

Borough of Poole

POOLE PARK SLUICE BRIDGE

Risk Assessment Method Statement



70044480-001 MARCH 2018

CONFIDENTIAL

Borough of **Poole**

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Risk Assessment Method Statement

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1 INTRODUCTION

As part of the £2.7 million Poole Park Life project, the existing footbridge over the sluice culvert channel within Poole Park will be replaced with a new structure. Borough of Poole (BoP) have commissioned WSP to prepare a Risk Assessment and Method Statement (RAMS) for these works.

The footbridge is located between Poole Park boating lake and the railway main line which runs from London to Weymouth. It spans the sluice channel enabling pedestrians and cyclists to cross. The sluice channel is used to regularly flush the boating lake to maintain water quality and salinity. The flushing is controlled by a sluice gate. This is located in a small compound between the footbridge and the adjacent railway bridge. This sluice gate is owned and operated by BoP. Access is via a lockable gate on the west approach to the footbridge. The location of the structure is circled in red in Figure 1.



Figure 1 – Location Plan

A drawing of the existing structure and a summary of the proposed works are shown on drawing 70044480-SBR-SK-CB-0001 in Appendix A.

The existing Poole Park Sluice Channel footbridge comprises prestressed concrete Bison floor beams with 75mm thick insitu topping slab. Extensive spalling has occurred with some beams missing the bottom faces and associated prestressing which forms the main bending resistance of the section. The footbridge is in poor condition and can no longer safely carry pedestrians and cyclists. There is a risk that the existing concrete bridge may collapse into the sluice channel blocking the sluice gate which drains Poole Park boating lake.

A temporary scaffolding bridge was constructed above the existing concrete bridge in 2012. However, the scaffolding certification is out of date and the timber decking is starting to rot. Tarmac surfacing was laid in 2012 to tie in with the path levels at either end of the temporary scaffolding bridge ramps.



The existing prestressed concrete deck is supported on insitu mass concrete cill beams on top of the original brick abutments. The existing cill beams are in poor condition due to poor quality concrete with a weathering honeycombed surface and some vertical cracks. The abutment brick work is generally in good condition. All exposed brick surfaces are sound with little or no spalling or mortar loss. The pointing is in good condition except locally around ends of abutments and below the upstream parapet piers where there is significant mortar loss weathering/scour. The majority of the brick abutment is below water level and is in very good condition with little or no spalling or mortar loss evident.

At the upstream end of the bridge are two listed brick pilasters. These are in poor condition with extensive loss of pointing, missing brickwork and signs of movement caused by remains of the original steel deck corroding and root infestation from vegetation growing in the open mortar joints.

The upstream lake approach walls are in poor condition. These are a mixture of mass concrete and stone. The poor quality concrete has a weathered, fractured and honeycombed surface. The stonework sections are fractured at weathered joints through settlement and displacement. Below the water level there are extensive and deep washout/scour voids under the walls and behind the brick piers, particularly on the east abutment side. This is also having a detrimental effect on the stability of the brick piers.

Borough of Poole propose to remove the temporary scaffolding bridge, demolish the existing concrete deck and replace it with a new FRP bridge deck. The existing upstream brick pilasters will be taken down and reconstructed. The existing abutment concrete cill beams are in poor condition and will be replaced. The abutment and upstream wing wall brickwork will be repaired and repointed. New parapets will be installed on both sides of the bridge and on the upstream approaches. The existing gate to the sluice gate compound is in poor condition and will be replaced. The path be resurfaced to marry the levels between the new bridge and the existing path.

The purpose of this document is to provide a detailed description and risk assessment for all works associated with the demolition and reconstruction of the footbridge. The method statement in section 2 describes how the work will be undertaken. A risk assessment for these works is included in Appendix B. The method statement identifies:

- Potential health, safety and environmental hazards and risks.
- A safe and planned method of work
- How the work is to be expedited in order to remove or minimise hazards risks and difficulties.

This RAMS is not the final solution – the design has yet to be carried out and a contractor appointed – and hence may be subject to change.

This RAMS does not include the method of taking down and reconstructing the upstream pilasters. As these are listed structures, BoP have engaged a specialist conservator to prepare a RAMS for these items.

