Location 5

Hard standing area – crack in parapet wall

Notes:

- Hairline crack in concrete parapet wall.
- Crack originates through penetration in wall, assumed to be a construction defect rather than caused by movement of the river wall.

Location 6

TOBS terrace area – overview of parapet wall

Notes:

- No new cracks observed in concrete parapet wall.
- Inspection of ground behind parapet wall prevented by presence of timber deck.
- No obvious indications of movement or settlement.

Location 7

TOBS terrace area – north corner

Notes:

- Existing crack in wall of concrete planter. See location 8 for detail.
- No new cracks observed in concrete parapet wall.
- No obvious indications of movement or settlement.

Location 8

TOBS terrace area – north corner planter crack detail

Notes:

- Existing crack in wall of concrete planter.
- Extent of crack remains unchanged since last inspection.
- No evidence to indicate that crack has widened since last inspection.

Location 9

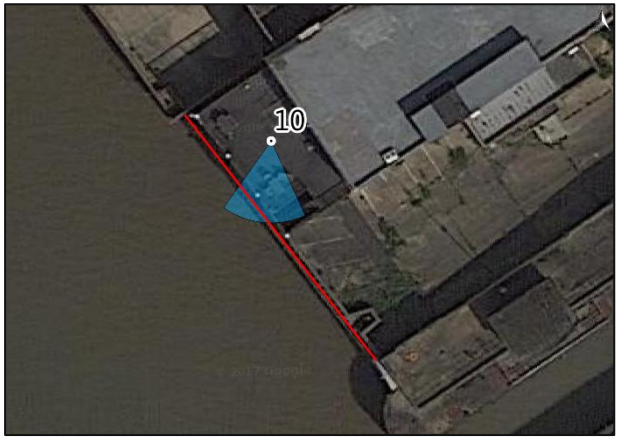
TOBS terrace area – north corned brick wall detail

Notes:

- Adjoining brick wall at north boundary of Dohm Wharf river wall.
- No cracks or other evidence of movement in bricks or mortar joints.
- Note that condition of mortar is poor in places.

Location 10

TOBS terrace area – south corner



Notes:

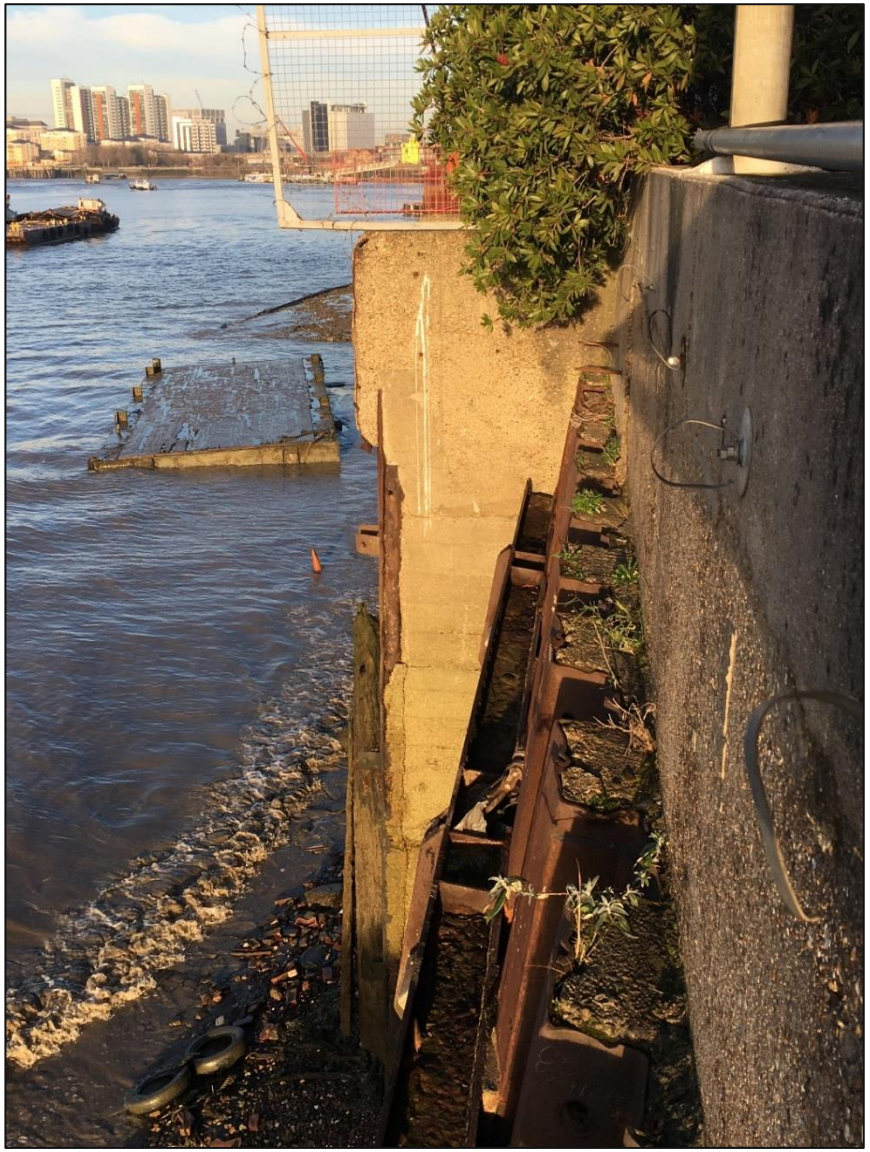
- No new cracks observed in concrete parapet wall.
- No obvious indications of movement or settlement.

