



Knowsley Metropolitan Borough Council

WINDY ARBOR PLAYING FIELDS

2021 Boundary Wall Inspection Report





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WINDY ARBOR PLAYING FIELDS

2021 Boundary Wall Inspection Report

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CONTENTS

SUMMARY	3
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1. INTRODUCTION	4
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1.1. CLIENT	4
1.2. SCOPE OF WORKS	4
1.3. LOCATION OF THE STRUCTURES	5
1.4. OBJECTIVES OF THE INSPECTION	5

2. HISTORY OF STRUCTURES	6
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2.1. HALSNEAD PARK ESTATE	6
2.2. WINDY ARBOR PLAYING FIELDS BOUNDARY WALL	6

3. WALL INSPECTION	7
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3.1. DESCRIPTION OF INSPECTION	7
3.2. WINDY ARBOR ROAD	7
3.3. LICKERS LANE	7

4. DISCUSSION AND RECOMMENDATIONS	8
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APPENDICES

APPENDIX A

APPENDIX B

SUMMARY

The boundary wall covered by this survey is in moderate to poor condition. A number of defects have been identified which relate primarily to the loss/deterioration of mortar pointing, weathered stones and voids (through either stone or mortar loss).

The most significant defects observed are 2 areas of mortar loss and weathered stones on the roadside elevation at Windy Arbor Road (defects 27 and 34). A sizable void exists on the parkside elevation (defect 57) however this is located on the reduced height section of wall adjacent to the park entrance so is not considered as significant.

APPENDIX A contains a catalogue of all the defects identified, alongside a description of their nature, an approximate chainage (measured from the pedestrian entrance on Lickers Lane) and significance to the wall.

A map has been included in APPENDIX B showing the approximate location of each of the defects identified.

The defects identified have been categorised by the following priority ratings:

High	A major void or significant defect that is likely to be affecting the integrity of the wall.
Medium	Defects that, while unlikely to affect the stability of the wall at present, could deteriorate further to a point where the integrity of the wall could be affected.
Low	Defects that would not affect the overall integrity of the wall.

Due to the specialist nature of old rubble masonry wall repair works, it is recommended that they are undertaken by a suitably experienced contractor with appropriate supervision. It is also recommended that the repair specification be agreed with a suitable party before undertaking any works to ensure that, due to the walls being heritage structures, the repair materials are appropriate.

Further to the above, it is recommended that a programme of regular condition inspections is implemented to monitor any further deterioration of the structure and that the identified repair recommendations arising from these inspections are undertaken in a timely manner.

1. INTRODUCTION

1.1. CLIENT

The project client is Knowsley Metropolitan Borough Council (KMBC).

1.2. SCOPE OF WORKS

WSP are currently commissioned by KMBC, for engineering consultancy services on a scheme to improve an existing car park at the Windy Arbor Playing Fields, off Windy Arbor Road in Whiston, Knowsley.

The proposed works require construction in close proximity to the existing random masonry boundary wall situated within the boundary of Halsnead Park, a designed parkland landscape. As a whole the estate wall is regarded as a non-designated heritage asset. The current condition of the wall is generally degraded and therefore likely to make it more sensitive to being disturbed during construction activity thus undertaking a condition survey has been recommended.

To comply with this recommendation KMBC have requested WSP undertaken a visual condition inspection of the full extent of the wall, running some 280m along the boundary at Lickers Lane and Windy Arbor Road, as shown on Figure 1 below.



Figure 1 - Boundary Wall Extent

1.3. LOCATION OF THE STRUCTURES

The boundary wall under consideration comprise the North and West walls of the Windy Arbor Playing Fields, running along Windy Arbor Road and Lickers Lane (Figure 2).

