of access of mobility scooters |

**Legislation Related to the Provision of Access Controls**

Scotland :

- The Trunk Road Network, is the responsibility of The Transport Scotland
- Principal, Local, Minor classified and unclassified roads are the responsibility of the local authority.

**APPENDIX SEVEN: Signing Proposal Plan**


Directional Sign
Information Sign
Dean Valley Walkway
Sign Location Plan
1:2500
Elizabeth Dorrian Landscape Architect
1:2,500
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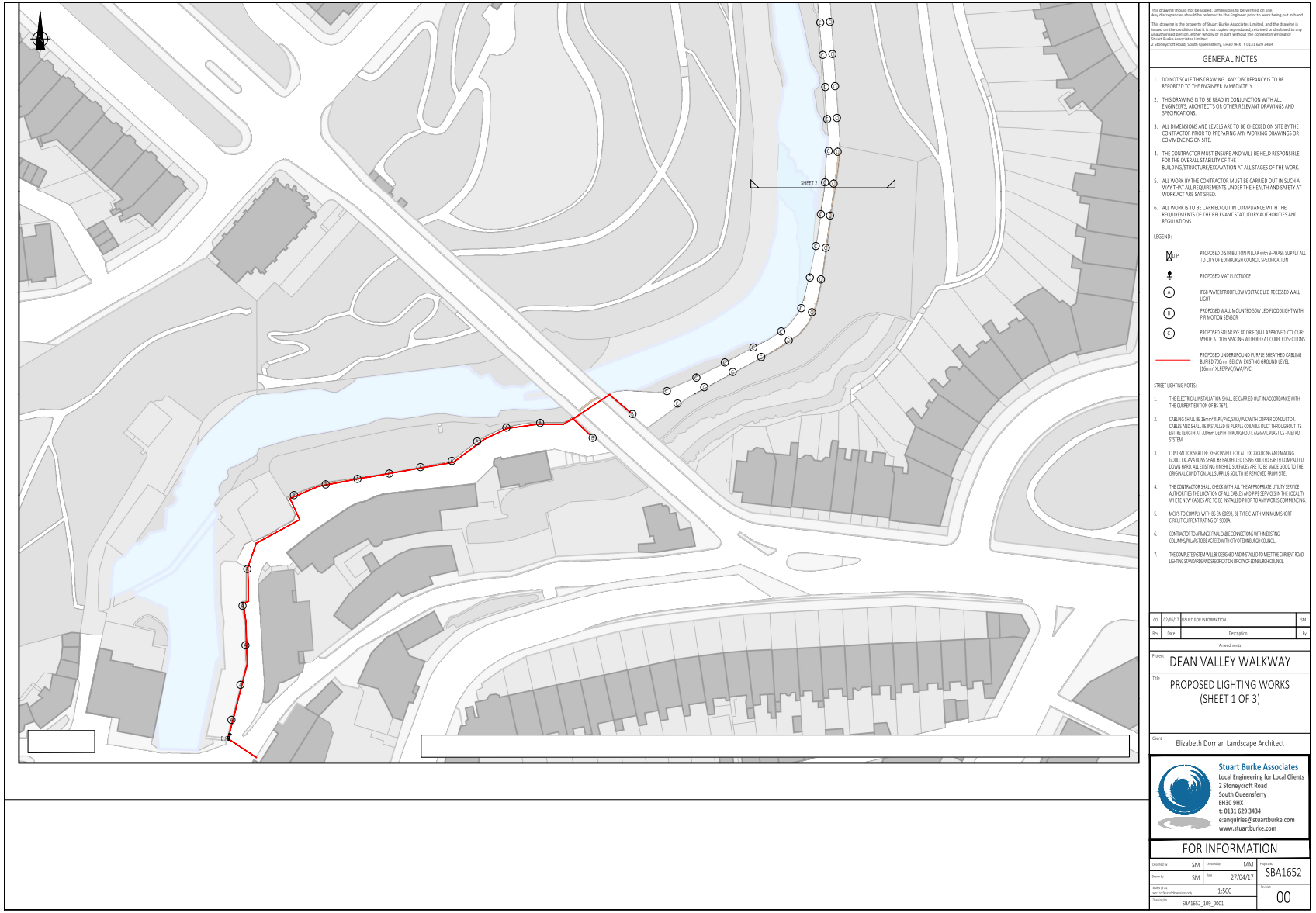
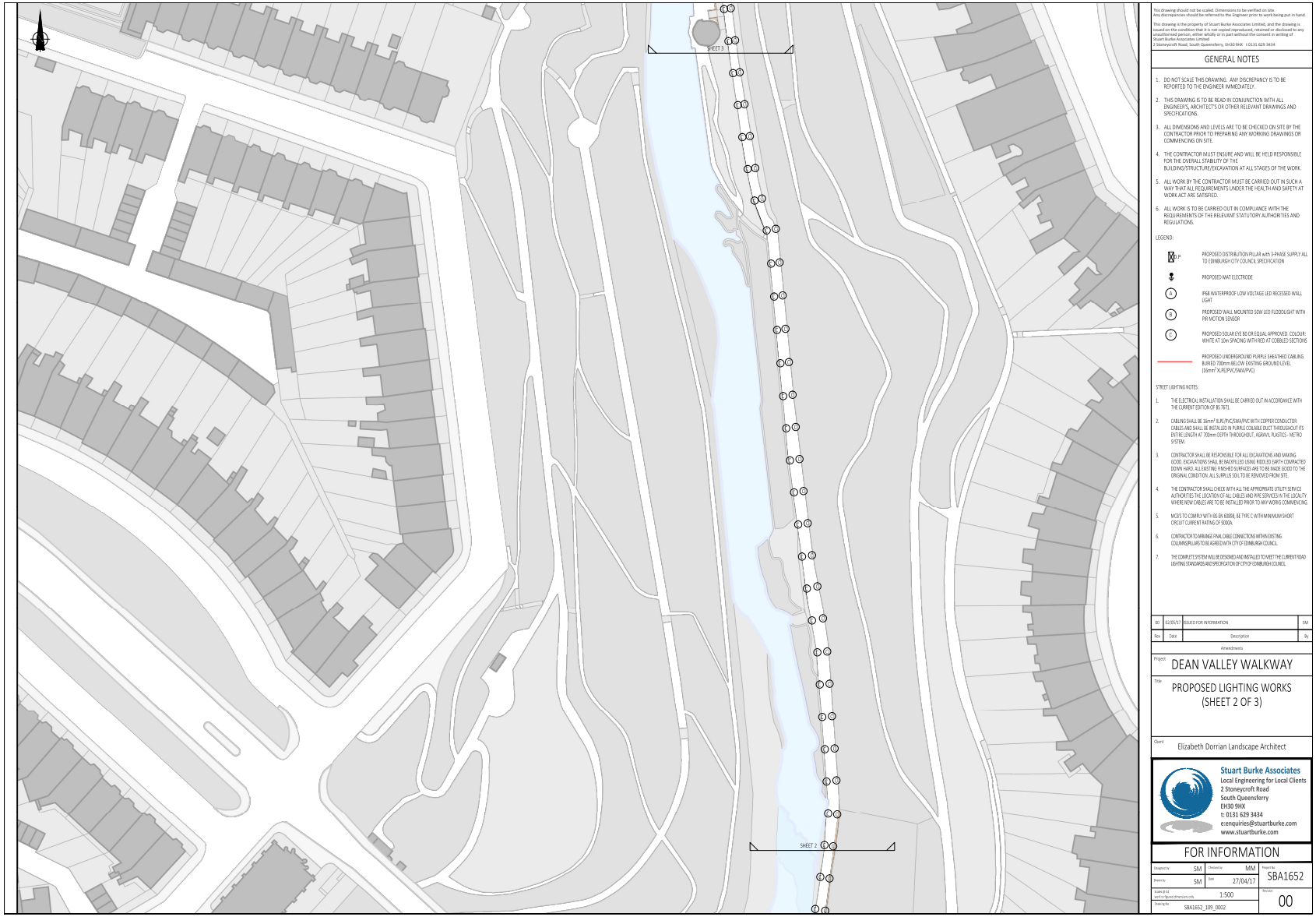
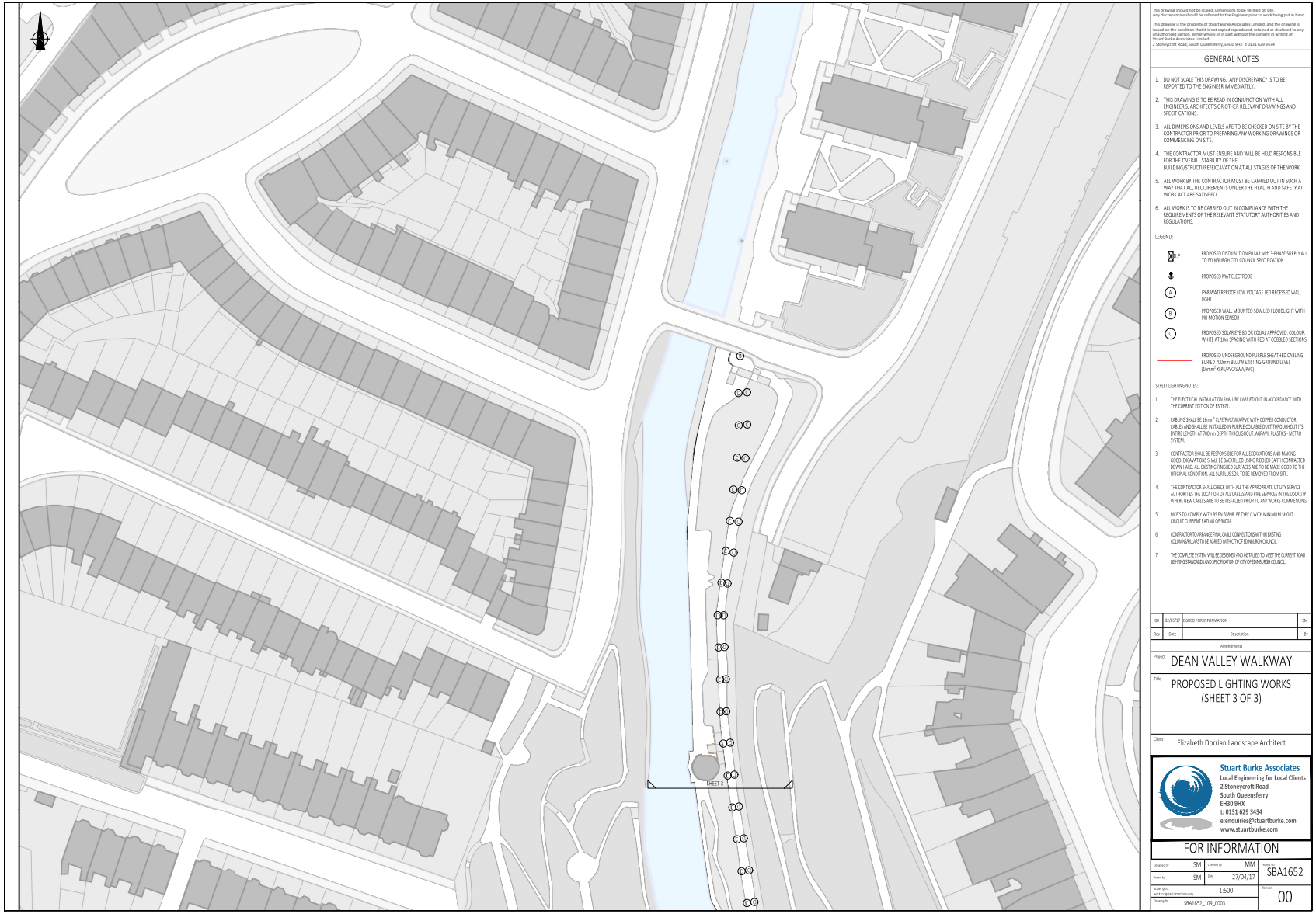
**APPENDIX EIGHT: Lighting Proposals**