Any lifting activities, including the installation of the FRP deck units, will require a lifting plan prepared by a competent person. The contractor will produce the lifting plans.

The Poole Park Sluice Channel footbridge is close to the London to Weymouth main railway line which is owned by Network Rail. All proposed works have been carefully considered to reduce any risks to the railway in particular. This RAMS will be provided to Network Rail for information and comment.

2 METHOD STATEMENT

The activities for each stage of the works are described below. These have been separated into five main sections with a list of activities for each main section

2.1 ESTABLISH SITE

Secure site and set up facilities

The site will be closed to the public by closing the lake path with HERAS fencing between Park Lake Road and Whitecliff Road to the west and east respectively.

Adjacent to the Park Lake Road, concrete bollards will need to be demolished and a heavy boulder moved to enable plant and delivery vehicle access to the site from the west approach. Outdoor gym equipment on the west approach will also need to be moved to enable wide vehicles to pass.

Adjacent to Whitecliff Road there is a timber road gate which could be used by vehicles and plant to access the site.

Any vegetation growth which may obstruct the works will be cleared. On the east approach, low hanging branches from two or three trees would need to be cut back. On the west approach, many more low hanging braches would need to be trimmed. This includes the branches of a small tree on the west side of the channel by the existing bridge which will be removed for the excavator lifting slew. This work will be carried out on the Poole Park side of the boundary fence and will be undertaken by a trained and competent arborist. No work will be done within the rail boundary.

Site welfare and office facilities will be set up either on the east or west approach to the bridge. Access between the east and west abutments will be provided by suitably wide temporary scaffolding on the upstream side of the bridge. This will be at a lower level than the top of the approach upstream wing walls. The level difference will be as low as possible and temporary steps used if possible to reduce the number and use of ladders.

Site access will be from Park Lake Road although access will be possible from Whitecliff Road if required. There is insufficient space for large vehicles to turn around once they arrive at the sluice channel. Large vehicles will reverse in from the main road along the existing pedestrian footpath and drive forwards to return to the main road. Low speed limit signs (5 to 10mph) will be provided and banksmen will be required for any reversing plant or vehicles. Most light vehicles will be excluded from the site, however light vehicles that need to gain close access to the site will be driven in, have space to turn around and drive out.

Drain the boating lake

The lake will be drained to expose the brick abutments and upstream wing walls for repairs. This will lower the water level at the sluice channel to the top of the sluice gate sill -1.4m Above Ordnance Datum (AOD). The sluice channel will still retain approximately 0.7-0.8m depth of water due to the concrete plinth which supports the base of the sluice gate.

2.2 **DEMOLITION**

The proposed demolition sequence is as follows:

Remove existing scaffold footbridge by hand

The existing temporary scaffold bridge will be taken down by hand, components loaded onto a 7.5 tonne flatbed truck and removed from site.

Remove tarmac surfacing for temporary scaffolding bridge

The existing tarmac surfacing on the approaches to the temporary scaffolding bridge will be broken up with hand breakers. An excavator will scoop the debris onto a 7.5 tonne flatbed truck for disposal off site.

The excavator will slew over the boating lake not the railway line. A slew restrictor will be fitted to the excavator to prevent the excavator slewing over the railway.

An exclusion zone around the excavator will be set up. A signaller will maintain exclusion zone and communicate with the operator. No one can enter the exclusion zone until operator has lowered the excavator arm onto the ground and shut down the machine.



Establish temporary crash deck and scaffolding

The existing Bison precast floor beams are in poor condition and judged to be unsuitable for cutting and lifting. Therefore, a temporary crash deck will be installed beneath the concrete deck and the structure demolished in sections by a breaker fitted to an excavator.

The demolition work will be carried out after the lake has been drained. A crash deck with membranes will be installed on temporary scaffolding by hand. Divers will be required to establish the scaffolding within the sluice channel and boating lake. The scaffolding will be provided under the deck soffit for the crash deck, for the full length of the abutment and upstream wing wall repairs and at the pilasters to enable these to be dismantled and rebuilt.

A silt screen will be installed across each end of the channel to trap any debris which falls into the water within the sluice channel.

