Shutta Road Retaining Walls Route Report

Division: CORMAC Consultancy

Site name: **Shutta Road, Looe**

Location: **SX256536**

Contract / Job No: CN1701503

Report No: CN1701503/01/01

Revision No. 0

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Revision	0	**Originator**	**Checked**	**Authorised**
Revision Date	07/05/21	WAB	**SGF**	**SGF**
Nature of Change	Original	[redacted]		
Purpose of Issue	Planning			

Executive Summary

Shutta Road is narrow and is unsuitable for wide vehicles.

There are 12 individually named retaining structures along Shutta Road of varying construction and materials.

Structure Name	Identified Defects	Proposed Actions
A Tregurtha Court	Vertical/stepped cracks in the parapet and leaning of up to 200mm. Masonry loss and loose masonry on the parapet considered a safety issue. Vegetation growth is obscuring the structure. Mature tree growth at the foot of the retaining wall is causing structure damage. Cracks ranging between 2-10mm in width were noted to the retaining wall.	The later addition to the wall height should be considered to be reduced in height along with measures to rebuild the wall to address the lean and the cracking throughout the parapet. Clearing any vegetation, trees and treat tree stumps to prevent future growth. Consideration should be made to repairing the vertical cracks in the retaining wall and installing monitoring devices to determine if the movement is ongoing.
B Shutta Road	The majority of the face of the retaining wall was covered in ivy and vegetation growth, limiting the inspection. There is some separation between the interface of the parapet and the adjacent Tregurtha Court parapet, this appears to be a result of some movement on the adjacent parapet wall. There is some scarring where bollards have been knocked out in the past and broken bollards insitu.	Vegetation growth, primarily ivy, is obscuring the majority of the structure therefore consideration should be given to undertaking vegetation clearance to allow unhindered inspection in future. Consideration for action on the adjacent Tregurtha parapet should be considered. Consideration could be given to the replacement of the broken bollards.
C Mount Pleasant	Part of the face of the retaining wall was covered in ivy and vegetation growth, limiting the inspection.	Vegetation growth, primarily ivy, is obscuring part of the structure therefore consideration could be given to undertaking vegetation clearance to allow unhindered inspection in future
D Dolphin Hotel	A vertical crack was found on the parapet at chainage 3m, the same location as on the upper retaining wall. The parapet at this location is failing, friable, with the stone and mortar being weathered and part has fallen undermining the coping. A number of vertical or stepped cracks were identified. The wall construction is loose, and the wall can be moved by hand.	The parapet therefore is considered at risk and it should be taken down and rebuilt. Weathered stone and joint mortar loss in the retaining wall will require re-pointing and securing any defective masonry and joints should be routinely undertaken. All vegetation should be removed to ensure any hidden defects are revealed.

	The stone and mortar to the upper, lower and mid-sections of the masonry retaining wall was found to be weathered with areas of friable mortar and eroded joints. Vegetation growth was noted on both faces of the parapet. An area of the carriageway was found to be sunken and cracked adjacent to the parapet.	The structure is subject to ongoing monitoring of structural movement to determine whether strengthening on the wall at this location is required.
E Rivercroft Hotel	A 1.0m band of the upper section of the retaining wall was found to be bulging up to 40mm half way up, over a length of 10m. Vertical cracks were identified in the upper section retaining wall. One notable example exists at chainage 30m; the crack extends to the parapet (both elevations) and is located adjacent to a sunken area of the carriageway. The stone and mortar to both sections of the masonry wall was found to be weathered with areas of friable/lost mortar measured to the majority of the walls. The lower 2m of the upper retaining wall had almost entirely lost all mortar. All the walls were covered by approximately a third with vegetation growth. At the north end of the structure an area of loose masonry to the parapet coping was noted at the north end of the structure. A number of vertical and stepped cracks were identified most notably at chainage 20m where the crack continues down the west elevation of the retained section of wall. A number of vertical cracks in the parapet are present; these cracks extend down the upper retained wall. The stone and mortar to the parapet was found to be eroded with areas of friable/lost mortar. An area of the carriageway was found to be sunken by 50mm adjacent to the parapet. At this location a number of vertical cracks in the parapet are present. In addition, a gap between the carriageway and parapet has formed at this location. The structure	The movement recorded by the monitoring has determined that the structure is required to be strengthened. Following detailed design a hybrid major maintenance and strengthening approach is to be employed. As part of the strengthening works to protect the rock anchor installers the parapet will need to be taken down and rebuilt. The ongoing monitoring has indicated excessive movement to such a degree that the Principal Structures Maintenance Engineer has instructed for the road to be closed and the parapet over the section of concern to be taken down. Where the wall is not being strengthened the stitching of cracks and general repointed where required will be employed. Vegetation will be cleared from the walls of the structure in order to determine the extent of any crack stitching and repointing required.

	is being monitored for movement with extensometers and by an inclinometer – the movement recorded are considered to be excessive.	
F Glencairn	Two vertical cracks were noted on the upper retaining wall, the cracks are also obscured by ivy. Vegetation was also noted in the larger of the cracks. Vegetation growth (particularly ivy) was noted obscuring the higher levels of the wall toward the south end. A garden shed also obscures the north end of the wall. Two diagonal cracks were noted on the lower retaining wall section. An area of erosion of the bedrock was noted at ground level measuring. Staining was noted to the wall. Areas of vegetation were noted on the concrete section of the wall, covering a small area. Vegetation was also noted in the joint between concrete and bedrock. Erosion was noted to the lower part of the parapet (within the splash zone from the carriageway). Some joint mortar loss was also noted throughout. The parapet was noted as leaning in a westerly direction by up to 70mm at CH 0m. Dense vegetation was noted on the parapet obscuring inspection. Corrosion was noted throughout the lower section parapet rails. Vegetation was noted on the parapet post at the start. Two spalled bricks were noted in the parapet post at the end.	No defects were identified during this inspection that appear to give immediate cause for concern with regards to the integrity or stability of the structure. Remedial works are recommended to improve the durability. The 2 No. cracks noted in the upper section of the stone masonry and concrete should be raked out to clear root ingress/ivy and repointed (masonry) or resin injected (concrete). Consideration should be given to thorough cleaning of all vegetation from the wall before the next inspection and repairing any further cracks/open joints that become evident. Spalling of individual bricks in the parapet posts at the top of the 'lower section' appear to be caused by weathering and vegetation growth. These areas do not appear to give immediate cause for concern due to their localised nature. However, consideration should be given to undertaking masonry repairs to improve durability. The 2 No. diagonal cracks noted at chainage 9m in the lower section of wall should be repaired by resin injection. The area of erosion of bedrock at chainage 6m at lower ground level should be shuttered up and reinstated with a flowable concrete repair material. Repointing of mortar joints to the upper masonry parapet is recommended. Monitor the 70mm out of verticality of the upper masonry parapet at chainage 0m on an annual basis.
G Belmont Hotel	A number of vertical and stepped cracks were found in the wall. There were some full height cracks in the retaining wall and in the buttress indicating movement has occurred at some point. The stone and mortar were found to be weathered with areas of friable/lost mortar over a fifth of the wall. Vegetation growth was covering a fifth of the wall and external parapet,	The vertical and stepped cracks should be repaired using crack stitching. Repointing and securing any defective masonry and joints are recommended. All vegetation should be removed to ensure any hidden defects are revealed. Consideration to monitoring should be considered.

	this meant not all the wall could be seen. An area of masonry loss to the parapet coping was noted to the north end. The top of the coping was loose with vegetation growth throughout the length of the wall. A number of vertical and stepped cracks were identified. The stone and mortar were found to have surface erosion with localised areas of loss. A resurfaced area of the carriageway adjacent to the BT utility pole was found to have sunk.	
H Bridgeside	Parts of the retaining wall were obscured by vegetation. An area of masonry loss to the parapet was noted to the north end. The dome cement mortar coping was noted as being loose with vegetation growth throughout the length of the wall. A large vertical crack was identified in the parapet. In places the stone and mortar was found to have surface erosion with localised areas of loss. The parapet wall is in poor condition, the crack in the parapet and the erosion, mortar loss and vegetation growth show that the durability of the parapet has been compromised	Vegetation on and around the structure appears to be promoting joint loss, spalling and loose masonry. All vegetation should be removed to ensure any hidden defects are revealed Consideration should be made to repairing the crack in the parapet with crack stitching and replacing the cement mortar dome copings. Repointing and securing any defective masonry and joints also be undertaken.
I War Memorial	There is a bulging section of the retaining wall from Ch.15.5 – 30.4. There is displacement and some of the mortar joints are opened up. There are also three cracks affecting the whole height of the retaining wall. Parts of the retaining wall were obscured by vegetation. An area of masonry loss to the parapet was noted to the coping at the north end. A large section of leaning parapet was identified during this inspection between two blocked up gateways (Section 1). The parapet at Section 4 was found to be substandard and should be rebuilt to match the adjacent parapet walls. In places the stone and mortar were found to be in poor condition.	Vegetation on and around the structure appears to be promoting joint loss, spalling and loose masonry. All vegetation should be removed to ensure any hidden defects Crack stitching may be required once the vegetation has been removed. Consideration should be made to taking down and rebuilding the parapet of the first panel and ensuring that the old gate ways are secure. The cement mortar dome copings should be repaired or replaced where required. Repointing and securing any defective masonry and joints should be undertaken. The fourth panel should be taken down and rebuilt to the same height as the adjoining parapet walls.
J Wesley Terrace (North)	The stone and cement mortar appear to be in good condition however parts	It is recommended vegetation is removed to enable a full inspection of the wall. Where found cracks should be stitched and

	of the retaining wall were obscured by vegetation. An area of masonry loss to the parapet was noted to the north end. The dome cement mortar coping was noted as being loose with vegetation growth throughout the length of the wall. A large vertical crack was found running almost to the top of the parapet.. In places the stone and mortar were found to have surface erosion with localised areas of loss. There is an old blocked up gateway with no coping.	areas of loss repointed The parapet wall is in poorer condition, the crack in the parapet and the erosion, mortar loss and vegetation growth show that the durability of the parapet has been compromised. Consideration should be made to repairing the crack and replacing the cement mortar dome copings. Repointing and securing any defective masonry and joints should be undertaken.
K Wesley Terrace (South)	Some ivy growth preventing inspection. No visible defects.	Vegetation growth, primarily ivy, is obscuring the part of the structure therefore consideration should be given to undertaking vegetation clearance to allow unhindered inspection in future.
L Trelyne Cottage	The stone and cement mortar appear to be in good condition however parts of the retaining wall were obscured by vegetation. The wall appeared to be free from deformation such as bulging, tilting undermining or stone loss so as a result it is considered to be in very good condition. Vegetation growth was recorded at approximately 10% coverage of the wall and external parapet The top 200mm of the coping was noted as being loose with vegetation growth throughout the length of the wall. There is a diagonal crack approximately halfway along the parapet.	Consideration should be made to repairing the copings, crack stitching of the diagonal crack and repointing and securing any defective masonry and joints. All vegetation should be removed to ensure any hidden defects are revealed

1. Introduction

There are 12 identified retaining wall structures which supports the U6149 unclassified road locally known as Shutta road between Tregurtha Court and Trelyne Cottage.

The structures are:

A	Tregurtha Court
B	Shutta Road
C	Mount Pleasant
D	Dolphin Hotel
E	Rivercroft Hotel
F	Glencairn
G	Belmont Hotel
H	Bridgeside
I	War Memorial
J	Wesley Terrace (North)
K	Wesley Terrace (South)
L	Trelyne Cottage

The above structures are maintained as assets of the highway authority and as a result they are subject to a regular inspection regime. The inspection of highways structures are undertaken in accordance with Department for Transport standards (The Design Manual for Roads and Bridges) and in particular in accordance with:
CS 450 Inspection of highway structures.
CS 470 Management of sub-standard highway structures

The assessment of condition of highway structures are undertaken in accordance with:
CS 459 – The assessment of bridge substructures, retaining structures and buried structures;
CS 461 – Assessment and upgrading of in-service parapets
These documents refer to further guidance such as:
DfT – Guidance on the Design, Assessment and Strengthening of Masonry Parapets on Highway Structures.

Shutta Road is a single-track road of varying but narrow width to modern standards. There are no traffic figures available, but the traffic is observed to be very light. The road itself is only capable of accommodating cars and light commercial vehicles with no abnormal loads being able to gain access. The U6149 has a bituminous surface which is not recent.

This report will summarise the inspection records for all of the above structures and will address each in turn from North to South.

2. Retaining Wall Inspection Reports

2.A Tregurtha Court

Structure Details:

Retaining Wall name:	TREGURTHA COURT (NORTH), SHUTTA ROAD, LOOE
OS grid ref:	SX 2550 5378

Road Name/Number:	U6149 Unclassified Road
Construction Type:	Mortared Masonry
Length:	57.5m
Retained Height:	Maximum = 6.0m Average = 3.5m
Carriageway Width:	2.35 to 3.9m
Parapet Type:	Mortared Masonry/block 1.4m – 2.0m height
Verge Width:	None

General Location

Tregurtha Court (North), Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe (photos 1 & 2). At the foot of the wall is the private garden of Tregurtha Court (North), a retirement home.

History

No documented history could be found for Tregurtha Court (North), Shutta Road, Looe Retaining Wall. The section of retaining wall immediately to the south (called 'Tregurtha Court') was rebuilt in 1995 following a collapse.

Specific Description

The wall elevation, sections and site plan are shown and the relevant photographs in Appendix A.

The retaining wall is constructed from mudstone random rubble mortared masonry with a front face batter nominally varying from 0 to 4.0 degrees to the vertical. It is 57.5 metres long and has a maximum retained height of 6.0 metres. There is an exposed rock face at the foot of the wall varying in height from 2.25 to 7.47 metres, detailed in section 4.4. Also, there is a parapet which is detailed in section 4.3.

The wall for assessment commences at Ch. 0 which is the northern boundary of the property, marked by a substantial flank wall (photo 4). At this chainage the retained height is 2.76 metres with a batter of 4.0 degrees. Between Ch. 0 and 25.0 the retained height varies from 2.76 to 3.4 metres (photos 5 & 6) with the batter varying from 2.5 to 4.0 degrees, becoming 3.79 metres and 1.4 degrees respectively at the latter chainage.

From Ch. 26.8 to 42.7 there is a rendered former swimming pool situated at the foot of the rock face (photos 3, 7 & 8). The retaining wall reaches its maximum retained height of 6.0 metres at Ch. 30.0 with a batter of 2 degrees. From this point to Ch. 45.0 the retained height varies as the rock head level fluctuates, having a minimum of 2.3 metres at Ch. 40.0. At Ch. 50.0 the retained height is 2.6 metres with an apparent tilt of 1.7 degrees, becoming 3.5 degrees by Ch. 55.0; this is detailed in section 4.6.

From Ch. 55.0 the wall is vertical and at Ch. 57.5 the wall for assessment terminates as beyond this point there is a recently constructed retaining wall replacing an earlier one which had failed structurally (see section 2.2 and photo 9).

The retaining wall thickness could not be determined from the inspection.

CARRIAGEWAY

Description

The U6149 has a bituminous surface which is not recent. It is on a curve with the retaining wall being on the inside of the curve and its width varies from 3.9 metres at Ch. 0 to 2.35 metres beyond Ch. 20.0 (photos 1 & 2). The gradient varies from 4.0 degrees at Ch. 0, becoming 0.8 degrees by Ch. 20.0 and 1.5 degrees by Ch. 50.0, all falling up-chainage. There is no footway or verge.

3.2 Traffic loading

There are no traffic figures available but during the course of several retaining wall inspections in Shutta Road over a period of two days, the traffic was observed to be very light with approximately six vehicles passing the location of the walls. The road itself is only capable of accommodating cars and light commercial vehicles with no abnormal loads being able to gain access.

Carriageway Condition

As is to be expected, there is no deflectograph information available; the inspection for assessment recorded no significant evidence of road cracking which could indicate movement of the wall.

Statutory Undertakers and Road Drainage

There is a water cover in the road surface 1.75 metres from the rear face of the parapet at Ch. 33.0 and there is a combined electricity and BT pole on the opposite side of the road at 37.8.

There are manholes at Ch. 10.5 and 50.0, 2.35 and 2.4 metres respectively from the rear of the parapet and at Ch. 37.0 there is another manhole on the opposite side of the road.

There is no road drainage alongside the retaining wall; the gradient should assist surface water to pass the wall location without ponding occurring.

Plant location plans have not been requested from the statutory undertakers at this stage.

SUMMARY OF FINDINGS

Below is a summary of the findings. Referenced photographs can be found in Appendix A.

Foundations

The lower 2-4m from ground level is bedrock. The surface 40mm of rock was found to be friable throughout the length of the wall. Refer to photo 3.

Retaining Wall

Tree growth was noted at chainage 2m on top of the bedrock which protrudes out by 500mm. A horizontal and stepped crack was also noted at this location measuring 2000x10mm. Numerous mature trees are located at the base of the wall over the length of the structure. A mature sycamore tree was identified at the base of the bedrock measuring 650mm in diameter at ground level at chainage 9m. Refer to photos 4 - 6

A vertical/stepped crack was noted at chainage 12m measuring 2x2700mm. Refer to photo 7.

