

CDM 2.0 Pre-Construction and Works Information Package

SECTION ONE Pre-Construction Information

General Data			
Region	East Midlands		
Waterway	Trent & Mersey Canal		
Functional Location	TM-146-003		
Grid Reference / What3Words	440827 327801	Post Code	DE72 2BT
Project Sponsor	Regional Engineer	Neil Owen	
Client Representative	Principal Engineer	Osi Ivowi	
Principal Designer (if applicable)	TBC (if required)	TBC	
Designer	Senior Engineer	Neil Bedford	
Principal Contractor (if required/known)	TBC	TBC	
Contractor/s	EMDS	TBC	
Temporary Works Co-ordinator (if required/known)	EMDS	Julian Rasen	
Temporary Works Designer (if known)	Principal/Senior Engineer	Ian Cozens / Neil Bedford (if required)	
Defects to be Rectified or Improvements Required			
Notification Number(s)	ZX Description		
12222570	B2X STPG - Bottom gates VERY STIFF		
12334897	B2X STPG - Ladder extensions		
12630326	B2X STPG - Alter O/S lock ladder		
12630327	B2X STPG - Alter T/P lock ladder		
13932471	B2X STPG - Leakage on top gate cills		
14253728	B2X STPG - Handrails non-compliant		
14742836	B2X STPG - Loose bricks T/P ladd. recess		
14742839	B2X STPG - Pointing works T/P chamber wall		
14742840	B2X STPG - Pointing works O/S chamber wall		
14838946	B2X STPG - Bollards requires moving		
16142671	B2X STPG - Replace bottom gates		
16488730	B2X STPG - Bottom O/S gate swings open		
16637698	B2X STPG - Remove debris from lock floor		
16768315	B2X STPG - D/S O/S s/plank groove b/work		
16902086	B2X STPG - Replace top gates		
16905076	B2X STPG - Repair/improve cill face (snag)		
16905081	B2X STPG - Design & fit better defectors		
Package Number	EM78	PMO Number	5157582

I, ...(print name) acting on behalf of Canal & River Trust and having regard to the appropriate competencies and resources required, do hereby appoint the above organisation to act as Principal Designer for the project.

Project Sponsor - Signed (on behalf of Canal & River Trust)

Date

(Complete this declaration if a Principal Designer is being appointed)

Project Summary

SAP Notes

1222570 B2X STPG - Bottom gates VERY STIFF

10.07.2009. 2009 AI - The bottom gates at this lock were very difficult to move. They require some work to make them easier to open and close.

13.07.2009. Func loc updated to Weston Lock (from bottom gates). Previously noted issues at this location due the nature of the lock chamber and gate installations (see previous notifications). COP Sth team will visit site and inspect in respect of this notification

15.07.2009. COP Sth team feedback. Believe to be an historic design issue. The gates have been weighted and greased but angles of batter and the size of gate makes them difficult to open. Notification update to 'ENG' for site inspection and advise regarding solution to highlighted issue.

30.07.2009. The lock is listed, but if the issue can be clearly identified listing won't prevent sensitive change but it will as a minimum require a conversation with the conservation officer. Speak to HA when designing works in relation to this problem - allow at least 8 weeks in case consent is needed.

27.08.2010. This is to be investigated during the winter stoppage 2010/2011

29.05.2013. Report from the Length Inspectors of increased number of verbal complaints regarding this problem

19.09.2017. -Bottom gates still very difficult to move, particularly to close again. Imagine this would be almost impossible for a lone boater, particularly of advanced age. Consider safety implications of this also.

05.03.2018. Photos added showing that o/s heel post is not sitting in quoin, could this have an effect on ability to swing gate. Gate was stiff to open (required much force) but swung open fairly freely once moving. Very stiff to close gate.

30.05.2019. No change, both gates remain very stiff to operate, particularly when closing. At time of inspection a boat was being helped through and the boater was unable to move the gate at all, AI had to operate it in her place.

15.07.2019. No change. Too difficult for some boaters to operate on their own.

15.10.2019. Given description that the batter of the lock wall is contributing to this issue, believe the solution to this problem will be same as was recently carried out at Aston, i.e. install a new quoin at a more vertical angle than the batter on the lock walls. The situation has improved slightly. This will require the lock gates to be replaced, but the gates will need to be measured up only once the new quoins haven been installed. Extended stoppage will be required.

06.10.2021. Lock gates generally relatively easy to swing at the moment, though the paddles are incredibly stiff to operate when lock full.

Asset Team Observations

None provided

Design Development Observations

- On the day of the site visit, I was able to operate both gates ok, however, these are large gates with heavy balance beams. Looking at the notification text It is likely that adjustment of the collars may have eased movement.

- The quoins are fixed at a batter. If the quoins were replaced to a more vertical angle, this should make the gates easier to operate (similar works completed at Aston lock previously)

Potential ways to make the gates easier to operate:

- Extend the length of the balance beams by 300mm. This will provide more leverage but when the gate is open it will obstruct the footbridge at the lock tail meaning users will need to cross over the adjacent road bridge instead.
- Change the batter of the quoins to a more vertical angle as was completed at Aston lock previously. Note – listed building consent would be required for this work and the measurements for the new gates would need to be taken after the quoins have been repositioned.

Update 30th May 2023

Following further discussion with the asset engineer, it had been agreed to leave the quoins as they are due to the risk of delays in measurement and construction of the new gates.

12334897 B2X STPG - Ladder extensions

15.11.2010. The lock ladders are fine in their current position but will require extending when a full lock stoppage is under-taken.

14.12.2010. Extending the lock ladders is likely to need listed building consent; when going forward discuss with heritage advisor & supply plans as existing and proposed for the application for Listed building consent

15.10.2019. Include with other stoppage works during B22.

Asset Team Observations

None provided

Design Development Observations

- The existing ladders do not comply with the Mandatory Standard for Navigation Standards
- Ladder recess is not wide enough. Widening of the ladder recess will involve some cutting of the stone copings.
- Stringers do not connect to handrails.
- Height from lockside copings stones to normal water level with chamber empty is 3700mm
- Height from lockside copings stones to lock invert is 5100mm (obtained from SAP functional location).
- Ladders should be replaced in their entirety to comply with current standard

12630326 B2X STPG - Alter O/S lock ladder

08.06.2017. 2017 AI - Alterations required to bring ladder up to latest standard, stringer hand space and continuous stringer to hoop handrail tops.

15.10.2019. Include with upcoming stoppage in B22.

03.08.2022. Photos swapped.

Asset Team Observations

None provided

Design Development Observations

- The existing ladders do not comply with the Mandatory Standard for Navigation Standards
- Ladder recess is not wide enough. Widening of the ladder recess will involve some cutting of the stone copings.
- Stringers do not connect to handrails.
- Ladders should be replaced in their entirety to comply with current standard

12630327 B2X STPG - Alter T/P lock ladder

08.06.2017. 2017 AI - Alterations required to bring ladder up to latest standard, stringer hand space and continuous stringer to hoop handrail tops.

15.10.2019. Include works in planned B22 stoppage.

12.04.2021 "Photo added."

Asset Team Observations

None provided

Design Development Observations

- The existing ladders do not comply with the Mandatory Standard for Navigation Standards
- Ladder recess is not wide enough. Widening of the ladder recess will involve some cutting of the stone copings.
- Stringers do not connect to handrails.
- Ladders should be replaced in their entirety to comply with current standard

13932471 B2X STPG - Leakage on top gate cills.

09.05.2016. Leakage visually reduced between Feb and April 2016. Re-prioritised to 5yrs.

12.10.2016. Leakage flow amended to heavy - photo added.

19.07.2017. Top gate cill leakage very little today.

15.10.2019. There does not appear to be an issue with the gates themselves based on the photographs, this appears to relate more to debris given the variation in the leakage in the supplied photographs.