Take down existing brick pilasters

Existing brick pilasters will be taken down by hand. Bricks and capstones will be removed and stored on either side of the bridge within the site boundary for reconstruction once the new bridge is installed. These materials will be stored in a location which does not block access to the site during the works, particularly on the east approach where there is less available space for storage.

Access to the pilasters will be provided by temporary scaffolding.

An excavator may be required to lift heavy coping stones. If so, a specific lifting plan prepared by a competent person would be required. No coping stone will be lifted higher than 1.8m or that required to place it on a vehicle if required.

Refer to the conservator's risk assessment method statement for demolition and reconstruction of brick pilasters.

Remove existing parapets, fences and gate

There is an existing steel bridge parapet on the upstream side. It comprises 50mm diameter tubular rails and posts with 50mm square mesh infill panels. The parapet will be removed by cutting off the posts and rails where these are connected to the deck and / or brick pilasters.

On the downstream side, there is an existing chain-link fence with concrete posts. There is also an existing steel gate to the sluice gate compound to the west of the bridge which is severely corroded. These will be taken down by hand. The concrete posts may be cut into sections to facilitate lifting and handling.

On the upstream side, there are existing fences adjacent to the approach walls. These comprise steel mesh supported on timber posts. The mesh will be cut away from the posts. The timber posts will be removed by hand and may be cut into sections to facilitate lifting and handling.

Break and remove prestressed concrete deck

The existing reinforced concrete floor beams will be broken up with an excavator fitted with a breaker. The debris will fall onto the crash deck supported on scaffolding below. An excavator will scoop the debris onto a 7.5 tonne flatbed truck for disposal off site.

The excavator will slew over the boating lake not the railway line. A slew restrictor will be fitted to the excavator to prevent the excavator slewing over the railway.

An exclusion zone around the excavator will be set up. A signaller will maintain exclusion zone and communicate with the operator. No one can enter the exclusion zone until operator has lowered the excavator arm onto the ground and shut down the machine.

No material will be lifted higher than 1.8m or that required to place it on the vehicle.

Break out existing cill beam

Existing concrete cill beams will be cut and broken out with small beakers by hand. An excavator will scoop debris into a 7.5 tonne flatbed truck for disposal off site.

Remove existing cut-off steel girders

Corroding cut-off steel girders from the original bridge deck are causing the brickwork abutments to move which is destabilising the existing brick pilasters. These steel beams will be removed to prevent the problem reoccurring.



2.3 ABUTMENT WORKS

Abutment and wing wall brickwork repairs

Working from scaffolding, repair abutment and upstream and downstream wing wall brickwork where required. Fill the hole where cut-off steel beams removed with engineering brickwork and mortar to match existing. Replace any missing bricks with engineering brickwork and mortar to match existing. Repoint any brickwork where required to match existing. All brickwork repairs and repointing to be done by hand.

Cast new abutment cill beams

Cast new reinforced concrete cill beams to support new FRP bridge deck. Exact dimensions of existing cill beam to be determined with information from BoP site investigation and the FRP deck design drawings.

2.4 NEW DECK

Install new FRP deck units

Deliver two new FRP 1.9 tonne deck units to site on 7.5 tonne flatbed truck. An excavator will be setup on each abutment. Two excavators will be used to lift each deck unit into place. This will allow the height of each end of the unit to be adjusted to suit during the lift. The excavators will slew over the boating lake not the railway line. A slew restrictor will be fitted to the excavators to prevent the excavator slewing over the railway.

One excavator will unload the FRP deck unit from the delivery vehicle. It will be positioned close to the sluice channel and then reslung to be lifted by both excavators for accurate positioning.

No material will be lifted higher than 1.8m or that required to remove it from the vehicle.

A lifting plan will be provided by the appointed contractor and all lifting LOLER certification checked for equipment before the lift.

An exclusion zone around the excavator will be set up. A signaller will maintain exclusion zone and communicate with the operator. No one can enter the exclusion zone until operator has lowered the excavator arm onto the ground and shut down the machine.

Connect FRP deck units

The FRP units will be bolted together on site using small hand tools.

