



The Plaza- Outline Construction Methodology



Prepared by KG- BAM. Rev002

Revision	Date	Comment
1	21/12/2019	1 st issue for planning permission
2	26/01/2020	Revised in line with Environmental Health comments

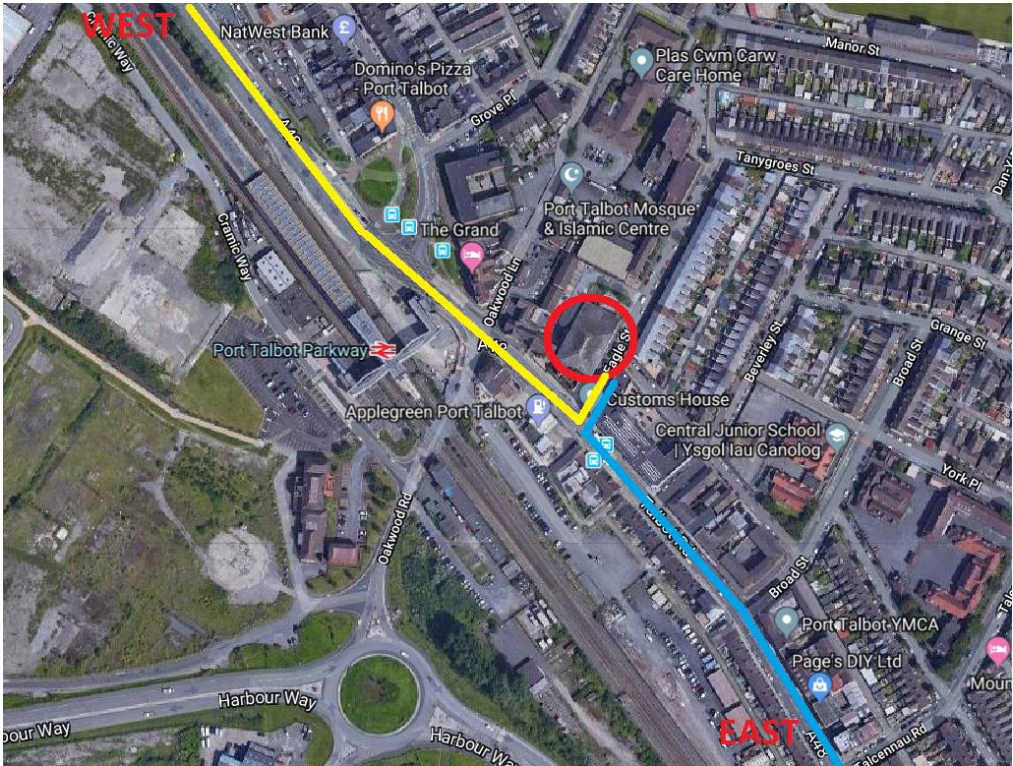
26/01/2020

Plaza Outline Construction Methodology

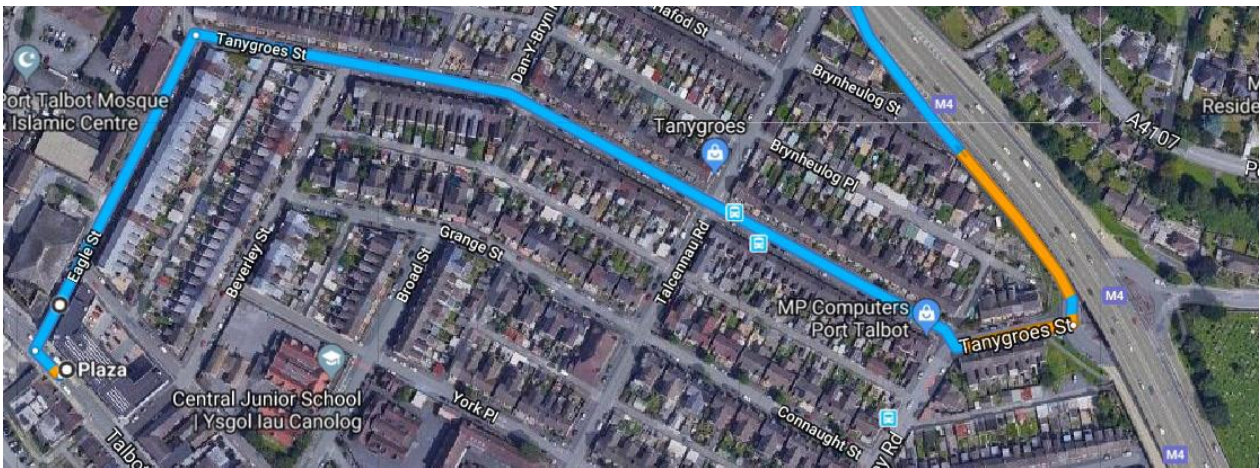
Location and access

The Plaza site is located at 14 Talbot Road, Port Talbot, SA13 1DT

The site will be accessed from the A48 (Talbot Road) with Eastbound traffic exiting the M4 at Junction 41 and Westbound vehicles leaving at Junction 38.



As the site is located adjacent to a number of residential streets, deliveries will need to be controlled to avoid the stacking up of vehicles and minimising the inconvenience to the neighbouring properties and businesses. This will be managed via our electronic vehicle management system which requires all suppliers and subcontractors to book a timed delivery slot. A detailed delivery management plan will be written showing access routes , confirming site contacts and booking in procedures as well as the location of any agreed holding points. All works will take place within a fully hoarded site and access for vehicles will be controlled by a full-time gateman/vehicle marshal. Pedestrian access will be controlled via a biometric turnstile. Due to the limited space within the hoarded site a one way traffic routing system is not possible, vehicles will approach the site along Eagle Street and then be reversed back into the site by the gateman/vehicle marshal. Once the vehicle is ready to exit the site, it will be released by the gateman when it is safe to re-enter Eagle Street.

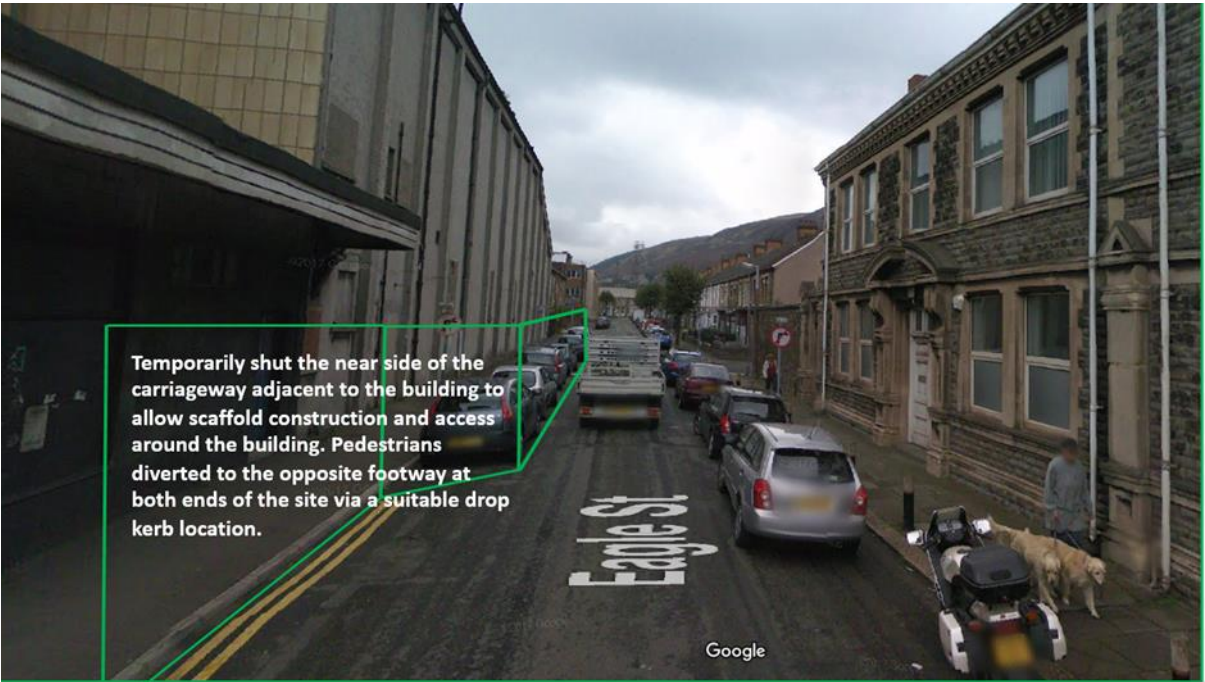


Due to the current one way system on the roads adjacent to the Plaza cinema, when exiting it will be necessary for vehicles exiting site to travel north on Eagle Street before turning right onto Tanygroes Street to return to the nearest junction on the M4. Following the Fleet Operator Recognition Scheme (FORS) guidelines, this will be the safest route as it requires only a single turn on a residential street.

We will block out half an hour either side of Central Junior School opening and closing time due to its proximity to the site. We have a provisional agreement to use one of the NPT holding areas to stop wagons and call them in after ensuring the site is ready to accept them.

Temporary rerouting of vehicles and pedestrians

We have had some initial discussion with NPT highways regarding temporary closures in and around the Plaza Building and Eagle Street. The proposal of this is as per the below images



Suitable “Chapter 8” signage will be used to divert pedestrians to the offside footway on Eagle Street. This will utilise the existing tactile crossing point. A further crossing point will be position approximately 60m North, beyond the site, to allow access to both footways

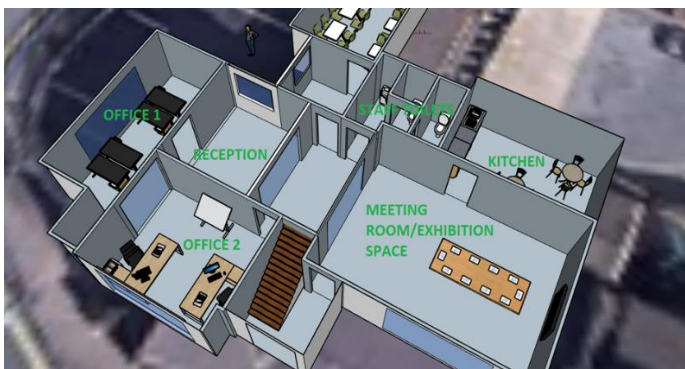
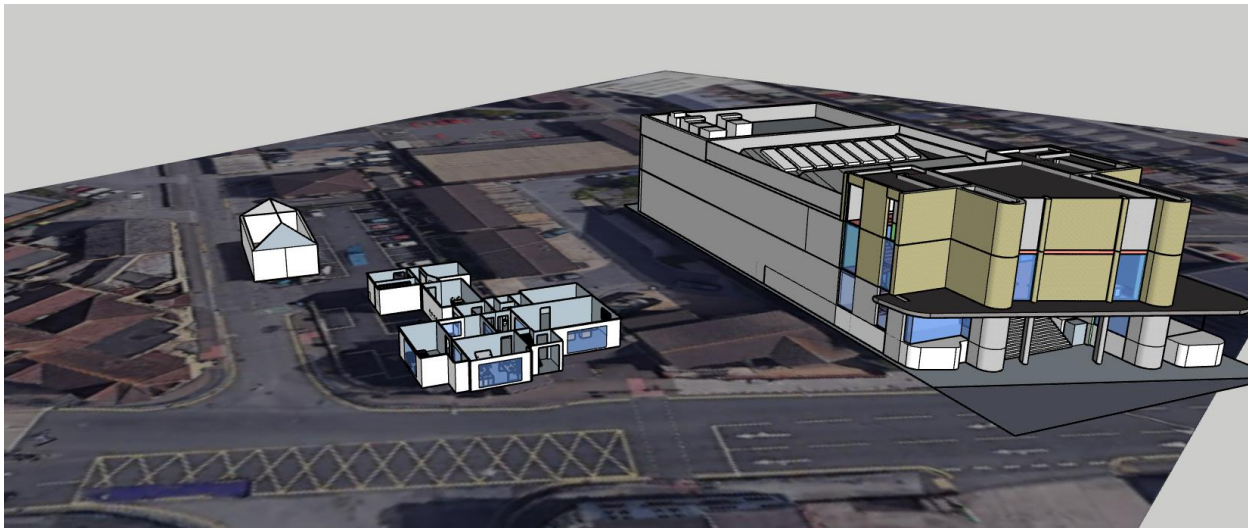


Along Talbot Road pedestrian access will be maintained at all times. It will be necessary to locally divert pedestrians from one side of the footpath. Once the full extent of the repairs required to the canopy is understood a programme for the localised diversions will be produced. Segregation will be via solid hoardings as with the rest of the site and the diversions will be put in place prior to closing the other section of the footpath.



Site setup/welfare/parking

The new building occupies the same footprint as the existing structure and as such leaves limited space for the provision of on site welfare and parking. As a result of this the only facilities within the site boundaries will be the provision of a security office and toilet block. For the duration of the construction project we have rented an adjacent property (Eagles House) which will provide the required welfare facilities along with parking and storage.





Operatives working on site will be instructed to follow all local parking regulations and use the spaces provided at Eagle House (Bam's welfare setup) or use the NCP car park located at the train station in the event of overflow parking being required.

Construction Operations

Due to the confined nature of the site deliveries to site will be on a just in time basis. In the event of this not being possible we have a number of locations within the locality where suppliers have offered us the use their storage facilities whereby the materials can be called in as required.

The site will be secured by way of robust 2.4m solid hoarding which will be assessed/designed by Bam Technical Services. As per the contract requirements the appearance of the hoardings, along with any displays, will be in line with the requirements of NPT. They will be periodically inspected and maintained to ensure they are fit for purpose throughout the contract.

To mitigate the use wheel washing facilities the arisings from the demolition works will be crushed and retained on site for reuse as fill. During the soft strip element skips will be dropped off and collected from a stoned up hard standing area to prevent the transfer of mud onto the adjacent highway. These will be monitored and maintained throughout the contract works. This will be backed up by a portable jet wash which will, if necessary, clean down any vehicles which require it before being released onto the public highway. All effluent from washing activities will be diverted back onto site.

After the initial delivery of equipment to site during the demolition phase it is estimated that there will be an average of 1 HGV skip wagon a day delivering and collecting skips from the site for an approximate 12 week duration. During this period there will also be small tool delivery in "transit" size vehicles however these will be on an adhoc basis. These will all be in line with the delivery plan set out above. The demolition plan has covered control of dust during the demolition process. The construction methods selected for the Plaza would be considered low risk in terms of dust. The frame is a steel frame construction with walls constructed of SFS and clad in weather defence board. Once the building envelope is wrapped it becomes an internal space and the likelihood of dust being emitted is minimal. The external cladding is made up of brick slips where cutting is kept to a minimum and where required a wet saw is utilised. All work equipment is well maintained and regular housekeeping is undertaken to keep the working environment clean

Waste Management

An environmental management plan has already been submitted, the salient points of which are as follows

BAM Construction’s Environmental Management System (EMS) is certified to ISO14001, and covers all activities of its construction sites and offices.

All BAM Construction sites aim to use natural resources responsibly to reduce our impact on the environment; this includes energy, water, sustainable & legal timber, waste reduction, waste prevention and forecasting wastes.

Our Environmental Management Systems had required our sites in England and Wales to produce a Site Waste Management’s plan. Changes to the requirement for Site Waste Management Plans in England, BAM took the opportunity to change and introduce into our procedures project resource efficiency plans, extending beyond recording how we prevent/recycle waste to conserving energy and water during construction demonstrating a sustainable construction. Since March 2014, BAM construction projects produce a Resource Management Plan (RMP).

The project has no BREEAM rating, but BAM Construction will apply environmental targets to the construction phase of new Plaza listed. The purpose of the specific waste targets is to both prevent , reduce and recycle the amount of waste created, and that what is produced is sent to licenced transfer station for further recovery and maximise diversion from landfill any that is produced.

Steps taken to minimise waste, the amount of waste generated during excavation, demolition and construction

The management of materials on this site, will ensure that materials consumption is reduced and the, production of waste created (excavation, demolition and construction) is avoided wherever possible. This will be possible by following prevention, reduction and reuse measures outlined below. Only where these routes have been exhausted should waste be sent for disposal.



The site is a brownfield site with an existing building and contents in derelict condition, we have tabled below the approach to how opportunities will be explored to how those existing materials could be reused or recycled in the first instance.

Waste Streams	Waste Prevention & Reuse, and recycling measures
Excavation	Application of the excavation activity to the waste hierarchy includes the following although not limited to: - Foundations and drainage grubbed out, subject to the structural survey and ground investigation we will look to crush and reuse material on site if this is practicable. If this can not be done on site the material will be removed for recycling off site. - Subject to classification of the ground makeup from the SI the excavated material will be used to bring the ground level up below the ground floor slab.
Demolition	Application of the demolition activity to the waste hierarchy includes the following although not limited to: - A pre-demolition audit will be undertaken by specialist demolition subcontractor, to identify those materials to be removed, for suitability for reuse and recovery to minimise non-recyclable waste, although the building has been in derelict since 1999 the reuse opportunities may be limited. - A soft strip will be undertaken to remove fixed furniture floor/wall treatments and fixtures and fittings etc. where possible these will be taken to a waste transfer station and recycled - Steel roof trusses will be lift out/removed, where it is not possible due to restrictions not to oversail adjacent boundaries the trusses will be removed in sections, for removal off site for recycling

	- Existing ground bearing slab removed, - Section of existing structure to be removed, the demolition material will be stockpiled on site, to be crushed and graded as material for reuse on site. Levelled across the site and underneath the building footprint to make up the levels. This will reduce the volume of demolition waste removed from site.
Demolition (Hazardous)	Asbestos cement sheeting (hazardous waste) will be removed from the building after the R&D asbestos survey to a licenced NRW/EA facility

Special considerations for the Plaza Redevelopment

- Vermin- Although no incidents of vermin being spotted have occurred whilst investigating the site, in the weeks prior to the demolition commencing pest control will be employed to clear the area on any vermin as a precautionary measure. These will remain in place during construction.
- Noisy activities- The proposed demolition methodology covers the demolition of the building in greater detail however low vibration methods will be employed to minimise nuisance to the neighbouring properties as well as prevent damage to the retained structure. Once the steel frame is erected the building will be wrapped in a weather defence board which will provide a further barrier between construction activities and neighbouring properties. Baseline/background readings have been taken in the period leading up to work commencing, we will continue to monitor noise levels during demolition and construction activities. For any activities where there is a likelihood of exceeding 80dB at source.
- The location for the noise monitoring will be the footpath outside the neighbouring properties on Eagle Mews, the footpath opposite the site on Eagle Street adjacent to the neighbouring properties, the rear of the site adjacent to (or under agreement from the owner) within the Royal Mail sorting office car park and the Apple Green Garage forecourt opposite the front of the site.
- Monitoring will take place prior to the activity starting, periodically depending on noise levels, after a significant change and after the activity completes so there is a representative sample of readings

The following activities have been highlighted as high risk noisy activities

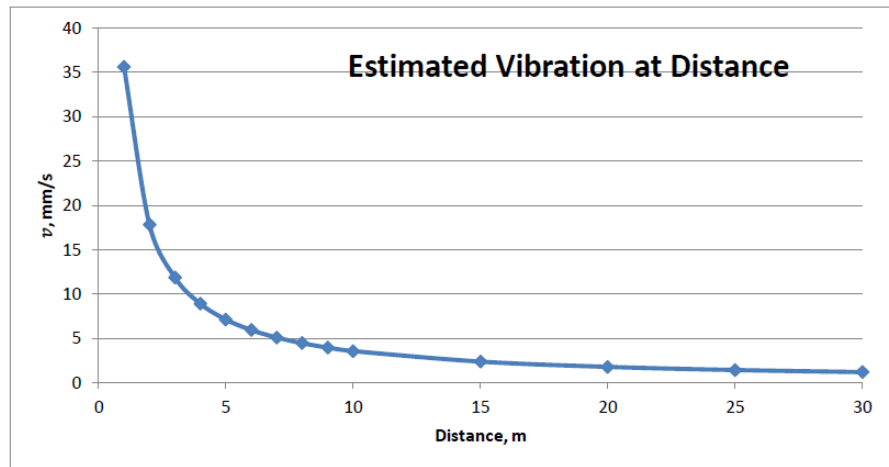
Sheet piling to retain Eagle Street footway

The footway on Eagle Street is immediately adjacent to the existing building. As the current buildings slab level is approximately 1.2-1.5m below the existing footpath level it is necessary to sheet pile along this elevation to prevent the collapse of the footway and potentially the highway into the excavation.

The vibration and noise assessment for the required rig and associated equipment to complete the task are shown in the extract below. The sheet pile length is 2m and the distance to the closest property is 15m away from where the rig will be standing. The current duration for the sheet piling works is 2 week.

Vibration Estimates

Distance, m	v, mm/s
1	35.6
2	17.8
3	11.9
4	8.9
5	7.1
6	5.9
7	5.1
8	4.4
9	4.0
10	3.6
15	2.4
20	1.8
25	1.4
30	1.2
At Subject	3.6



Tolerance of building (not occupants)

	v, mm/s	Acceptable Distance, m
Ruins, buildings of architectural merit	2	17.8
Residential	5	7.1
Light commercial	10	3.6
Heavy Industrial	15	2.4
Buried Services (general)	25	1.4
Buried Services (old brick sewers)	12.5	2.8

NOISE ASSESSMENT



SPI PILING Ltd.
Steel Piling Contractor

Contract Name	Aikengill, Lancaster
Contract Number	C21333
Pile Type	ZZ12-770 (single)
Pile Length (m)	8.0
Equipment	38t New Holland Excavator Grizzly MG-90

Ground Conditions	0.0 to 0.4m stone platform
	0.4 to 1.5m soft sandy clay
	1.5 to 8.0 stiff clay
Date	18/03/2019
Weather Conditions	Dry / No wind

Reading (db)	R1
X - At Source	
On Tickover	74
2m Driven	122
4m Driven	125
6.0m Driven	103

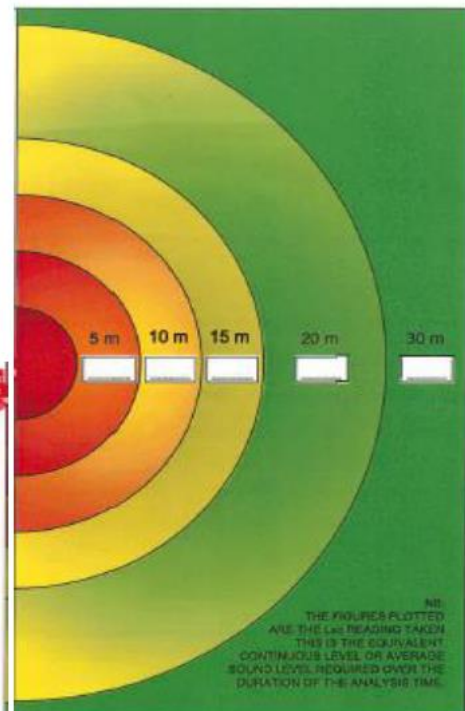
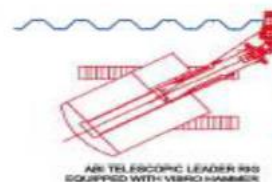
Reading (db)	R1
20m From Source	
On Tickover	75
2m Driven	101
4m Driven	90
6.0m Driven	86

Reading (db)	R1
5m From Source	
On Tickover	75
2m Driven	114
4m Driven	95
6.0m Driven	97

Reading (db)	R1
40m From Source	
On Tickover	74
2m Driven	80
4m Driven	76
6.0m Driven	83

Reading (db)	R1
10m From Source	
On Tickover	75
2m Driven	115
4m Driven	112
6.0m Driven	105

Reading (db)	R1
15m From Source	
On Tickover	75
2m Driven	108
4m Driven	95
6.0m Driven	89



The requirement for supporting Eagle Street is unavoidable however the following mitigation measures have been employed to minimise nuisance

- There will be a solid hoarding surrounding the site along all elevations
- We will use a moveable acoustic barrier fence around the rig. Test data shows that a maximum 40db reduction can be achieved using these systems
- Footpath closure will be in place to divert pedestrians in the vicinity on to the opposite footway
- Well maintained plant and equipment to be used to minimise additional plant noise
- Noise monitoring will be carried out at source and in sensitive areas. Background areas have already been collected during the pre construction stage.

Groundworks

- Ground works activities are not expected to exceed an average of 80db outside of the site hoardings during the groundworks required to construct the Plaza. Well maintained plant and equipment will ensure unnecessary noise is kept to the bare minimum. Based on the current design the groundworks element of the build is approximately 6 weeks.

Steel Erection

- The majority of the steel erection will be below an average level of 85db at source. The only activity that is likely to exceed these levels is the use of an impact wrench to connect the steel members. The sound level at source will peak at 90db however this will be infrequent. Where is practical to do so an acoustic screen can be used to reduce the sound levels transferred from the point which it emendates to the boundary of the site. Again noise monitoring will be carried out during this activity.

SFS Installation



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- To minimise the nuisance of the on site cutting of the SFS an acoustic cutting station similar to the photo above will be used.
- It will be necessary to fix the SFS to the steel frame by the use of the use of a cartridge direct fastening tool, commonly knows as a “DX” or “Hilti gun”. Noise assessment for the commonly used models are below. The noise levels referenced are at source and will be infrequent.

Direct fastening tools



Tool	Vibration				Noise
	Cartridge color	Recommended number of fastenings per day		HSE Points	Workplace relevant emission value L _{PA,1s}
		EAV 2.5 m/s ²	ELV 5 m/s ²		
GX 120/GX 120-ME	-	3500	14000	0.03	102 dB(A)
GX 100/GX 100-E	-	2700	10800	0.04	102 dB(A)
GX 90 WF	-	25000	100000	0.00	106 dB(A)
DX 351	white	2100	8400	0.05	104 dB(A)
	green	1900	7600	0.05	
	yellow	1100	4400	0.09	
	red	800	3200	0.13	
DX 460	green	1300	5200	0.08	103 dB(A)
	yellow	1000	4000	0.10	
	red	1000	4000	0.10	
	black	600	2400	0.17	
DX 76	blue	700	2800	0.14	110 dB(A)
	red	600	2400	0.17	
	black	400	1600	0.25	

* Sound pressure level $L_{pA,1s}$ measured at user's ear according to standard EN 12549. Wear ear plugs according to operating instructions.

Weather defence board

- Upon completion of the SFS the building will be wrapped in weather defence board. The fixing of the boards is undertaken with self drilling screws so the noise levels are unlikely to breach 80db at source. The Sinat weather defence board has a density of 873kg/m³, once the building has been wrapped in weather defence board this will significantly reduce the noise levels outside of the site. We will however continue to monitor noise levels throughout the construction phase.
- Storage of materials- Once the rear section of the building has been demolished the site is clear and opened up for the heavier elements of construction, frame, roofing etc. Deliveries to site will, where possible, be on a just in time basis. Once the frame has been completed where materials are required to be stored on site the hall at the rear of the building will be used as a staging point for distribution into the building.
- Operational hours- 08:00-18:00 Monday to Friday, 08:00-13:00 Saturday (If required) and No working on Sunday.

Complaints

In the event that there is a complaint made about the site/project activities we will attempt to resolve the issue as soon as practicably possible. We will log all complaints and report them in the NPT monthly project meetings and demonstrate our corrective actions