The majority of the retaining wall was covered in ivy and vegetation growth, limiting the inspection. From chainage 15 - 58.5m, the wall was had approximately 95% coverage.
Refer to photos 8 – 10.
Surface erosion was typical to the stone and mortar; however, no areas of significant joint loss or masonry loss were found to the exposed areas of the wall. Refer to photos 11 – 12.

Drainage
Vegetation growth and root ingress was found to be partially blocking all weep holes in the retaining wall by up to 50%. The locations of the weep holes appeared random and were largely obscured by ivy. Refer to photos 13.
Parapet
Numerous stepped vertical cracks were identified to the parapet measuring up to 30mm in width. At chainage 31m a vertical and horizontal crack measuring up to 15mm in width was noted. Refer to photos 14 – 16.
At chainage 25-40m the parapet was found to be leaning towards the carriageway by up to 200mm. A number of the above-mentioned stepped cracks were included within this chainage. Refer to photos 17 – 18.
An area of masonry loss was noted to the parapet copings at chainage 49m measuring 720x350x380mm. Towards the north end of the structure the copings were found to be loose. Refer to photos 19 – 21.
Vegetation growth could be seen to much of the parapet. Refer to photo 22.

Carriageway
No defects were noted to the carriageway. Refer to photos

Footway
No footway is present - the parapet directly abuts the single carriageway road.

Recommendations
It is unlikely that this wall meets the current design criteria for retaining structures. The inspection report contains comments on the condition of the structure seen at the time of the inspection. It is not possible to accurately predict the performance of historic walls in line with current best design and construction practice without extensive intrusive investigation. The recommendations should be read with this in mind.

A number of defects identified to elements would give cause for concern in terms of the structure's stability and durability. Vertical/stepped cracks in the parapet and leaning of up to 200mm towards the carriageway should be addressed in the near future; the parapet has an unstable appearance and the later extension seems to be adding to the instability. Vegetation growth, primarily ivy, is obscuring the majority of the structure. Mature tree growth at the foot of the retaining wall and atop the bedrock towards the north end is likely causing the structure damage. Consideration should be made for clearing any vegetation and treating tree stumps with glyphosate plugs to prevent future growth. The erosion and mortar loss shows that the durability has been compromised, therefore consideration should be given to undertaking remedial works and monitoring at future inspections as described below.

Vertical cracks in the structure were not only found in the parapet; other cracks ranging between 2-10mm in width were noted to the retaining wall. Consideration should be made to repairing the vertical cracks and installing monitoring devices to determine if the movement is ongoing. During the inspection, a number of vehicles were seen scraping the parapet to navigate the narrow road. Signage is already in place to warn road users of the narrow carriageway.

Weathered stone and joint mortar loss noted during this inspection are a result of chemical and physical erosion over time. Masonry loss towards the south end of the parapet and loose masonry at the north end of the parapet could be considered a safety issue, therefore, re-pointing and securing any defective masonry and joints should be a part of a routine maintenance program to ensure the longevity of the wall. The later addition to the wall height should be considered to be reduced in height along with measures to rebuild the wall to address the lean and the cracking throughout the parapet.

The bedrock which the retained wall is founded on was seen to be friable to the touch. The outer 40mm crumbled easily and was damp throughout the length of the structure. Currently this does not appear to be undermining the retained wall, however future monitoring is advised and vegetation clearance to allow unhindered inspection in future.

2.B Shutta Road

Structure Details:

Retaining Wall name:	Shutta road, Looe
OS grid ref:	SX 2550 5373
Road Name/Number:	U6149 Unclassified Road
Construction Type:	Reinforced Concrete with Rock Anchor Stays
Length:	27m
Retained Height:	Maximum = 6.5m Average = 6.0m
Carriageway Width:	2.9 to 3.8m
Parapet Type:	Mortared Masonry facing to Reinforced Concrete Core 1.2m height
Verge Width:	None

General Location

Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe. At the foot of the wall are private gardens and a parking area between Tregertha Court and 3 Mount Pleasant.

History

No documented history could be found for Shutta Road, Looe Retaining Wall. The structure was strengthened in 1996.

Specific Description

The retaining wall is constructed from anchored reinforced concrete with random rubble semi coursed mortared masonry facing, sourced from a local Quarry, with a front face batter of 4.0 degrees to the vertical. The masonry was secured to the concrete using stainless steel abbey slots and ties and tied into the existing masonry at either end. It is 27 metres long and has a maximum retained height of 6.5 metres. The structure has a reinforced concrete parapet which is 1.2m in height and is faced with local stone with a cock and hen style coping. The strengthening scheme in 1996 added a 1.8m footway adjacent to the highway, at a later date bollards were added to prevent parking on the footway.

SUMMARY OF FINDINGS

Below is a summary of the findings. Referenced photographs can be found in Appendix B.
Foundations

Retaining Wall
The wall is in good condition with no visual signs of any structural movement.
The majority of the face of the retaining wall was covered in ivy and vegetation growth, limiting the inspection.

Parapet
There is some separation between the interface of the parapet and the adjacent Tregurtha Court parapet, this appears to be a result of some movement on the adjacent parapet wall.

Carriageway
No defects were noted to the carriageway.

Footway
The footway is in good condition, with scarring where bollards have been knocked out in the past. Consideration could be given to their replacement.

Recommendations

Vegetation growth, primarily ivy, is obscuring the majority of the structure therefore consideration should be given to undertaking vegetation clearance to allow unhindered inspection in future. Consideration for action on the adjacent Tregurtha parapet should be considered.

2.C Mount Pleasant

Structure Details:

Retaining Wall name:	Mount Pleasant Shutta road, Looe
OS grid ref:	SX 2550 5372
Road Name/Number:	U6149 Unclassified Road
Construction Type:	Reinforced Concrete with Rock Anchor Stays
Length:	17.5m
Retained Height:	Maximum = 6.5m Average = 6.0m
Carriageway Width:	2.8 to 3.45m
Parapet Type:	Mortared Masonry facing to Reinforced Concrete Core 1.2m height
Verge Width:	None

General Location

Mount Pleasant Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe At the foot of the wall are the private gardens of 1-3 Mount Pleasant, on Station Road and are private homes.

History

No documented history could be found for Mount Pleasant Shutta Road, Looe Retaining Wall. The structure was strengthened in 2005.

Specific Description

The retaining wall is constructed from anchored reinforced concrete with random rubble semi coursed mortared masonry facing, sourced from Callywith Quarry, with a front face batter of 4.0 degrees to the vertical. The structure has a reinforced concrete parapet which is 1.2m in height and is faced with local stone with a cock and hen style coping. It is 17.5 metres long and has a maximum retained height of 6.5 metres.

SUMMARY OF FINDINGS

Below is a summary of the findings. Referenced photographs can be found in Appendix C.

Retaining Wall
The wall is in good condition with no visual signs of any structural movement.
Part of the face of the retaining wall was covered in ivy and vegetation growth, limiting the inspection.

Carriageway
No defects were noted to the carriageway. Refer to photos

Footway
No footway is present - the parapet directly abuts the single carriageway road.

Recommendations

Vegetation growth, primarily ivy, is obscuring part of the structure therefore consideration should be given to undertaking vegetation clearance to allow unhindered inspection in future.

2.D Dolphin Hotel

Structure Details:

Retaining Wall name:	Dolphin Hotel Shutta road, Looe
OS grid ref:	SX 2549 5369
Road Name/Number:	U6149 Unclassified Road
Construction Type:	Mortared Masonry
Length:	20.4m
Retained Height:	Maximum = 13.23m Average = 12.84m
Carriageway Width:	2.4 to 3.76m
Parapet Type:	Mortared Masonry
Verge Width:	None

General Location

Dolphin Hotel Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe At the foot of the wall are the gardens of the Dolphin Hotel, on Station Road and are private homes.

History

No documented history could be found for Mount Pleasant Shutta Road, Looe Retaining Wall. The structure was strengthened in 2007.

Specific Description

The wall is split into two sections, an upper and lower, divided by a mid-level terrace and garden. Access steps descend from here to the hotel ground floor. The retaining wall comprises random masonry with a random masonry parapet. The mid-level terrace is bounded by a low concrete wall providing notional edge protection. The wall has a westerly aspect.

The wall measures approximately 20m in length with a maximum retained height of approximately 13.2m. The parapet has an average height of 1.2m. The wall supports the single carriageway of Shutta Road and likely the properties beyond. Stone masonry access steps, including a tubular handrail, exist from the road to the terraced garden at the north end of the structure.

SUMMARY OF FINDINGS

Below is a summary of the findings. Referenced photographs can be found in Appendix D.

Foundations

The foundations are below the formation level of the surrounding structures and were therefore not inspected. A vertical crack measuring 35x2700mm was found at the upper section of wall, chainage 3m, suggesting that movement has occurred at some point.

Retaining Wall

The stone and mortar to the upper, lower and mid-sections of the masonry wall was found to be weathered with areas of friable mortar and eroded joints measured at 30-40mm depth typically (but

up to 100mm locally) to approximately 60% of the walls surface area. Vegetation growth was recorded at approximately 40% coverage of the upper and mid walls and over 90% of the lower wall, limiting inspection..

Parapet
A vertical crack measuring 15x1200mm was noted at chainage 3m, the same location on the upper retaining wall with the previously mentioned 35mm crack. Repair work appears to have been attempted in recent years but is failing and friable. A number of vertical/stepped cracks were identified during this inspection, measuring up to 10mm in width by 1200mm in height. The wall construction appears loose and the wall can be moved by hand. There is stone loss in this area on the outward face undermining the coping. Vegetation growth was noted to approximately 20% of the internal and external faces of the parapet. The stone and mortar were found to be weathered in appearance, with a typical loss of 25mm depth and he coping. Evidence of monitoring devices were evident.

Carriageway
An area measuring 3600x2070mm of the carriageway was found to be sunken by 50mm at chainage 0m adjacent to the parapet. A crack at the depression edge measured 6mm in width. An assumed measuring device was noted in the surfacing, the structure continues to be monitored. The carriageway edges were largely covered in vegetation.

Footway
No footway is present - the parapet directly abuts the single carriageway road.

Access Steps
Vegetation growth was noted to the stone masonry steps which lead from the carriageway to the terraced garden at the north end and the mid-section steps. The tubular safety rail was secure.

Recommendations

It is unlikely that this wall meets the current design criteria for retaining structures. Our inspection report contains comments on the condition of the structure seen at the time of the inspection. It is not possible to accurately predict the performance of historic walls in line with current best design and construction practice without extensive intrusive investigation. The recommendations should be read with this in mind.

A number of defects identified would give cause for concern in terms of the structure's integrity and durability. A vertical crack in the parapet and upper section of the retained wall (measuring 35mm in width) is a cause for concern; in addition a sunken area of the carriageway is within proximity to the crack – this could be an indication of movement of the wall or foundations and settlement of the fill; the stone and mortar loss of the parapet with it being able to be moved by hand.
This area of the wall should be further investigated as the vehicular loadings are having an unknown effect on the structure. The weathering, mortar loss and vegetation growth show that the durability has been compromised, therefore consideration should be given to undertaking remedial works and monitoring at future inspections as described below.

Vertical cracks in the structure were not only adjacent to the area of sunken carriageway; others cracks up to 10mm in width were noted to the parapet. Consideration should be made to repairing the vertical cracks and the monitoring should continue to determine if the movement is ongoing. During the inspection, a number of vehicles were seen scraping the parapet to navigate the narrow road. Signage is already in place to warn road users of the narrow carriageway. The parapet therefore is considered at risk and it should be considered for rebuilding.

Weathered stone and joint mortar loss noted during this inspection are a result of chemical and physical erosion over time. Re-pointing and securing any defective masonry and joints should be a part of a routine maintenance program to ensure the longevity of the wall.

Vegetation on and around the structure appears to be promoting joint loss and spalling. Vegetation growth is also beginning to obscure inspection, particularly the lower section of the retained wall and carriageway edges. All vegetation should be removed to ensure any hidden defects are revealed. Doing so in the short term could present a cost benefit.
The structure is subject to ongoing monitoring of structural movement to determine whether strengthening on the wall at this location is required.

2.E Rivercroft Hotel

Structure Details:

Retaining Wall name:	Rivercroft Hotel Shutta road, Looe
OS grid ref:	SX 2549 5367
Road Name/Number:	U6149 Unclassified Road
Construction Type:	Mortared Masonry
Length:	35.4m
Retained Height:	Maximum = 12.16m Average = 11.22m
Carriageway Width:	2.4m
Parapet Type:	Mortared Masonry
Verge Width:	None

General Location

Rivercroft Hotel Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe At the foot of the wall are the gardens of the Rivercroft Hotel, on Station Road and are private homes.

History

No documented history could be found for Mount Pleasant Shutta Road, Looe Retaining Wall. The structure was strengthened in 2007.

Specific Description

The wall is split into two sections, an upper and lower divided by a terraced garden and tubular/mesh safety fence. The retaining wall comprises bonded random masonry block work, a bonded stone masonry parapet with a rendered stone coping. The wall has a westerly aspect. The wall measures approximately 36m in length with a maximum retained height of approximately 12.5m. The parapet has an average height of 1.4m. The wall supports a single lane carriageway known as Shutta Road and other structures beyond the carriageway

Access steps from the terrace lead south and down into the ground floor of the hotel. A wall finished in cement render retains the terrace above the steps (thought to be an addition by the landowner/tenants). A second set of steel access steps and railings are present towards the north end providing access into an upper floor of the hotel. Stone masonry access steps from the road to the terraced garden are present at the north end of the structure. A building has been constructed on the north end of the terrace inclusive of a concrete block wall, this was not included within the scope of inspection (thought to be an addition by the landowner).

SUMMARY OF FINDINGS

Below is a summary of the findings. Referenced photographs can be found in Appendix E:

Foundations

The foundations are below formation level of the terraces and paths and were not inspected. However, a number of vertical and stepped cracks were found. Included were full height cracks in the

upper section of wall measuring up to 40mm in width at chainage 26m and 25mm in width at chainage 20m possibly indicating movement has occurred.

Retaining Wall
A 1.0m band of the upper section of wall was found to be bulging up to 40mm half way up, over a length of 10m. In addition to the vertical cracks highlighted in 4.2, other vertical cracks were identified in the upper section retaining wall measuring up to 10mm in width by the full height. One notable example exists at chainage 30m; the crack extends to the parapet (both elevations) and is located adjacent to a sunken area of the carriageway. The stone and mortar to both sections of the masonry wall was found to be weathered with areas of friable/lost mortar measured up to 50mm in depth to the majority of the walls. At chainage 7m to 13m, the lower 2m of the upper wall had almost entirely lost all mortar. Vegetation growth was recorded at approximately 30% coverage of the walls and external parapet. There are crack monitoring devices attached to wall across some of the cracks.

Parapet
An area of loose masonry to the parapet coping measuring 620x330x350mmwas noted at the north end of the structure. A number of vertical and stepped cracks were identified measuring up to 20mm in width by 1400mm in height, most notably at chainage 20m where the crack continues down the west elevation of the retained section of wall. At chainage 26m to 30m, a number of vertical cracks in the parapet are present measuring up to 15mm in width; these cracks extend down the upper retained wall measuring up to 40mm in width. A horizontal crack measuring 6000x10mm was noted from chainage 5m to 11m. The stone and mortar to the parapet was found to be eroded with areas of friable/lost mortar measuring up to 50mm depth. Vegetation growth was noted to approximately 20% of the internal and external faces of the parapet, most notably at the capping (south end). There are some threaded studs installed into the parapet for monitoring purposes.

Carriageway
An area measuring 7000x1500mm of the carriageway was found to be sunken by 50mm at chainage 25-32m adjacent to the parapet. At this location a number of vertical cracks in the parapet (referred to in 4.5) are present. In addition, a gap between the carriageway and parapet measured 10mm wide at this location. The carriageway edges are largely covered in vegetation.

Footway
No footway is present - the parapet directly abuts the single carriageway road.

Access Steps & Concrete Wall
The steps are informal in regard of rise and going, however, they were seen to be in satisfactory condition with no loose of overly uneven surfaces noted. There was light vegetation growth to some areas locally. The concrete steps leading down to the rear of the hotel ground floor appeared sound. The rendered wall was of poor condition/construction. Stepped cracks up to 8mm in width and delaminating skim was noted throughout the wall.

Recommendations

It is unlikely that this wall meets the current design criteria for retaining structures. Our inspection report contains comments on the condition of the structure seen at the time of the inspection. It is not possible to accurately predict the performance of historic walls in line with current best design and construction practice without extensive intrusive investigation. The recommendations should be read with this in mind.

A number of defects identified would give cause for concern in terms of the structure's integrity and durability. Vertical/stepped cracks in the parapet and retained wall in close proximity to a sunken

area of the carriageway, including bulging, could suggest settlement of the fill or movement associated with the foundations. This area of the wall should be further investigated as the vehicular loads are having an unknown effect on the structure. Erosion, mortar loss and vegetation growth show that the durability has been compromised, therefore consideration should be given to undertaking major works and further monitoring as described below.