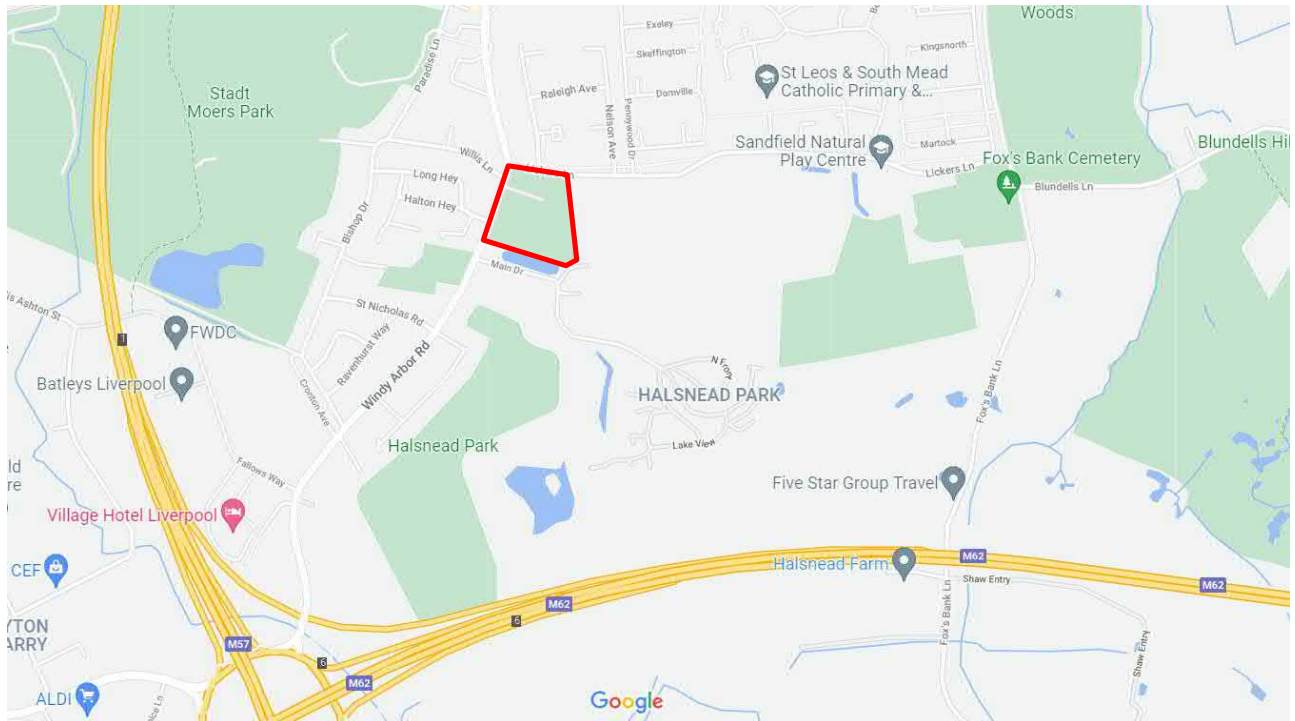


Figure 2: Location of Windy Arbor Playing Field (map data ©2018 Google)

1.4. OBJECTIVES OF THE INSPECTION

The inspection aims to identify defects in the structure that could affect the integrity of the wall during planned construction activity and, if left unattended, could result in progressive deterioration of the wall structure, increasing the cost of maintenance and the risk of possible failure at some point in the future.

2. HISTORY OF STRUCTURES

2.1. HALSNEAD PARK ESTATE

The Windy Arbor Playing Fields is situated in the north western corner of the former Halsnead Park Estate and was established in the mid-20th Century.

Halsnead Park was originally the hunting estate of the Willis family, the chief landowners within the Whiston district between the 1680s and 1920s. The park, originally covering land north and south of the M62, were the grounds and gardens of Halsnead Hall which was constructed in the 17th century and stood until 1932.

The boundary wall of the estate, including that around the playing fields, is identified as a non-designated heritage asset and is specifically identified within the Halsnead Masterplan Supplementary Planning Document (SPD).

