

CONTROL OF POLLUTION ACT 1974

Application for Section 61 Consent

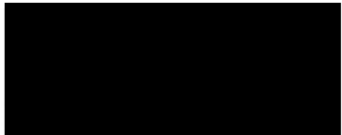
CONTRACT AWP20

Weekend Track Replacement

Submission:	Weekend Ballast Track Renewal Works
Local Authority Reference:	London Borough of Bromley
S61 Consent Application Reference:	S61-LBrom-AWP20-LR65.CTRKT.BALT.04

To the Principal Environmental Health Officer

I HEREBY MAKE APPLICATION for prior consent in respect of works to be carried out on the (construction) sites specified under Section 61 of the Control of Pollution Act 1974.



23rd June 2020

Signed.....

Date.....

Print Name [Redacted].....

(Environmental Advisor)

<p><i>Details of 1st party (registered address)</i> <u>(Please use as postal address)</u></p> <p>Integrated Track Team (1st Floor, 172 Buckingham Palace Road, London SW1W 9TJ) c/o London Underground, 5 Endeavour Square, London E20 1JN Tel: 0207 027 3138</p>	<p><i>Details of contractors</i></p> <p>Balfour Beatty Rail 5 Churchill Place Churchill Place, Canary Wharf, London, England, E14 5HU Tel: 01737 785000</p>
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<p>1. Location of proposed works.</p>	<p>The site is located within the London Borough of Bromley between Birbeck and Harrington Road stations on the London TramLink Network.</p> <p>The worksite for the project will be worked over four full weekend track closures and will start at Birbeck station and will head towards Harrington Road station. The works will be split up into four stages.</p> <p>For more detailed site plans, Refer to Appendix 1.</p>
<p>2. Name and address of Main Contractor</p>	<p>██████████, Environmental Advisor Integrated Track Team 1st Floor 172 Buckingham Palace Road, London SW1W 9TN</p>

<p>3. Particulars of works to be carried out</p>	<p>We will complete the works during both midweek engineering hours and four weekend possessions in Weeks 21,22,23 & 24.</p> <p><i>Midweek Engineering Hours:</i> every Monday to Thursday between the weekend possessions from 23:00 to 05:00 each night. Prep works and follow up works will also be undertaken during engineering hours.</p> <p><i>Week 21:</i> The renewal of 144m of ballast, sleepers and running rail from 23:00 on Friday 21st August 2020 to 04:00 on Monday 24th August 2020.</p> <p><i>Week 22:</i> The renewal of 215m of ballast, sleepers and running rail from 21:00 on Friday 28th August 2020 to 04:00 on Tuesday 1st September 2020 (Bank Holiday Weekend).</p> <p><i>Week 23:</i> The renewal of 144m of ballast, sleepers and running rail from 23:00 on Friday 4th September 2020 to 04:00 on Monday 7th September 2020.</p> <p><i>Week 24:</i> The renewal of 144m of ballast, sleepers and running rail from 23:00 on Friday 11th September 2020 to 04:00 on Monday 14th September 2020.</p> <p>Site Access</p> <p>Site Access will be via an authorised access point at the Harrington Road Compound (see Appendix 1).</p> <p>Welfare</p> <p>All welfare will be positioned within the compound area off Harrington Road.</p> <p>Staff Parking</p> <p>Staff Parking will be located at Kinetic Arena, Croydon Arena, Albert Road, London, SE25 4QL.</p> <p>Road Rail Vehicle (RRV) Access to Track</p> <p>All RRV's will access the worksite through a road rail access point at a dedicated road rail access point (RRAP) as illustrated in Appendix 1 off the level-crossing at Harrington Road.</p>
<p>4. Methods to be used in each stage of development.</p>	<p>Refer to Method Statements in Appendix 2</p>
<p>5. Hours of Work</p>	<p>It is essential that the majority of these works be completed in weekend possession hours, outside of the normal weekday working hours due to the requirement to keep the Tram route operational.</p> <p>During a weekend possession, we close a section of the line throughout the weekend.</p>