21.07.2020. New photo added.

28.08.2020 - Whilst significant, is not causing an operational problem at present.

04.08.2022 Updated photo added as requested. Minimal Cill leakage on day of visit.

Asset Team Observations

None provided

Design Development Observations

- Extensive leakage at the cills was observed.
- The cills should be replaced at the same time as the lock gates are replaced.

14253728 B2X STPG - Handrails non-compliant

10.08.2016. Both top gate handrails don't conform to standard.

06.07.2021. Look to bring the handrails up to the latest standard in the upcoming stoppage in B23.

03.08.2022 Photos added.

Asset Team Observations

None provided

Design Development Observations

- Handrails are fitted to the upstream side of the lock gates. not the downstream side.
- Width of the walkway is 260mm, narrowing to 210mm where the paddle gear is fitted to the upstream side.
- It is not possible to relocate the handrail to the downstream side of the gates due to the narrow width of the walkway between the handrail and the paddle gear.
- To comply with the Mandatory Standard for Navigation Standards, a walkway will need to be constructed and added to the top gates in a similar way to that undertaken previously at Derwent mouth lock.
- A new walkway will change the style and appearance of the gates and is subject to obtaining listed building consent.

Update 30th May 2023

Following further discussion with the asset engineer, it had been agreed to investigate obtaining a dispensation to remove the requirement to comply with the Mandatory Standard. Use of such a walkway is likely to be low as customers can cross the lock at the footbridge at the downstream end.

14742836 B2X STPG - Loose bricks T/P ladd. Recess

06.06.2017. The d/s corner top of the t/p ladder recess requires brick repairs. There are two bricks that are loose and another missing.

15.10.2019. Low priority but include with planned stoppage in B22.

04.08.2022 Photo swapped.

Asset Team Observations

None provided

Design Development Observations

- The ladder recesses will require widening to accommodate the new ladders. The brickwork should be repaired as part of these works.

14742839 B2X STPG - Pointing works T/P chamber wall

06.06.2017. Localised areas of mortar loss noted along full length of the towpath side chamber wall. Loss appears worst in the upper 1m of brickwork immediately beneath the lock side copings.

15.10.2019. Low priority but include in planned stoppage in B22.

Asset Team Observations

None provided

Design Development Observations

- At the time of the site visit, it was difficult to inspect the chamber wall due to algae growth on the brickwork.
- There may be areas of brickwork which require replacement estimated at 3m2.
- Approximately 10m2 of the chamber wall will require repointing including the bed joint beneath the copings.
- The chamber wall will require pressure-washing prior to commencing works to enable a more detailed inspection of the brickwork to be completed.

14742840 B2X STPG - Pointing works O/S chamber wall

06.06.2017. Large areas of mortar loss along the entire length of the offside chamber wall. Of note it was felt that mortar loss was mainly bad within the bottom gate recess and the upper 1m of wall immediately beneath the lock top coping

15.10.2019. Low priority but include in the planned B22 stoppage.

16.04.2021. "Photo swapped".

26.05.2022 Damage to OS brick chamber wall from boat impacts (7metres from top gate) and 2m from top of coping.

30.03.2023. Photo swapped.

Asset Team Observations

None provided

Design Development Observations

- At the time of the site visit, it was difficult to inspect the chamber wall due to algae growth on the brickwork.
- There are areas of brickwork which require replacement estimated at 6m2.
- Approximately 10m2 of the chamber wall will require repointing including the bed joint beneath the copings.
- The chamber wall will require pressure-washing prior to commencing works to enable a more detailed inspection of the brickwork to be completed.

14838946 B2X STPG - Bollards requires moving

31.07.2017. The middle holding point on the towpath side and the bottom holding point on the offside of the lock should be repositioned to reduce the risk of a rope becoming snagged on the lock ladder.

06.09.2017. As the situation has been like this for a while, and no ZQ incident reports are apparent, the works with a 5-year priority, or to be completed when other works are carried out on the site. Works will not require a stoppage.

19.09.2017. Photos added, as requested. Appears unlikely that the bottom holding post would pose a risk of snagging as is approx 5m from the ladder.

06.07.2021. Works added to the programme, however this will require discussion with the heritage team to decide as the lock is Grade II listed.

Asset Team Observations

None provided

Design Development Observations

- During the site visit, it was not obvious how repositioning of the bollards could be improved.
- If bollards are moved away from the ladder, this will create another problem in that the spacings will then be incorrect.

Update 30th May 2023

Following further discussion with the asset engineer, it had been agreed to investigate obtaining a dispensation to remove the requirement to comply with the Mandatory Standard.

16142671 B2X STPG - Replace bottom gates

15.10.2019. Bottom gates are coming to the end of their operational life. Look to install new quoins vertically in the wall (not in line with the wall batter) as done during the B18 stoppage at Aston Lock. This will require prior agreement with the workshop to measure for the gates after the new quoins are installed, and then manufacture the gates immediately and deliver to site.

12.04.2021 "Photos added."

21.03.2022 Leakage through bottom gates now so severe that lock is barely able to fill. Please prioritise gate replacement. Anticipate that lock will struggle to make it through coming season. Photo added.

04.08.2022 Photo added.

Asset Team Observations

None provided

Design Development Observations

- The gates are in poor condition and should be replaced along with the clap cills and gate cups.
- Replacement gates should be manufactured to the existing gate style / specification for this area of the Trent & Mersey Canal.

- On the day of the site visit, I was able to operate both gates ok, however, these are large gates with heavy balance beams.
- The quoins are fixed at a batter. If the quoins were replaced to a more vertical angle, this should make the gates easier to operate (similar works completed at Aston lock previously)
- Listed building consent would be required for this work and the measurements for the new gates would need to be taken after the quoins have been repositioned.

Update 30th May 2023

Following further discussion with the asset engineer, it had been agreed to leave the quoins as they are due to the risk of delays in measurement and construction of the new gates.

16488730 B2X STPG - Bottom O/S gate swings open

20.08.2020. The mitre is not aligning on the gates when they close, meaning the o/s gate, if closed last, swings open. This will be resolved when gates replaced in B22 so assume NFA until then.

28.08.2020. Look to resolve during gate replacement, proposed for B22 but may be subject to change.

06.07.2021. Works have been added for inclusion in the stoppage in B23. This may indicate that the gates are unbalanced, supported by the report of the lock gate inspector in 2019 which gave a breakout reading of 60Nm to operate. Gate has been graded as Serviceability Grade 2 "Restricted Use".

Similar issues at Aston Lock recently were dealt with by installing new quoins that were set vertically (rather than battered). Issue may also relate to the length of the balance beam combined with the size of the gate.

06.10.2021. Bottom gates both closed and lock chamber empty on arrival.

Asset Team Observations

None provided

Design Development Observations

- Problem was not evident during site visit and has likely been rectified by adjustment of the gate collar or possible movement of the gate cup.
- The installation of the new lock gates will prevent this problem providing that the gate cups are fitted correctly and collard adjustment is correct.

16637698 B2X STPG - Remove debris from lock floor

30.11.2020. Request that debris is removed from the lock floor when next dewatered. Unknown how much (if any) is in there, however assuming a depth of around 0.3m across the entire floor gives a value of 30 cubic metres.