Connect FRP deck to abutments

The FRP deck units will be secured to the new abutment cill beams using Hilti anchors or similar with associated hand tools.

Rebuild brick pilasters

The existing brick pilasters will be rebuilt by hand in accordance with the conservator's risk assessment method statement.

An excavator may be required to lift heavy coping stones. If so, a specific lifting plan prepared by a competent person would be required. No coping stone will be lifted higher than 1.8m or that required to place it on the new brick pilaster.

Access to the pilasters will be provided by temporary scaffolding.

2.5 NEW PARAPETS / FENCING

Install new parapets and gate

New bridge parapets will be fixed to the new FRP deck using bolts and small hand tools. The upstream side parapet will be 1200mm tall and the downstream side parapet will be 1800mm tall. The higher parapet on the downstream side is required to secure the sluice gate compound.

An 1800mm lockable gate will be installed immediately to the west of the bridge on the downstream side. This will provide access to the sluice gate compound where the sluice gate controls are situated.

New 1200mm high parapets on the upstream side will be provided on the east and west approaches to the bridge.

The existing fencing around the sluice gate compound separates this area from the railway. This fencing will be unaffected by the works. No access to the line will be permitted for any personnel involved in the works.

2.6 FINISHES

Reinstate footpath approaches

The footpath surfacing on the approaches will be reinstated. Demolished concrete bollards on the approaches will be reinstated.

Remove temporary scaffolding by hand

Divers will be required to remove the temporary scaffolding by hand.

Remove site facilities

Remove site welfare and office facilities.

Appendix A

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DRAWINGS



DO NOT SCALE

Appendix B

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RISK ASSESSMENT

BMS : Project Delivery

T480 Modified: Risk Assessment & Method Statement (RAMS)



Provide Feedback

BMS : **Project Delivery**

T480 Modified: Risk Assessment & Method Statement (RAMS)

A hard copy of this form should be available on site throughout the duration of our works						
Project Number	70044480	Project Name	Poole Park Sluice Bridge			
Risk Assessment Ref	B	Assessment Completed By	ADM			
Risk Assessment Date	28/03/2018	Assessment Authorised By	ВР			
Site Specific Risk Assessme	Risk	Site Specific Rick Assessments	& Controls	Risk Rating	Risk Grading	
Significant nazarus	(Who might be harmed and how)	(What is being done to control t	he risk on this iob?)	See Matrix	(automated)	
Falls from height	Site personnel - serious/fatal injury	Provide edge protection with te	mporary scaffolding parapet	1		
_	from fall from bridge deck while	Suitable footwear to be worn to	prevent slips		Moderate Risk -	
	removing parapets				Proceed	
Falls from height	Site personnel - serious/fatal injury	Ladders used for scaffolding access will be clipped in place		1	Moderate Risk - Proceed	
	from fall from scaffolding ladder	Temporary scaffolding access route between east and west abutments provided for site personnel will be suitably wide and have a level similar to the abutments to avoid use of high ladders to cross sluice channel during works				
				5		
Falling objects	Site personnel on scaffolding below	No demolition work to be carrie	d out while site personnel on	1		
	existing bridge deck - injury from	scaffolding below - areas below	demolition work to be cordoned off	1		
	falling objects from demolition work	and signed as necessary			Low Risk - Proceed	
	above	Kick boards included on scattold	ling parapet edge protection to reduce	3		
Excavator - lifting	Site personnel - risk of serious injury	All heavy lifting activities require	ing excavator to be covered by a	1		
loading of equipment and	crushed by lifted load	Competencies of operator and a	associated roles such as slinger to be			
materials	Railway - risk of encroachment over	checked				
	railway boundary or even	LOLER certification to be checked for all lifting equipment to be used, eg. chains, shackles and slings, etc				
	derailment					
		lest certificate for the excavato	r to be checked			
		cross the park / rail boundary so	that it cannot foul the railway line			
		Works area to be segregated by	using temporary barriers, cones, etc			
		or a member of the workforce p	ositioned appropriately to restrict			
		access into the immediate area	of the lift		Moderate Risk -	
		signalier may be required who will monitor exclusion zone around excavator and communicate with operator		5 Proc	Proceed	
		Suitable communications arrang				
		Excavator should slew over wat				
		Loads shall not be slewed/lifted				
		I wo excavators to be used to co				
		Tag lines shall be utilised to ensure full control of load				
		Clearance over any site obstacle				
		pilaster, existing approach parapets will be carefully considered and a height limiting device may be fitted to the excavator				
Road vahieles driving onto	Vahisla drivan by member of the	Encura vahislas connat driva dir	actly anto site use of gates foncing			
site unchallenged	public colliding with site personnel - serious/fatal injury	that filter vehicles into either a	holding area or car park	1		
		Ensure signage is in place identifying where drivers need to go, such as 'site office' etc; limit road vehicles wherever possible Traffic plans to be in place and wherever practical, pedestrian and vehicle routes are to be clearly identifiable on site with appropriate signage			Moderate Risk - Proceed	
				5		
		Vehicles required to enter site r	s required to enter site regularly and authorised are to have			
		flashing beacons fitted and used	1			
Plant/delivery vehicle	Plant/delivery vehicle colliding with	Site staff to be made aware of h	aul routes/walkways at inductions,	1		
coming into contact with	site personnel - serious/fatal injury	traffic plan to be displayed. Dail	y briefings to be undertaken to			
of control compromising		day, especially areas designated	l as 'plant only' areas			
railway		Wherever possible pedestrians	to be restricted to identified walkways			
		along haul roads, isolated by ap	propriate fencing. Access to work			
		zones only at designated points Railway tracks are on embankment above the level of vehicular access Set speed limits suitable for the site, i.e 5-10 mph; ensure reversing activities are minimised as much as possible; where required vehicles are to be banked			Moderate Risk -	
				E	Proceed	
				Э		