Location 11

TOBS terrace area – end face of adjacent wall to north

Notes:

- Adjoining river wall to north steps out from alignment of Dohm Wharf river wall.
- Reinforcement within concrete face of adjoining river wall exposed.
- No evidence of movement at interface between two river walls.



Location 12

Hard standing area – overview of hard standing

Notes:

- Taken from the upper deck of the TOBS roof terrace.
- No new cracks or other evidence of movement or settlement within concrete hard standing observed.

Location 13

Hard standing area – overview of hard standing

Notes:

- Taken from the upper deck of the TOBS roof terrace.
- No new cracks or other evidence of movement or settlement within concrete hard standing observed.

Location 14

Hard standing area – overview of hard standing

Notes:

- Taken from the upper deck of the TOBS roof terrace.
- No new cracks or other evidence of movement or settlement within concrete hard standing observed.

Location 15

Hard standing area – view away from river wall

Notes:

- No new cracks or other evidence of movement or settlement within concrete hard standing observed.

BUROHAPPOLD ENGINEERING

Technical Note

Project	Thames Side West
Subject	Dohm Wharf River Wall Quarterly Inspection – March 2018
Project no	035668
Date	9 April 2018

Revision	Description	Issued by	Date	Approved (signature)
00	For issue	JF	09.04.18	

1 Introduction

Dohm Wharf Wall is a section of river wall on the north bank of the River Thames. The wall is 32m long, and comprises steel sheet piles, waling beams and ground anchors. The retained area behind the wall is occupied by hard standing and a warehouse.

Following the completion of a series of repairs to the steel sheet pile sections in September 2017, it was agreed with the Environment Agency (EA) that quarterly inspections of the river shall be carried out. The principle aim of these inspections is to ensure that the river wall remains in suitable condition to act as a flood defence, until the wall is fully replaced as part of the Thames Side West Operational Development works. The purpose of these visual inspections is twofold:

- To monitor the overall structural stability of river wall; and
- To monitor the repairs previously carried out to the steel sheet pile wall to confirm that the repairs remain in place and that no further degradation of the condition of the steel has taken place.