16.04.2021. "Photo added."

03.08.2022 Photo added.

Asset Team Observations

None provided

Design Development Observations

- During the day of the site visit, the canal was in water, and it was not possible to inspect the invert of the lock.
- Whilst the lock is dewatered, the chamber should be cleared of mud and debris.
- All debris removed from the lock chamber should be disposed of using a licensed waste management contractor.

16768315 B2X STPG - D/S O/S s/plank groove b/work

14.04.2021. The bottom o/s stop plank groove opening would benefit from brickwork repairs. Missing, loose bricks and general repointing works required.

06.07.2021. Added to the gate replacement stoppage for B23.

10.08.2022. Photos added

Asset Team Observations

None provided

Design Development Observations

- There is approximately 0.75m² of brickwork to be repaired around the top of the stop plank groove on the offside approach wall at the downstream end of the lock.
- Loose bricks can be removed and re-laid.
- Missing brickwork should be replaced with bricks to match the originals in size and colour

16902086 B2X STPG - Replace top gates

06.07.2021. Gate to be replaced alongside the Grade 5 bottom gates, cost effectiveness.

03.08.2022. Photos added.

Asset Team Observations

None provided

Design Development Observations

- The gates are in poor condition and should be replaced along with the clap cills and gate cups.
- Replacement gates should be manufactured to the existing gate style / specification for this area of the Trent & Mersey Canal.

16905076 B2X STPG - Repair/improve cill face (snag)

07.07.2021. As part of the investigation into a recent boat sinking at Stenson Lock, the face of the cill (ribbed metal at present) was raised by the Chief Operating Officer as a potential contributory factor.

At present the investigation is ongoing for that case, however it is theoretical possible that the face of the cill could be a snag risk for boats. Recommend that improvements are made at the next stoppage to remove this potential hazard. Photo of current arrangement at Weston Lock can be found using the following link. [http://gateway/asset/Asset/TM/TM-146/TM-146-003/20141211_100752%20-%20Head%20wall%20of%20chamber\(570411\).jpg](http://gateway/asset/Asset/TM/TM-146/TM-146-003/20141211_100752%20-%20Head%20wall%20of%20chamber(570411).jpg)

03.08.2022. Photos of dropped Cill fender iron rail that has dropped and will have caused a gap that could be a potential snagging point.

Asset Team Observations

None provided

Design Development Observation

- The cill fender rails are fitted horizontally across the face of the cill wall and can pose a snagging risk to craft.
- A suitable solution would be to provide timber fenders as was recently completed at lock 6, Stenson lock.
- The existing cill fender rails should be removed and replaced with timber fenders fixed to the wall to form a flush face.

16905081 B2X STPG - Design & fit better deflectors

07.07.2021. An investigation is underway following a recent incident of a boat sinking/capsizing in Stenson Lock. Whilst incorrect operation of the lock is suspected (gate paddles were open early), the deflectors did not appear to prevent boat inundation. Given the high cill, deflecting the water down may not stop a boat becoming flooded. The water may just cascade over the cill anyway. Need to look at diverting the water to the side. Keith Boswell suggested that when he was Asset Engineer in this area, alternative baffles were put forward for Stenson Lock to deflect water to the side, however they were never installed due to Listed Building Consent Issues. This alternative should be investigated again for Weston Lock during the stoppage to replace the lock gates. The current baffles installed at Weston are the 'cat-flap' design which do not suffer from blockages but do still divert water down onto the cill.

06.10.2021. Photos added to illustrate water flow, paddles lifted fully with deflectors in place and restricting flow.

16.02.2023. Put the deflection angle in the paddle hole of the gate so slats that can and do block up to cause a fouled paddle are not then required. That's how it was done on 1930#s Grand Union gates(Warwick & Napton cut)

Asset Team Observations

None provided

Design Development Observation

- Existing deflectors allow water to cascade over the cill.
- Following discussion with the asset engineer, a solution similar to the original gates on the Birmingham – Warwick canal can be tested here.
- The solution is to fit a frame with curved sides into the paddle aperture to divert water sideways.