Paragraph 5.16 of the Halsnead SPD states *“There are a number of designated and non-designated heritage assets both within and around the Halsnead site, illustrated in Figure 5.3 overleaf. There are opportunities to:*

- *Retain, integrate and (where appropriate) create a buffer between new development and these features;*
- *Retain, repair and integrate the sandstone boundary walls of the former Halsnead Park Estate; and*
- *Reinstate or reinterpret remnant elements of the historic landscape such as the former main drive to the estate linking to Fox’s Bank Lane and semi-natural historic landscape features such as ponds and clumps of trees.”*

2.2. WINDY ARBOR PLAYING FIELDS BOUNDARY WALL

The boundary wall is a very strong landscape feature around the perimeter of the whole of the Halsnead Park Estate and is a locally distinctive feature. It is constructed of local stone although there is variety in the materials used. Along Lickers Lane the wall is of a red sandstone, while along Windy Arbor Road it is principally pale grey-buff sandstone, red sandstone copings are used on both sections. Both types of stone are likely to have been sourced from local quarries. The wall is tall and of a tapering design with a rubble centre and rounded coping. Adjacent to the entrance to the car park the wall has been lowered in height from original, a clear ‘lip’ is visible behind the copings as the original coping now sits on a wider section of wall than it was designed for. The wall would originally have been constructed with Natural Hydraulic Lime (NHL) mortar, however some subsequent repairs appear to have been carried out using cement-based mortar.

3. WALL INSPECTION

3.1. DESCRIPTION OF INSPECTION

The wall inspection was undertaken on 28th September 2021 by WSP.

The inspection, confined to visual observations, was undertaken from the footpaths and playing field. A small portion of the wall was inaccessible during the survey due to ongoing works and the presence of an associated site compound, this is not considered to significantly affect the overall conclusions of the inspection. Access to the park-side elevation of the wall was restricted in areas due to considerable vegetation growth.

A catalogue of the principal defects identified is included within APPENDIX A to this report which includes a photograph and description.

The following text discusses the observations from the wall inspection for each section of wall and gives reference to the defects identified.

A number of defects observed within the fabric of the walls do not yet warrant immediate treatment and it is therefore recommended that future visual monitoring of these items be undertaken.

3.2. WINDY ARBOR ROAD

The wall along Windy Arbor Road is in moderate condition with some areas tending to poor condition, there are numerous areas of degraded or missing mortar, several significantly weathered stones, a few instances of vegetation growth within the wall, a fractured coping stone and some locations where brickwork repairs have been undertaken (brickwork repairs on the playing field elevation only).

The alignment of the wall itself appears good, there is no significant evidence of bowing, bulging or rotation. There is a small concave misalignment at a previous mortar repair and at 2 locations there are continuous cracks running through the mortar joints the full height of the wall, these are a possible indication of relative movement between the sections of wall either side.

3.3. LICKERS LANE

The wall along Lickers Lane is in generally poor condition, there are numerous areas of degraded or missing mortar, a number of sizable voids, several significantly weathered stones and some locations where brickwork repairs have been undertaken (brickwork repairs on the playing field elevation only).

The alignment of the wall itself appears reasonable, there is one location showing potential bulging but no significant bowing, or rotation.

4. DISCUSSION AND RECOMMENDATIONS

There were 10 defects identified on the section of wall bounding the car park location (13-18 and 54-57 inclusive), of these 6 were rated as medium and 4 low priority. One of the medium defects is a void in the lowered section of wall adjacent to the entrance which is to be modified as part of the car park improvement and should therefore be addressed by the works. The remaining 5 medium defects are areas of failed mortar creating voids in the wall face, ideally these should be addressed in advance of the planned works. Of the 4 low priority defects, 2 relate to vegetation growth on the parkside elevation of the wall which should be removed during the works, while the final 2 are for small areas of mortar loss which could be addressed at the same time as the medium mortar defects.

There were 59 defects identified on the other sections of the wall, due to their separation from the planned works on the car park it is not considered that these areas could be affected by (or affect) the works. It is suggested that consideration be given to localised repairs to the mortar and stone generally but particularly at the 2 defects rated as high priority.

Given the heritage aspect of the wall any repairs should be designed to replicate as close as possible the original construction. To this end any replacement stones required should be matched to the adjacent stonework and all mortar used should be a suitably colour matched Natural Hydraulic Lime mortar.