	<p><i>Ballast Track Renewal Works: As per Section 3.</i></p> <p>Where mid-week deliveries / prep works are required, our hours of work are from 23:00 – 05:00, Sunday – Thursday.</p> <p>We will be undertaking follow up works during engineering hours (same hours as mid-week deliveries) in this area for up to 6 months after the core weekend works have finished.</p>
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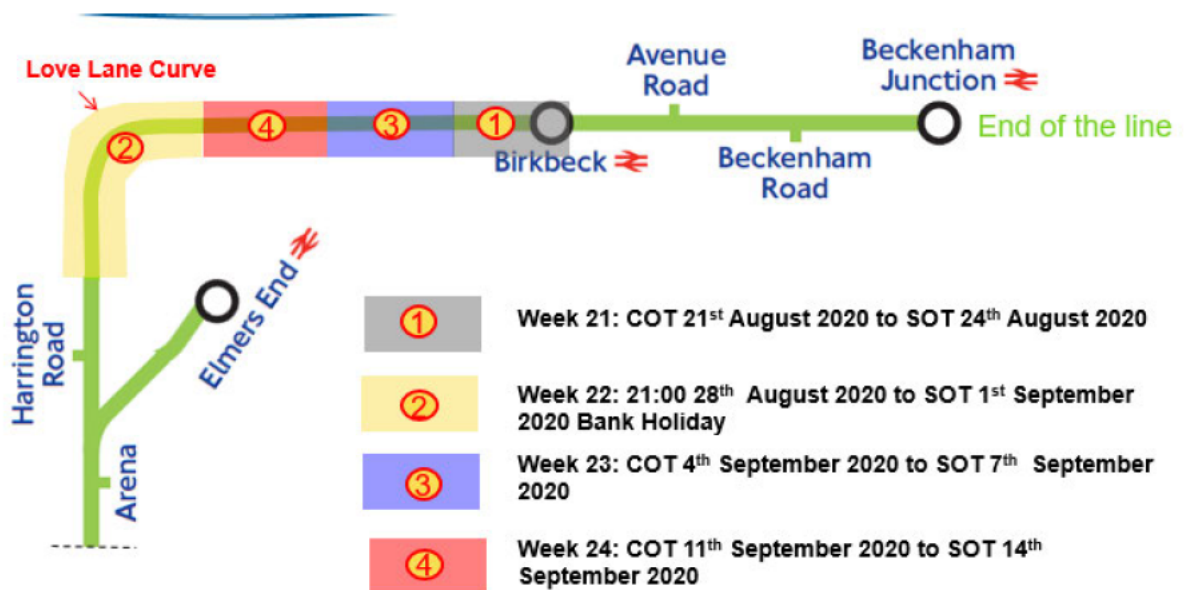
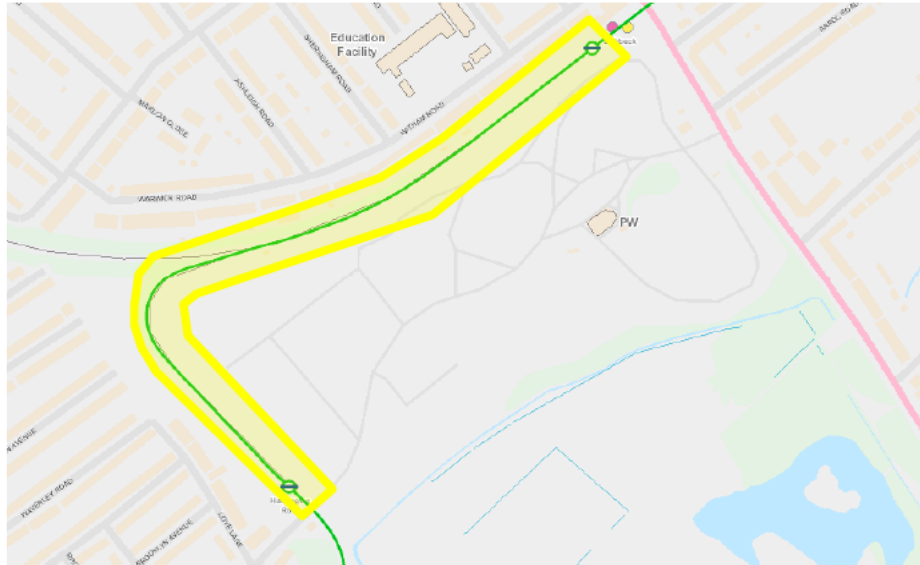
<p>6. Number type and make of equipment and machinery (including heavy vehicles) stating Sound Power Levels</p>	<p>For a full plant list refer to Appendix 3.</p> <p>Sound Power levels are taken from BS 5228-1:2009 recommended measurements (*).</p>																																																								
	<table border="1"> <thead> <tr> <th>Key Plant</th> <th>Number</th> <th>L_{WA} (single unit)</th> </tr> </thead> <tbody> <tr><td>LUL battery operated loco</td><td>5</td><td>93.0</td></tr> <tr><td>Road/rail excavator (RRV)</td><td>6</td><td>85.7</td></tr> <tr><td>Whacker plates</td><td>2</td><td>103.0*</td></tr> <tr><td>Diamond blade disk cutter</td><td>1</td><td>108.0*</td></tr> <tr><td>Angle grinder</td><td>2</td><td>114.0*</td></tr> <tr><td>Impact wrench</td><td>2</td><td>110.5</td></tr> <tr><td>Breaker (110v)</td><td>1</td><td>105.0*</td></tr> <tr><td>Chain saw (110v)</td><td>1</td><td>88.0</td></tr> <tr><td>100KVa generator</td><td>1</td><td>113.0*</td></tr> <tr><td>Combi drill</td><td>1</td><td>106.0*</td></tr> <tr><td>Oxyacetylene Burner</td><td>3</td><td>95.6</td></tr> <tr><td>Welding kit</td><td>3</td><td>95.6</td></tr> <tr><td>Tamper</td><td>1</td><td>108.0</td></tr> <tr><td>Laser guided dozer</td><td>2</td><td>107.0</td></tr> <tr><td>Generator and lighting</td><td>3</td><td>88.8</td></tr> <tr><td>HIAB</td><td>2</td><td>89.0</td></tr> <tr><td>FUCHS Machine</td><td>1</td><td>104.0</td></tr> </tbody> </table>	Key Plant	Number	L _{WA} (single unit)	LUL battery operated loco	5	93.0	Road/rail excavator (RRV)	6	85.7	Whacker plates	2	103.0*	Diamond blade disk cutter	1	108.0*	Angle grinder	2	114.0*	Impact wrench	2	110.5	Breaker (110v)	1	105.0*	Chain saw (110v)	1	88.0	100KVa generator	1	113.0*	Combi drill	1	106.0*	Oxyacetylene Burner	3	95.6	Welding kit	3	95.6	Tamper	1	108.0	Laser guided dozer	2	107.0	Generator and lighting	3	88.8	HIAB	2	89.0	FUCHS Machine	1	104.0		
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<p>7. Proposed steps to minimize noise and vibration.</p>	<p>Specific Best Practice measures to minimise noise at all times during these works are detailed in Appendix 3.</p> <p>Our new standard of best practice includes the use of noise absorbing quilts in welfare areas and around generators to minimise the noise impact.</p>																																																								
<p>8. Predicted Noise Levels</p>	<p>Appendix 4 presents predicted noise levels for the noisiest activities at the distances stated. Noise Absorbing quilts will reduce these figures by up to 15dB.</p>																																																								