Photos

12222570 Plate 1 2016



12222570 Plate 2 2018



12222570 Plate 3 2018



12334897 Plate 4 2016



12334897 Plate 5 2016



12630326 Plate 6 2022



12630326 Plate 7 2022



12630327 Plate 8 2016



12630327 Plate 9 2021



13932471 Plate 10 2016



13932471 Plate 11 2020



13932471 Plate 12 2022



14253728 Plate 13 2022



14253728 Plate 14 2022



14253728 Plate 15 2022



14742836 Plate 16 2017



14742836 Plate 17 2017



14742836 Plate 18 2022



14742839 Plate 19 2017



14742839 Plate 20 2017



14742839 Plate 21 2017



14742840 Plate 22 2017



14742840 Plate 23 2022



14742840 Plate 24 2022



14838946 Plate 25 2017



14838946 Plate 26 2017



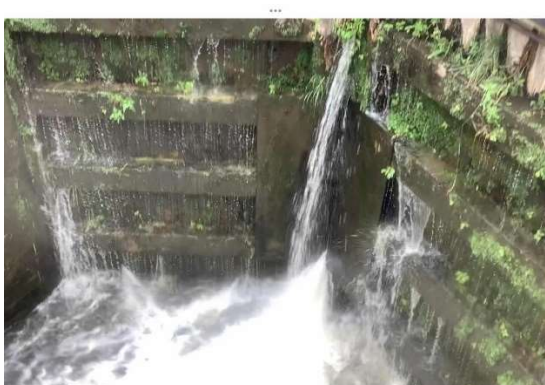
16142671 Plate 27 2021



16142671 Plate 28 2022



16142671 Plate 29 2022



16488730 Plate 30 2020



16637698 Plate 31 2021



16637698 Plate 32 2022



16768315 Plate 33 2022



16768315 Plate 34 2022



16768315 Plate 35 2022



16902086 Plate 36 2022



16902086 Plate 37 2022



16902086 Plate 38 2022



16905076 Plate 39 2022



16905076 Plate 40 2022



16905076 Plate 41 2022



16905081 Plate 42 2021



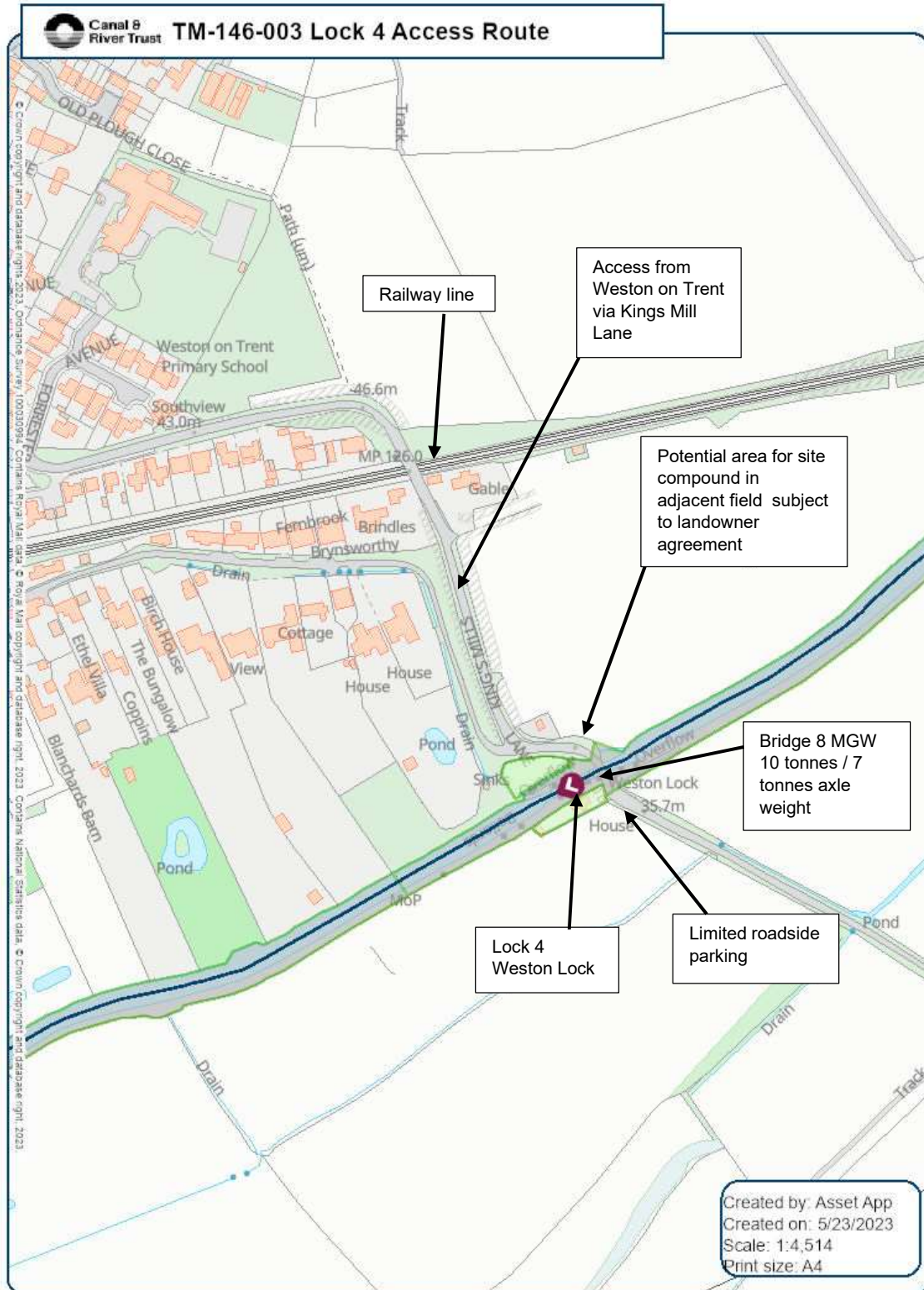
16905081 Plate 43 2021



16905081 Plate 44 2021



Access Route and Site Boundaries



Site address is: Lock 4, Weston Lock, Kings Mills Lane, Weston on Trent. DE72 2BT.
 There is limited roadside parking each side of the canal bridge. It is recommended that a site compound be established in the adjacent field near the lock if agreement can be reached with the landowner.

Use of Surrounding Land
Lock 4 Weston Lock is situated on the Trent & Mersey Canal on the outskirts of the village of Weston on Trent and has a lock cottage adjacent to the towpath side of the lock. This is a Grade II listed lock, and the towpath is a public right of way. Surrounding land is rural. The access road to the lock is narrow.
Existing Services
There are services to the adjacent lock cottage at the side of the lock chamber with an LV overhead electricity supply crossing the lock chamber. GIS map layer identifies fibre optic cables in the towpath. A service search should be undertaken prior to the works taking place
Existing Hazardous Materials
Nothing beyond what is typical for a rural/urban/industrial canal is expected. Standard Hygiene requirements expected.
Existing Structures and Ground Conditions.
It should be assumed for the purposes of the works that all canal towing paths are made ground. Bridge 8 TM-146-004 has a condition grade B – good. Capacity MGWV to BD21 is 7.5 tonnes. The bridge is constructed with a brick arch and parapets with an Asphalt deck surface.

Relevant Information	Links or N/A (Reason)
Existing Information - Inspections/Surveys/silt surveys/drawings/Photographs/H& S filef	2022 Principal Inspection report: TM-146-003-Lock 4-Weston Lock-PI Report-26-05-22.pdf 2022 Top mitre gate inspection report: TM-146-003-02 Trent and Mersey Canal Weston Lock 4 TEM B22 Inspection.pdf 2022 Bottom mitre gate inspection report: TM-146-003-03 Trent and Mersey Canal Weston Lock 4 Bottom Gate Revisit.pdf 2009 lock bywash inspection report: Weston Lock 4 TM-146-003 Bywash Cvt PI Report.doc 2014 bottom stop plank measurements: Bottom Stop Plank measurements(532538).docx 2017 visitor rick assessment: VRA - TM-146-003 Weston Lock 4.docx 2010 CDM 1.1 Weston Lock: CDM 1.1 Weston Lock 4.doc.
Lock gate stoppage specification check sheet & Gate requirement sheet	Not supplied
Will the works require notification to the HSE?	Works are not expected to: - last longer than 30 working days and have more than 20 workers working at the same time at any point on the project or - exceed 500 person day Therefore HSE notification is not envisaged
If 'YES' insert date F10 submitted to the HSE and the reference number:	NA

Key Constraints / External Approvals Required			
Stoppage Dates	TBC	Other Key Dates	B23 by 31.03.2024
Any Towpath and/or Navigation Closure/Restrictions required?	The navigation will require closure. The canal towpath is a public right of way. The towpath should be diverted past the lock if adequate segregation for the path using fencing cannot be achieved		
Statutory Designations	The lock is a grade II listed structure. In addition, the lock cottage and the bridge are also grade II listed structures. The canal corridor is a conservation area.		
Env App: Ref-No	2306-1612-5921-8925 Heritage – Kerry Walmsley Ecology – Penny Foster Environmental Scientist – Jordan Parker		
Use of CRT Premises	The site sits within CRT land ownership boundary.		
Use of navigation & towpath	The navigation will require closure. The towpath should be diverted past the lock if adequate segregation for the path using fencing cannot be achieved		

SECTION ONE Completed By:	
Name: Neil Bedford	Role: Senior Design Development Engineer.
Signed: <i>N Bedford</i>	Date: 25.05.2023
SECTION ONE Reviewed By:	
Name: Osi Ivowi	Role: Project Sponsor.
Signed: <i>[Signature]</i>	Date: 20 June 2023

SECTION TWO Design including Significant Residual Risks of Design & Construction Risk

Description / Scope of Works / Photos
1222570 B2X STPG - Bottom gates VERY STIFF <u>Existing structure</u> • These are large gates with heavy balance beams • The quoins are fixed at a batter. <u>Problem / Issue</u> • Gates reported as very stiff to operate. • Issue may be exacerbated if gates are not maintained sufficiently i.e. greased collars and correct collar adjustment. • Measurements for the new gates cannot be completed until the quoins have been altered, this may not leave enough time for the gates to be manufactured and fitted before the end of the stoppage period. <u>Proposed Solution</u> • New bottom gates are being fitted as detailed for notification 16142671. Correct fitting and maintenance of the new gates will reduce this issue. <u>Material Specification</u> • Refer to notification 16142671 <u>Method / Activities</u> Refer to drawings: • EM78-CRT-TM-146-003-DR-C-0002– General Layout • EM78-CRT-TM-146-003-DR-C-0004 – Lock gate replacements & repairs <u>Constraints / Other Considerations</u> • Changes to the batter of the quoins may make gates easier to operate, however the lock is grade II listed and LBC would be required to alter the quoins and masonry. • Extending the length of the balance beams will provide more leverage but when the gates are open they will obstruct the footbridge at the lock tail meaning users will need to cross over the adjacent road bridge instead. • Following further discussion with the asset engineer, it had been agreed to leave the quoins as they are due to the risk of delays in measurement and construction of the new gates.