Due to the specialist nature of old rubble masonry wall repair works, it is recommended that they are undertaken by a suitably experienced contractor with appropriate supervision. It is also recommended that the repair specification be agreed with a suitable party before undertaking any works to ensure that, due to the walls being heritage structures, the repair materials are appropriate.

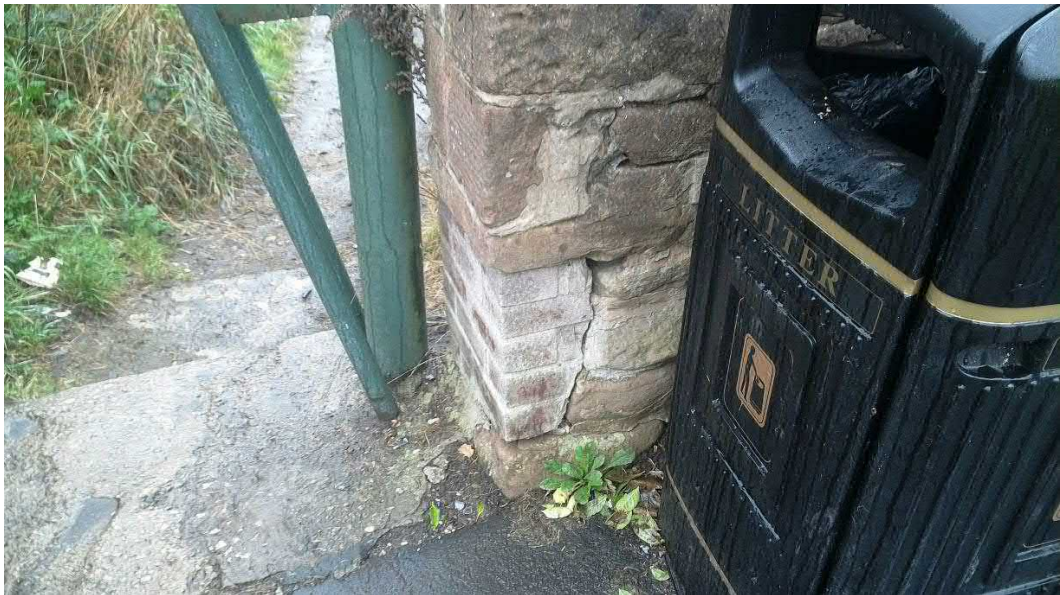
It is further suggested that consideration be given to undertaken localised investigations into the condition of the walls' rubble core at intervals along the wall and specifically at those areas showing bulging and cracking. This can be achieved using radar detection techniques which are basically a modified version of ground penetrating radar used for sub-surface profiling. As this is a specialist service, engagement with a suitably experienced practitioner is advised.

From a longer-term heritage perspective consideration could also be given to replacing the brickwork repairs with stonework repairs more in keeping with the original construction of the wall.

Appendix A

CATALOGUE OF DEFECTS

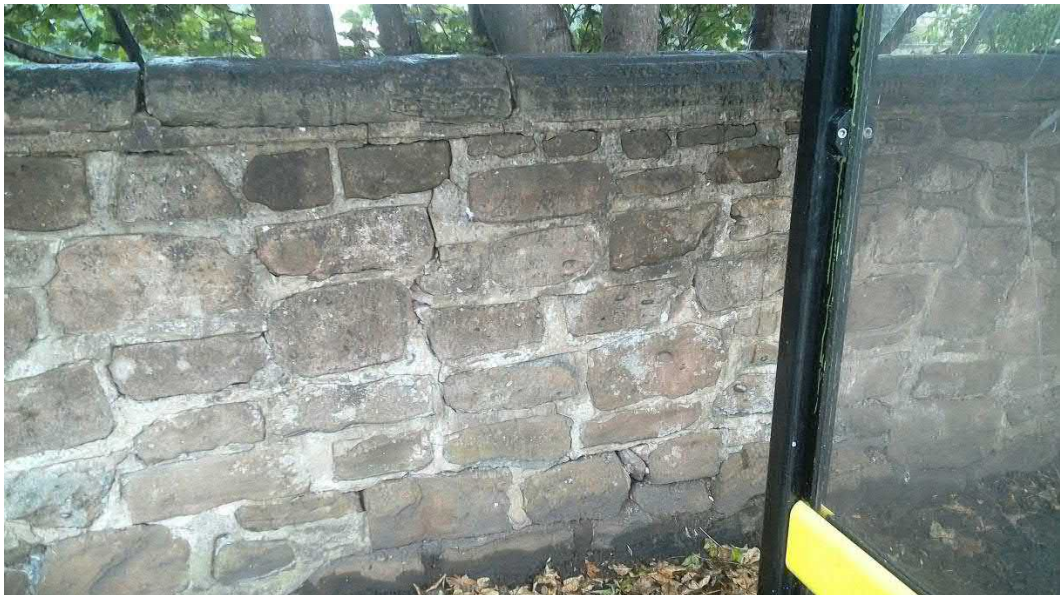


Defect No:	0001	Elevation:	Roadside	Defect Chainage:	0m
Defect Type:	Brickwork repair		Severity:	Low	
Photograph:					

Defect No:	0002	Elevation:	Roadside	Defect Chainage:	5m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0003	Elevation:	Roadside	Defect Chainage:	7m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0004	Elevation:	Roadside	Defect Chainage:	10m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0005	Elevation:	Roadside	Defect Chainage:	15m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0006	Elevation:	Roadside	Defect Chainage:	17m
Defect Type:	Voids		Severity:	Medium	
Photograph:					

Defect No:	0007	Elevation:	Roadside	Defect Chainage:	22m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0008	Elevation:	Roadside	Defect Chainage:	29m
Defect Type:	Voids		Severity:	Medium	
Photograph:					

Defect No:	0009	Elevation:	Roadside	Defect Chainage:	35m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0010	Elevation:	Roadside	Defect Chainage:	40m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0011	Elevation:	Roadside	Defect Chainage:	46m
Defect Type:	Voids/ Weathered Stone		Severity:	Medium	
Photograph:					

Defect No:	0012	Elevation:	Roadside	Defect Chainage:	53m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0013	Elevation:	Roadside	Defect Chainage:	64m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0014	Elevation:	Roadside	Defect Chainage:	74m
Defect Type:	Voids		Severity:	Medium	
Photograph:					

Defect No:	0015	Elevation:	Roadside	Defect Chainage:	95m
Defect Type:	Voids		Severity:	Medium	
Photograph:					

Defect No:	0016	Elevation:	Roadside	Defect Chainage:	102m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0017	Elevation:	Roadside	Defect Chainage:	115m
Defect Type:	Weathered Stone		Severity:	Medium	
Photograph:					

Defect No:	0018	Elevation:	Roadside	Defect Chainage:	130m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0019	Elevation:	Roadside	Defect Chainage:	177m
Defect Type:	Bow at re-pointing		Severity:	Low	
Photograph:					

Defect No:	0020	Elevation:	Roadside	Defect Chainage:	182m
Defect Type:	Void		Severity:	Medium	
Photograph:					

Defect No:	0021	Elevation:	Roadside	Defect Chainage:	197m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0022	Elevation:	Roadside	Defect Chainage:	204m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0023	Elevation:	Roadside	Defect Chainage:	207m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0024	Elevation:	Roadside	Defect Chainage:	211m
Defect Type:	Void		Severity:	Medium	
Photograph:					

Defect No:	0025	Elevation:	Roadside	Defect Chainage:	216m
Defect Type:	Weathered Stone		Severity:	Low	
Photograph:					

Defect No:	0026	Elevation:	Roadside	Defect Chainage:	220m
Defect Type:	Mortar/ Weathered Stone		Severity:	Medium	
Photograph:					

Defect No:	0027	Elevation:	Roadside	Defect Chainage:	226m
Defect Type:	Mortar/ Weathered Stone		Severity:	High	
Photograph:					

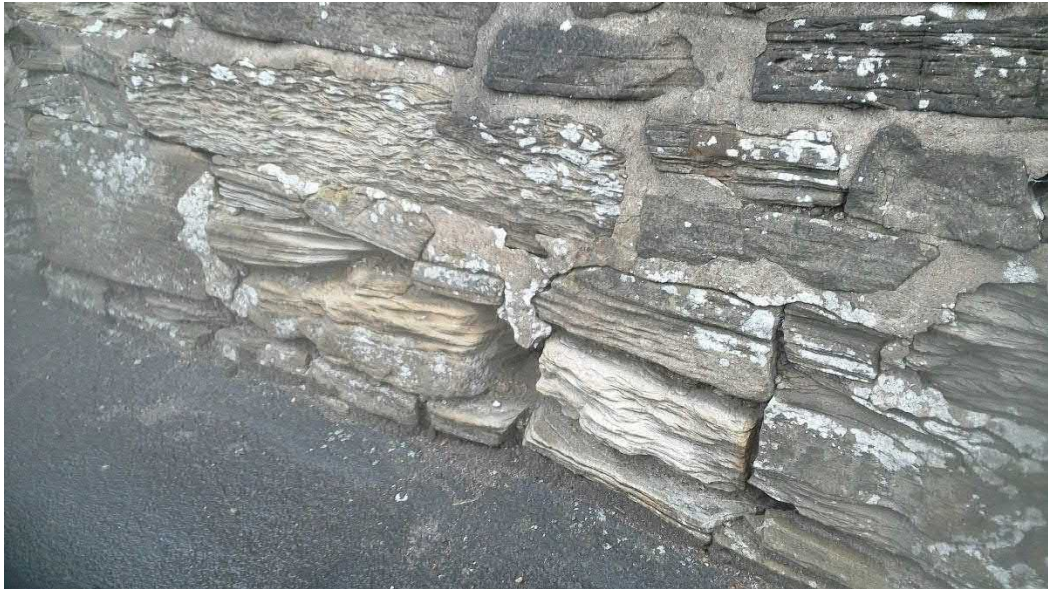
Defect No:	0028	Elevation:	Roadside	Defect Chainage:	230m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0029	Elevation:	Roadside	Defect Chainage:	233m
Defect Type:	Vegetation		Severity:	Low	
Photograph:					

Defect No:	0030	Elevation:	Roadside	Defect Chainage:	238m
Defect Type:	Vegetation		Severity:	Low	
Photograph:					

Defect No:	0031	Elevation:	Roadside	Defect Chainage:	240m
Defect Type:	Weathered Stone		Severity:	Medium	
Photograph:					

Defect No:	0032	Elevation:	Roadside	Defect Chainage:	243m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0033	Elevation:	Roadside	Defect Chainage:	245m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0034	Elevation:	Roadside	Defect Chainage:	251m
Defect Type:	Weathered Stone		Severity:	High	
Photograph:					

Defect No:	0035	Elevation:	Roadside	Defect Chainage:	254m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0036	Elevation:	Roadside	Defect Chainage:	258m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0037	Elevation:	Roadside	Defect Chainage:	262m
Defect Type:	Mortar Crack		Severity:	Medium	
Photograph:					

Defect No:	0038	Elevation:	Roadside	Defect Chainage:	265m
Defect Type:	Mortar Crack		Severity:	Medium	
Photograph:					

Defect No:	0039	Elevation:	Roadside	Defect Chainage:	270m
Defect Type:	Vegetation		Severity:	Low	
Photograph:					

Defect No:	0040	Elevation:	Roadside	Defect Chainage:	274m
Defect Type:	Mortar Failure/ Cracked Cope		Severity:	Low	
Photograph:					

Defect No:	0041	Elevation:	Roadside	Defect Chainage:	280m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0042	Elevation:	Roadside	Defect Chainage:	286m
Defect Type:	Vegetation		Severity:	Low	
Photograph:					

Defect No:	0043	Elevation:	Parkside	Defect Chainage:	0m
Defect Type:	Brickwork Repair		Severity:	Low	
Photograph:	 A photograph showing a section of a stone wall, likely made of dark, rough-hewn stones. The wall is heavily overgrown with tall, dry, yellowish-brown grass and some green weeds. To the right of the wall, there is a green metal post or gate. In the background, a residential street is visible with houses having brick walls and tiled roofs. A blue sky is partially visible above the houses.				

Defect No:	0044	Elevation:	Parkside	Defect Chainage:	12m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0045	Elevation:	Parkside	Defect Chainage:	14m
Defect Type:	Void		Severity:	Medium	
Photograph:					

Defect No:	0046	Elevation:	Parkside	Defect Chainage:	17m
Defect Type:	Void		Severity:	Medium	
Photograph:					

Defect No:	0047	Elevation:	Parkside	Defect Chainage:	26m
Defect Type:	Brickwork Repair		Severity:	Low	
Photograph:					

Defect No:	0048	Elevation:	Parkside	Defect Chainage:	35m
Defect Type:	Brickwork Repair		Severity:	Low	
Photograph:					

Defect No:	0049	Elevation:	Parkside	Defect Chainage:	42m
Defect Type:	Brickwork Repair		Severity:	Low	
Photograph:					

Defect No:	0050	Elevation:	Parkside	Defect Chainage:	48m
Defect Type:	Brickwork Repair		Severity:	Low	
Photograph:					

Defect No:	0051	Elevation:	Parkside	Defect Chainage:	56m
Defect Type:	Brickwork Repair		Severity:	Low	
Photograph:					

Defect No:	0052	Elevation:	Parkside	Defect Chainage:	62m
Defect Type:	Brickwork Repair		Severity:	Low	
Photograph:					

Defect No:	0053	Elevation:	Parkside	Defect Chainage:	65m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0054	Elevation:	Parkside	Defect Chainage:	116m
Defect Type:	Vegetation		Severity:	Low	
Photograph:					

Defect No:	0055	Elevation:	Parkside	Defect Chainage:	120m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0056	Elevation:	Parkside	Defect Chainage:	136m
Defect Type:	Vegetation		Severity:	Low	
Photograph:					

Defect No:	0057	Elevation:	Parkside	Defect Chainage:	144m
Defect Type:	Void		Severity:	Medium	
Photograph:					

Defect No:	0058	Elevation:	Parkside	Defect Chainage:	167m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0059	Elevation:	Parkside	Defect Chainage:	199m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0060	Elevation:	Parkside	Defect Chainage:	208m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0061	Elevation:	Parkside	Defect Chainage:	217m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0062	Elevation:	Parkside	Defect Chainage:	228m
Defect Type:	Void		Severity:	Low	
Photograph:					

Defect No:	0063	Elevation:	Parkside	Defect Chainage:	240m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0064	Elevation:	Parkside	Defect Chainage:	249m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0065	Elevation:	Parkside	Defect Chainage:	260m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0066	Elevation:	Parkside	Defect Chainage:	270m
Defect Type:	Mortar Failure		Severity:	Medium	
Photograph:					

Defect No:	0067	Elevation:	Parkside	Defect Chainage:	273m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Defect No:	0068	Elevation:	Parkside	Defect Chainage:	279m
Defect Type:	Brickwork Repair		Severity:	Low	
Photograph:	 A photograph of a stone wall, likely a retaining wall, showing a section of brickwork repair. The wall is constructed from dark, rough-hewn stones. A rectangular section of the wall, located in the lower-middle part, has been replaced with red bricks. The base of the wall is overgrown with green vegetation and weeds. The top of the wall is capped with a layer of smoother, lighter-colored stones.				

Defect No:	0069	Elevation:	Parkside	Defect Chainage:	283m
Defect Type:	Mortar Failure		Severity:	Low	
Photograph:					

Appendix B



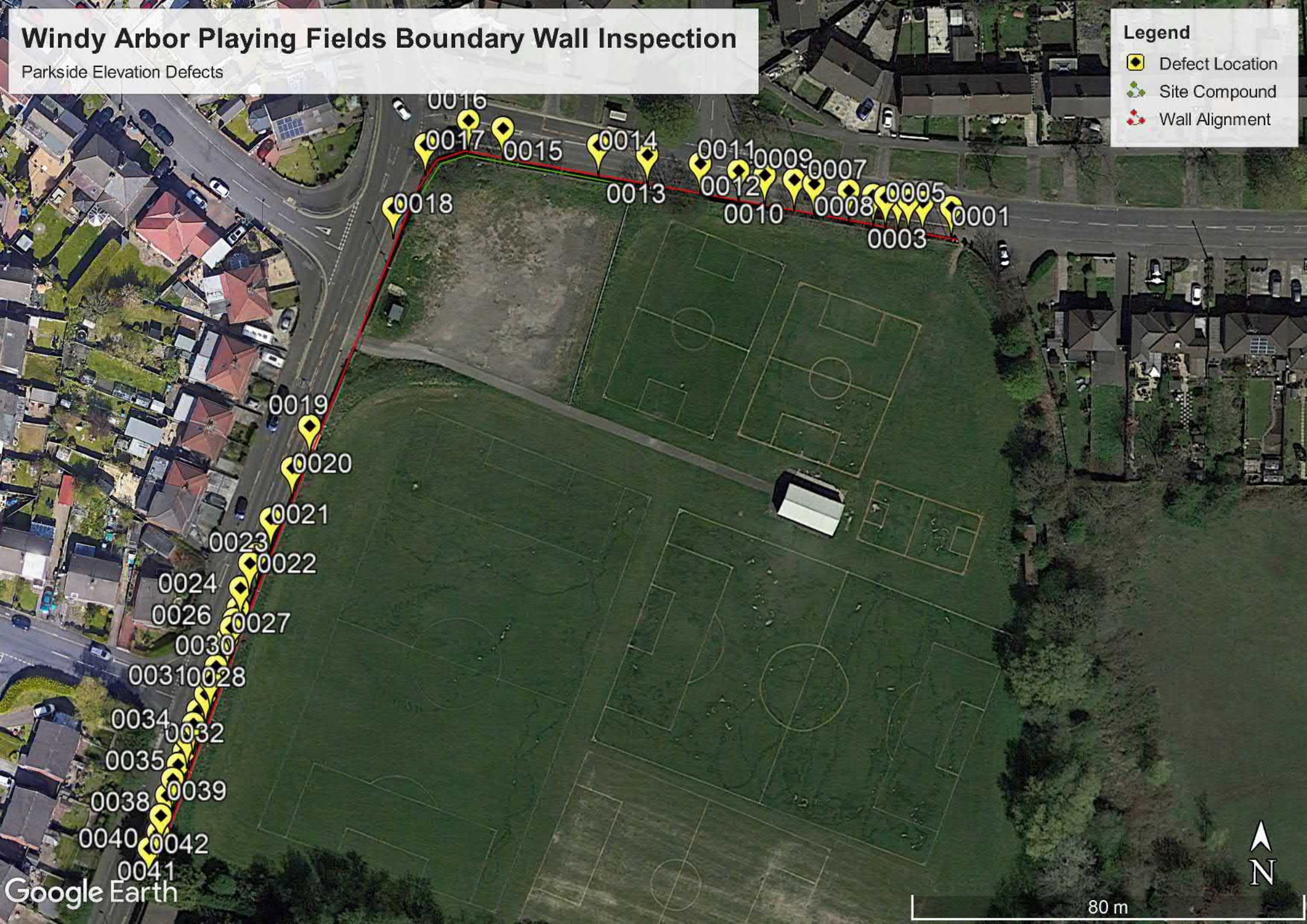
DEFECT MAP

Windy Arbor Playing Fields Boundary Wall Inspection

Parkside Elevation Defects

Legend

-  Defect Location
-  Site Compound
-  Wall Alignment



Windy Arbor Playing Fields Boundary Wall Inspection

Parkside Elevation Defects

Legend

-  Defect Location
-  Site Compound
-  Wall Alignment



Google Earth

80 m





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