Vertical cracks in the structure were not only adjacent to the area of sunken carriageway; other cracks were noted at many locations in the structure. The structure is subject to movement monitoring and the movement has been enough for the decision to strengthen the retaining wall to be made. The wall has continued to be monitored whilst a hybrid strengthening maintenance approach has been designed. As part of the maintenance element it is understood that the masonry face will be strengthened by means of helical stitch matrix, in other sections the vertical cracks should be repaired using helical stitches and repointing. Further monitoring should be undertaken to determine if the movement ceases. A horizontal crack in the parapet is likely due to impact damage; during the inspection, a number of vehicles were seen scraping the parapet to navigate the narrow road. As part of the strengthening works to protect the rock anchor installers the parapet will need to be taken down and rebuilt.
The ongoing monitoring has indicated excessive movement to such a degree that the Principal Structures Maintenance Engineer has instructed for the road to be closed and the parapet over the section of concern to be taken down.

Loose coping stones within the remaining parapet, weathered stone and joint mortar loss noted during this inspection are a result of degradation over time. Re-pointing and securing any defective masonry and joints should be a part of a routine maintenance program to ensure the longevity of the wall.

Vegetation on and around the structure appears to be promoting joint loss, spalling and loose masonry. Vegetation growth is also beginning to obscure inspection, particularly the retained wall, parapet capping and carriageway edges. All vegetation should be removed to ensure any hidden defects are revealed.

2.F Glencairn

Structure Details:

Retaining Wall name:	Glencairn Shutta road, Looe
OS grid ref:	SX 2548 5364
Road Name/Number:	U6149 Unclassified Road
Construction Type:	Upper Wall Mortared Masonry and Mass Concrete Buttress Lower Wall Mass Concrete
Length:	12.2m
Retained Height:	Upper Wall Maximum = 3.6m Average = 2.55m Lower Wall Maximum = 3.6m Average = 2.8m Maximum overall retained Height = 13.18m
Carriageway Width:	2.8m
Parapet Type:	Mortared Masonry
Verge Width:	None

General Location

Glencairn Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe At the foot of the wall are the private gardens of Glencairn on Station Road.

History

No documented history could be found for Mount Pleasant Shutta Road, Looe Retaining Wall. The structure was strengthened in 2007.

Specific Description

The retaining wall comprises two sections; the 'upper section' comprises mortared stone masonry and concrete with two concrete buttresses. The 'lower section' is made up of in-situ cast concrete on top of bedrock. The wall retains the western side of Shutta Road - a single width, one-way carriageway. The wall measures approximately 12m in length and has a maximum retained height of 3.6m for the 'upper section' and 7m for the 'lower section' (at chainage 7m). On top of the 'upper section' of retaining wall is a parapet that extends above carriageway level, consisting of mortared stone masonry, with an average height of 1300mm.
The parapet above the 'lower section' has five brick masonry posts linked by horizontal tubular steel rails, with an average height of 900mm.

SUMMARY OF FINDINGS

Below is a summary of the findings. Referenced photographs can be found in Appendix F.

Foundations
The foundations were not available to be inspected directly during this inspection however no evidence was found to suggest that movement had occurred.

Retaining Wall
Upper Section

Two vertical cracks were noted: at CH 5m (3000xhairline) and at CH 7.5m (3000x30–50mm) the cracks are also obscured by ivy. Vegetation was also noted in the larger of the cracks. Vegetation growth (particularly ivy) was noted obscuring the higher levels of the wall toward the south end. A garden shed also obscures the north end of the wall.
Lower Section
Two diagonal cracks were noted at CH 9m (1000x2mm and 480x1mm). An area of erosion of the bedrock was noted at CH 6m at ground level measuring from 750x1100x200mm. Staining was noted to the wall at CH 10-12m. Areas of vegetation were noted on the concrete section of the wall, covering up to 5% and covering up to 10% of the bedrock section. Vegetation was also noted in the joint between concrete and bedrock.

Parapet
Upper Section
Erosion was noted to the lower 400mm of the parapet between CH 0m and 12m, measuring typically 40mm in depth (within the splash zone from the carriageway). Joint mortar loss was also noted throughout approximately 5%, with a loss of up to 30mm in depth. The parapet was noted leaning in a westerly direction by up to 70mm at CH 0m. Dense vegetation was noted on the parapet obscuring inspection.
Lower Section
Corrosion was noted throughout approximately 60% of the parapet rails. Vegetation was noted on the parapet post at CH 0m. Two spalled bricks (100x70x40mm and 200x70x20mm) were noted in the parapet post at CH 12m.

Carriageway
No visible defects were noted.

Footway

Upper Section

No footway is present - the parapet directly abuts the single carriageway road.

Lower Section
Minor vegetation growth and detritus was noted on the footpath. General weathering was noted to the surface of the lower footpath and stairs that lead to the ground level of the buildings on station road.

Recommendations

It is unlikely that this wall meets the current design criteria for retaining structures. Our inspection report contains comments on the condition of the structure seen at the time of the inspection. It is not possible to accurately predict the performance of historic walls in line with current best design and construction practice without extensive intrusive investigation. The recommendations should be read with this in mind.

No defects were identified during this inspection that appear to give immediate cause for concern with regards to the integrity or stability of the structure. Remedial works are recommended to improve the durability. However, dense vegetation obscured inspection of upper areas of the wall.

The 2 No. cracks noted in the upper section of the stone masonry and concrete should be raked out to clear root ingress/ivy and repointed (masonry) or resin injected (concrete). Consideration should

be given to thorough cleaning of all vegetation from the wall before the next inspection and repairing any further cracks/open joints that become evident.
Spalling of individual bricks in the parapet posts at the top of the 'lower section' appear to be caused by weathering and vegetation growth. These areas do not appear to give immediate cause for concern due to their localised nature. However, consideration should be given to undertaking masonry repairs to improve durability.
The 2 No. diagonal cracks noted at chainage 9m in the lower section of wall should be repaired by resin injection. The area of erosion of bedrock at chainage 6m at lower ground level should be shuttered up and reinstated with a flowable concrete repair material. Reinstatement of mortar joints to the high level masonry parapet (lower 400mm high section in the splash zone) is recommended.
Monitor the 70mm out of verticality of the upper masonry parapet at chainage 0m on an annual basis.

2.G Belmont Hotel

Structure Details:

Retaining Wall name:	Belmont Hotel Shutta road, Looe	
OS grid ref:	SX 2548 5361	
Road Name/Number:	U6149 Unclassified Road	
Construction Type:	Mortared Masonry	
Length:	15.8m	
Retained Height:	Maximum = 3.2m	Average = 3.15m
Carriageway Width:	2.8m	
Parapet Type:	Mortared Masonry	
Verge Width:	None	

General Location

Belmont Hotel Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe. At the foot of the wall are the private terrace and garden of the Belmont Hotel, currently used as apartments.

History

No documented history could be found for Belmont Hotel Shutta Road, Looe Retaining Wall.

Specific Description

The retaining wall comprises bonded random masonry block work, with a bonded random masonry block work parapet. The wall measures approximately 16m in length with a maximum retained height of 3.2m. The parapet has an average height of 1.5m. The wall supports a single lane carriageway known as Shutta Road. At the base of the wall is a terraced garden for the former Belmont Hotel. Further walls exist below the upper terrace.
Stone masonry access steps, from Shutta Road to the garden are present at the north end of the structure. A number of services are present on the wall and a service housing building is present at the south end of the wall in the garden.

SUMMARY OF FINDINGS

Below is a summary of the findings. Referenced photographs can be found in Appendix G.

Foundations
The foundations are below the formation level of the gardens and hence not visible. No inspection of this element took place. A number of vertical and stepped cracks were found in the wall. Included were full height cracks measured up to 6mm in width in the wall (chainage 4m) and 15mm width in the buttress at the south end of the wall (chainage 16m) indicating movement has occurred at some point.

Retaining Wall

Aside from the stepped and vertical cracks highlighted above, the stone and mortar was found to be weathered with areas of friable/lost mortar measured at 100mm depth to approximately 20% of the wall. Vegetation growth was recorded at approximately 20% coverage of the wall and external parapet

Parapet
An area of masonry loss to the parapet coping measuring 520x280x460mm was noted to the north end. The top 200mm of the coping was noted as being loose with vegetation growth throughout the length of the wall. A number of vertical and stepped cracks were identified during this inspection, measuring up to 10mm in width by 1200mm in height, most notably at chainage 6.5m where the crack continues down the west elevation of the retained section of wall. The stone and mortar was found to have surface erosion with localised areas of loss measuring up to 1200x700x60mm (chainage 12m). At chainage 6.5m, behind a utility pole, two cored holes were found, assumedly associated with services.

Carriageway
A resurfaced area of the carriageway adjacent to the BT utility pole at chainage 6.5m was found to have sunk by 15mm. It should be noted that a 10mm vertical crack in the parapet is present at this chainage also. Vegetation growth could be seen to both sides of the carriageway edges over the full length of the structure.

Footway
No footway is present - the parapet directly abuts the single carriageway road.

Access Steps
Vegetation growth at 20% (same as the retained wall) coverage was present at the access steps. A sound area of repair could be seen.

Recommendations

It is unlikely that this wall meets the current design criteria for retaining structures. Our inspection report contains comments on the condition of the structure seen at the time of the inspection. It is not possible to accurately predict the performance of historic walls in line with current best design and construction practice without extensive intrusive investigation. The recommendations should be read with this in mind.

In the lower sections of the wall the pointing appears to be in fair condition, except where noted, the more exposed (and more difficult to access) parapet wall is in poorer condition. A number of defects identified would give cause for concern in terms of the structures integrity and durability. Vertical/stepped cracks in the parapet and retained wall in close proximity to a sunken repair in the carriageway and active services would suggest that recent utility works may have damaged the structure. The erosion, mortar loss and vegetation growth show that the durability has been compromised, therefore consideration should be given to undertaking remedial works and monitoring at future inspections as described below.

Vertical cracks in the structure were not only adjacent to the utility pole; other cracks noted could indicate movement/settlement of the foundations. No previous records were available for review at the time of this report therefore consideration should be made to repairing these cracks and installing monitoring devices to determine if the movement is ongoing. Simple mortar pads may provide the least visual impact and could be placed during repointing works. Missing masonry, loose capping stones and joint mortar loss noted during this inspection are likely a result of degradation

over time and impact damage. Repointing and securing any defective masonry and joints should be a part of a routine maintenance program to ensure the longevity of the wall.

Vegetation on and around the structure appears to be promoting joint loss, spalling and loose masonry. Vegetation growth is also obscuring sections, particularly the retained wall, parapet coping and carriageway edges. All vegetation should be removed to ensure any hidden defects are revealed. Doing so in the short term could carry a cost benefit.

2.H Bridgeside

Structure Details:

Retaining Wall name:	Bridgeside Shutta road, Looe
OS grid ref:	SX 2548 5359
Road Name/Number:	U6149 Unclassified Road
Construction Type:	Mortared Masonry
Length:	14.6m
Retained Height:	Maximum = 4.35m Average = 3.9m
Carriageway Width:	3.0 m
Parapet Type:	Mortared Masonry
Verge Width:	None

General Location

Bridgeside Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe. At the base of the wall is in the garden of a hotel known as Bridgeside.

History

No documented history could be found for Bridgeside Shutta Road, Looe Retaining Wall.

Specific Description

The retaining wall comprises cement mortared random masonry, with a cement mortared masonry parapet. The wall measures approximately 14.6m in length with a maximum retained height of 4.35m. The parapet has an average height of 1.4m. The wall supports a single lane carriageway known as Shutta Road. At the base of the wall is a ledge measuring 4-5m in width. At the front of this ledge is a rock face which is partially faced with mortared masonry.

SUMMARY OF FINDINGS

Below is a summary of the findings. Referenced photographs can be found in Appendix H.

Foundations

The wall foundations were not exposed and were not, therefore, inspected or assessed. There is visible rock in the vicinity of the retaining wall indicating that the wall may be founded on bedrock, however, no defects were visible.

Retaining Wall

The stone and cement mortar appear to be in good condition however parts of the retaining wall were obscured by vegetation. Vegetation growth was recorded at approximately 10% coverage of the wall and external parapet

Parapet
An area of masonry loss to the parapet was noted to the north end. The top 200mm of the dome cement mortar coping was noted as being loose with vegetation growth throughout the length of the wall. A large vertical crack was identified during this inspection, measuring up to 10mm in width by 1300mm in height. In places the stone and mortar was found to have surface erosion with localised areas of loss. At approximately chainage 8m there is an old gate way with a granite lintel.

Carriageway
No visible defects were noted.

Footway
No footway is present - the parapet directly abuts the single carriageway road.

Recommendations

It is unlikely that this wall meets the current design criteria for retaining structures. Our inspection report contains comments on the condition of the structure seen at the time of the inspection. It is not possible to accurately predict the performance of historic walls in line with current best design and construction practice without extensive intrusive investigation. The recommendations should be read with this in mind.

The pointing appears to be in fair condition on the retaining wall, however it is recommended vegetation is removed to enable a full inspection of the wall. The parapet wall is in poorer condition, the crack in the parapet and the erosion, mortar loss and vegetation growth show that the durability of the parapet has been compromised, therefore consideration should be given to undertaking remedial works.

Consideration should be made to repairing the crack and replacing the cement mortar dome copings. Repointing and securing any defective masonry and joints should be a part of a routine maintenance program to ensure the longevity of the wall.

Vegetation on and around the structure appears to be promoting joint loss, spalling and loose masonry. All vegetation should be removed to ensure any hidden defects are revealed. Doing so in the short term could carry a cost benefit.

2.I War Memorial

Structure Details:

Retaining Wall name:	War Memorial Shutta road, Looe
OS grid ref:	SX 2549 5356
Road Name/Number:	U6149 Unclassified Road
Construction Type:	Mortared Masonry
Length:	49.8m
Retained Height:	Maximum = 3.1m Average = 3m
Carriageway Width:	2.8 - 3.3 m
Parapet Type:	Mortared Masonry
Verge Width:	None

General Location

War Memorial Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe. At the base of the wall is an area of scrub to the rear of a number of properties on Fore Street, Looe.

History

No documented history could be found for War Memorial Shutta Road, Looe Retaining Wall.

Specific Description

The retaining wall is constructed from mortared masonry throughout. The retaining wall consists of four distinct sections divided by short returning walls.

The first panel runs from Ch.0.0 – 15.5, this section is drained by weepholes.From Ch.0.0 – 0.380 the retaining wall is buttressed by a returning wall extending 1.7m at right angles from the front face of the wall. There is a vertical joint in the returning wall 70mm from the front face of the retaining wal. At Ch.0.8 there are three 70mm Ø ducts emerging from the front face of the wall at a height of 2.5m above ground level. The retained height at Ch.2.0 is 3.16m. From Ch.12.1 – 14.55 the remains of a set of steps 830mm wide rise up to a 950mm landing adjacent to a blocked access to the highway. The landing is 1.9m above ground level. The bottom of the blocked-up access is 480mm above the landing. The parapet is constructed from mortared masonry matching the retaining wall. From Ch.0.0 – 15.5 it is constructed from siltstone laid on lime mortar partially repointed with cement mortar. It is 500mm thick and 1.55 – 1.63 m high with a 1500mm high round topped coping above it.

The second panel commences at the end of the landing, Ch.15.5. This second panel does not incorporate any weepholes or other forms of drainage. From Ch.15.5 – 15.83 there is a 330mm thick returning wall which extends 1.8m at right angles from the front face of the retaining wall at its base. This returning wall is triangular with a small extension above the top of the original cock & hen coping abutting the retaining wall. This extension is 600mm wide and it is not attached or keyed to the retaining wall, there is a gap of approximately 40mm between the two walls. From Ch.15.83 – 16.38 there is a raised area supported by mortared masonry, this 600 – 700 mm high. Above this there is a conical void 750mm wide, 580 high and 600mm deep extending through the returning wall and into the steps structure behind. At Ch.16.3 the retained height is 2.59m. There is a bulge in the

lower part of the wall throughout this second panel centred approximately 650mm above ground level. The maximum displacement of the bulge is 55mm. There is an opening of the masonry joints associated with this bulge. This affects the wall to a height of approximately 1.6 – 1.7m above ground level. At Ch.21.5 the retained height is 2.28m. At Ch.22.7 the ground at the base of the retaining wall starts to slope downhill along the increasing chainage at 16° to the horizontal. From Ch. 25.2 – 31.4 there is the remains of a set of steps rising up to a 1.9m landing adjacent to a 700mm access which has been blocked off with corrugated iron. The landing is 1.9m above ground level, the bottom of the corrugated iron is 800mm above the landing. The steps are 860mm wide. The end of the landing marks the start of the third panel of the retaining wall. The parapet is also constructed from siltstone on lime mortar. The mortar is more weathered and this part of the parapet tilts toward the highway by up to 7.8°

The third panel is drained by vitrified clay pipe weepholes, the retained height at Ch. 32.4 is 2.88m. The ground at the base of the wall rises with a gradient of 6.2°, but this gradient increases to 23.6° at Ch. 43.0. At Ch.44.6 the retained height is 1.08m. There is another returning wall at this point marking the start of the fourth panel of the retaining wall. The wall is constructed from mudstone with typical stone sizes of 400 x 100mm laid on cement mortar with 10mm joints. The material appears less weathered and is generally in better condition. The parapet is also constructed of mudstone and cement mortar.