9. Approximate duration of works.	Preparatory, drainage and track renewal works will take place during the dates and times listed within Section 5. Please note that we will need one month prior to the start of the core works (21st August 2020) for prep works and six months after the end of the core works (14th September) for follow up works. Prep works usually involves the delivery of equipment and materials. Follow up works usually consist of completion of snagging works and removal of equipment to return the site to its original condition.	
10. List of plans and documents attached.	Appendix 1 Appendix 2 Appendix 3 Appendix 4 Appendix 5 Appendix 6	Site Plans and Drawings Method Statements (incl. BPM) Best Practicable Means Working Hours and programme Plant list & Sound Power levels Predicted Noise Levels

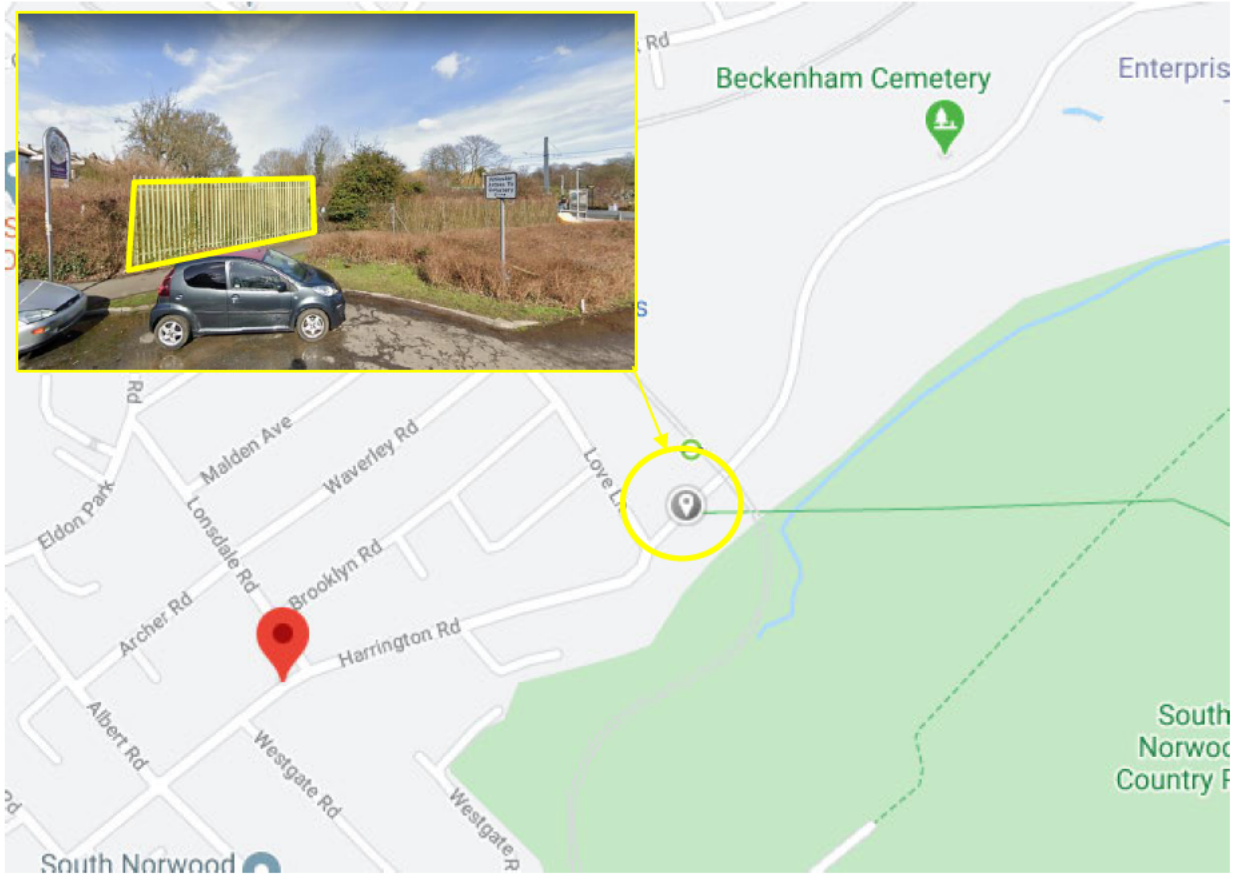
11. Other Information.	<p>Integrated Track Team Contacts:</p> <p>HSES Project Partner – [REDACTED] Tel: [REDACTED]</p> <p>Operations Manager – [REDACTED] Tel: [REDACTED]</p> <p>Environmental Advisor – [REDACTED] Tel: [REDACTED]</p> <p>Site Manager – [REDACTED] Tel: [REDACTED]</p> <p>All public enquiries about these works will be handled by the Community Relations team: Phone: 0343 222 7878 (24 hours) E-mail: communityrelations@tfl.gov.uk Write: London Underground Community Relations, 5th floor, Palestra, 197 Blackfriars Road London SE1 8NJ</p> <p>A letter drop informing local residents of the planned works will be sent 4 weeks prior to the works and a reminder letter will be sent 1 week prior to the works.</p>
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Appendix 1 – Site Drawings and Plans