SHEET 2
GENERAL NOTES
1. DO NOT SCALE THIS DRAWING. ANY DISCREPANCY IS TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEER'S, ARCHITECT'S OR OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
3. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.
4. THE CONTRACTOR MUST ENSURE AND WILL BE HELD RESPONSIBLE FOR THE OVERALL STABILITY OF THE BUILDING/STRUCTURE/EXCAVATION AT ALL STAGES OF THE WORK.
5. ALL WORK BY THE CONTRACTOR MUST BE CARRIED OUT IN SUCH A WAY THAT ALL REQUIREMENTS UNDER THE HEALTH AND SAFETY AT WORK ACT ARE SATISFIED.
6. ALL WORK IS TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES AND REGULATIONS.
LEGEND:
PROPOSED DISTRIBUTION PILLAR with 3-PHASE SUPPLY ALL TO CITY OF EDINBURGH COUNCIL SPECIFICATION
PROPOSED MAT ELECTRODE
IP68 WATERPROOF LOW VOLTAGE LED RECESSED WALL LIGHT
PROPOSED WALL MOUNTED 50W LED FLOODLIGHT WITH PIR MOTION SENSOR
PROPOSED SOLAR EYE BD OR EQUAL APPROVED. COLOUR: WHITE AT 10m SPACING WITH RED AT COBBLED SECTIONS
PROPOSED UNDERGROUND PURPLE SHEATHED CABLING BURIED 700mm BELOW EXISTING GROUND LEVEL (16mm² XLPE/PVC/SWA/PVC)
STREET LIGHTING NOTES:
1. THE ELECTRICAL INSTALLATION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT EDITION OF BS 7671.
2. CABLING SHALL BE 16mm² XLPE/PVC/SWA/PVC WITH COPPER CONDUCTOR. CABLES AND SHALL BE INSTALLED IN PURPLE COILABLE DUCT THROUGHOUT ITS ENTIRE LENGTH AT 700mm DEPTH THROUGHOUT, AGRAVIL PLASTICS - METRO SYSTEM.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATIONS AND MAKING GOOD. EXCAVATIONS SHALL BE BACKFILLED USING RIDDLED EARTH COMPACTED DOWN HARD. ALL EXISTING FINISHED SURFACES ARE TO BE MADE GOOD TO THE ORIGINAL CONDITION. ALL SURPLUS SOIL TO BE REMOVED FROM SITE.
4. THE CONTRACTOR SHALL CHECK WITH ALL THE APPROPRIATE UTILITY SERVICE AUTHORITIES THE LOCATION OF ALL CABLES AND PIPE SERVICES IN THE LOCALITY WHERE NEW CABLES ARE TO BE INSTALLED PRIOR TO ANY WORKS COMMENCING.
5. MCB'S TO COMPLY WITH BS EN 60898, BE TYPE C WITH MINIMUM SHORT CIRCUIT CURRENT RATING OF 9000A
6. CONTRACTOR TO ARRANGE FINAL CABLE CONNECTIONS WITH EXISTING COLUMNS/PILLARS TO BE AGREED WITH CITY OF EDINBURGH COUNCIL.
7. THE COMPLETE SYSTEM WILL BE DESIGNED AND INSTALLED TO MEET THE CURRENT ROAD LIGHTING STANDARDS AND SPECIFICATION OF CITY OF EDINBURGH COUNCIL.
00 03/05/17 ISSUED FOR INFORMATION SM
Rev Date Description By
Amendments
Project DEAN VALLEY WALKWAY
Title PROPOSED LIGHTING WORKS (SHEET 1 OF 3)
Client Elizabeth Dorrian Landscape Architect
Stuart Burke Associates
Local Engineering for Local Clients
2 Stoneycroft Road
South Queensferry
EH30 9HX
t: 0131 629 3434
e:enquiries@stuartburke.com
www.stuartburke.com
FOR INFORMATION
Designed by SM Checked by MM Project No SBA1652
Drawn by SM Date 27/04/17
Scale @ A1 1:500
Drawing No SBA1652_109_0001
Revision 00