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Project Number	70044480	Project Name	Poole Park Sluice Bridge			
Risk Assessment Ref	B 28/03/2018	Assessment Completed By Assessment Authorised By	ADM BP			
Plant and equipment	Site personnel - risk of injury from operating plant and equipment	Supplier will provide adequate of Drivers and operators of plant a with appropriate certification Mechanical plant and equipmer condition, safety devices should excavator) and be in good work Plant and equipment should be recorded Self propelled plant and equipm that it can be started/operated include not leaving the engine r and not leaving starting handles Mobile plant will be fitted with	pperating instructions and information nd equipment will be suitably trained it will be maintained in good be fitted (e.g. slew restrictor for ing order inspected regularly and inspections ent will not be left unattended such by unauthorised persons. This will unning, not leaving keys in the ignition present. flashing beacons	2	Moderate Risk - Proceed	
Breaking out works - demolition of deck with breaker attached to excavator or abutment cill beam with hand held breakers	Site personnel - risk of injury / eye injury from flying debris due to breakers Site personnel operating small breakers - hand-arm vibration syndrome (HAVS) from handheld concrete breakers	During breaking out works the s monitor stand-off area around t and any other third parties are a direct path of any flying debris The wearing of eye protection is immediate area if not specified requirements Dust levels generated from brea visually; where identified as una and method of works reviewed as the use of water suppression For manual breakers, operatives to take turns to reduce exposure	upervising engineer will establish and he breakout works to ensure that they at a distance so as not to be in the s mandatory for all staff working in the within minimum site PPE sking out activities to be monitored (cceptable the activity is to be stopped and remedial measures adopted, such s to be appropriately experienced and e to HAVS	2	Moderate Risk - Proceed	
Damaging levels of noise from plant or portable equipment operations	Site personnel - risk of hearing damage from noise of breakers	Prior to hiring or procuring plan whether they are the quietest v levels of noise in operation Put in place hearing protection : equipment being used, where th compulsory and mark them with Where work has to be carried o eg. operators, maintenance eng staff are to be taken outside of t Ensure all ear protection is in go Do not use hearing protection a technical and organisational me Provide all workforce with heari their noise exposure is between values Provide all workforce with heari them properly when their noise action values Make sure the protectors give e below 85 dB at the ear; target th and jobs in a working day	t or equipment ask the question as to ariants available that produce lesser cones suitable for the plant and ne wearing of hearing protection is n signs if possible ut within the hearing protection zone ineers, then regular breaks for the the area ood repair and readily available on site s an alternative to controlling noise by ans ng protectors if they ask for it and the lower and upper exposure action ng protectors and make sure they use exposure exceeds the upper exposure nough protection - aim at least to get ne use of protectors to the noisy tasks	3	Moderate Risk - Proceed	
Injury through the use of hand tools	Site personnel - risk of injury from hand tools	Operatives to be appropriately of Operatives to undertake due can The tool is to be used for the pu Appropriate protective gloves to and prevent puncture injuries, e	experienced in the use of hand tools re and attention when using the tools. rposes it was intended for b worn where identified to aid grip tc	2	Moderate Risk - Proceed	
Slips and trips and falls from poor housekeeping practices	Site personnel - risk of injury from slip, trip or fall	Good housekeeping to be maint trip or slip hazards are identified Any spillages are to be cleaned of prevent possible slips; where no off as a minimum Designated walkways on site are times Works to be planned in such a v from unfinished works potentia No open holes, trenches, etc are adequate barriers or suitable alt All rubbish is to be put in the ap	ained on site to ensure that potential dearly and reduced wherever possible up immediately where possible to to possible the area is to be cordoned e to be kept clear of obstructions at all vay so as not to cause or leave in place l trip and fall hazards e to be left unprotected at any time; rematives to be put in place propriate skips or receptacles on site	2	Moderate Risk - Proceed	