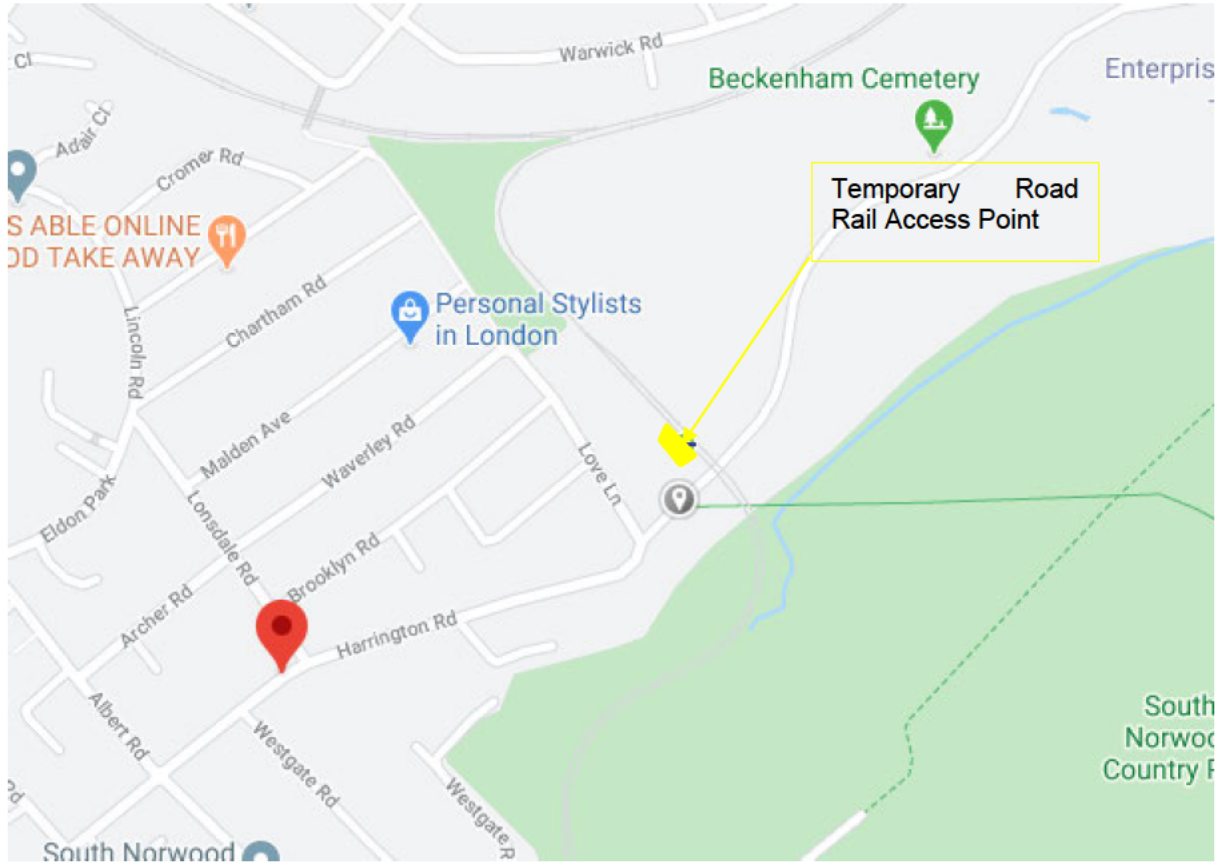
The yellow area shows the extent of the worksite in which the preparatory works and ballasted track renewal works will take place along the London Tram Route between Birkbeck and Harrington Road stations over weeks 21, 22, 23 and 24.



Site Access Point: Authorised Access Point: Harrington Road Compound, Harrington Road, Croydon, SE25 4NF.



Machine Access Point: RRAP, Harrington Road, Croydon, SE25 4NF.



Staff Car Parking: Kinetic Arena, Croydon Arena, Albert Road, London, SE25 4QL.



Appendix 2 – Typical Method Statement

1.0 Scope

- The works to be carried out under this Section 61 Application are the renewal of 647m of ballast, sleepers and running rail. The worksite is located approximately 50m north from the end of platform end at Harrington Road station, finishing at the end of the platform at Birbeck station. The proposed works will run over four possession weekends as detailed in the main application and will require preparatory works to be undertaken during midweek engineering hours prior to the commencement of the possession weekend works.
- Engineer's trains will be travelling from Hither Green Depot with various materials and tools to be used. Upon completion of the works, these trains will leave the possession and travel back to Ruislip depot.
- Access for road-rail vehicles/plant (RRV's) and will be from the stated location in Section 3, also bringing in various tools and equipment on trailers.
- Access to the worksite for staff will be through the closest available and most appropriate station. Details of the location are provided in Section 3.
- Any remaining small tools that cannot be transported on Trains or RRV's will be brought through the authorised site access points as listed within the main application.

2.0 Work Activities - Summary

The works can be categorised as follows:

2.1 Pre-Possession Works

Compound set-up

Prior to the renewal of the track assets due to be replaced in Weeks 21, 22, 23 and 24, access to the currently empty compound area off Harrington Road will be created to enable set-up of site. The works will oversee the installation of temporary fencing in place of the permanent fencing just off Harrington Road in addition to the levelling of the compound and some minor de-vegetation works.

Excavation of Trial Holes

It may be necessary to carry out Trial hole excavations which will be hand dug at various points along the track to determine the standing water level and also to check for hard material, existing ballast depths that are not visible at the surface.

Preparation works

The power cables for the site lighting will be laid out throughout the site in suitable locations adjacent to the works and in areas used for walkways. There will be power generators placed at intervals. These will supply 110v power for the lighting and small tools at the work site.

90m/216m rail strings will be required to be moved from the present location to a location near to the worksite for ease of installation during the weekend. This may also require for road access at designated points to bring in various materials. These works may take place during midweek evening or mid-week nights, however, we will endeavour to complete these during day time hours wherever possible.

2.2 Establishment of Site Welfare Facilities and Signing In/Out Desk

All access and egress will be through the compound area at Harrington Road unless an Emergency Situation Occurs
The signing in desk will be located at the site entrance within the compound.
Welfare units will be situated in the compound area.