The fourth panel (Ch 44.6-50.3) has a retained height less than 1.5m but it is included in this assessment report for completeness and ease of identification of features and deformations. At Ch.47.5 there is a change of direction of 16.6° allowing the carriageway to widen by 400mm over its remaining length. From Ch. 48.2 – 48.6 there is a blocked up opening 1.0m high through the front face of the wall. At Ch.48.9 another retaining wall commences 1.4m from the front face of the retaining wall. The survey terminated at Ch.49.8, the end of the retaining wall. with a cement mortared masonry parapet. The wall measures approximately 14.6m in length with a maximum retained height of 4.35m. The parapet has an average height of 1.4m. The wall is also constructed from mudstone, the general quality of the construction is of a poor standard and the mortar joints are poor.

SUMMARY OF FINDINGS

Below is a summary of the findings. Referenced photographs can be found in Appendix I.

Foundations
The wall foundations were not exposed and were not, therefore, assessed.

Retaining Wall

The retaining wall is generally in fair condition. The primary concern is the bulging section from Ch.15.5 – 30.4. There is displacement and some of the mortar joints are opened up. There are also three cracks affecting the whole height of the retaining wall. Only one of these has any displacement associated with it and this is just 5mm.The stone and cement mortar appear to be in good condition however parts of the retaining wall were obscured by vegetation. Vegetation growth was recorded at approximately 30% coverage of the wall and external parapet

Parapet
An area of masonry loss to the parapet was noted to 14m of the coping at the north end. A large section of leaning parapet (15.7 degree lean towards the highway) was identified during this inspection between two blocked up gateways approximately between Ch. 15 -32. Owing to the excessive lean the granite lintel is also leaning out into the road by approximately 330mm, at

approximate chainages 6.0 ,8-0 & 12.0 there is a diagonal cracking. In places the stone and mortar were found to be in poor condition. At Ch 44.5 approximately the lower parapet is of poor condition and was loose to the touch over its entire length.

Carriageway
No visible defects were noted.

Footway
No footway is present - the parapet directly abuts the single carriageway road.

Recommendations

It is unlikely that this wall meets the current design criteria for retaining structures. Our inspection report contains comments on the condition of the structure seen at the time of the inspection. It is not possible to accurately predict the performance of historic walls in line with current best design and construction practice without extensive intrusive investigation. The recommendations should be read with this in mind.

The pointing appears to be in fair condition on the majority of the retaining wall, the exception being the fourth panel, however it is recommended vegetation is removed to enable a full inspection of the wall. Crack stitching may be required once the vegetation has been removed. The parapet wall is in poorer condition, the crack in the parapet and the erosion, mortar loss and vegetation growth show that the durability of the parapet has been compromised, therefore consideration should be given to undertaking remedial works.

Consideration should be made to taking down and rebuilding the parapet of the first panel and ensuring that the old gate ways are secure. The cement mortar dome copings should be repaired or replaced where required. Repointing and securing any defective masonry and joints should be a part of a routine maintenance program to ensure the longevity of the wall. The fourth panel should be taken down and rebuilt to the same height as the adjoining parapet walls.

Vegetation on and around the structure appears to be promoting joint loss, spalling and loose masonry. All vegetation should be removed to ensure any hidden defects are revealed. Doing so in the short term could carry a cost benefit.

2.J Wesley Terrace (North)

Structure Details:

Retaining Wall name:	Wesley Terrace)North) Shutta road, Looe
OS grid ref:	SX 2550 5353
Road Name/Number:	U6149 Unclassified Road
Construction Type:	Mortared Masonry
Length:	21.08m
Retained Height:	Maximum = 3.5m Average = 3.23m
Carriageway Width:	2.8 to 4.62m
Parapet Type:	Mortared Masonry
Verge Width:	None

General Location

Wesley Terrace (North) Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe. At the base of the wall is in private gardens.

History

No documented history could be found for Wesley Terrace (North) Shutta Road, Looe Retaining Wall.

Specific Description

The retaining wall comprises limestone mortared random mudstone masonry, with a limestone mortared mudstone masonry parapet. The wall measures approximately 21.08m in length with a maximum retained height of 3.5m. The parapet has an average height of 1.4m. The maximum Active retained height is that chain each five where the courage way acts directly on the wall and is 3.49 metres with a vertical front face. The wall is constructed as mortar masonry mudstone structure using lime mortar.

The first section of the wall commences at between chainage 0 to 2 with a raised garden bed 1.15 metres high that is set forward 1.8 metres from the wall face with a sloping embankment from its top level to the secondary wall at the edge of the carriage way. the retaining wall then rises between chainage 2 and 3.2 to parapet level at Chainage 3.2 where the Effective retaining wall commences.

The effective retaining wall commences at chainage 5 at the point where the secondary wall terminates and at that point as has a retained height of 3.49 metres and a vertical front face. At chainage seven there is an opening in the wall face 2.1 metres above ground level it is 75 mm square and measures 1400 mm deep. At chainage 7.1 a vertical crack extends the full height of the wall Up to one millimetre wide between chainage 5 and 8.6 the bedrock was visible up to 250 mm above the ground level. A purchasing divided ball intersects the war face the war face at between chain each 11.45 and 11.78 that terminates 2.3 metres below the top of the wall measured from parapet level this wall slopes at 17.9 degrees away from the retaining wall at approximately 90 degrees and follows the natural slope of the garden. At chainage 11.8 and up to chainage 14.58 on the main wall there is evidence of a previously removed building of up to 2.12 metres above ground level. Between

chainage 11.8 and 17.58 there is a raised garden which is two point 4 two metres wide that steps down 400 and 60 mm to ground level and then continues at the normal slope of the remaining garden area. The original access steps are covered with stone debris and heavy foliage between chainage 17.58 and 21.08

The disuse gateway is in filled with concrete block work between the top landing to the steps and the top of the lower pit between chainage 19.85 and 21.08. Below the base of the main retaining wall are two secondary retaining walls these walls are separated by the buttressing wall between chain age 11.45 to 11.78 producing distances of 8.8 metres from the war face between chainage knowlton 11.45 plus 12.45 metres from the face of the wall between chainage 11.8 and chenies 21.08. The lower walls are also of morchard masonry construction and have Heights of 2.8 metres and 5.68 metres respectively and are founded on the bedrock pillow

The carriage way is generally straight with a gradient of two degrees rising down chainage with the width generally of 2.8 metres and a maximum width adjacent to the parking area of up to 4.62 metres the road surface is in good condition with no signs of cracking

The Wall face was generally clear of vegetation and therefore all areas required were accessible for the retaining wall sections however the section between chainage 0 and 3.2 was heavily covered in vegetation.

The parapets is a mortared masonry structure constructed in a random rubble style from mudstone matching the retaining wall and measures 16.65 metres long from Chainage 3.2 to 19.85 and is between 1.1 metres and 1.32 metres high with an average thickness of 350 mm the stone sizes vary between 200 to 450 mm and the line motor mortar joints are up to 300 or up to 35mm wide .

The parapet is largely covered in vegetation between chanage 3.2 and 11.45 also between chainage 15 and 18 however this did not prevent access to visually inspect the purpose for defects

A crack was noted at chainage 7.0 running vertically up the parapet of 21mm wide and it was not evident in the wall face below the crack in the wall face at chainage 7.1 metres did not show within the parapet at the same chainage. The original gateway with the parapet between chainage 19.85 and 21.08 is in filled with concrete block work in a cement mortar and finished level with the top of the original parapet but it is only 220 mm thick as the blocks were laid flat. The coping to the parapet was missing between chainage 11.45 and 15.55 plus between chainage 17.45 and 19.85 .

The wall foundations were not exposed and were not therefore inspected however between Chainage 5 and 8.6 the bedrock on which the wall is believed to be founded was evident up to 250mm above ground level

The retaining wall is constructed as a mortared masonry wall with mudstone bedded in line water the stone is generally in good condition with only slight signs of friability whereas the lime mortar is becoming slightly more friable and there are no signs of calcite staining or Moss that could indicate water behind the wall; stone sizes vary between 200 and 450 mm

The wall displayed no signs of bulging tilting undermining or stone loss there is evidence of cracking at Chainage 7 running vertically up the wall face and a 75mm square hole is showing at chainage 72.1 metres above ground level that has a depth of 1.4 metres. The bedrock showing between Chainage 5 and 8.6 is clear evidence of rock been behind the wall and forms a significant part of the foundations of this wall section

The retaining wall is generally in good condition with only slight early signs of friability of the formation stone. The cracking in the retaining wall at change seven and in the power pad change 11 are the only outward signs of defects in the wall as a whole.

Summary of Findings

Below is a summary of the findings.

Foundations

The wall foundations were not exposed and were not, therefore, assessed. There is visible rock in the vicinity of the retaining wall indicating that the wall may be founded on bedrock. No defects were visible.

Retaining Wall

The stone and cement mortar appear to be in good condition however parts of the retaining wall were obscured by vegetation. Vegetation growth was recorded at approximately 10% coverage of the wall and external parapet

Parapet
An area of masonry loss to the parapet was noted to the north end. The top 200mm of the dome cement mortar coping was noted as being loose with vegetation growth throughout the length of the wall. A large vertical crack was identified during this inspection, measuring up to 10mm in width by 1300mm in height. In places the stone and mortar were found to have surface erosion with localised areas of loss. At approximately chainage 8m there is an old gate way with granite.

Carriageway
No visible defects were noted.

Footway
No footway is present - the parapet directly abuts the single carriageway road.

Recommendations

It is unlikely that this wall meets the current design criteria for retaining structures. Our inspection report contains comments on the condition of the structure seen at the time of the inspection. It is not possible to accurately predict the performance of historic walls in line with current best design and construction practice without extensive intrusive investigation. The recommendations should be read with this in mind.

The pointing appears to be in fair condition on the retaining wall, however it is recommended vegetation is removed to enable a full inspection of the wall. The parapet wall is in poorer condition, the crack in the parapet and the erosion, mortar loss and vegetation growth show that the durability of the parapet has been compromised, therefore consideration should be given to undertaking remedial works.

Consideration should be made to repairing the crack and replacing the cement mortar dome copings. Repointing and securing any defective masonry and joints should be a part of a routine maintenance program to ensure the longevity of the wall.

Vegetation on and around the structure appears to be promoting joint loss, spalling and loose masonry. All vegetation should be removed to ensure any hidden defects are revealed. Doing so in the short term could carry a cost benefit.

2.K Wesley Terrace (South)

Structure Details:

Retaining Wall name:	Wesley Terrace (South), Looe
OS grid ref:	SX 2551 5352
Road Name/Number:	U6149 Unclassified Road
Construction Type:	Reinforced Concrete with Rock Anchor Stays
Length:	16.2m
Retained Height:	Maximum = 3m Average = 2.8m
Carriageway Width:	2.9m
Parapet Type:	Mortared Masonry facing to Reinforced Concrete Core 1.2m height
Verge Width:	None

General Location

Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe. At the base of the wall is private gardens to the rear of Fore Street.

History

No documented history could be found for Wesley terrace, Looe Retaining Wall. The structure was strengthened in 1998.

Specific Description

The retaining wall is constructed from anchored reinforced concrete with random rubble semi coursed mortared masonry facing, sourced from a local Quarry, with a vertical front face. The masonry was secured to the concrete using stainless steel wall ties and tied into the existing masonry at either end. It is 16.2 metres long and has a maximum retained height of 3 metres. The structure has a reinforced concrete parapet which is 1.2m in height and is faced with local stone with a cock and hen style coping. The southern most point of the scheme there is a 1.2m opening to a flight of concrete steps to the ground below.
The wall is founded on a buried reinforced concrete ground beam and was divided into 4 equal bays. The reinforced concrete wall is anchored to the original retaining wall and rock mass beyond via 2 rows of ground anchors at 1m horizontal and vertical centres. The anchor heads are covered over by the masonry facing.

SUMMARY OF FINDINGS

Below is a summary of the findings. Referenced photographs can be found in Appendix K.

Foundations

There were no foundations or edge beam visible at the time of inspection and there was no evidence of structural movement.

Retaining Wall
The wall is in good condition with no visual signs of any structural movement.
The 10% of the face of the retaining wall was covered in ivy and vegetation growth, however this did not limit the inspection.

Parapet
The parapet is in good condition.

Carriageway
No defects were noted to the carriageway.

Recommendations

Vegetation growth, primarily ivy, is obscuring the part of the structure therefore consideration should be given to undertaking vegetation clearance to allow unhindered inspection in future.

2.L Trelyne Cottage

Structure Details:

Retaining Wall name:	Trelyne Cottage Shutta road, Looe
OS grid ref:	SX 2551 5350
Road Name/Number:	U6149 Unclassified Road
Construction Type:	Mortared Masonry
Length:	10.7m
Retained Height:	Maximum = 2.22m Average = 1.9m
Carriageway Width:	3.2 m
Parapet Type:	Mortared Masonry
Verge Width:	None

General Location

Trelyne Cottage Shutta Road, Looe retaining wall is located on the west side of Shutta Road in Looe. At the base of the wall is in an area of scrub land adjacent to Trelyne Cottage.

History

No documented history could be found for Trelyne Cottage Shutta Road, Looe Retaining Wall.

Specific Description

The retaining wall comprises cement mortared random masonry, with a cement mortared masonry parapet. The wall measures approximately 10.7m in length with a maximum retained height of 2.22m with the lower 1.5m being vertical, above which the retaining wall has a front face batter angle of 1.5 degrees to the vertical. The parapet is 1.75 – 1.85 metres high and 500 mm thick with a rough top coping. At a level of 470 - 700 mm above for the carriageway level there is a course of vertically aligned masonry. The parapet is constructed from mortared masonry mudstone with stone sizes of approximately 300 x 80mm laid on cement mortar with 5 -10mm joints. The vertically aligned course is constructed from stones measuring approximately 225 x 70mm.

The wall commences at chainage 0 at the point where a boundary wall intersects the retaining wall at right angles. At this chainage the retained height is 1.53 metres this gradually increases to the maximum of 2.22 metres by chainage 5.7, then reducing again to 1.75 metres at chainage 10.7 where the retaining wall abuts the property Trelyne Cottage

There are no weep holes or other means of drainage incorporated into the retaining wall construction there are also no damp patches or calcite deposits to indicate a likely water level behind the wall.

Carriage way shutter Rd is very narrow with a winding torturous horizontal alignment and sections of steep gradient the geometry of the accesses at either end of the road are such that is difficult to enter shutter Rd with a large vehicle some parts of this highway are less than 2.0m wide

The section of the highway supported by Trelyne cottage shutter Rd Looe retaining wall is 3.2 metres wide with a gradient of 4.7 to 9.3 degrees running downhill along the increasing chainage the running surface consists of 6 mm tarmac which has been in place for a few years.

Wall drainage the retaining walls constructed without weep holes or other formal means of drainage however there are no damp patches, calcite deposits or succulent vegetation to indicate the presence of rear water pressure to the back of the wall.

SUMMARY OF FINDINGS

Below is a summary of the findings. Referenced photographs can be found in Appendix L.

Foundations
The wall foundations were not exposed and were not, therefore, assessed. No defects were visible.

Retaining Wall

The stone and cement mortar appear to be in good condition however parts of the retaining wall were obscured by vegetation. The wall appeared to be free from deformation such as bulging, tilting undermining or stone loss so as a result it is considered to be in very good condition. Vegetation growth was recorded at approximately 10% coverage of the wall and external parapet

Parapet
The top 200mm of the coping was noted as being loose with vegetation growth throughout the length of the wall. There is a diagonal crack approximately halfway along the parapet.

Carriageway
No visible defects were noted.

Footway
No footway is present - the parapet directly abuts the single carriageway road.

Recommendations

It is unlikely that this wall meets the current design criteria for retaining structures. Our inspection report contains comments on the condition of the structure seen at the time of the inspection. It is not possible to accurately predict the performance of historic walls in line with current best design and construction practice without extensive intrusive investigation. The recommendations should be read with this in mind.

The pointing appears to be in fair condition on the retaining wall, however it is recommended vegetation is removed to enable a full inspection of the wall.

Consideration should be made to repairing the copings and repointing and securing any defective masonry and joints should be a part of a routine maintenance program to ensure the longevity of the wall.

Vegetation on and around the structure appears to be promoting joint loss, spalling and loose masonry. All vegetation should be removed to ensure any hidden defects are revealed. Doing so in the short term could carry a cost benefit.