The second quarterly inspection was carried out on the 22nd March 2018. Present at the inspection were Jack Foster and Mairi Dean, of BuroHappold Engineering. The inspection was carried out from both the land side and the river side of the river wall.

This Technical Note provides a summary of the observations during the 22nd March 2018 inspection and should be read in conjunction with the following reports from previous inspections and site visits carried out by BuroHappold:

- Dohm Wharf River Wall Inspection, 23rd February 2017
- Dohm Wharf Repairs Summary Report, 27th September 2017
- Dohm Wharf River Wall Quarterly Inspection, 19th December 2017

2 Overall Structural Stability

2.1 General

A visual inspection of the river wall was carried out from both the land and river side of the river wall, in order to monitor the overall structural stability of the river wall by identifying any evidence of movement.

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2.2 Land Side

A visual inspection of the river wall was carried out from the land side, with access gained via the following two areas shown in Figure 2.1 which are separated by timber hoarding and a fire escape from the adjacent building.

- Concrete hardstanding (purple)
- The Old Basket Supply (TOBS) terrace area, both at ground and first floor level (orange)

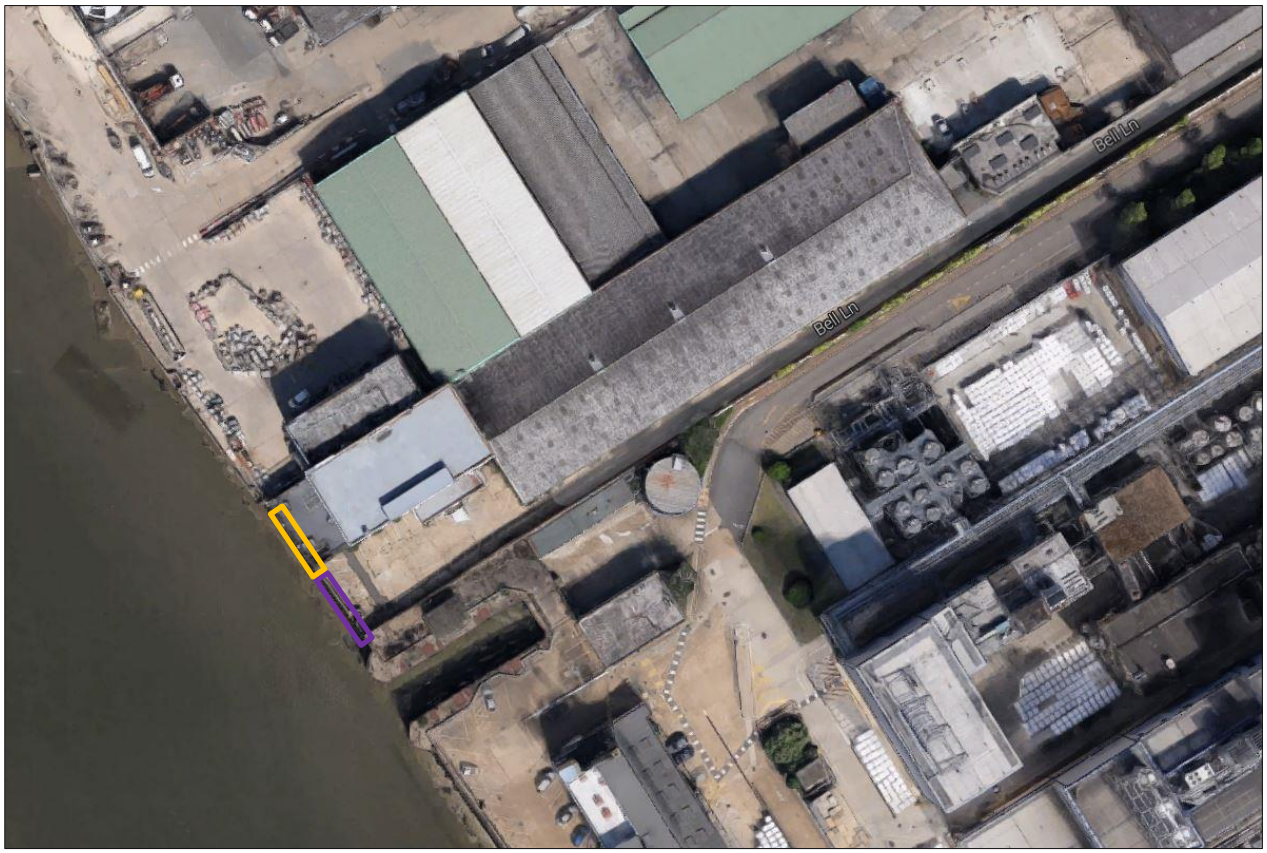


Figure 2.1: Aerial view of Dohm Wharf showing inspection areas

The purpose of the visual inspection was to monitor the overall structural stability of the river wall by identifying any evidence of movement such as new cracks in the concrete parapet wall, capping beam, hardstanding or adjacent perpendicular brick walls.

Record photos were taken from a series of standard locations to allow repeat photos to be taken to enable direct visual comparison to determine if any degradation occurs between subsequent quarterly inspections. These record photos and locations are given in the Appendix, along with observation notes.

No evidence of movement or settlement of the existing river wall was observed.

2.3 River Side

A visual inspection of the river wall was also carried out from the river side, with access to the river bed gained via a boat at low tide. The river bed consists of a mixture of sand, gravel and assorted debris including brick fragments and concrete, for approximately 2m from the river wall. Further than 2m from the river wall, the river bed consists of soft mud.

Record photos of the repairs previously carried out to the steel sheet pile wall were taken and are discussed in further detail in Section 3. Figure 2.2 shows the overall condition of the river wall, taken from the river bed at low tide. The patch repairs can clearly be seen in Figure 2.2 as areas with less vegetation growth.