Provide Feedback

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Project Number	70044480	Project Name	Poole Park Sluice Bridge			
Risk Assessment Ref	В	Assessment Completed By	ADM			
Risk Assessment Date	28/03/2018	Assessment Authorised By	BP			
Manual lifting and handling	Site personnel - risk of back injuries	When planning the operation/a	ctivity, consideration will be given to	2		
		pilaster coping stones by crane if possible (e.g. remove the fleavy pilaster coping stones by crane if possible) Where manual handling of loads is necessary, risks to be assessed and controls implemented including sufficient numbers of operatives engaged on the lift. All individuals involved in manual handling activities shall have received manual handling training. The surrounding area will be level and stable where possible and free from tripping hazards. Suitable PPE will be provided and worn, i.e.: gloves for abrasive, sharp or chemically harmful loads, steel toe capped footwear.		3	Moderate Risk - Proceed	
Working on or near water (boating lake and sluice channel)	Site personnel falling into cold water - shock and/or rapid fatigue in the water	Provide edge protection to scaffolding to prevent site personnel falling into the water Swimming competence and use of buoyancy aids. Appropriate PPE (e.g. warm clothing or survival suits). Ensure welfare available nearby. The type of (BS EN standard) buoyancy aids should be informed by a risk assessment and communication with the manufacturer or supplier Avoid chin strap of a safety helmet. Wear non slip footwear		3	Moderate Risk - Proceed	
Working on or near water (boating lake and sluice channel)	Site personnel - surface fall/slip risks into water and consequent risk of shock or drowning	 Maintain vigilance and walk at a steady pace. Site specific assessment of bank conditions. Ensure appropriate footwear worn, e.g. ankle protection and grippy sole. Consider use of two persons and throw line or rope where appropriate. Do not lone work on steep or slippery banks where risk and consequence of fall is foreseeable. 		2	Moderate Risk -	
				3	Proceed	
Working on or near water (boating lake and sluice Vehicles and plant operatives - surface fall/slip risks into water and Consider the use of sto Extra care must be take		Extra care must be taken when Consider the use of stop blocks,	driving or operating plant near water. , fencing, and/or banksmen, e.g. treat	2		
channel)	consequent risk of shock or drowning	the watercourse as an open excavation. Plant or vehicles should not cross existing temporary scaffold bridge, existing concrete deck or new FRP deck - these structures are not designed to accommodate vehicle loading		3	Moderate Risk - Proceed	
Microbiological hazards (Weil's deisease)	Site personnel - low risk of infection working adjacent to water due to	The importance of personal hygiene, including washing hands before eating and smoking, is to be included in site inductions. Information regarding Weil's Disease is to be included in site inductions		1		
	brackish/saline conditions however treat as possible			3	Low Risk - Proceed	



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wsp.com