Access for all staff will be via the signing in point at the gate of the compound. All staff shall sign in at the signing in desk and shall receive a briefing on the possession, possession limits and work site limits and specific briefing on working with track mounted vehicles from the Gate Master. All operatives shall then be briefed on their tasks for that shift from the Site Person in Charge.

Once the station is closed the materials will be taken onto the platforms.

2.3 Delivery of On-track plant

- The road rail excavators (RRVs) will on-track at the stated point and travel to the worksite once the possession has been taken.

2.4 Removal of existing rail

- The existing conductor rail will be moved out into the cess or the six-foot with road rail excavator fitted with a rail thimble or alternatively, iron manned in the adjacent line, 6ft or cess. The same conductor rail will be replaced once the new running rail is installed.
- The track running rails will be cut into manageable 18m Panels using flame-cutting gear or Disc-cutters. Rails will be loaded onto the engineer's train using road rail excavators. The wagons will then be taken to Hither Green Depot for disposal of the loaded material, along with any other scrap rail identified on site.

2.5 Formation Dig

- The spoil (existing track ballast) will be excavated using RRVs with bucket attachments and loaded on to engineer's trains, which will be taken to the Hither Green Depot for disposal.
- Ballast shall be spread using a Dozer fitted with the laser level control system and the Terram geo-textile will be unrolled over the new formation.

2.6 Bottom Ballast

- New track ballast will be unloaded from the wagons sitting on the opposite road and placed onto the geo-textile laid using the using RRVs and is then pushed out using a using Dozer fitted with laser level control system to control the level of ballast. The ballast is then compacted with the Triple Whacker plate set.

2.7 Top Ballast

- Top ballast will then be unloaded from wagons sitting on the opposite road using road RRVs fitted with bucket attachment and placed in between the newly installed sleepers. In single line areas (area with no track adjacent to the ballast track replacement) where the RRV's can not physically unload a train with ballast. A dumper will be employed to transport ballast to the required location. Alternatively, An auto-ballast will lay the top ballast
- Once works have been completed the excavators and dozers will be taken off-site.

2.8 Tamping

- The Tamper then moves to the worksite and carries out the required track alignment (raising, lowering or slewing left or right).

Appendix 3 – Best practicable means

Best practicable means will be employed at all times during the works described in the application.

Location of plant and generators will be as far as reasonably practicable from the boundary with the local residents. Generators will be surrounded with noise absorbing quilts to minimise noise emissions.

Modern, silenced and well-maintained plant will be used at all times, conforming to EC Directives.

Equipment will be shut down when not in use.

The generator engine compartments will be closed when equipment is in use.

Semi-static equipment will be sited as far away as reasonably practicable from inhabited buildings.

Where possible, the road rail machines will be delivered by rail to reduce the intrusion into the local community.

Where possible the base plates will be fixed to the sleepers prior to installation, to remove the necessity to drill.

Personnel will be instructed on BPM measures to reduce noise and vibration as part of their induction training.

Materials will be handled in a manner that minimizes noise.

Welfare units will be placed as far away from the nearest residences as possible.

Noise absorbent barriers will be placed around all welfare locations and generators outside the station and in the welfare areas.

A survey of all plant being utilized on site will also be carried out in conjunction with the noise survey and checked against the plant list.

Any breaches of the predicted noise levels or the use of additional plant will be notified to the Local Authority.

All monitoring results will be logged by the Project SHEQ Team and made available to the Project Manager and the Local Authority on request.

Should any complaints about vibration arise, they will be investigated, and where necessary work practices modified. None of the items of plant to be used will cause any degree of vibration.

There shall be regular communication between the Project SHEQ Team, TramLink Community Relations Team and the Local Authority to monitor the progress of the works and to consider any concerns or complaints raised by the local community via the Local Authority.

Local residents and the Local Authority will be informed of the works by letter drop. This will take place 28 days prior to the works commencing, with a reminder being delivered 4 days prior to the commencement of activity.

All plant and equipment will then be put into the storage area or removed and transported back to the yard.

Appendix 4 – Working Hours and Works Programme

Due to the nature of the works it is essential that they are carried out during track possession hours, outside of the normal weekday working hours.

When mid-week deliveries are required, our working hours are 22:00 - 05:00. Noise proof barriers are erected throughout this process to reduce delivery noise as much as possible.

Although for weekend works, site set up will start at approximately 22:00 Friday night, the possession of the track line will start at 01:30 on Saturday morning. Experience of previous works shows there is a high likelihood that no physical work will start on track before 04.30 hrs.

See Appendix 2 for works programmed to take place during booked railway possessions.

Appendix 5 – Plant List and Sound Power Levels

Movement of Engineers Train					
Noise levels of activities	Make	No. of Units	Reference	Single Unit L _{wA} /dB	L _{Aeq} @ 10m
Plant to be used					
Engineers Train		5	On site measurement	93.0	65.0
Generators and lighting		10	On site measurement	88.8	60.8

Removal of existing rail					
Noise levels of activities	Make	No. of Units	Reference	Single Unit L _{wA} /dB	L _{Aeq} @ 10m
Plant to be used					
Oxyacetylene burner		2	On site measurement	95.6	67.6
Generator and lighting		10	On site measurement	88.8	60.8
Road rail excavator	PC138	6	On site measurement	85.7	57.7

Formation dig					
Noise levels of activities	Make	No. of Units	Reference	Single Unit L _{wA} /dB	L _{Aeq} @ 10m
Plant to be used					
Road rail excavator	PC138	6	On site measurement	102.5	74.5
Generators and lighting		10	On site measurement	88.8	60.8

Bottom ballast					
Noise levels of activities	Make	No. of Units	Reference	Single Unit L _{wA} /dB	L _{Aeq} @ 10m
Plant to be used					
Road rail excavator	PC138	6	On site measurement	102.5	74.5
Wacker plate	Wacker	2	On site measurement	103	75