Site Visit Photo's

Plate 45 – Existing bottom end lock gates & battered quoins



Plate 46 – Existing bottom end lock gate balance beams & footbridge



12334897 B2X STPG - Ladder extensions
12630326 B2X STPG - Alter O/S lock ladder
12630327 B2X STPG - Alter T/P lock ladder
14742836 B2X STPG - Loose bricks T/P ladder Recess
12334897 B2X STPG - Ladder extensions

Existing structure

- Height from lockside copings stones to normal water level with chamber empty is 3700mm
- Height from lockside copings stones to lock invert is 5100mm (obtained from SAP functional location).

Problem / Issue

- The existing ladders do not comply with the Mandatory Standard for Navigation Standards.
- Ladder recesses are not wide enough. Widening of the ladder recess will involve some cutting of the stone copings.
- Stringers do not connect to handrails.
- There are some loose bricks in the towpath side ladder recess which require re-laying.
- Ladders are too short.

Proposed Solution

- Ladders should be replaced in their entirety to comply with current Mandatory Standard for Navigation Standards.
- Replace both ladders with new ladders as per Trust standard details for new lock ladders & hoops drawing numbers STD-CRT-ZZ-ZZ-03-DR-C-06 & STD-CRT-ZZ-ZZ-03-DR-C-07.
- Construct ladder recess in chamber walls in accordance with Canal & River Trust Civil Engineering Specification version 1.1 Part U Brickwork, Blockwork and Masonry.

Material Specification

- Lock ladders as per Trust standard details for new lock ladders & hoops drawing numbers STD-CRT-ZZ-ZZ-03-DR-C-06 & STD-CRT-ZZ-ZZ-03-DR-C-07.
- Ladder tops to have equal hoops.
- Mortar to be NHL5 Lime mortar.
- Bricks to match existing in size and colour and must meet class F2 S2 quality.

Method / Activities

Refer to drawings:

- EM78-CRT-TM-146-003-DR-C-0002– General Layout
- EM78-CRT-TM-146-003-DR-C-0003 – Lock ladder & chamber repairs
- EM78-STD-CRT-ZZ-ZZ-03-DR-C-03 Refacing Brickwork
- EM78-STD-CRT-ZZ-ZZ-03-DR-C-06 New lock ladder and hoops -Drawing 1 of 2
- EM78-STD-CRT-ZZ-ZZ-03-DR-C-07 New lock ladder and hoops -Drawing 2 of 2

Constraints / Other Considerations

- Ladder recess to be widened by cutting only on one side of the ladder to create the required width.
- Lifting operations: ladders to be supplied in two sections.
- Lock is listed and sits within a conservation area.
- Access to lock chamber using access scaffold

Site Visit Photo's

Plate 47 – existing towpath lock ladder



Plate 48 – existing towpath lock ladder top



Plate 49 – existing offside lock ladder



13932471 B2X STPG - Leakage on top gate cills

Existing structure

- Timber clap cill with concrete forbay behind cill.

Problem / Issue

- Extensive leakage at the cills was observed, in particular near to the quoins.

Proposed Solution

- Replace the cills at the same time as the lock gates are replaced.
- Seal any leakage through quoins / masonry with cementitious grout such as "Fosroc – Conbextra HF" (or similar approved).
- Seal gap between new cills and existing concrete forbay with concrete.

Material Specification

- Oak cills to BS EN 338 grade class D40
- Concrete C32/40 class S2 to BS EN 206-1 for fixing cills.
- Fosroc – Conbextra HF grout to BS EN 1504-3 Class R4

Method / Activities

Refer to drawings:

- EM78-CRT-TM-146-003-DR-C-0002– General Layout
- EM78-CRT-TM-146-003-DR-C-0004 – Lock gate replacements & repairs

Constraints / Other Considerations

- Top chamber of lock will require dewatering.
- Lifting operations of lock gates and materials
- Services – overhead
- Lock is listed and sits within a conservation area.

Site Visit Photo's

Plate 50 – leakage at cills



14253728 B2X STPG - Handrails non-compliant.

- Following further discussion with the asset engineer, it had been agreed to investigate obtaining a dispensation to remove the requirement to comply with the Mandatory Standard.
- Use of such a walkway is likely to be low as customers can cross the lock at the footbridge at the downstream end.
- When the new gates are installed, handrails will be fitted to the upstream face of the lock gates as per the existing arrangement.

14742839 B2X STPG - Pointing works T/P chamber wall

Existing structure

- Lock chamber wall constructed in brickwork with sandstone copings on top of the wall.
- Height from lockside copings stones to lock invert is 5100mm (obtained from SAP functional location).
- At the time of the site visit, it was difficult to inspect the chamber wall due to algae growth on the brickwork

Problem / Issue

- Localised areas of mortar loss noted along full length of the towpath side chamber wall. Loss appears worst in the upper 1m of brickwork immediately beneath the lock side copings.
- There may be areas of brickwork which require replacement estimated at 3m².
- Approximately 10m² of the TP chamber wall will require repointing including the bed joint beneath the copings.

Proposed Solution

- Pressure wash the lock chambers wall to remove any loose mortar and vegetation.
- Contact Asset Engineer immediately if after cleaning, scope of repair has changed.
- Prepare brickwork for repointing.
- Repoint the brickwork. Replace any spalled or damaged bricks
- Where brickwork requires replacement, new brickwork to be constructed in accordance with drawing STD-CRT-ZZ-ZZ-03-DR-C-03 Refacing Brickwork.
- All works to be completed in accordance with Canal & River Trust Civil Engineering Specification version 1.1 Part U Brickwork, Blockwork and Masonry.

Material Specification

- Mortar to be NHL5 Lime mortar.
- Bricks to match existing in size and colour and must meet class F2 S2 quality.
- All Materials to meet Canal & River Trust Civil Engineering Specification version 1.1

Method / Activities

Refer to drawings:

- EM78-CRT-TM-146-003-DR-C-0002– General Layout
- EM78-CRT-TM-146-003-DR-C-0003 – Lock ladder & chamber repairs
- STD-CRT-ZZ-ZZ-03-DR-C-03 Refacing Brickwork

Constraints / Other Considerations

- Lock chamber will require dewatering.
- Access to lock chamber (scaffolding).
- Services – overhead
- Lock is listed and sits within a conservation area.

Site Visit Photo's

Plate 51 – towpath chamber wall – lock ladder to top gate



Plate 52 – towpath chamber wall – lock ladder to bottom gates



14742840 B2X STPG - Pointing works O/S chamber wall

Existing structure

- Lock chamber wall constructed in brickwork with sandstone copings on top of the wall.
- Height from lockside copings stones to lock invert is 5100mm (obtained from SAP functional location).
- At the time of the site visit, it was difficult to inspect the chamber wall due to algae growth on the brickwork

Problem / Issue

- Large areas of mortar loss along the entire length of the offside chamber wall. Of note it was felt that mortar loss was mainly bad within the bottom gate recess and the upper 1m of wall immediately beneath the lock top coping
- There are areas of brickwork which require replacement estimated at 6m².
- Approximately 10m² of the chamber wall will require repointing including the bed joint beneath the copings.