Appendix A

Tregurtha Court Sketch & Photographs

N S

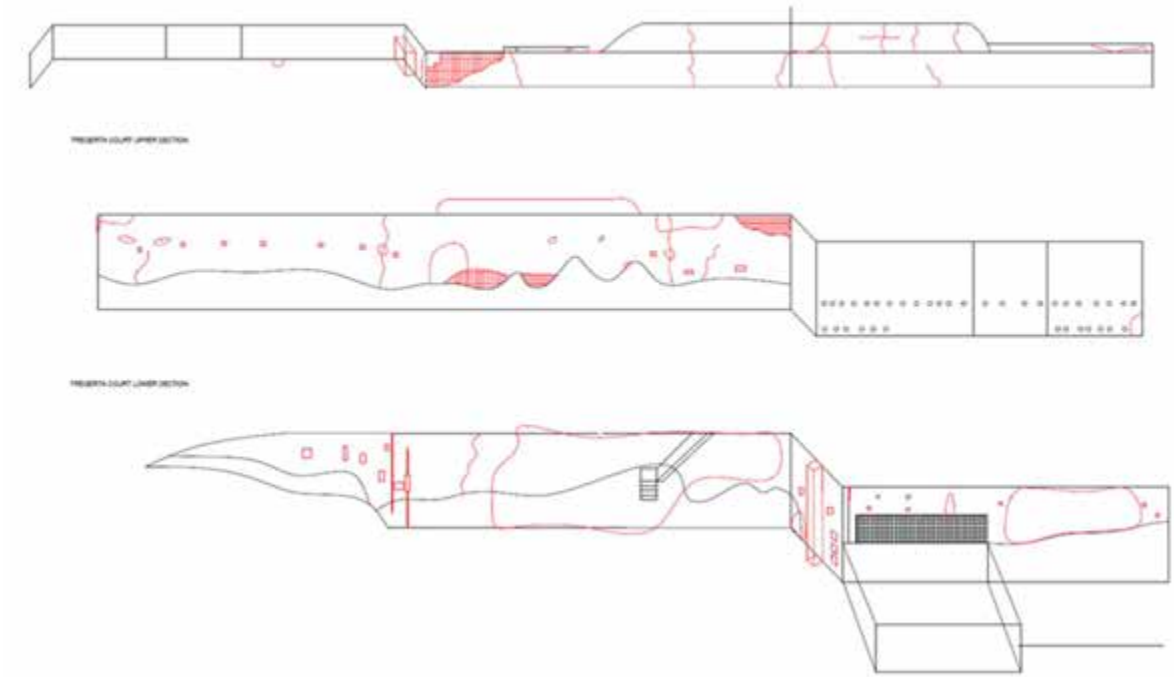


Photo 1: General view showing the north end of the west elevation

Photo 2: General view showing the south end of the west elevation

Photo 3: View showing the typical condition of the bedrock. Note the two areas easily removed

Photo 4: View showing the tree growth at chainage 2m and the protruding bedrock

Photo 5: View showing the horizontal and stepped crack adjacent to the tree growth at chainage 2m

Photo 6: View showing mature tree growth at the base of the wall, chainage 9m

Photo 7: View showing the vertical crack at chainage 12m

Photo 8: View showing the vegetation growth obscuring the wall at chainage 20m

Photo 9: View showing the vegetation growth obscuring the wall at chainage 31m

Photo 10: View showing the vegetation growth obscuring the wall at chainage 43m

Photo 11: View showing the typical condition of the stone and mortar at chainage 15m

Photo 12: View showing the typical condition of the stone and mortar at chainage 32m

Photo 13: Typical condition of the weep holes in the retaining wall, 50% blocked

Photo 14: View showing a stepped crack in the parapet towards the south end

Photo 15: View showing a vertical and horizontal crack in the parapet at chainage 31m

Photo 16: View showing a typical stepped crack in the parapet at chainage 21m

Photo 17: View showing the parapet leaning towards the carriageway at chainage 30m (looking south)

Photo 18: View showing the parapet leaning towards the carriageway at chainage 35m (looking north)

Photo 19: View showing missing coping stones towards the south end of the parapet

Photo 20: View showing an area of loose masonry at the north end of the parapet

Photo 21: View showing an area of loose masonry towards the north end of the parapet

Photo 22: View showing the vegetation growth atop the parapet towards the south end of the structure

Photo 23: View showing the vegetation growth atop the parapet towards the north end of the structure

Photograph 24 – Vertical crack where the new construction meets the old and the crack is transferred to the other side of the wall

Photograph 25 – Concrete construction of wall presumed as a past repair

Photograph 26 – Crack in coping mortar facing

Photograph 27 – Section of coping mortar missing

Photograph 28 – A section of wall that has been added on top of the wall and is also loose, that made it unsafe to abseil over and so the wall below was inspected from ground level where possible.

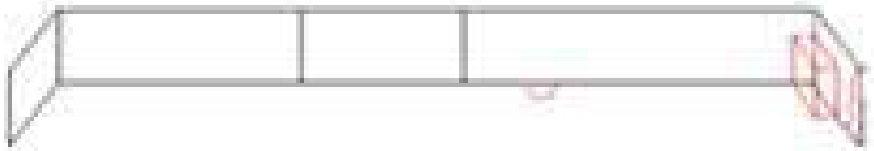
Photograph 29 – Wall seems to be bowing inwards and if the top section was to fall, it is possible for the wall to fall onto the road.

Photograph 30 – Horizontal crack 5mm wide with displacement

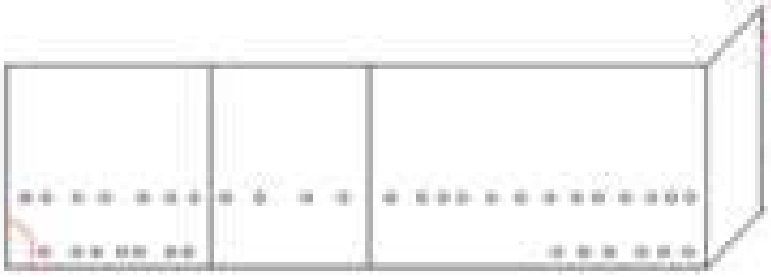
Appendix B

Shutta Road

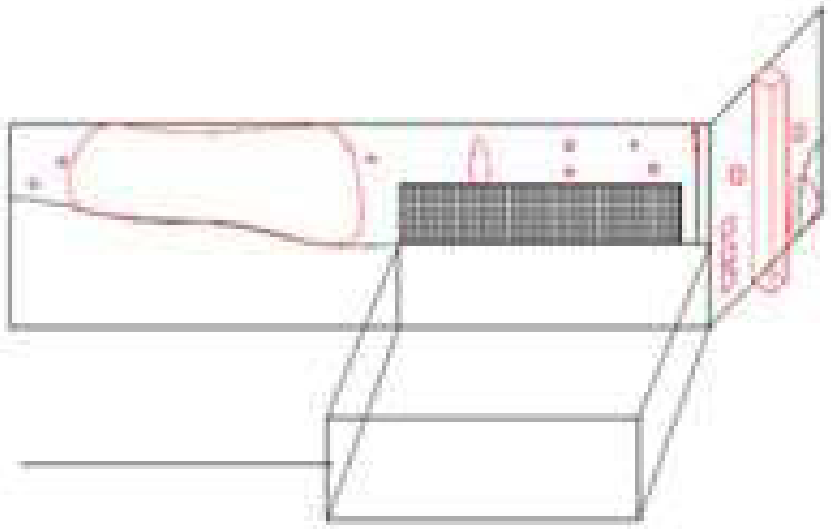
Sketch & Photographs



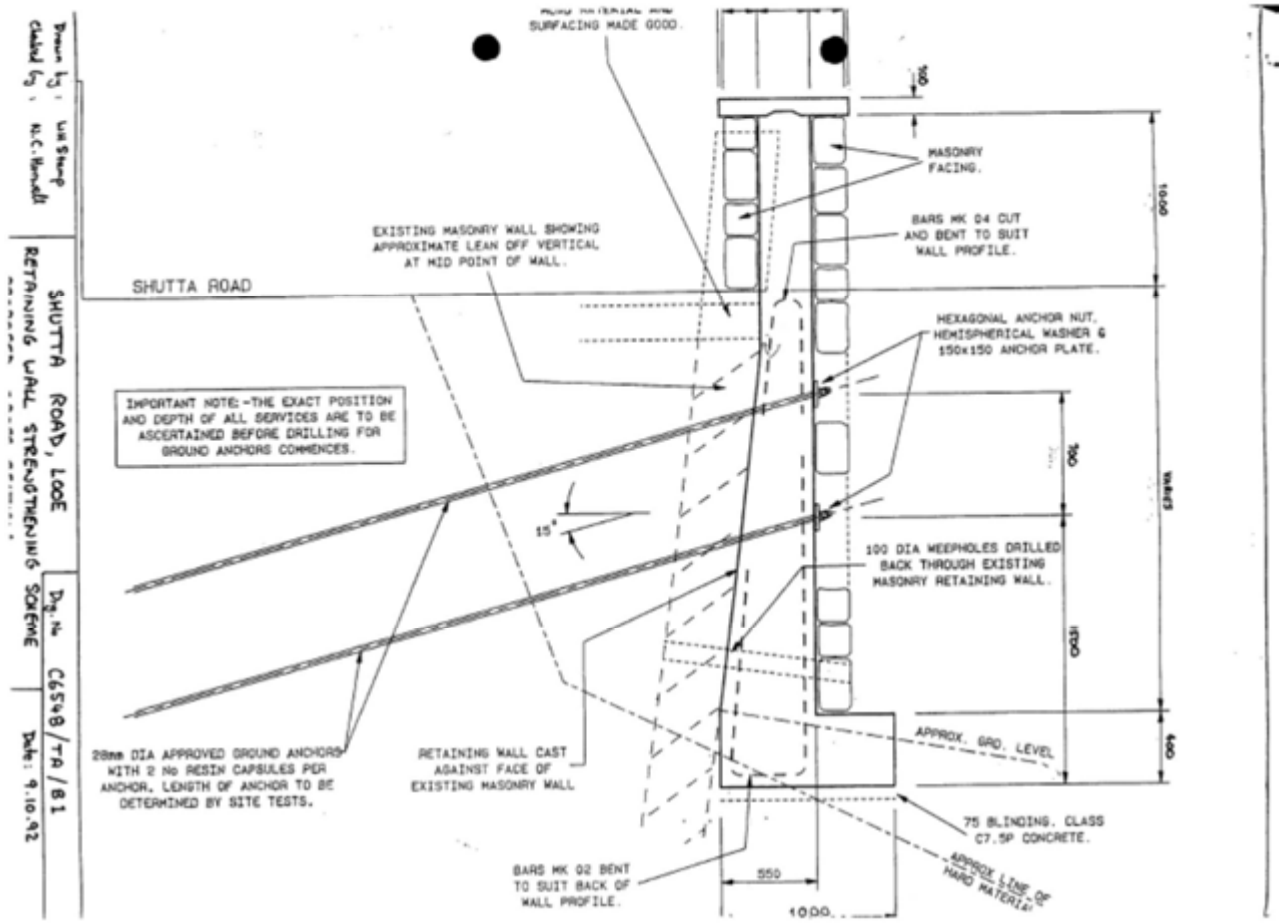
Shutta Road Parapet



Shutta Road Upper Section



Shutta Road Lower section



Photograph 1 – Vertical crack where the new construction meets the old and the crack is transferred to the other side of the wall

Photograph 2 – Parapet in good condition some leachate, vegetation visible on wall.

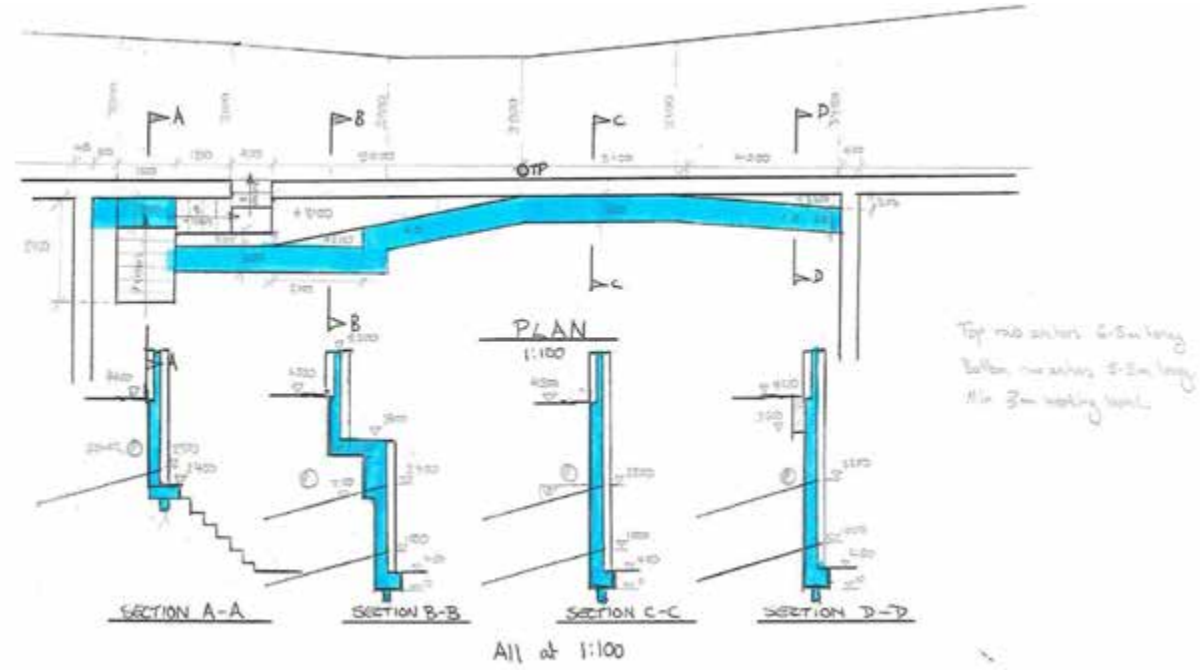
Photograph 3 – Parapet in good condition, bollards all damaged some missing.

Photograph 4 – Wall in good condition, some ivy growth visible.

Photograph 5 – Coping in view and some ivy growth visible on to face of wall.

Appendix C

Mount Pleasant
Sketch & Photographs



Photograph 1: View of parapet and road.

Photograph 2: View of road surface note old repair patch in road showing signs of movement near the foul water drain.

Photograph 3: View of telegraph pole and vegetation growth on Parapet.

Photograph 4: Parapet in good condition, Cock and Hen style coping

Photograph 5: General view of wall face, Ivy growth evident.

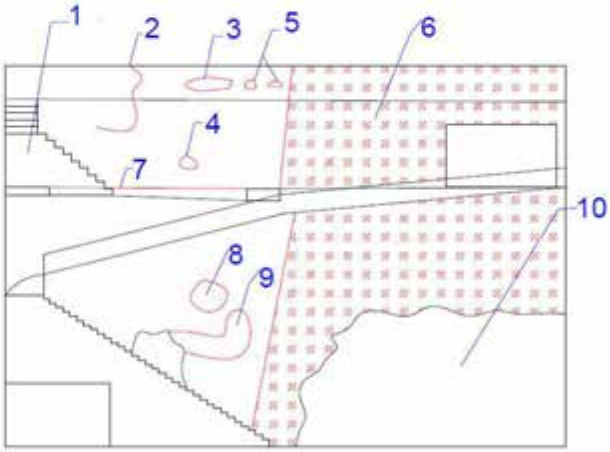
Photograph 6: View of Retaining Wall Face good general condition, note Ivy growth.

Photograph 7: View of lower mass concrete wall

Appendix D

Dolphin Hotel
Sketch & Photographs

Dolphin Hotel Parapet Elevation



Dolphin Hotel Retaining Wall Elevation

Photograph 1 – Repointed area of wall.

Photograph 2 – Stairs, showing the vegetation present and the degree of lean that is on the wall

Photograph 3 – Vertical Crack / Joint where the wall changes direction, note recent stone and coping loss

Photograph 4 – Facing missing on stonework

Photograph 5 – Minor stonework displacement and missing masonry infill between large stones.

Photograph 7 – Loose and missing stonework

Photograph 8 – Missing stonework

Photograph 9 – Vegetation growth present on the wall

Photograph 10 – Render facing of lower wall extension

Photograph 11 – Open mortar joints

Photograph 12 – Open mortar joints.