Installation of new sleepers					
Noise levels of activities	Make	No. of	Reference	Single	L _{Aeq} @
Plant to be used					

Plant to be used		Units		Unit L _{wA} /dB	10m
Road rail excavator	PC138	6	On site measurement	102.5	74.5
Impact wrenches	Maxim Master 35	2	On site measurement	110.5	82.5
Generators and lighting		10	On site measurement	88.8	60.8

Installation of new running rail					
Noise levels of activities	Make	No. of	Reference	Single	L _{Aeq} @
Plant to be used		Units		Unit L _{wA} /dB	10m
Road rail excavator	PC138	6	On site measurement	102.5	74.5
Welding kit	MPMS/180 IDLEY	2	On site measurement	95.6	67.6
Generators and lighting		10	On site measurement	88.8	60.8

Reinstatement of conductor rail					
Noise levels of activities	Make	No. of	Reference	Single	L _{Aeq} @
Plant to be used		Units		Unit L _{wA} /dB	10m
Road rail excavator	PC138	6	On site measurement	102.5	74.5
Welding kit	MPMS/180 IDLEY	2	On site measurement	95.6	67.6
Generators and lighting		10	On site measurement	88.8	60.8

Top ballast					
Noise levels of activities	Make	No. of	Reference	Single	L _{Aeq} @
Plant to be used		Units		Unit L _{wA} /dB	10m
Road rail excavator	PC138	6	On site measurement	102.5	74.5
Generators and lighting		10	On site measurement	88.8	60.8

Tamping					
Noise levels of activities	Make	No. of	Reference	Single	L _{Aeq} @
Plant to be used		Units		Unit L _{wA} /dB	10m
Tamper	LUL Transplant	1	On site measurement	108	80

NOTES

Where specific makes of plant are named, it is for illustration only and could be substituted with plant from a different manufacturer, though care will be taken to ensure that it is no noisier. Should this not be possible and it becomes necessary to use a noisier item of plant a dispensation or variation, as necessary, will be applied for if this is deemed necessary.

Appendix 6 - Predicted Noise Levels (closest building approximately 20m from worksite)
Points Renewal

Movement of Engineering Train (Night)												
Plant Type or Activity	Sound Power Level	LAeq at 10m	Source of Noise Data	Distance to receptor	Adjustments			Resultant LAeq	Duration of activity as percentage of 5min	Correction to LAeq (5min)	Activity LAeq (5min)	Worst case noise level LAeq (5min)
	Lwa				Distance	Screening	Reflection					
	dB	dB		m	dB	dB	dB	dB	%	dB	dB	dB
LUL Battery operated loco	93	65	On site measurement	20	-6.0	0	0	59.0	100	0.0	59.0	
LUL Battery operated loco	93	65	On site measurement	20	-6.0	0	0	59.0	100	0.0	59.0	
Worst case noise level:											62.0	

Movement of Engineering Train (Day)

Plant Type or Activity	Sound Power Level Lwa dB	LAeq at 10m dB	Source of Noise Data	Distance to receptor m	Adjustments			Resultant LAeq dB	Duration of activity as percentage of 1hr %	Correction to LAeq (1hr) dB	Activity LAeq (1hr) dB	Worst case noise level LAeq (1hr) dB
					Distance dB	Screening dB	Reflection dB					
LUL Battery operated loco	93	65	On site measurement	20	-6.0	0	0	59.0	100	-3.0	56.0	
LUL Battery operated loco	93	65	On site measurement	20	-6.0	0	0	59.0	100	-3.0	56.0	
Worst case noise level:											59.0	

Removal of existing rail (Night)

Plant Type or Activity	Sound Power Level	LAeq at 10m	Source of Noise Data	Distance to receptor	Adjustments			Resultant LAeq	Duration of activity as percentage of 5min	Correction to LAeq (5min)	Activity LAeq (5min)	Worst case noise level LAeq (5min)
					Distance	Screening	Reflection					
					dB	dB	dB					
	Lwa											
	dB	dB		m	dB	dB	dB	dB	%	dB	dB	dB
Oxyacetylene burner	95.6	67.6	On site measurement	20	-6.0	0	0	61.6	100	0.0	61.6	
Oxyacetylene burner	95.6	67.6	On site measurement	20	-6.0	0	0	61.6	100	0.0	61.6	
Chain Saw	88	60	On site measurement	20	-6.0	0	0	54.0	100	0.0	54.0	
Generator and lighting	88.8	60.8	On site measurement	20	-6.0	0	0	54.8	100	0.0	54.8	
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	0.0	51.7	
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	0.0	51.7	
Disc cutter	109.7	81.7	On site measurement	20	-6.0	-15	0	60.7	100	0.0	60.7	
Worst case noise level:											65.5	

Removal of existing rail (Day)

Plant Type or Activity	Sound Power Level	LAeq at 10m	Source of Noise Data	Distance to receptor	Adjustments			Resultant LAeq	Duration of activity as percentage of 1hr	Correction to LAeq (1hr)	Activity LAeq (1hr)	Worst case noise level LAeq (1hr)
					Distance	Screening	Reflection					
					dB	dB	dB					
Oxyacetylene burner	95.6	67.6	On site measurement	20	-6.0		0	61.6	100	-3.0	58.6	
Oxyacetylene burner	95.6	67.6	On site measurement	20	-6.0		0	61.6	100	-3.0	58.6	
Chain Saw	88	60	On site measurement	20	-6.0	0	0	54.0	100	-3.0	51.0	
Generator and lighting	88.8	60.8	On site measurement	20	-6.0	0	0	54.8	100	-3.0	51.8	
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	-3.0	48.7	
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	-3.0	48.7	
Disc cutter	109.7	81.7	On site measurement	20	-6.0	-15	0	60.7	100	-3.0	57.7	
Worst case noise level:											62.5	