Proposed Solution

- Pressure wash the lock chambers wall to remove any loose mortar and vegetation.
- Contact Asset Engineer immediately if after cleaning, scope of repair has changed.
- Prepare brickwork for repointing.
- Repoint the brickwork. Replace any spalled or damaged bricks
- Where brickwork requires replacement, new brickwork to be constructed in accordance with drawing STD-CRT-ZZ-ZZ-03-DR-C-03 Refacing Brickwork.
- All works to be completed in accordance with Canal & River Trust Civil Engineering Specification version 1.1 Part U Brickwork, Blockwork and Masonry.

Material Specification

- Mortar to be NHL5 Lime mortar.
- Bricks to match existing in size and colour and must meet class F2 S2 quality.
- All Materials to meet Canal & River Trust Civil Engineering Specification version 1.1

Method / Activities

Refer to drawings:

- EM78-CRT-TM-146-003-DR-C-0002– General Layout
- EM78-CRT-TM-146-003-DR-C-0003 – Lock ladder & chamber repairs
- STD-CRT-ZZ-ZZ-03-DR-C-03 Refacing Brickwork

Constraints / Other Considerations

- Lock chamber will require dewatering.
- Access to lock chamber (scaffolding).
- Services – overhead
- Lock is listed and sits within a conservation area.

Site Visit Photo's

Plate 53 – offside chamber wall – lock ladder to top gate



Plate 54 – offside chamber wall – lock ladder to bottom gates



14838946 B2X STPG - Bollards requires moving

- There are three cast iron bollards fixed to the top of copings stones along each chamber wall
- If bollards are moved away from the ladder, this will create another problem in that the spacings will then be incorrect.
- During the site visit, it was not obvious how repositioning of the bollards could be improved.
- Following further discussion with the asset engineer, it had been agreed to investigate obtaining a dispensation to remove the requirement to comply with the Mandatory Standard.

16142671 B2X STPG - Replace bottom gates

16488730 B2X STPG - Bottom O/S gate swings open

16637698 B2X STPG - Remove debris from lock floor

Existing structure

- Gates manufactured in 2005
- Gates constructed primarily in Oak
- Gates are of framed construction with oak planking.
- Steel quoins
- Cills assumed to be timber (Oak)
- Height from lockside copings stones to lock invert is 5100mm (obtained from SAP functional location)

Problem / Issue

- Gates inspected and assessed as grade 4 – gates require replacement within 5 years.
- Leakage from gates losing the “fit” position due to wear / alignment of gate cups.
- Boil at cill and leakage through mitres
- Offside gate reported as swinging open.
- Estimated 30m³ of debris in the bottom of the lock chamber

Proposed Solution

- Replace the lock gates and balance beams with new gates to the Trent & Mersy canal style and measurements for this location.
- New gates to include all gate furniture & fixings (ironwork, sluice gates, paddle gear).
- Replace timber cills.
- Replace gate cups.
- Seal any leakage through quoins / masonry with cementitious grout such as “Fosroc – Conbextra HF” (or similar approved)
- Remove debris from invert of lock chamber.

Material Specification

- Lock gates and balance beams to the Trust specification for this location of the canal and lock as measured, manufactured and supplied by the Trust workshop.
- Oak cills to BS EN 338 grade class D40
- Cast iron gate cups as supplied by the Trust workshop.
- Concrete C32/40 class S2 to BS EN 206-1 for fixing cills.
- Fosroc – Conbextra HF grout to BS EN 1504-3 Class R4

Method / Activities

- Refer to drawings:
- EM78-CRT-TM-146-003-DR-C-0002– General Layout
- EM78-CRT-TM-146-003-DR-C-0004 – Lock gate replacements & repairs

Constraints / Other Considerations

- Lock chamber will require dewatering.
- Lifting operations of lock gates and materials
- Services – overhead and underground
- Lock is listed and sits within a conservation area.
- Silt / debris in lock chamber may be contaminated – testing to be completed during the planning stage of the works.

Site Visit Photo's

Plate 55 –Bottom end lock gates downstream face



Plate 56 – Bottom end lock gates upstream face



16768315 B2X STPG - D/S O/S s/plank groove b/work

Existing structure

- Plank groove consists of a 240mm wide x 230mm deep steel channel built into the masonry of the approach wall.

Problem / Issue

- There is approximately 0.75m² of brickwork to be repaired around the top of the stop plank groove on the offside approach wall at the downstream end of the lock.
- The brickwork is loose / spalled.

Proposed Solution

- Remove any loose or damaged bricks.
- Replace brickwork with bricks to match the originals in size and colour.

Material Specification

- Mortar to be NHL5 Lime mortar.
- Bricks to match existing in size and colour and must meet class F2 S2 quality.
- All Materials to meet Canal & River Trust Civil Engineering Specification version 1.1

Method / Activities

Refer to drawings:

- EM78-CRT-TM-146-003-DR-C-0002– General Layout
- EM78-CRT-TM-146-003-DR-C-0003 – Lock ladder & chamber repairs
- STD-CRT-ZZ-ZZ-03-DR-C-03 - Refacing Brickwork

Constraints / Other Considerations

- Works to be completed either prior to stop plank installation or after stop planks have been removed
- Access to approach wall – scaffold or floating plant.
- Lock is listed and sits within a conservation area.

Site Visit Photo's

Plate 57 – Brickwork to top of stop plank groove.



16902086 B2X STPG – Replace top gates

Existing structure

- Gates manufactured in 2003
- Gates and balance beams constructed primarily in Oak
- Gates are of framed construction with oak planking.
- Steel quoins
- Cills assumed to be timber (Oak)

Problem / Issue

- Gates inspected and assessed as grade 3 – gates require replacement within 10 years.
- Leakage from gates losing the “fit” position due to wear / alignment of gate cups.

Proposed Solution

- Replace the lock gates and balance beams with new gates to the Trent & Mersey canal style and measurements for this location.
- New gates to include all gate furniture & fixings (ironwork, sluice gates, paddle gear).
- Replace timber cills.
- Replace gate cups.
- Seal any leakage through quoins / masonry with cementitious grout such as “Fosroc – Conbextra HF” (or similar approved)

Material Specification

- Lock gates and balance beams to the Trust specification for this location of the canal and lock as measured, manufactured and supplied by the Trust workshop.
- Oak cills to BS EN 338 grade class D40
- Cast iron gate cups as supplied by the Trust workshop.
- Concrete C32/40 class S2 to BS EN 206-1 for fixing cills.
- Fosroc – Conbextra HF grout to BS EN 1504-3 Class R4

Method / Activities

Refer to drawings:

- EM78-CRT-TM-146-003-DR-C-0002– General Layout
- EM78-CRT-TM-146-003-DR-C-0004 – Lock gate replacements & repairs

Constraints / Other Considerations

- Top chamber will require dewatering.
- Lifting operations of lock gates and materials
- Services – overhead and underground
- Lock is listed and sits within a conservation area.

Site Visit Photo's

Plate 58 – Top end lock gates



16905076 B2X STPG – Rep Cill Face / improve cill face (snag)

Existing structure

- The face of the wall which forms the cill is constructed in brickwork with 10 number steel or iron rails fixed horizontally to act as fenders

Problem / Issue

- The cill fender rails are fitted horizontally across the face of the cill wall and can pose a snagging risk to craft where there are voids between the rails.
- The voids are due to missing / failed timber fenders at the face of the wall.
- As part of the investigation into a recent boat sinking at Stenson Lock, the face of the cill (ribbed metal at present) was raised by the Chief Operating Officer as a potential contributory factor. At present the investigation is ongoing for that case.