Photograph 13 – Vegetation growth present on the lower section of the wall

Photograph 14 – Vegetation growth

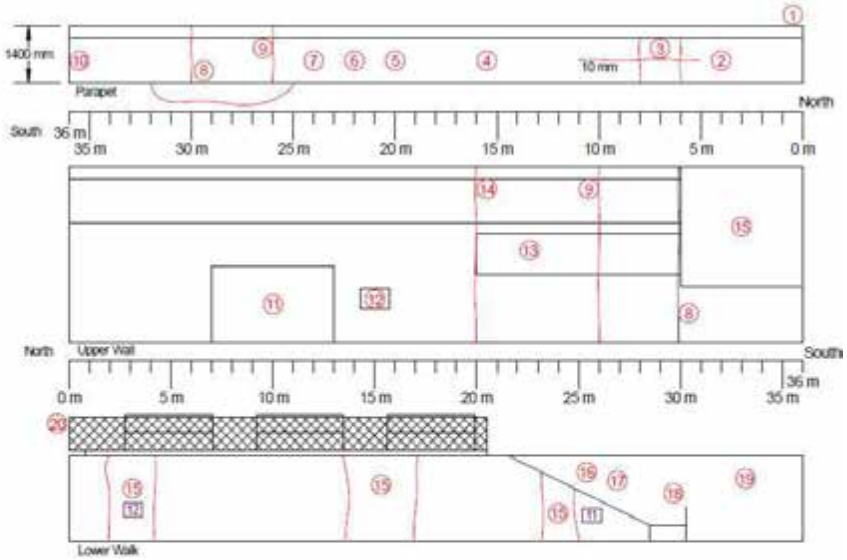
Photograph 15 – Vertical/diagonal crack to 10mm wide

Photograph 14 – Vertical crack / rough open masonry joint where wall changes direction

Photograph 15 – General view of the west elevation, upper and mid-section

Appendix E

Rivercroft Hotel
Sketch & Photographs



Defects:
1. Loose coping stone measuring 620x330x350mm. [13]
2. Crack measuring 1400x8mm.
3. Area of missing bricks and mortar loss measuring 2000x500mm. [17]
+ Horizontal crack measuring 6000x10mm. [16]
4. Vertical crack measuring 1400x7mm.
5. Vertical crack measuring 1400x20mm. [14]
6. Vertical crack measuring 1400x7mm.
7. Area of loose concrete cladding measuring 200x350x1200mm.
8. Three cracks measuring 1250x15mm, 1400x5mm and 1400x5mm to parapet + crack measuring 10mm x full height to retaining wall + sunken area of carriageway measuring up to 7000x1500x50mm. [15]
+ 10mm gap between surfacing and parapet base. [20]
+ vegetation growing along base of parapet.
9. Vertical crack measuring 650x6mm to parapet, vertical crack measuring 40mm x full height to retaining wall. [05] [15]
10. Open joint measuring 20x1400mm to parapet.
+ open joint measuring 10mm x full height to retaining wall. [07]
11. Area of total joint mortar loss masonry (6000x2000mm). [08]
12. Area of weathering. [10]
13. Bulging to retaining wall up to 10000x1000x40mm. [06]
14. Vertical crack/open joint measuring 25 mm x full height to retaining wall. [04]
15. Ivy growth.
16. Hollow sounding + 2mm wide crack measuring 200x1700mm.
17. 1mm vertical crack.
18. Vertical crack measuring 8x2300mm. [22]
19. Stepped crack measuring 4x3150mm.
20. Loose fence unsafe with loose tubular parapet sections. [23]

General Notes:
Moss and vegetation growth to up to 20% of parapet. [18]
Moss and vegetation growth to up to 30% of retaining wall.
Vegetation growing to base of parapet.
Open joints, mortar loss, erosion and masonry loss throughout lower 2000 mm of upper wall (50mm loss typical).

Defect reference
Photo reference
All dimensions in mm unless stated otherwise.

Photo 1: General view of the west elevation, upper section.

Photo 2: General view showing the west elevation of the wall, lower section.

Photo 3: General view showing the concrete render section of the lower wall above access steps.

Photo 4: Vertical crack in the upper section of wall measuring 25mm in width at chainage 20m.

Photo 5: Vertical crack in the upper section of wall measuring 40mm in width at chainage 26m.

Photo 6: View showing a band of bulging to the upper section of retained wall over a length of approximately 10m.

Photo 7: View showing further cracking in the upper section of the retaining wall (chainage 30m)

Photo 8: View showing an area of total joint loss at chainage 10m (upper wall)

Photo 9: View showing the typical condition of the upper wall.

Photo 10: Detailed view of the stone masonry and mortar (upper wall).

Photo 11: View showing typical condition of the south end of the lower wall. Photo

Photo 12: View showing typical condition of the north end of the lower wall.

Photo 13: View showing an area of loose masonry at the north end of the parapet.

Photo 14: View showing a vertical crack in the parapet at chainage 20m.

Photo 15: View showing a vertical crack in the parapet at chainage 26m.

Photo 16: View showing a horizontal crack in the parapet between chainage 5-11m.

Photo 17: View showing typical joint loss and erosion to the parapet

Photo 18: View showing the vegetation growth to the parapet (south end).

Photo 19: View showing the area of sunken carriageway towards the south end of the structure.

Photo 20: View showing the gap between the carriageway surfacing and the parapet.

Photo 21: View showing the access steps from the carriageway to the terraced garden

Photo 22: View showing cracks and delaminated cement render in the concrete block wall.

Photo 23: View showing the handrail at the edge of the terrace garden.

Appendix F

Glencairn
Sketch & Photographs

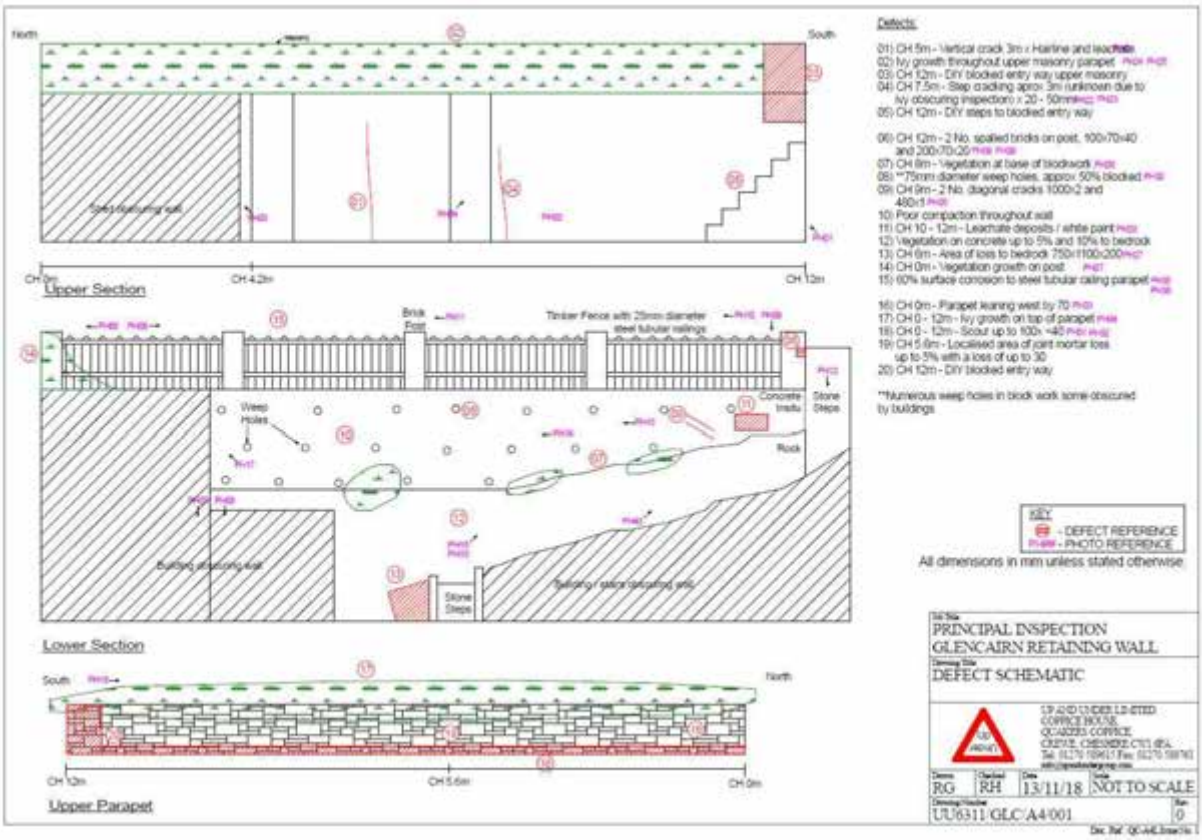


Photo 1: General view looking north showing the upper section of the retaining wall from CH 12m.

Photo 2: General view looking north showing the upper section of the retaining wall from CH 7m.

Photo 3: General view looking north of the upper section of the retaining wall from CH 4.5.

Photo 4: General view looking south showing the upper section of the retaining wall from CH 5.5m.

Photo 5: General view looking north showing the lower section parapet from CH 3m.

Photo 6: General view looking south showing the lower section parapet from CH 3m.

Photo 7: General view looking south showing the lower section over the parapet from CH 3m.

Photo 8: General view looking south of the lower section over the parapet from CH 3m.

Photo 9: General view looking south showing the lower section parapet and stairway from CH 12m.

Photo 10: General view looking north showing the lower section footway from CH 12m.

Photo 11: General view looking north showing the lower section parapet from CH 6.

Photo 12: General view looking north showing the lower section stairway from CH 12m.

Photo 13: General view looking north showing the lower section retaining wall from CH 12m.

Photo 14: General view looking north showing the lower section retaining wall from CH 10m.

Photo 15: General view looking south showing the lower section retaining wall from ground level at CH 6m.

Photo 16: General view looking south showing the lower section retaining wall from ground level at CH 6m.

Photo 17: General view looking north showing the lower section retaining wall from ground level at CH 6m.

Photo 18: General view of the upper section retaining wall's parapet at CH 12m.

Photo 19: General view of the north approach carriageway

Photo 20: General view of the south approach carriageway

Photo 21: View showing vertical crack in the upper section of the retaining wall at CH 5m.

Photo 22: Detailed view showing a vertical crack in the upper section of the retaining wall at CH 7.5m.

Photo 23: View showing a vertical crack in the upper section of the retaining wall at CH 7.5m.

Photo 24: Vegetation on the upper section of the retaining wall at CH 5m.

Photo 25: Vegetation on the upper section of the retaining wall at CH 5m

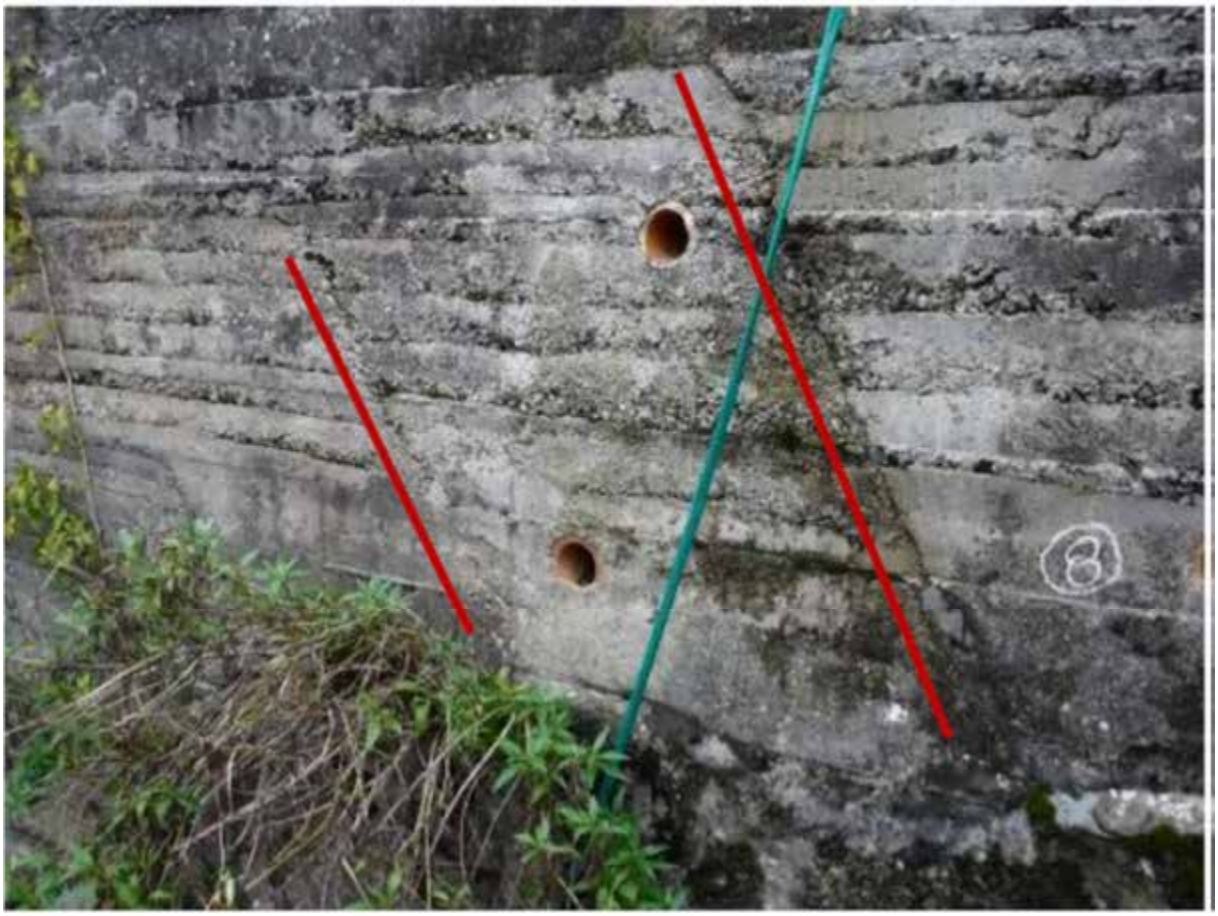


Photo 26: View showing two diagonal cracks in concrete in the lower section of the retaining wall at CH 9m.

Photo 27: View showing stone loss/weathering and water seepage in the lower section of retaining wall at CH 6m.

Photo 30: View showing multiple weep hole outlets in the lower section of the retaining wall.

Photo 31: View showing the erosion to the lower 400mm of the parapet above the upper section of the retaining wall.

Photo 33: View showing the parapet at CH 0m leaning towards the west.

Photo 34: View showing vegetation growth a top of the parapet of the upper section of the retaining wall

Photo 35: View showing surface corrosion to the steel parapet above the lower section of the retaining wall.

Photo 38: View showing a spalled brick in the southern end of the parapet above the lower section of the retaining wall.

Photo 40: View showing the carriageway surfacing, looking north.

Photo 41: View showing the carriageway surfacing, looking south.

Appendix G

Belmont Hotel
Sketch & Photographs

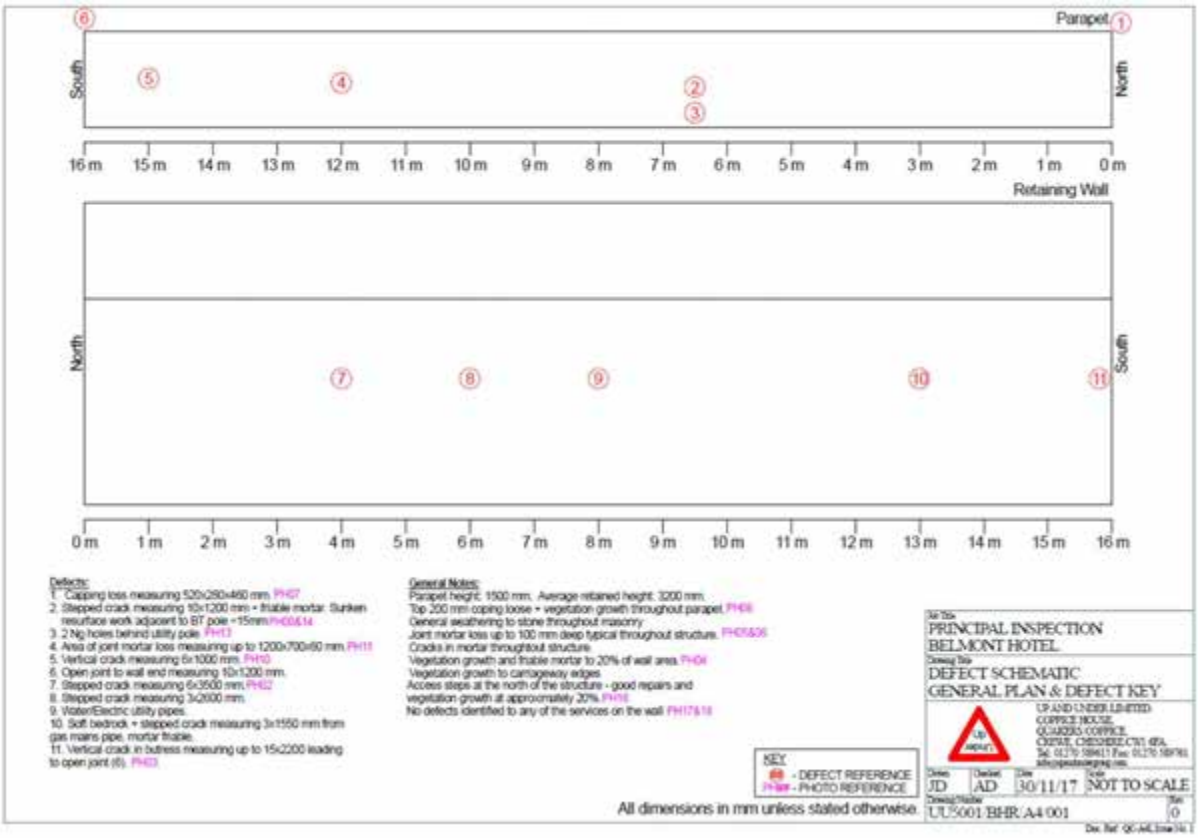


Photo 1: General view of the west elevation

Photo 2: View showing a vertical crack in the wall at chainage 4m

Photo 3: View showing a 15mm crack in the buttress at the south end of the wall

Photo 4: View showing the vegetation growth to the wall

Photo 5: Detailed view showing the typical condition of the stone and mortar in the higher sections of the wall.