Formation dig (Night)

Plant Type or Activity	Sound Power Level Lwa	LAeq at 10 m	Source of Noise Data	Distance to receptor	Adjustments			Resultant LAeq	Duration of activity as percentage of 5min	Correction to LAeq (5min)	Activity LAeq (5min)	Worst case noise level LAeq (5min)
					Distance	Screening	Reflection					
	dB	dB		m	dB	dB	dB	dB	%	dB	dB	dB
Road rail excavator	102.5	74.5	On site measurement	20	-6.0	0	0	68.5	100	0.0	68.5	
Road rail excavator	102.5	74.5	On site measurement	20	-6.0	0	0	68.5	100	0.0	68.5	
FUCHS Machine	104	76	On site measurement	20	-6.0	0	0	70.0	100	0.0	70.0	
Generator and lighting	88.8	60.8	On site measurement	20	-6.0	0	0	54.8	100	0.0	54.8	
Worst case noise level:											73.9	

Formation dig (Day)

Plant Type or Activity	Sound Power Level Lwa dB	LAeq at 10 m dB	Source of Noise Data	Distance to receptor m	Adjustments			Resultant LAeq dB	Duration of activity as percentage of 1hr %	Correction to LAeq (1hr) dB	Activity LAeq (1hr) dB	Worst case noise level LAeq (1hr) dB
					Distance dB	Screening dB	Reflection dB					
Road rail excavator	102.5	74.5	On site measurement	20	-6.0	0	0	68.5	50	-3.0	65.5	
Road rail excavator	102.5	74.5	On site measurement	20	-6.0	0	0	68.5	50	-3.0	65.5	
FUCHS Machine	104	76	On site measurement	20	-6.0	0	0	70.0	50	-3.0	67.0	
Generator and lighting	88.8	60.8	On site measurement	20	-6.0	0	0	54.8	50	-3.0	51.8	
Worst case noise level:											70.9	

Bottom Ballast (Night)

Plant Type or Activity	Sound Power Level	LAeq at 10 m	Source of Noise Data	Distance to receptor	Adjustments			Resultant LAeq	Duration of activity as percentage of 5min	Correction to LAeq (5min)	Activity LAeq (5min)	Worst case noise level LAeq (5min)
					Distance	Screening	Reflection					
					dB	dB	dB					
Tracked Excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	0.0	51.7	
Tracked Excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	0.0	51.7	
FUCHS Machine	104	76	On site measurement	20	-6.0	0	0	70.0	100	0.0	70.0	
Triple wacker plate	103	75	On site measurement	20	-6.0	0	0	69.0	100	0.0	69.0	
Worst case noise level:											72.6	

Bottom Ballast (Day)

Plant Type or Activity	Sound Power Level	LAeq at 10 m	Source of Noise Data	Distance to receptor	Adjustments			Resultant LAeq	Duration of activity as percentage of 5min	Correction to LAeq (5min)	Activity LAeq (5min)	Worst case noise level LAeq (5min)
					Distance	Screening	Reflection					
					dB	dB	dB					
Tracked Excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	-3.0	48.7	
Tracked Excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	-3.0	48.7	
FUCHS Machine	104	76	On site measurement	20	-6.0	0	0	70.0	100	-3.0	67.0	
Triple wacker plate	103	75	On site measurement	20	-6.0	0	0	69.0	100	-3.0	66.0	
Worst case noise level:											69.6	

Installation of new sleepers (Night)

Plant Type or Activity	Sound Power Level	L _{Aeq} at 10m	Source of Noise Data	Distance to receptor	Adjustments			Resultant L _{Aeq}	Duration of activity as percentage of 5min	Correction to L _{Aeq} (5min)	Activity L _{Aeq} (5min)	Worst case noise level L _{Aeq} (5min)
	L _{wa}				Distance	Screening	Reflection					
	dB	dB			m	dB	dB					
Tracked excavators	104	76	On site measurement	20	-6.0	0	0	70.0	100	0.0	70.0	
Tracked excavators	104	76	On site measurement	20	-6.0	0	0	70.0	100	0.0	70.0	
Rail drills	114.6	86.6	On site measurement	20	-6.0	-15	0	65.6	100	0.0	65.6	
Impact wrenches	110.5	82.5	On site measurement	20	-6.0	-15	0	61.5	100	0.0	61.5	
Impact wrenches	110.5	82.5	On site measurement	20	-6.0	-15	0	61.5	100	0.0	61.5	
Generators and lighting	88.8	60.8	On site measurement	20	-6.0	0	0	54.8	100	0.0	54.8	
Worst case noise level:											74.3	

Installation of new sleepers (Day)

Plant Type or Activity	Sound Power Level	L _{Aeq} at 10m	Source of Noise Data	Distance to receptor	Adjustments			Resultant L _{Aeq}	Duration of activity as percentage of 1hr	Correction to L _{Aeq} (1hr)	Activity L _{Aeq} (1hr)	Worst case noise level L _{Aeq} (1hr)
	L _{wa}				Distance	Screening	Reflection					
	dB	dB			m	dB	dB					
Tracked excavators	104	76	On site measurement	20	-6.0	0	0	70.0	50	-3.0	67.0	
Tracked excavators	104	76	On site measurement	20	-6.0	0	0	70.0	50	-3.0	67.0	
Rail drills	114.6	86.6	On site measurement	20	-6.0	-15	0	65.6	10	-10.0	55.6	
Impact wrenches	110.5	82.5	On site measurement	20	-6.0	-15	0	61.5	20	-7.0	54.5	
Impact wrenches	110.5	82.5	On site measurement	20	-6.0	-15	0	61.5	20	-7.0	54.5	
Generators and lighting	88.8	60.8	On site measurement	20	-6.0	0	0	54.8	100	0.0	54.8	
Worst case noise level:											70.5	