While there is minor corrosion to the steel sheet pile, no significant deterioration since the previous inspection was observed.

No evidence of movement or settlement of the existing river wall was observed, either at the interface with the adjacent river wall structures or overall.

Figure 2.2: Overall view of the river wall, taken from the river bed at low tide

3 Steel Sheet Pile Repairs

During the 23rd February 2017 inspection, corrosion to the steel sheet pile sections of the river wall was observed. This was most significant in the splash zone above high water where voids were present behind perforations in the steel.

Following the inspection, it was recommended that short-term remedial works were carried out to preserve the structural integrity of the wall and the associated flood defence. These remedial works to the corroded areas of the steel sheet piling were carried out in August and September 2017, in the form of plates welded over the perforations.

As part of this quarterly monitoring, a visual inspection of the remedial works was carried out from both the land side and river side of the river wall to confirm that the repairs remain in place and that no further degradation of the steel has taken place.

For the purpose of reporting the condition of the repairs to the steel sheet piles, the wall has been divided into the following three areas:

- Upper Level – from the lower waling beam to the top of the wall;
- Mid Level – from 2m above the level of the river bed to the lower waling beam; and
- Low Level – from the two of the river wall to approximately 2m above the level of the river bed.

3.1 Upper Level

The repairs to the entire sheet pile wall were visible from the river side. In addition, the repairs to the upper level of the river wall above the upper waling beam were visible form the land side.

All plate repairs appear to remain securely welded to the existing sheet pile sections and there is no evidence of further degradation of the condition of the remaining steel. Figure 3.1 shows a typical photograph of the upper level of the river wall, showing the steel plate repairs securely welded to the sheet piling.

Figure 3.1: Typical photograph of upper level of river wall, showing steel plate repairs to sheet piling, taken from the river bed

There are two locations where a perforation has not had a patch repair installed. One is between the two waling beams immediately north of the southernmost ground anchor, shown in Figure 3.2. This was not observed at completion of the repair works, but it is likely to have been missed due to access issues to this section of the river wall during the remedial works, and proximity to the waling beam. The extent of this perforation does not appear to have deteriorated since the previous inspection.