Photo 6: View showing the typical condition of the stone and mortar

Photo 7: View showing masonry loss to the parapet coping at the north end

Photo 8: View showing the vegetation growth to the parapet

Photo 9: View showing a vertical/stepped crack in the parapet at chainage 6.5m

Photo 10: View showing vertical/stepped cracking in the parapet at chainage 15m

Photo 11: View showing an area of joint mortar loss to the parapet at chainage 12m

Photo 12: View showing the typical condition of the parapet overall

Photo 13: View showing two holes behind a utility hole at chainage 6.5m

Photo 14: View showing the sunken resurfacing adjacent to a BT utility pole

Photo 15: View showing the vegetation growth to the edges of the carriageway

Photo 16: View showing the access steps – vegetation growth and sound repairs

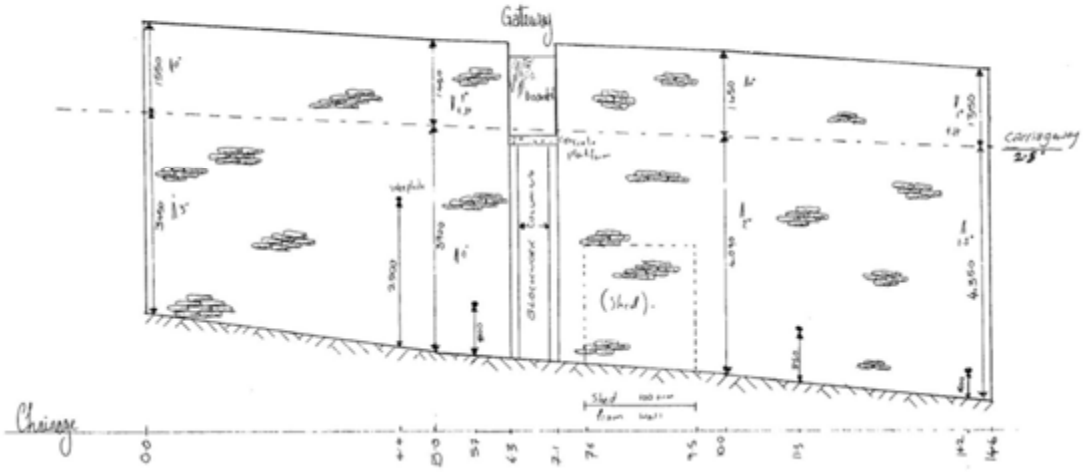
Photo 17: View showing the services at the south end of the structure

Photo 18: View showing the services at chainage 6.5m (adjacent to the cored holes in the parapet and BT utility pole. Also the vertical crack.

Appendix H

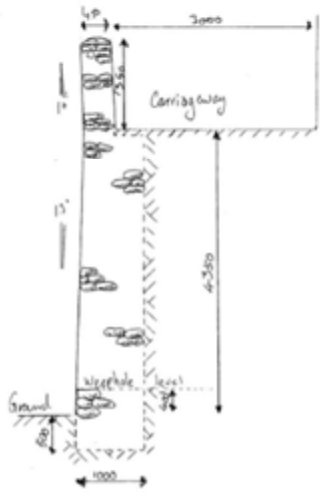
Bridgeside Hotel
Sketch & Photographs

BRIDGESIDE. SHUTTA ROAD. LOOE 20/2548 5359 S3100/19/03/200/01.
ELEVATION DRAWN 1:50 AT A3.



DRAWN 28th Sept 2005

BRIDGESIDE. SHUTTA ROAD. LOOE 20/2548 5359 S3100/19/03/200/01
CROSS-SECTION DRAWN 1:50 AT A4.



Photograph 1 : General view of Parapet and road. Note old sign used as barrier. Domed concrete coping cracked and loose.

Photograph 2 : further view of parapet and the opening.

Photograph 3 : View of retaining wall and adjoining buttress. Open joints evident in pointing and vegetation.

Photograph 4: View of cementitious mortar dome coping and ivy growth. View of southern adjoining buttress.

Photograph 5 : General view of wall.

Photograph 6: View of the wall

Photograph 7: Ch.0.0 – 4.0, view of first part of retaining wall and returning wall

Photograph 8: Ch.2.0 – 7.6, general view, note mortared blockwork supports to concrete platform and timber shed

Photograph 9: Ch. 12.0 – 14.6, general view of front face of retaining wall

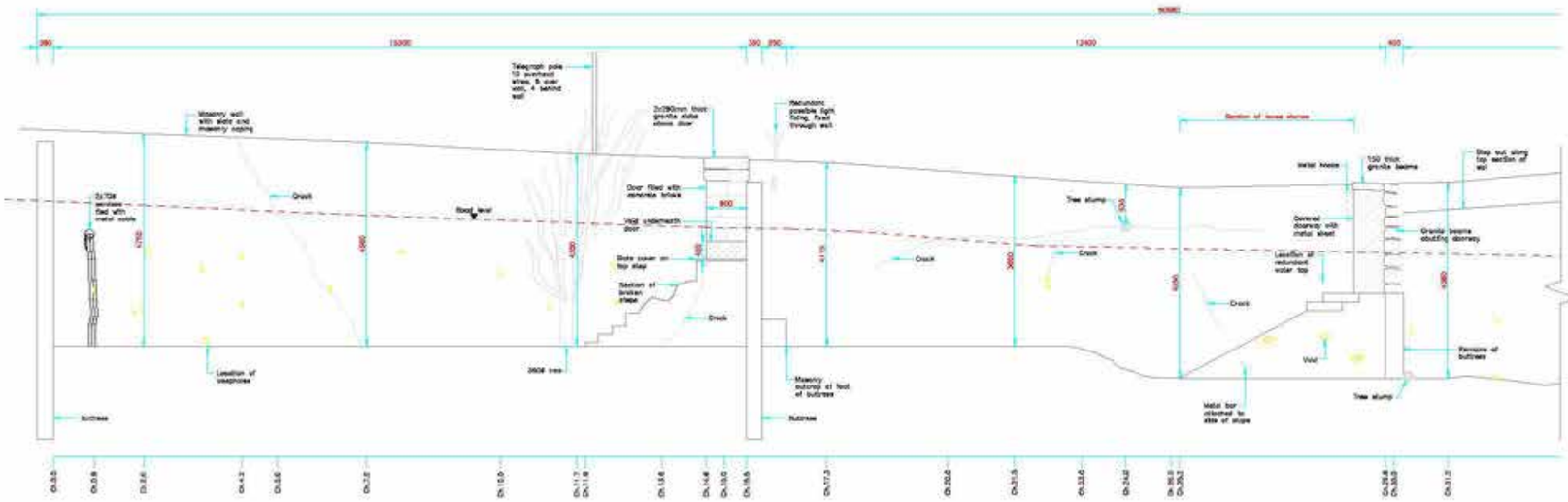
Photograph 10 : Rock supporting ledge at base of retaining wall

Photograph 11 : Ch.2.0, typical construction

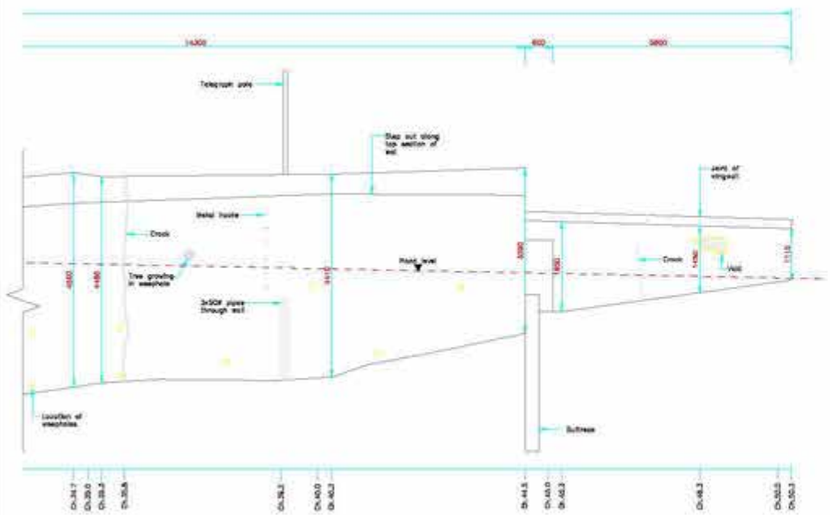
Photograph 12 : Ch. 2.0 – 7.0 View of mortared masonry facing at front of ledge above roof of building, note rock down chainage

Appendix I

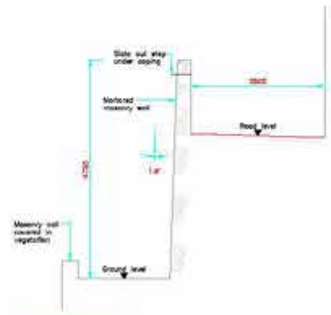
War Memorial
Sketch & Photographs



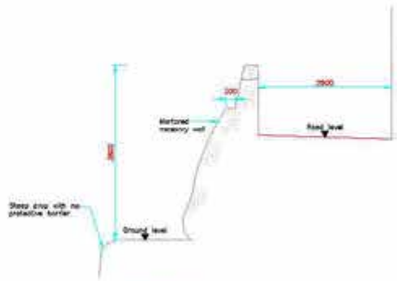
Elevation
1:50



Elevation
1:50



Section @ Ch.2.6
1:50



Section @ Ch.23.0
1:50

1. Do not scale off this drawing.
2. All dimensions are in millimetres.
3. All levels are to Ordnance Survey Datum.

REV	DATE	NATURE OF REVISION
P1		Preliminary

REVISIONS

LOCATION
Shutta Road
SX 255 535

PROJECT
Retaining Wall Assessment

DRAWING TITLE
General Arrangement

PROJECT MANAGER

ORIGINATOR

SCALE
As Shown (A1)

DRAWING NO
S3220/11-71/5101

REVISION
P1

Photograph 1: Ch 0 towards Ch 49.8 View of road and parapet, coping heavy with vegetation. Displacement of wall evident at joint with adjoining parapet wall.

Photograph 2 : Ch – 0 View of parapet lean and heavy vegetation to coping.

Photograph 3: Ch – 32 View of leaning parapet, mortar loss to dome coping, debris on floor.

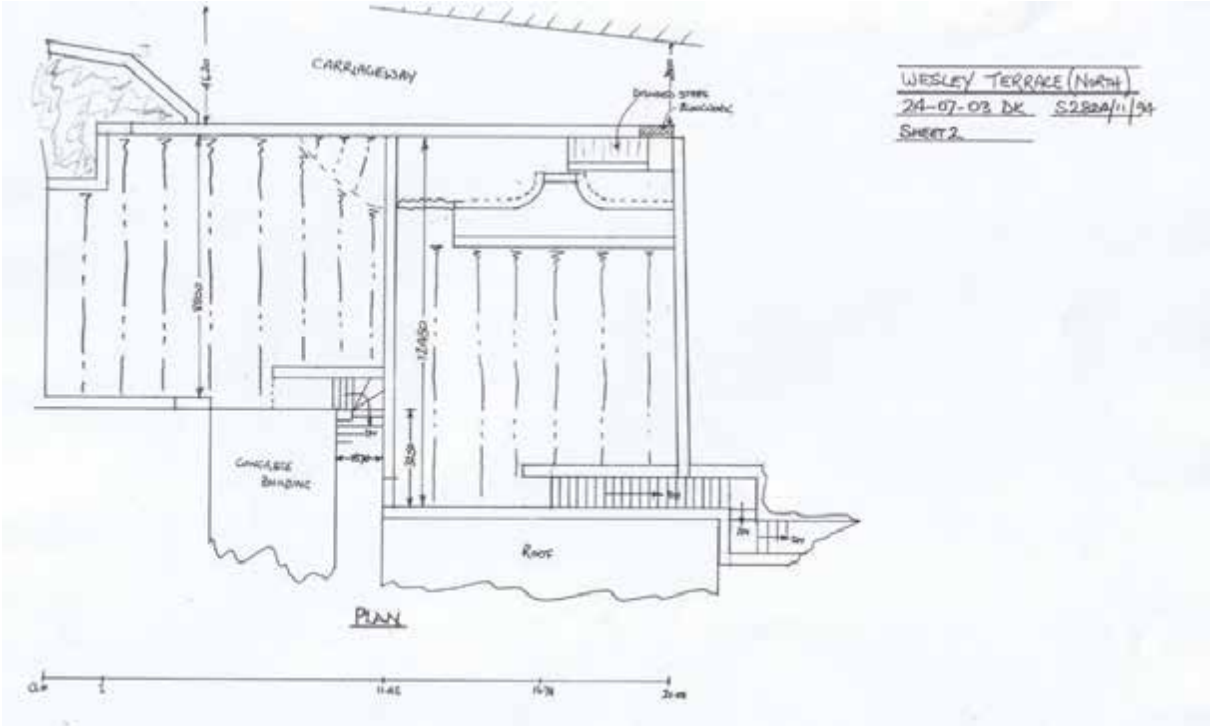
Photograph 4 : Ch 32 View of shuttered opening and view of tilting parapet. This has moved significantly and is considered unsafe.

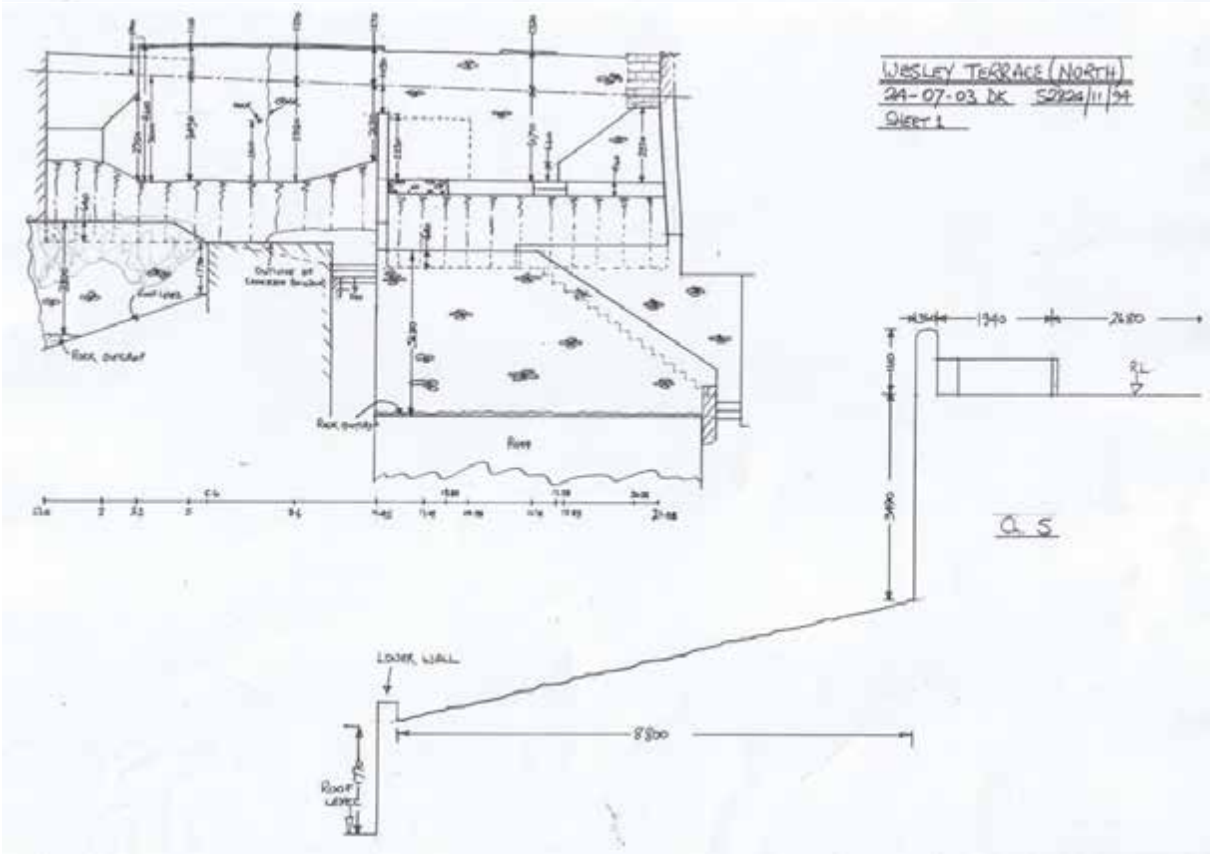
Photograph 5 : Ch 49 towards 0. View of parapet and returning wall.

Photograph 6 : Ch 49. Other retaining wall commences, and access path blocked off.

Appendix J

Wesley Terrace (North)
Sketch & Photographs


CARRIAGEWAY
WESLEY TERRACE (NORTH)
24-07-03 DK S2824/11/94
SHEET 2
CONCRETE BUILDING
ROOF
PLAN


WESLEY TERRACE (NORTH)
24-07-03 DK S2824/11/94
SHEET 1
ROOF
RL
LOWER WALL
8800
ROOF LEVEL

Photograph 1 : Wesley Terrace (North) looking north. Blocked up access way, damaged missing coping.

Photograph 2: View over parapet looking north. Buttress wall visible below, extensive ivy growth visible on wall.