Installation of new running rail (Night)

Plant Type or Activity	Sound Power Level Lwa	LAeq at 10m	Source of Noise Data	Distance to receptor	Adjustments			Resultant LAeq	Duration of activity as percentage of 5min	Correction to LAeq (5min)	Activity LAeq (5min)	Worst case noise level LAeq (5min)
					Distance	Screening	Reflection					
					dB	dB	dB					
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	0.0	51.7	
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	0.0	51.7	
Welding kit	95.6	67.6	On site measurement	20	-6.0	0	0	61.6	50	0.0	61.6	
Generators and lighting	88.8	60.8	On site measurement	20	-6.0	0	0	54.8	100	0.0	54.8	
Worst case noise level:											63.1	

Installation of new running rail (Day)

Plant Type or Activity	Sound Power Level	LAeq at 10m	Source of Noise Data	Distance to receptor	Adjustments			Resultant LAeq	Duration of activity as percentage of 5min	Correction to LAeq (5min)	Activity LAeq (5min)	Worst case noise level LAeq (5min)
					Distance	Screening	Reflection					
					dB	dB	dB					
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	-3.0	48.7	
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	-3.0	48.7	
Welding kit	95.6	67.6	On site measurement	20	-6.0	0	0	61.6	50	-3.0	58.6	
Generators and lighting	88.8	60.8	On site measurement	20	-6.0	0	0	54.8	100	-3.0	51.8	
Worst case noise level:											60.1	

Top ballast (Night)

Plant Type or Activity	Sound Power Level L _{wa} dB	L _{Aeq} at 10m dB	Source of Noise Data	Distance to receptor m	Adjustments			Resultant L _{Aeq} dB	Duration of activity as percentage of 5min %	Correction to L _{Aeq} (5min) dB	Activity L _{Aeq} (5min) dB	Worst case noise level L _{Aeq} (5min) dB
					Distance dB	Screening dB	Reflection dB					
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	0.0	51.7	
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	0.0	51.7	
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	0.0	51.7	
Generators and lighting	88.8	60.8	On site measurement	20	-6.0	0	0	54.8	100	0.0	54.8	
FUCHS Machine	104	76	On site measurement	20	-6.0	0	0	70.0	100	0.0	70.0	
Worst case noise level:											70.3	

Top ballast (Day)

Plant Type or Activity	Sound Power Level	L _{Aeq} at 10 m	Source of Noise Data	Distance to receptor	Adjustments			Resultant L _{Aeq}	Duration of activity as percentage of 5min	Correction to L _{Aeq} (5min)	Activity L _{Aeq} (5min)	Worst case noise level L _{Aeq} (5min)
	L _{wa}				Distance	Screening	Reflection					
	dB	dB			m	dB	dB					
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	-3.0	48.7	
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	-3.0	48.7	
Road rail excavator	85.7	57.7	On site measurement	20	-6.0	0	0	51.7	100	-3.0	48.7	
Generators and lighting	88.8	60.8	On site measurement	20	-6.0	0	0	54.8	100	-3.0	51.8	
FUCHS Machine	104	76	On site measurement	20	-6.0	0	0	70.0	100	-3.0	67.0	
Worst case noise level:											67.3	

Tamping (Night)

Plant Type or Activity	Sound Power Level	LAeq at 10 m	Source of Noise Data	Distance to receptor	Adjustments			Resultant LAeq	Duration of activity as percentage of 5min	Correction to LAeq (5min)	Activity LAeq (5min)	Worst case noise level LAeq (5min)
	Lwa				Distance	Screening	Reflection					
	dB											
Tamper	108	80	On site measurement	20	-6.0	0	0	74.0	100	0.0	74.0	
Generators and lighting	88.8	60.8	On site measurement	20	-6.0	0	0	54.8	100	0.0	54.8	
Worst case noise level:											74.0	

Tamping (Day)

Plant Type or Activity	Sound Power Level	L _{Aeq} at 10 m	Source of Noise Data	Distance to receptor	Adjustments			Resultant L _{Aeq}	Duration of activity as percentage of 1hr	Correction to L _{Aeq} (1hr)	Activity L _{Aeq} (1hr)	Worst case noise level L _{Aeq} (1hr)
	L _{wa}				Distance	Screening	Reflection					
	dB	dB			m	dB	dB					
Tamper	108	80	On site measurement	20	-6.0	0	0	74.0	100	-3.0	71.0	
Worst case noise level:											71.0	

HIAB (Night)

Plant Type or Activity	Sound Power Level	LAeq at 10m	Source of Noise Data	Distance to receptor	Adjustments			Resultant LAeq	Duration of activity as percentage of 5min	Correction to LAeq (5min)	Activity LAeq (5min)	Worst case noise level LAeq (5min)
					Distance	Screening	Reflection					
					Reduction dB	dB	dB					
HIAB (Night)	89	61	On site measurement	20	-6.0	0	0	55.0	100	0.0	55.0	
Worst case noise level:											55.0	

**HIAB
(Day)**

Plant Type or Activity	Sound Power Level	LAeq at 10m	Source of Noise Data	Distance to receptor	Adjustments			Resultant LAeq	Duration of activity as percentage of 5min	Correction to LAeq (5min)	Activity LAeq (5min)	Worst case noise level LAeq (5min)
					Distance	Screening	Reflection					
	Lwa				Distance	Screening	Reflection					
	dB	dB		m	dB	dB	dB	dB	%	dB	dB	dB
HIAB	89	61	Manufacturers Data	20	-6.0	0	0	55.0	100	-3.0	52.0	
Worst case noise level:											52.0	