The other perforation that has not been patched is immediately under the lower waling beam on the northernmost out-pan of the sheet pile wall, as shown in Figure 3.3. This perforation was not observed during the 19th December inspection as it is not visible from the land side.

It is considered that the two perforations observed would not pose a risk of structural failure of the river wall. Additional repair works are therefore not proposed, however these two areas will be closely monitored as part of the ongoing quarterly inspection programme to identify whether any further significant corrosion occurs.

The underside of the patch repairs to the upper level of the sheet pile wall have either been filled with mastic or a length of reinforcement bar welded to both the patch and the existing sheet pile. Where mastic has been used, the repair is in good condition. Where a weld has been used to seal the patch, some small gaps remain. This has the potential to allow water into the void behind the river wall. These gaps are all located above the mean high water springs level.

Given that the operation of the Thames Barrier prevents exceptionally high water levels in the Thames, it is considered that this small number of narrow gaps in the river wall would not present a significant risk in terms of reducing capacity of the river wall to act as a flood defence. It is recommended that these gaps are closely monitored as part of the ongoing quarterly inspection programme

Figure 3.2 Location at south end of river wall where patch repair to perforation in steel sheet piling has been missed

Figure 3.3 Location at north end of river wall where patch repair to perforation in steel sheet piling has been missed

3.2 Mid Level

The repairs to the mid level of the sheet pile wall were visible from the river side only. All repairs at the mid level appear to be in good condition, with no new perforations.

A typical example of one of the mid level repairs is shown in Figure 3.4:

Figure 3.4 Typical patch repair to the mid level of the steel sheet pile wall, in good condition

3.3 Low Level

The repairs to the low level of the sheet pile wall were visible from the river side only. Access to the river bed was gained at low tide via a boat. Figure 3.5 shows a typical repair to the low level of the sheet pile wall.

Figure 3.5 Typical patch repair to the low level of the steel sheet pile wall, in acceptable condition

The low level patch repairs are generally in acceptable condition. Each patch repair has a weep hole at the bottom to allow water to drain from behind the river wall, as was the case with the existing wall.

In all locations, the lower southern side of the plate has not been fully welded to the existing sheet pile, as circled in red in Figure 3.5. This is due to the continuous flow of water draining from behind the river wall, which prevented a weld from being completed.

It is considered that this missing length of weld would not pose a risk of structural failure of the river wall. However it is recommended that these areas are monitored during subsequent quarterly inspections to check that degradation of the repair does not occur.

4 Summary and Conclusion

The visual inspection from both the land and river side of the river wall did not identify any evidence of further movement or settlement within the concrete hardstanding, concrete capping beam and parapet wall or adjoining brick walls since the previous inspection.

The welds of the repairs to the steel sheet pile at the upper level remain sound and the plates are securely fixed. Two locations were identified where a perforation had not had a patch repair installed, which was not observed at the time of remedial works. The perforation at the south end of the wall which was observed during the previous quarterly inspection on 19th December has not deteriorated. The second perforation which was not observed during the previous quarterly inspection due to visibility obstructions is located immediately below the lower waling beam at the north end of the wall.

It is considered that the omission of these two repairs would not pose a risk of structural failure of the river wall. These two areas will be closely monitored as part of the ongoing quarterly inspection programme to identify whether any further significant corrosion occurs.

There are some small gaps on the underside of the upper level repairs, where reinforcement bars have been welded in to fill the gap. Given that these gaps are above mean high water springs and that the Thames Barrier prevents exceptionally high water levels, it is considered that this small number of narrow gaps in the river wall would not present a significant risk in terms of reducing capacity of the river wall to act as a flood defence.

The welds of the repairs to the steel sheet pile at the mid level remain sound and the plates are securely fixed.