Proposed Solution

- A suitable solution would be to fit timber fenders to the existing timber / masonry face of the wall behind the fender rails to cover the voids
- Timber fenders to consist of oak planks 300mm x 50mm x 1800mm long mounted vertically between top and bottom horizontal fender rails.
- The original fender rails (D-section) can then be fixed to the timber.

Material Specification

- Oak planks to BS EN 338 grade class D40.
- M20 200mm coach screws for fixing timbers & original fender rails - A4 316 Stainless Steel.
- If timber planks are fixed to masonry instead of timber, use M20 stainless threaded bat fixed with Hilti HY-270 resin or similar approved.

Method / Activities

Refer to drawings:

- EM78-CRT-TM-146-003-DR-C-0002– General Layout
- EM78-CRT-TM-146-003-DR-C-0005 – Repairs to cill face

Constraints / Other Considerations

- Lock chamber will require dewatering.
- Lifting operations of lock gates and materials
- Services – overhead and underground
- Lock is listed and sits within a conservation area.

Site Visit Photo's

Plate 59 – Cill / chamber wall with horizontal fender rails

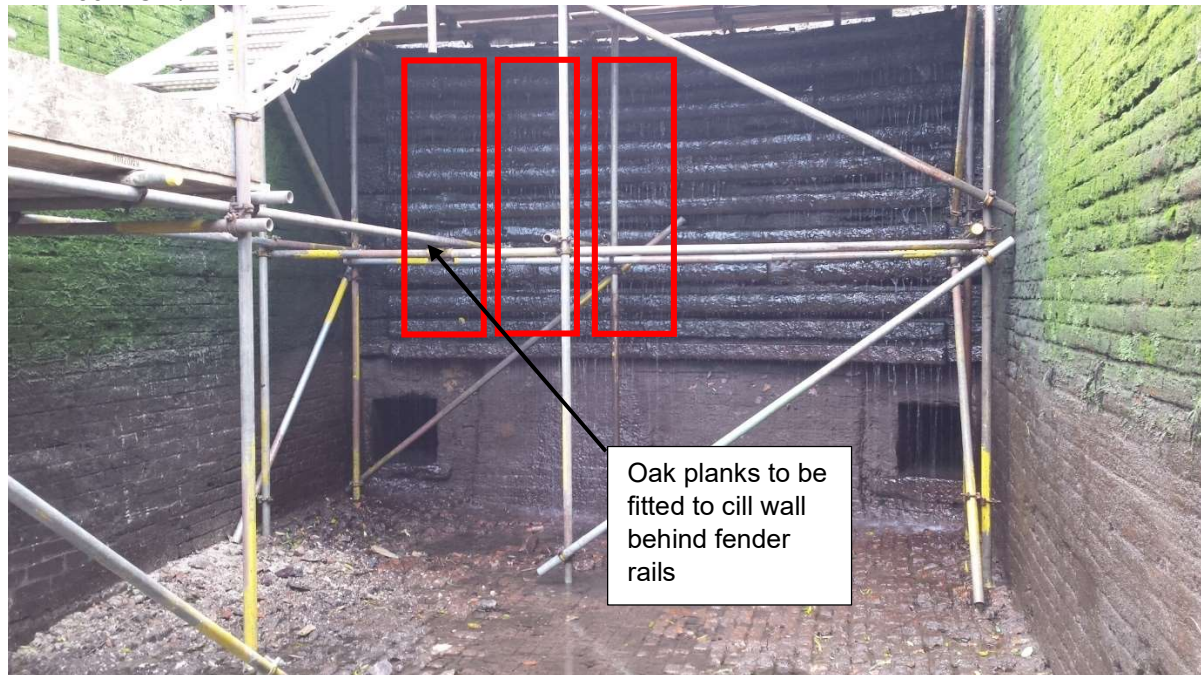


Plate 60 – example of similar fendering installed at Stenson Lock



16905081 B2X STPG – Design & fit better deflectors.

Existing structure

- The top lock gates have sluices fitted within each gate leaf.
- The sluice apertures in each gate leaf have a deflector fitted to reduce the risk of water flooding into a boat within the lock chamber
- The current deflectors are the 'cat-flap' design.

Problem / Issue

- Existing deflectors allow water to cascade over the cill.
- Alternative solution using louvre baffle is prone to blockage.

Proposed Solution

- Fit a frame with curved sides into the sluice gate aperture to divert water sideways to the chamber walls.
- The design is used on current Grand Union top end lock gates with gate sluices installed.
- CRT workshop to supply a set of 'cat-flap' deflectors for fitting at a later date if required.

Material Specification

- Supplied already built into the new lock gates.

Method / Activities

- None - supplied already built into the new lock gates.

Constraints / Other Considerations

- Top chamber will require dewatering.
- Lock is listed and sits within a conservation area

Site Visit Photo's

Plate 60 – example of similar type of sluice aperture with curved sides



Drawings

EM78-CRT-TM-146-003-DR-C-0002– General Layout

EM78-CRT-TM-146-003-DR-C-0003 – Lock ladder & chamber repairs

EM78-CRT-TM-146-003-DR-C-0004 – Lock gate replacements & repairs

EM78-CRT-TM-146-003-DR-C-0005 – Repairs to cill face

EM78-STD-CRT-ZZ-ZZ-03-DR-C-03 Refacing Brickwork

EM78-STD-CRT-ZZ-ZZ-03-DR-C-06 New lock ladder and hoops -Drawing 1 of 2

EM78-STD-CRT-ZZ-ZZ-03-DR-C-07 New lock ladder and hoops -Drawing 2 of 2

Temporary Works

Temporary Works Co-ordinator to assess site for any additional Temporary Works requirements and submit a request for temporary works designs at the works planning stage.

Please include the following as part of this:

Stop Plank design
Access scaffolding
Lifting operations

Utilities

The Contractor is advised to make their own enquiries and satisfy themselves of the exact location of any services within and adjacent to the site, including accesses. The Contractor shall fully comply with any requirements of the owners of the services that may be affected by the works.

During the site visit it was noted that there are services to the adjacent lock cottage at the side of the lock chamber with an LV overhead electricity supply crossing the lock chamber.

GIS map layer identifies fibre optic cables in the towpath.
A service search should be undertaken prior to the works taking place

Significant Residual Risks of Design & Construction Risk

Ref. A.# for Construction and commissioning
 Ref. B.# for Repair/ maintenance/ cleaning
 Ref. C.# for Disassembly / dismantling/ demolition



Ref	Activity and hazard	Design input to eliminate/reduce hazard	Significant Residual Risk
A.1	Brickwork & fender repairs within lock chamber - (<i>injury or death of persons</i>) resulting from fall from height	The repairs to the chamber walls are required.	Hazard Identification No. 1 on drgs. Contractor to establish access system i.e scaffolding to provide safe working area
A.2	Contact with overhead services (<i>injury or death of persons</i>) during lifting operations or with scaffold tubes	Services are visible above the lock and are known to be present in adjacent lock cottage. Refer to HSE guidance note "avoiding danger from overhead power lines".	Hazard Identification No. 2 on drgs. Contractor is to develop safe method of works for working near overhead power and telephone lines
A.3	Site Access to the site – (<i>injury to persons</i>) resulting from users of adjacent lock cottage	Lock cottage can remain accessible by use of secure site fencing / hoarding	Hazard Identification No. 3 on drgs Safe means of access is to be established by Contractor.
A.4	Lifting operations - (<i>injury or death of persons</i>) resulting from failure of equipment.	Lifting operations cannot be avoided.	Hazard Identification No. 4 on drgs Lifting operations to be planned and managed by Appointed Person with appropriate training, competence and experience.
A.5	Site Access to the site – (<i>injury to persons</i>) resulting from failure of road bridge with 7tonne axle / 10 tonne m.g.w.	Access will be required across the bridge	Hazard Identification No. 5 on drgs Do not exceed weight limit of bridge. Lift lock gates and materials over the lock from the offside.
A.6	Inundation from failure of dams (<i>injury or death of persons</i>) from contact with canal boats.	Dams – stop planks - are required to dewater the canal to undertake the works	Hazard Identification No. 6 on drgs Stop planks to be designed to Eurocode 5 to accommodate the loads imposed upon them. Dams to be inspected daily by competent persons.