SHEET 3
SHEET 2
GENERAL NOTES
1. DO NOT SCALE THIS DRAWING. ANY DISCREPANCY IS TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEER'S, ARCHITECT'S OR OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
3. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.
4. THE CONTRACTOR MUST ENSURE AND WILL BE HELD RESPONSIBLE FOR THE OVERALL STABILITY OF THE BUILDING/STRUCTURE/EXCAVATION AT ALL STAGES OF THE WORK.
5. ALL WORK BY THE CONTRACTOR MUST BE CARRIED OUT IN SUCH A WAY THAT ALL REQUIREMENTS UNDER THE HEALTH AND SAFETY AT WORK ACT ARE SATISFIED.
6. ALL WORK IS TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES AND REGULATIONS.
LEGEND:
PROPOSED DISTRIBUTION PILLAR with 3-PHASE SUPPLY ALL TO EDINBURGH CITY COUNCIL SPECIFICATION
PROPOSED MAT ELECTRODE
IP68 WATERPROOF LOW VOLTAGE LED RECESSED WALL LIGHT
PROPOSED WALL MOUNTED 50W LED FLOODLIGHT WITH PIR MOTION SENSOR
PROPOSED SOLAR EYE BD OR EQUAL APPROVED. COLOUR: WHITE AT 10m SPACING WITH RED AT COBBLED SECTIONS
PROPOSED UNDERGROUND PURPLE SHEATHED CABLING BURIED 700mm BELOW EXISTING GROUND LEVEL (16mm² XLPE/PVC/SWA/PVC)
STREET LIGHTING NOTES:
1. THE ELECTRICAL INSTALLATION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT EDITION OF BS 7671.
2. CABLING SHALL BE 16mm² XLPE/PVC/SWA/PVC WITH COPPER CONDUCTOR. CABLES AND SHALL BE INSTALLED IN PURPLE COLABLE DUCT THROUGHOUT ITS ENTIRE LENGTH AT 700mm DEPTH THROUGHOUT, AGRAVIL PLASTEX - METRO SYSTEM.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATIONS AND MAKING GOOD. EXCAVATIONS SHALL BE BACKFILLED USING RIDDLED EARTH COMPACTED DOWN HARD. ALL EXISTING FINISHED SURFACES ARE TO BE MADE GOOD TO THE ORIGINAL CONDITION. ALL SURPLUS SOIL TO BE REMOVED FROM SITE.
4. THE CONTRACTOR SHALL CHECK WITH ALL THE APPROPRIATE UTILITY SERVICE AUTHORITIES THE LOCATION OF ALL CABLES AND PIPE SERVICES IN THE LOCALITY WHERE NEW CABLES ARE TO BE INSTALLED PRIOR TO ANY WORKS COMMENCING.
5. MCBS TO COMPLY WITH BS EN 60898, BE TYPE C WITH MINIMUM SHORT CIRCUIT CURRENT RATING OF 9000A
6. CONTRACTOR TO ARRANGE FINAL CABLE CONNECTIONS WITHIN EXISTING COLUMNS/PILLARS TO BE AGREED WITH CITY OF EDINBURGH COUNCIL.
7. THE COMPLETE SYSTEM WILL BE DESIGNED AND INSTALLED TO MEET THE CURRENT ROAD LIGHTING STANDARDS AND SPECIFICATION OF CITY OF EDINBURGH COUNCIL.
00 03/05/17 ISSUED FOR INFORMATION SM
Rev Date Description By
Amendments
Project DEAN VALLEY WALKWAY
Title PROPOSED LIGHTING WORKS (SHEET 2 OF 3)
Client Elizabeth Dorrian Landscape Architect
Stuart Burke Associates
Local Engineering for Local Clients
2 Stoneycroft Road
South Queensferry
EH30 9HX
t: 0131 629 3434
e:enquiries@stuartburke.com
www.stuartburke.com
FOR INFORMATION
Designed by SM Checked by MM Project No. SBA1652
Drawn by SM Date 27/04/17
Scale @ A1 1:500
Drawing No. SBA1652_109_0002
Revision 00


SHEET 3
This drawing should not be scaled. Dimensions to be verified on site.
Any discrepancies should be referred to the Engineer prior to work being put in hand.
This drawing is the property of Stuart Burke Associates Limited, and the drawing is issued on the condition that it is not copied reproduced, retained or disclosed to any unauthorised person, either wholly or in part without the consent in writing of Stuart Burke Associates Limited
2 Stoneycroft Road, South Queensferry, EH30 9HX t: 0131 629 3434
GENERAL NOTES
1. DO NOT SCALE THIS DRAWING. ANY DISCREPANCY IS TO BE REPORTED TO THE ENGINEER IMMEDIATELY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEER'S, ARCHITECT'S OR OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
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Drawn by SM Date 27/04/17
Scale @ A1 1:500
Drawing No SBA1652_103_0003
Revision 00

## 1.0 Lighting Specification

### 1.1 Recessed wall lights

*Materials*

275m lighting cabling (16mm2 XLPE/PVC/SWA/PVC) buried 700mm below existing cobbles. (Allowance to be made for removal, storage, trenching, installation of cable, backfilling & reinstatement of existing cobbles)
14 No. IP68 Low Voltage LED Recessed Wall Lights
25m of 25mm Galvanised steel conduit including galvanised saddles and fixtures for wall mounting cable to recessed lights

*Method*

- Wet cut existing wall at desired height 100mm wide x 80mm tall x 125mm deep
- Run lighting cable up face of wall in galvanised steel conduit (face fixed) with suitable fixing brackets
- Install recessed wall light and connect to cable
- Seal around recessed wall light

### 1.2 Solar Eye 80

*Materials*

84 No. White Solar Eye 80
12 No. Red Solar Eye 80

*Method*

- Dry cut existing surfacing with 80mm milling tool bit to a depth of 30mm
- Install solar stud using a 2 part all weather adhesive
- Leave to cure for a minimum of 24 hour period at ambient temperatures prior to use

1.3 Flood lights

*Materials*

3 No 50W LED Flood Lights with PIR Movement Sensor
Distribution Pillar to City of Edinburgh Council Specification
Allowance for Earthing (Electrical Contractor to confirm requirements)

**Please note that the cabling design for the recessed lights/floods should be undertaken by a suitably qualified electrical engineer and our design is shown as indicative for information only.**

Clearview Intelligence
making journeys work

How many lives saved today?

# Product Specification
## SolarLite Road Studs™

**The smart, safe and sustainable option for providing guidance and hazard warning to drivers during the hours of darkness, reducing accident rates by over 70%, reducing environmental impact and saving costs.**

Clearview Intelligence offers a range of solar powered road studs to suit a wide variety of applications with both embedded and surface mounted products.

There are in the UK alone an average of 5 fatalities every day and many more serious injuries Driving at night can be particularly hazardous; although only a third of journeys are made during the hours of darkness almost half the serious accidents occurs at this time.

Clearview provides a sustainable solution with innovative solar powered SolarLite Intelligent Road Studs helping to reduce accident rates by over 70% on current UK installations.

**Increased visibility**
Using ultra bright LEDs (Light Emitting Diodes) to provide up to ten times greater visibility than traditional retro-reflective studs, and unlike conventional retro-reflective road studs, SolarLite studs do not rely on vehicle headlight efficiency to perform effectively.

At a speed of 100km/h (62mph) this can increase the time a driver has to react from 3.2 seconds to over 30 seconds.

**Reducing accidents and saving lives**

The innovative design of Clearview's SolarLite road studs makes them a vital component in cutting the number of road traffic accidents during the hours of darkness and thus saving countless lives each year.

A fatality on UK roads is calculated by the Department for Transport (DfT) to cost over £1.9M, not to mention the dreadful personal consequences of such a tragic, and on occasions, preventable accident.

By installing SolarLite studs, road authorities can help reduce accident rates and as a consequence significantly cut the amount of road closures and congestion. The studs are particularly effective at sites where there is a high accident risk, often on sharp corners, winding roads with poor delineation; or where street lighting is either unavailable, not cost effective or environmentally not possible.

## Key Benefits

- Superior distance visibility of road layout ahead compared to retro-reflective studs
- Reliable all night, all year round performance
- Lower lifetime costs than traditional road studs
- Long lasting, carefree operation
- Maintains superior visibility even in poor weather conditions and on wet roads
- Decreases night time accidents by over 70%
- Allows additional reaction time to respond to changing road layouts
- Reduces erratic driving behaviour and smoothes braking along winding roads
- Enhances driving experience, making drivers feel safer and more able to travel at night
- Highly impactful and politically visible contribution towards reducing road safety fears

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Clearview Intelligence
making journeys work

**Client:** Edinburgh City Council
**Location:** City of Edinburgh, Scotland
**Application:** Pathway Guidance

# Case Study
## Edinburgh Towpath Delineation

### Background

The Union Canal is a 31.5 mile (50.7 km) canal in Scotland, from Lochrin Basin and the Leamington lift bridge in Fountainbridge, Edinburgh to Falkirk, where it meets the Forthand Clyde Canal.

In June 2008, British Waterways Scotland decided to market the area between Edinburgh Quay and Ashley Terrace Bridge as Edinburgh Canal Quarter. With the canal now largely restored for both boating, walkers and cyclists on the towpath, it is enjoying a new lease of life. Supported by funding from Waste Recycling Environmental Limited (WREN), a non-profit making Environmental Body registered to fund projects which are eligible under the Landfill Communities Fund, the section of towpath between Harrison Park and Viewforth has been widened and resurfaced allowing improved and safer shared use for walkers, cyclists and wheelchair users.

This section of towpath leads directly to the City Centre and is very popular. The towpath is also part of the 10,000 mile national cycle network. However, with the towpath being so close to the water's edge, safety is a major consideration for towpath users, especially during the hours of darkness. Given the aesthetic impact on the location and the rising electricity costs of traditional street lighting, this was deemed not suitable and an alternative, less invasive and more sustainable solution was sought.

### Solution

This 2.5km stretch of the Union Canal towpath has been significantly improved from a night time safety perspective with the installation of 560 Bi-Directional SolarLite Active Road Studs, which now delineate both edges of the towpath to provide cyclists and pedestrians with more clearly defined guidance and visibility of the path ahead for up to a distance of 900m.

Powered by energy harvested during daylight hours through solar panels built into the surface of the studs, the SolarLite Active Road Studs automatically illuminate during the hours of darkness. With the studs embedded into the surface of the canal towpath and sitting only 4mm proud of the surface, they maximise night time visibility whilst ensuring they are unobtrusive and inoffensive to the towpath's users.

The majority of studs are white studs installed at 10m intervals to mark the edges of the towpath, with red studs at 5m intervals warning of hazards such as the towpath narrowing on approaches to over bridges and finally green studs highlighting towpath entrances and exits. All stud locations were positioned carefully to avoid any impact on the original materials of the canal such as mileposts or cobbled areas.

As the Union Canal is a Heritage site, great care was taken during installation to protect the natural historic fabric and the local environment. Working within the guidelines set out by British Waterways Scotland and ever mindful of the importance of this site, installation was completed within just two weeks using portable core drilling equipment. All flushing water and debris from the installation was collected and removed from site in containers for safe disposal to avoid any pollution to the canal itself.

## Key Benefits

- **Increased towpath visibility of up to 900m for pedestrian, cyclists and wheel chair users**
- **Increased safety in the hours of darkness**
- **The flush profile of the studs are less than 4mm ensuring they are unobtrusive to bicycle wheels, walkers and are wheelchair friendly**

*More and more people use the waterway year-round for leisure and commuting to work, so we are extremely pleased with the benefits of installing these small compact solar-powered LED studs within the new upgraded sections of towpath.*

**Richard Miller**
British Waterways Scotland

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