Photograph 3: Start of wall looking from garden at base of wall (Note density of vegetation on adjoining wall section connecting to this wall)

Photograph 4: Ch. 0 to 10 View showing vegetation on top of wall and parapet.

Photograph 5: Ch. 5 to 15 View showing location of cross wall at mid-point of retaining wall.

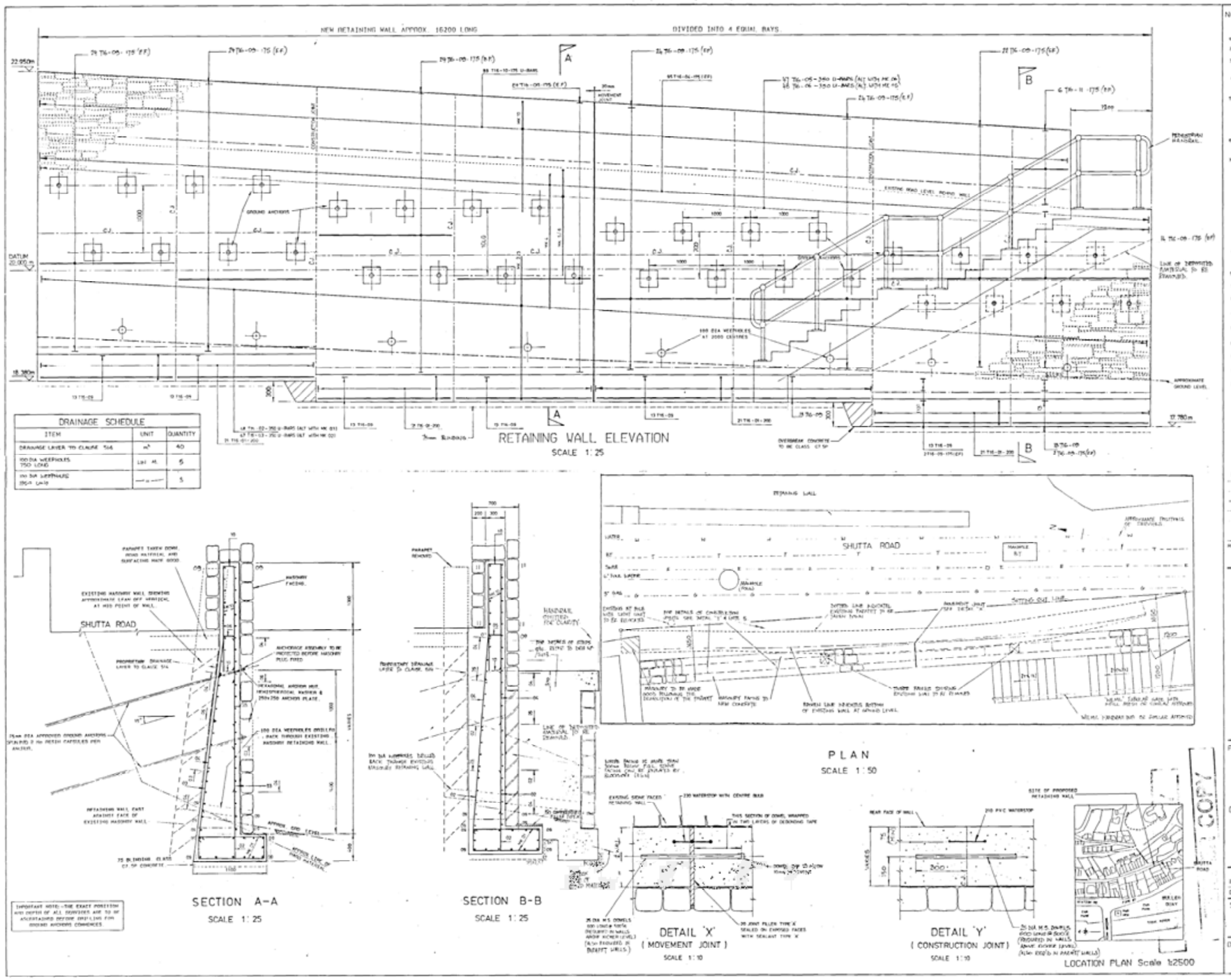
Photograph 6: Ch. 5 to 21.08 End section of wall with sloping gardens in foreground.

Photograph 7: Ch. 11.45 to 16 View of wall showing outline of previous building at Ch. 11.78 to 14.58.

Photograph 8: Ch. 14 to 21.08 View of wall including disused access steps.

Appendix K

Wesley Terrace (South)
Sketch & Photographs



NOTES

1. ALL DIMENSIONS ARE GIVEN IN MILLIMETRES
2. NO DIMENSIONS ARE TO BE SCALED OFF THIS DRAWING
3. ALL CONCRETE TO BE MIX PRT 3A3 UNLESS OTHERWISE SHOWN
4. FOR DETAILS OF CONCRETE MIX REFERENCES SEE APPENDIX 5/1/1.
5. CONTRACTION JOINTS SHALL BE PROVIDED WHERE SHOWN ON DRAWINGS AND SUBJECT TO THE ENGINEERS APPROVAL AT LOCATIONS SELECTED BY THE CONTRACTOR. WATERBAR SHALL BE PROVIDED TO THE BURIED FACE OF ALL CONTRACTION JOINTS. IF THE EXPOSED FACE CONCRETE IS AT EXPOSED OR IS FACED WITH STONEWORK
6. CONCRETE COVER TO REINFORCEMENT TO BE MINIMUM 40mm (i.e. 40mm MINIMUM UNLESS OTHERWISE SHOWN
7. REINFORCEMENT NOTATION
   - 4 DENOTES PLAIN OR DEFORMED GRADE 250 BARS
   - 2 DENOTES TYPE 2 DEFORMED GRADE 460 BARS
   - S DENOTES TYPE 2 DEFORMED STAINLESS STEEL GRADE 460 BARS TO BRITISH STANDARD

   POSITION NOTATION
   - NF DENOTES NEAR FACE
   - FF DENOTES FAR FACE
   - EF DENOTES EARTH FACE
   - T DENOTES TOP
   - B DENOTES BOTTOM
   - ARD DENOTES ALTERNATE BARS REVERSED
   - APD DENOTES ALTERNATE PAIRS REVERSED
8. PLASTIC COVER BLOCKS TO REINFORCEMENT ARE NOT TO BE USED
9. TYING WIRE ON EXPOSED FACES TO BE STAINLESS STEEL
10. REINFORCEMENT SCHEDULED TO BS4466 1989
11. LAPS TO BE 400 MINIMUM LAP LENGTHS TO BE 15 dia. R + 500 UNLESS OTHERWISE SHOWN
12. MASONRY TO BE SPECIAL STONEWORK TYPE A UNLESS OTHERWISE SHOWN. SEE APPENDIX 2/4/1.
13. ALL FORMED FINISHES TO BE F1 UNLESS OTHERWISE SHOWN
14. ALL UNFORMED FINISHES TO BE U3 UNLESS OTHERWISE SHOWN
15. ALL EXPOSED CONCRETE CORNERS TO BE CHAMFERED 25x25 UNLESS OTHERWISE SHOWN
16. ALL BURIED CONCRETE SURFACES MORE THAN 500mm BELOW F.G.L. ARE TO BE WATERPROOFED WITH 3 COATS OF BITUMEN LATEX EMULSION (SEE APPENDIX 2/2/3)
17. REFER TO CONSTRUCTION SEQUENCE DRAWING No S1272/06/C/S102
18. SITE INVESTIGATIONS
   THE FOLLOWING INFORMATION IS AVAILABLE TO TENDERERS
   1. A REPORT ON STABILITY CONDITIONS IN EAST LODE CARRIED OUT IN 1996 BY FREDERICK SNOWBALL CONSULTING ENGINEERING GEOLOGIST.
   2. RECENT COMMENTS ON SUITABLE FOUNDING MATERIAL BY CORNWALL COUNTY COUNCIL'S ENGINEERING SERVICES LABORATORY.
19. DESIGN TO 300 kN/m² (see Roof Structural Details)

REV	DATE	NATURE OF REVISION

REVISIONS

CORNWALL COUNTY COUNCIL

PETER STETHRIDGE
Being a Pol Cdng PCE CMI MCIW
COUNTY SURVEYOR
TRANSPORTATION & ESTATES
County Hall, Truro
Cornwall, TR1 3AY

a service supplied by
The Design Consultancy

PROJECT

SHUTTA ROAD RETAINING WALLS
EAST LODE

DRAWING TITLE

WESLEY TERRACE
GENERAL ARRANGEMENT AND
REINFORCEMENT DETAILS

	ORIGINATOR	CHECKED	AUTHORISED
INITIALS	[illegible]	DA	AJS Y
DATE	NOV 97	NOV 97	NOV 97

SCALE

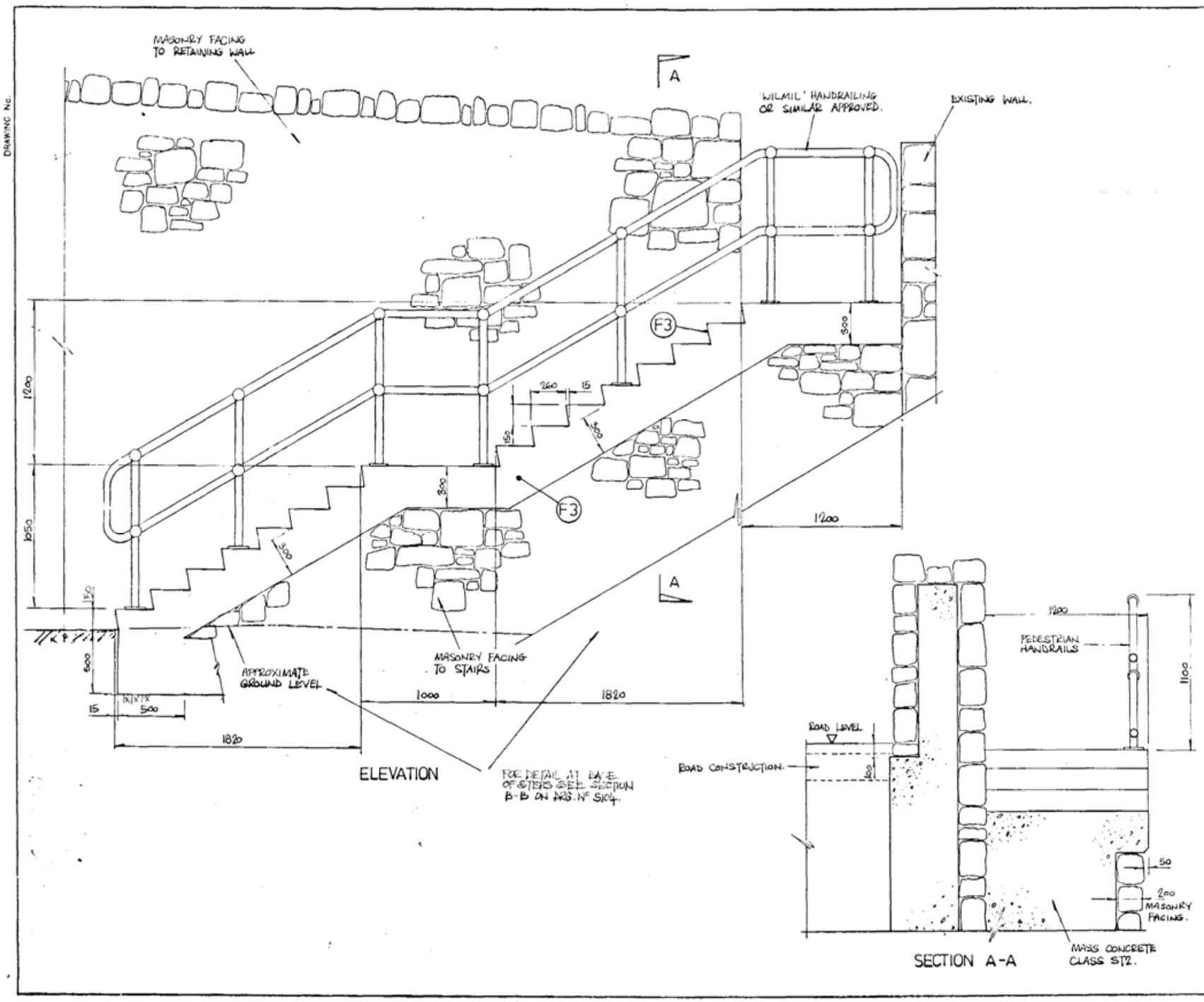
AS SHOWN

DRAWING NO S1272/06/T/S104

REVISION

Safety first

DRAWING No.



NOTES:
1. FOR GENERAL NOTES REFER TO DRG Nº/S101.

REV.	DATE	NATURE OF REVISION

REVISIONS

CORNWALL COUNTY COUNCIL

PETER STETHRIDGE
B.Eng M.Phil C.Eng FICE FIHT MCSM
COUNTY SURVEYOR
TRANSPORTATION & ESTATES
County Hall Truro
Cornwall TR1 3AY

A service supplied by
The Design Consultancy

PROJECT
SHUTTA ROAD
RETAINING WALLS
EAST LOOE

DRAWING TITLE
WESLEY TERRACE
STAIR DETAILS

	ORIGINATOR	CHECKED	AUTHORISED
INITIALS	DP	DA	AGY
DATE	NOV 97	NOV 97	NOV 97

SCALE
1:25

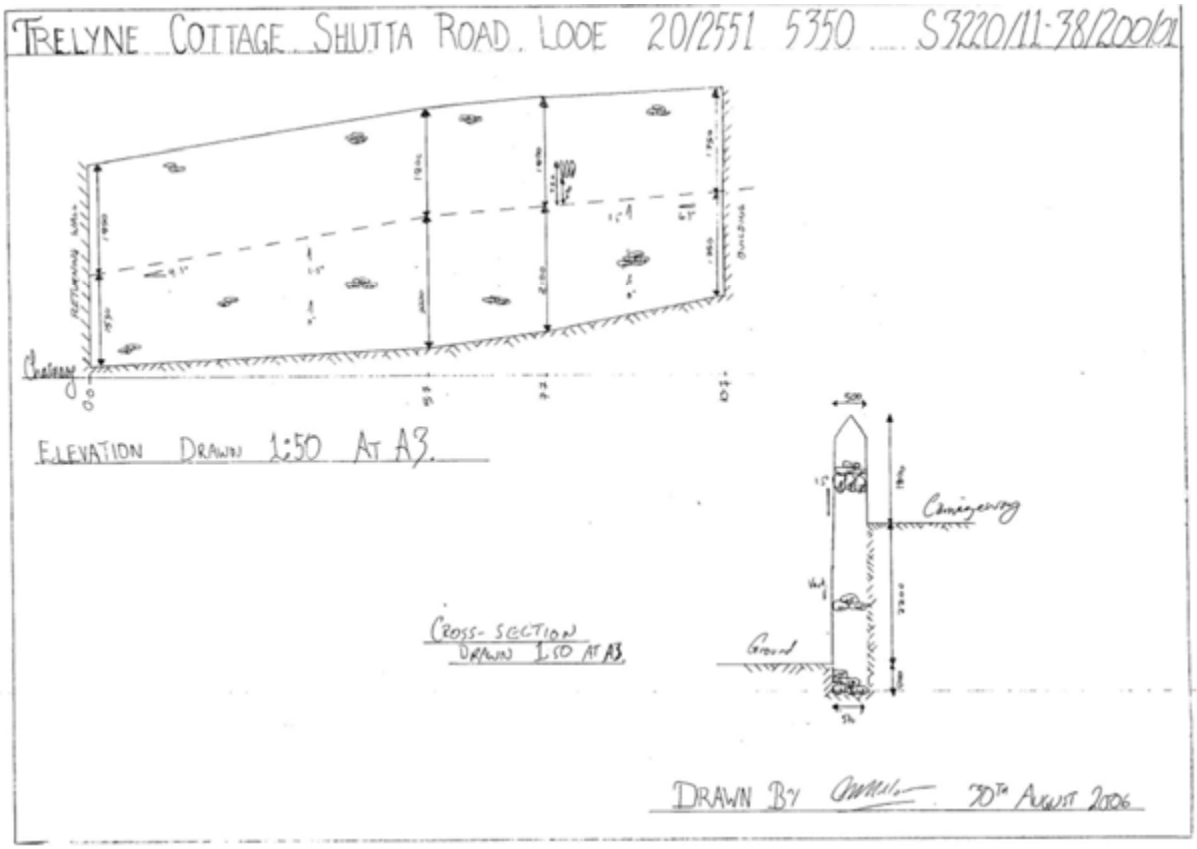
DRAWING NO REVISION
S1272/06/T/S105

Photograph 1: View of wall face looking south

Photograph 2: View of parapet looking south

Appendix L

Trelyne Cottage Sketch & Photographs



Photograph 1 : View of road and parapet looking north

Photograph 2 : View of road and parapet looking south, coping loose with vegetation

Photograph 3 : Crack from road to row of vertical coursed stone in the parapet

Photograph 4 : A second crack from the road level through the vertical coursed stone work.

Photograph 5: General view over the parapet at the retaining wall below.