The welds of the repairs to the steel sheet pile at the low level were observed to not be fully complete, prevented at the time the remedial works were carried out by a continuous flow of water from the perforation in the existing wall. It is considered that this missing length of weld would not pose a risk of structural failure of the river wall.

The next quarterly inspection is due to be carried out in June 2018.

Appendix

Location 1

Hard standing area – overview of parapet wall

Notes:

- Hard standing generally in good condition.
- Existing cracks in hard standing previously observed during 23rd February and 19th December inspections.
- No new cracks observed in concrete parapet wall or concrete hard standing.
- No obvious indications of movement or settlement of parapet wall or hard standing.
- Vegetation present within cracks in hard standing, similar extent to previous inspection on 19th December.

Location 2

Hard standing area – south corner

Notes:

- Brick wall perpendicular to river wall, at south boundary of Dohm Wharf river wall.
- Existing crack in brick wall unchanged since last inspection. See location 3 for detail.
- No new cracks observed in concrete parapet wall, adjoining red brick wall or concrete hardstanding.

Location 3

Hard standing area – south corner brick wall crack detail

Notes:

- Brick wall perpendicular to river wall, at south boundary of Dohm Wharf river wall.
- Existing crack in brick wall at approximate level of crest of concrete parapet wall.
- Extent of crack remains unchanged since 19th December 2017 inspection.
- Crack does not appear to have widened since 19th December 2017 inspection.
- No obvious indications of movement or settlement.

Location 4

Hard standing area – north corner

Notes:

- No new cracks observed in concrete parapet wall or concrete hard standing.
- No evidence of movement at interface between timber hoarding, concrete parapet wall and concrete hard standing.
- No obvious indications of movement or settlement of parapet wall or hard standing.

Location 5

Hard standing area – crack in parapet wall

Notes:

- Hairline crack in concrete parapet wall.
- Crack originates through penetration in wall, assumed to be a construction defect rather than caused by movement of the river wall.

Location 6

TOBS terrace area – overview of parapet wall

Notes:

- No new cracks observed in concrete parapet wall.
- Inspection of ground behind parapet wall prevented by presence of timber deck.
- No obvious indications of movement or settlement.

Location 7

TOBS terrace area – north corner

Notes:

- Existing crack in wall of concrete planter. See location 8 for detail.
- No new cracks observed in concrete parapet wall.
- No obvious indications of movement or settlement.

Location 8

TOBS terrace area – north corner planter crack detail

Notes:

- Existing crack in wall of concrete planter.
- Extent of crack remains unchanged since last inspection.
- No evidence to indicate that crack has widened since last inspection.

Location 9

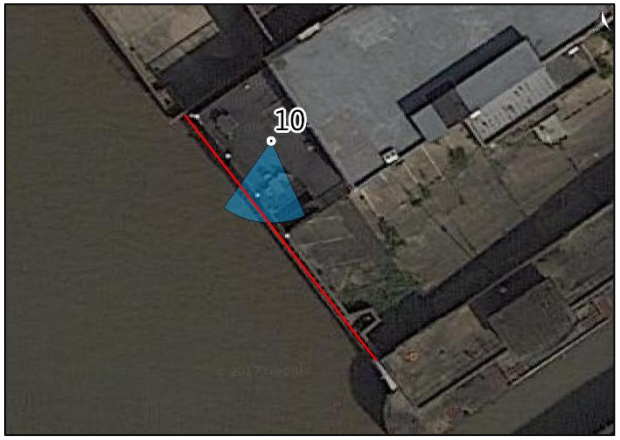
TOBS terrace area – north corned brick wall detail

Notes:

- Adjoining brick wall at north boundary of Dohm Wharf river wall.
- No evidence to indicate that crack has widened or extended since last inspection.
- Note that condition of mortar is poor in places.

Location 10

TOBS terrace area – south corner



Notes:

- No new cracks observed in concrete parapet wall.
- No obvious indications of movement or settlement.