In addition to the above project specific risks, the Contractor or Principal Contractor must ensure that they have developed and maintain throughout the construction period effective control measures to reduce and control the level of health and safety risk.

SECTION TWO Completed By:

Name: Neil Bedford

Role: Senior Engineer. Design Development

Signed: *N Bedford*

Date: 06/06/2023

SECTION TWO Reviewed By:

Name: Osi Ivowi

Role: Principal Designer or by the Client
Representative (if no Principal Designer is appointed)

Signed:



Date: 20 June 2023

SECTION THREE

Construction Phase Plan Review

General Information
Health and Safety aims of the project are defined?
Neighbourhood Risks identified?
<i>Precautions required to avoid danger to boaters, the public and those working near the site. Include restrictions e.g., neighbouring buildings, utility services, vehicular and pedestrian traffic flows, work activities of the client</i>
Use of CRT Premises
<i>Are specific precautions identified to be taken to ensure the safety of those requiring access to premises that will remain in use during construction work</i>

Management
Are Site Rules identified?
<i>PPE, accident reporting, fire procedures, site induction etc.</i>
Are arrangements for regular site meetings / toolbox talks specified?
Are Site Induction arrangements specified?
Site Organisation + Temporary Works
Have Site Access / Egress arrangements been specified?
<i>Detailed arrangements (e.g., for deliveries and emergencies) are incorporated into the plan to ensure safe means of access, egress</i>
Loading and Unloading arrangements have been specified?
<i>Have areas been designated and lifting equipment (if any) identified. Including protection from falling materials.</i>
Have layout and storage areas been identified?
<i>Detailed arrangements have been provided, including reference to flammable liquids and LPG.</i>

Are electrical distribution or Shared Mechanical Plant arrangements defined?

Including details of the means of supply and distribution, requirements for low voltage tools and local generators. As well as details on the provision and use of mechanical plant used by a number of contractors.

Are works involving particular risks identified?

Arrangements for pre-use and routine inspections (who, when, how recorded). Permits to work, statutory inspections etc. including work at height, Scaffold, Excavations/Trenching, Confined Space, Drowning, Diving, cofferdams, overhead services and hazardous substances.

Site Security arrangements detailed?

Detailed arrangements for securing the site against unauthorised entry, and for reception of visitors, and for protection of members of the public.

Are Welfare facilities identified?

Detailed arrangements to specify facilities available / provided for washing, toilets, drying of clothing, shelter from adverse weather and mess-rooms.

Emergency Procedures detailed?

First aid provision, nearest hospital, fire procedures etc.

Environment / Heritage arrangements detailed?

Specific requirements detailed in the Environmental Appraisal

SECTION THREE Reviewed By:

Name:

Role: Principal Designer or Client Representative
(if no Principal Designer is appointed)

Signed:

Date:

SECTION FOUR Site Release

Upon receipt of:

- completed Sections One and Two of this document,
- completed Section Three (Construction Phase Plan Checklist), and
- completed Design Risk Register,

the Trust's Client Representative will review the documents to confirm that suitable arrangements are in place for the management of health and safety during the delivery of the project and compliance with the 'Client' duties set out in the Construction (Design and Management) Regulations 2015.

No construction work must take place at any Trusts location, without the Contractor / Principal Contractor being in possession of a fully completed the Site Release.

Declarations by the Trusts Project Manager/Client Representative	Checked
An acceptable Construction Phase Plan has been prepared for the works	
Site Rules have been prepared and communicated to those working	
A secure fenced boundary has been established around the site	
Arrangements have been made for reception of visitors	
Copies of the HSE Notification Form are posted at entry points	
The local CRT Manager has agreed to release the premises	
Welfare facilities have been provided	

I, ... acting on behalf of Canal & River Trust Client and having regard to the arrangements made at this site for Health and Safety in accordance with the requirements of the Construction (Design and Management) Regulations, do hereby release the specified premises to the control of..... as the Principal Contractor for the construction works.

Signed (on behalf of Canal & River Trust)

Date

SECTION FIVE Design Changes

To be completed by the Principal Designer (or Client Representative if no Principal Designer appointed) in conjunction with all Designers (including Temporary Works) and the Principal Contractor / Contractor.

Where all design is to be undertaken by the Contractor / Principal Contractor, they must be involved in the completion and update of Section Five.

Section 8 – Changes		
Are there any significant or unusual residual health and safety risks introduced by the change to the design that the Contractor / Principal Contractor, Maintenance Staff or Building Users must manage.		
Item Number	Description	Designer sign off

SECTION SIX Project Completion and Hand Over

The Client Representative responsible for the project will ensure that this section is completed following receipt of information from the Principal Designer and Principal Contractor.

This document will be ultimately signed off by the Project Sponsor confirming that Sections One to Six have been completed.

The Section acts as the Health and Safety File and should include the following information:

- a) Any residual hazards which remain and how they have been dealt with (for example surveys or other information concerning asbestos; contaminated land; water bearing strata; buried services etc).
- b) Key structural principles (for example, bracing, sources of substantial stored energy including pre- or post-tensioned members) and safe working loads for floors and roofs, particularly where these may preclude placing scaffolding or heavy machinery there.
- c) Hazardous materials used (for example lead paint; pesticides; special coatings which should not be burnt off etc).
- d) Information regarding the removal or dismantling of installed plant and equipment (for example any special arrangements for lifting, order or other special instructions for dismantling etc).
- e) Health and safety information about equipment provided for cleaning or maintaining the structure.
- f) The nature, location and markings of significant services, including underground cables; gas supply equipment; fire-fighting services etc.
- g) Information and as-built drawings of the structure, its plant and equipment (for example, the means of safe access to and from service voids, fire doors and compartmentalisation etc).
- h) Operating and Maintenance manuals relating to the equipment installed or replaced.
- i) Any as built drawings or plans that reflect the works completed.

Works Delivery			
Delivery Dates		Contractor Supervisor	
Start Date		Name	
End Date		Date	
Photographs / Plans of completed works			
Photo 1		Photo 2	

As Built Plans/Drawings
O&M's issued and checked
Warranty Information
Non-standard materials record
Other Information

Upon project completion all six sections of this form to be filed by the Client Representative responsible for the project.

Health and Safety File Completed By:	
Name:	Role: Principal Designer/Principal Contractor
Signed:	Date:
Review of Health and Safety File Completed By:	
Name:	Role: Client Representative
Signed:	Date:
Final Sign Off:	
Project Handover Completed By:	
Name:	Role: Project Sponsor
Signed:	Date: