

Tilbury Douglas Construction

Construction, Environmental Management Plan

Cascades Leisure Centre Gravesend Kent

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1. Introduction

This CEMP details how Tilbury Douglas Construction proposes to manage the construction activities for the construction of the new Leisure Centre then the demolition of the existing leisure centre, public house and external works comprising of car parking areas and soft landscaping, which are located off Thong Lane, Gravesend DA12 4LG.

The project has a programme commencement date of June 2023 with completion of the works in December 2024.

This plan covers:

- Hours of work
- Management of deliveries
 - Sizes
 - Routing
 - Delivery scheduling
 - Material movement on site
- Parking
- Wheel cleaning
- Construction staff travel plan
- Public Safety and access to the existing Leisure Centre
 - Site security
 - Fire plan
- Construction Activities
- Waste removal and recycling
- Air quality, Dust and Vibration Management Plan
- Tree protection
- Resident Liaison

2. Hours of Work

Our proposed hours of work on site will be:

Monday to Friday 0800 to 1800

Saturday 0800 to 1300

Sunday & Bank Holidays no work

During the construction period it may be necessary in exceptional circumstances to work outside these hours. Should this occur, these works will be subject to consultation with the project team and the local Planning Authority, as required

3. Management of Deliveries, Loading and Unloading Arrangements

The new leisure centre is located just to the south of the existing leisure centre and will share the access roads. The site is bounded by Thong Lane to the west, Legend Sports to the east, Gravesend golf centre to the south and with residential housing on Thong Lane to the west.

All access for construction vehicles will be from Thong Lane. The existing leisure centre and Legend Sports will be in operation throughout the construction of the new leisure centre with construction / public vehicular access sharing the same access routes off Thong Lane.

A pedestrian access gate will also be established adjacent to the main gate. The pedestrian and vehicle access points will be segregated. To assist with the safe operation of the vehicle entrance an appropriately trained traffic marshal will man the vehicle access gate at all times when the site is operational. The traffic Marshall will be responsible for ensuring vehicles operate safely in the access area and to stop traffic movements should any members of the public be in the vicinity of the site access when accessing the existing leisure centre and Legend Sports.

The new building construction includes foundations, 2hr concrete formed swimming pools, structural steel frame with insitu concrete floor slabs at all levels including the roof together with aluminum windows, brickwork and rainscreen panel cladding to the facades. The frame will be erected using mobile cranes so the following vehicles will require access to the site.

The following vehicles will be required:

- Rigid body lorry 12m - component materials, cladding finishes, etc.
- Articulated lorry 16.5m - steelwork deliveries, window units
- Concrete mixer lorry 8.7m
- Piling rigs – via articulated lorry 16.5m
- Mobile cranes (typical) 12.3m
- Transit van - short and long wheelbase

Access to the site will be via a clearly marked and a segregated pedestrian route and will be protected from vehicles by fencing. Whenever vehicles are moving on site a banksman will accompany the vehicle to ensure the safety of pedestrians. Space will be available within the site for reversing so that whenever possible vehicles can also exit the site in a forward gear.

To avoid disruption to local traffic, all deliveries will be pre-booked, giving 24-hour notice. The booking system will be managed by our logistics team. Wherever possible, deliveries will not be allocated during the peak morning and evening rush hour to avoid congestion on roads local to the site.

Discussions will be held with the existing Leisure Centre operator to establish if there are any dates and times when there will be large number of visitors to the leisure centre and we will avoid construction delivery vehicles at peak movement times. Deliveries will be between the hours of 0800 to 1800 (Monday – Friday) and Saturday 0800 to 1300.

To ensure the safety of the public and other road users on arrival the vehicle will be met by a banksman who will supervise the vehicle as it enters the site. The delivery driver will remain with the vehicle so it can easily be removed if required.

4. Haulage routes

It is noted that the site although off Thong Lane is located in a predominantly non-residential area. All construction delivery vehicles will access the site from Thong Lane approaching mainly from the South.

Access from the South via M25 & A2

1. Exit M25 at junction 2 – A2 east junction
2. East bound along the A2 Watling Street
3. Turn off the A2 at the M2 junction and proceed along Brewers Road
4. At the roundabout proceed straight across to Darnley Lodge Lane
5. Darnley Lodge Lane leads to Thong Lane

5. Wheel Cleaning

The main access to the site off Thong Lane the A217 will be via the existing access roads.

The access route will be clearly signposted and the entrance to the site will be protected by gates with the opening either side protected by a upvc hoarding to clearly identify the entrance area.

A concrete apron will be formed immediately behind the entrance. This will be sized to accommodate the largest delivery vehicle. The apron will be provided with a drainage channel running to a temporary settlement tank. Vehicles preparing to leave the site will be parked on the concrete apron, inspected and cleaned by jet wash to ensure that no debris leaves the site. Any large debris will then be removed and the water and all arisings from the cleaning operation will be swept into the drainage channel. The drainage channel will be connected to a settlement tank which allows clean water to be discharged to the local sewer system.

The main site haul road will be formed as an initial activity together with hard standings around the new building area. This will minimise the opportunity for mud to be collected on the wheels of vehicles on site. Early cut and fill activities required to remodel the area of the site forming the new leisure centre will be carried out by tracked excavators and site dumpers. Vehicles being loaded with excavated material for disposal off site will be parked on a hard standing outside the area of the cut operation.

The jet wash at the site entrance will ensure that vehicles leaving the site do not deposit mud or debris onto the highway during the initial site grading operation, foundation or drainage works. A jet washing system with controlled drainage is our preferred system of wheel cleaning as it allows for full inspection and spot cleaning as required.

The wheel cleaning process will be managed by our traffic marshal who will be trained and carry out an inspection of all parts of the vehicle including wheels, mudflaps, the underside and wheel arches.

Back up plant will be held at site to allow for maintenance operations or equipment failure.

6. Site Establishment & Parking

Our site establishment will be located on the existing MUGA and connected to statutory services, using this location will avoid the requirement for the site establishment to be relocated during the course of the works. The site establishment will consist of toilets, drying room, canteen, offices and a meeting room.

The new leisure centre is located on the current car park, to mitigate the loss the hard standing to the north will be prepared as car park for the use of the leisure centre and for the construction operatives.

Subcontractors will be encouraged to use min buses and vans to reduce the number vehicles in the car park and on the roads. Parking in the local area will be actively discouraged to avoid nuisance to local resident.

On-site parking will be provided for emergency vehicles during the construction stage.

The parking area will be outside the area of the main works which will assist with security and safety of all site operatives and visitors.

Where possible we will encourage all operatives and visitors to travel to site making use of public transport, either by bus or over ground train.

All subcontractors will be provided with details of the local stations and bus routes serving the sites.

This information will be discussed with our suppliers and subcontractors prior to placing orders so that use of alternative transport, rather than private cars, is maximised. We note the following transport links exist:

Train Lines: Gravesend Station a 30-minute bus journey

Bus Routes: 748, 480 and 481

7. Security, Hoardings & Access

The safety of members of the public is a priority for us. The site area will be within the grounds of Casacdes Lesiure Centre, Legend Sports and the golf clubs which will be open to public access and for staff and visitors.

The site access points will be secured by metal gates and clearly identified by with 2.4m high upvc hoardings to each side of the gates.

The site boundary within the grounds will be protected by 1.8m high heras fencing to the full perimeter of the works area. Once the cut and fill works have been completed the permanent perimeter fencing comprising 2.4m high upvc hoarding will be installed around the boundary.

The site fencing will carry signage to identify the site area. Safety signage will be fixed to the hoarding at entrances and at intervals on the perimeter. Figure 1. below shows an typical site entrance detail.

A detailed plan of the proposed site boundary protection is shown on our site logistics drawings attached at Appendix A. All site hoardings and boundary fences will be inspected on a regular basis to ensure that the site perimeter is secure and in a safe condition. Documented weekly inspections will also be carried out as part of the weekly site safety inspection.



Figure 1 – typical site entrance

All plant and materials will be stored within the site boundary, either within the working area compound or the materials area. Containers may be located in the materials storage area for high value items. As the works progress, the new build materials will also be stored within the new building. Theft from site of both plant and materials is a daily risk and measures will be taken to reduce this risk. Plant will be removed once its use has ended, otherwise it will be securely stored either within locked metal cabins, a security container or it will be physically chained down. Materials will be delivered as required and incorporated into the works as soon as practicable.

Should a member of the public wish to contact the site for any reason, a contact name and telephone number will be provided on signage at the main entrance in accordance with good practice and in compliance with the Considerate Constructors Code. The site hoarding will be

provided with vision panels at various points so that visitors or 'passers- by' can view the works safely without the need to access the site.

8. Operative Site Inductions

All operatives will receive a site-specific induction which will highlight the residential nature of their surroundings and live Leisure Centre opposite. During the induction operatives will receive instruction on compliance with CSCS certification, health and safety issues, the site rules and security arrangements.

The Project Manager will develop the induction presentation to make it site specific. In particular this will address:

- Fire alarm and evacuation procedures.
- Site rules and regulations.
- Security responsibilities Interface with existing operations.
- Method statement briefings.
- PPE policies.
- Training and competency.
- Site waste disposal.
- Working in a live environment

All operatives will be advised of the site rules which will include appropriate behaviors and dress.

9. Fire Escape Routes

Fire prevention procedures in accordance with “The Joint Code of Practice on the Protection from Fire on Construction Sites” will be operated.

Details of fire escape routes will be displayed at various locations around the site; these will be reviewed and updated as the construction progresses. In the event of fire or building evacuation, site personnel will assemble at a muster point located in front of the new building. Fire drills will be held at regular intervals. Fire alarms will be installed both in the site offices and throughout the site.

Fire escape routes will be clearly identified, and we will ensure that escape routes are kept clear. An appropriate number of fire extinguishers will be located throughout the site.

Particular measures to reduce the risk of fire will include:

- No smoking will be permitted on site
- Hot work will be avoided wherever possible, where hot work is necessary, this will be carried out under a permit to work, with fire extinguishers on hand. The work will finish at least 1 hour before the site closes and the area inspected at the end of the working day
- Flammable materials will not be stored within the buildings but in a suitable container within the site compound

10. Waste – Recycling & Disposal

Our site Waste Management procedures and Plan (SWMP) will drive our management and reduction of waste at Cascades Leisure Centre. These detail all the requirements for waste management, including legal, duty of care and best practice elements and are audited under ISO14001. Our SWMP and waste reporting will also meet the requirements of the BREEAM Wst 01 credit reporting. Waste data will be collated and monitored during the progress of the project using our sustainability reporting tool, STREEM.

At Cascades Leisure Centre the waste targets will be those from the BREEAM assessment, less than 6.5 tonnes of construction waste per 100m² and as a minimum 80% tonnage diverted from landfill. On a typical project more than 95% of waste is diverted from landfill. Waste storage and movements will comply with both pollution prevention and waste permitting legislation.

We will ensure that all access routes, fire escapes and staircases are swept and kept clear of debris on a regular basis to maintain high standards of health and safety on the project, and all general areas of the project will be swept clean on a weekly basis.

Sub-contractors will be responsible for removing waste emanating from their works to a central point on site within our hoarding line. When appropriate we will provide wheelie bins to the workforce to serve as the central point for rubbish collection prior to removal to site skips. A space has been allocated for skips as recorded on the site logistics plan in Appendix A. These skips will allow for segregation at source to be carried out which will be followed by further sorting by our waste carrier at their waste transfer station to maximise the opportunity for recycling and to minimise landfill.

The management asbestos surveys do identified asbestos that is required to be removed under controlled conditions prior to the demolition of Regans Bar and the existing leisure centre. A R&D asbestos surveys will be carried out and this will be removed by a suitably competent contractor and the arisings disposed of at a suitably licensed receiving facility.

11. Safety Management

The works on site will be subject to the Main Contractor's Health and Safety Policy. The project will be operated in accordance of the requirements of the specific Project Health and Safety Plan. This plan identifies accountabilities for the management of safety, identifies high risk activities and is used to monitor the production and review of subcontractor method statements. All works will be carried out under the control of a method statement produced following risk assessment by the subcontractor.

The site team will also ensure the requirements of the health and safety plan are communicated at induction, all contractor progress meetings and safety committee meetings. We will also undertake regular safety inspection on site to confirm that the requirements of the subcontractor site specific method statements are being carried out.

Regular safety inspections will be carried out by the site team and weekly audits will be carried out by the visiting Health and Safety Manager allocated to the project. Audits are recorded on HSQE Project Inspection Form. This system is further monitored by visiting director audits.

12. Tree Protection Method Statement

A tree Survey Report for the site has been prepared by XXX, report reference XXXX dated XX 2023. RECOMMENDATIONS

Further to the survey an Arboricultural Impact Assessment Report (AIA) has also been prepared for the scheme document ref **XX dated November 2022**. This document identifies the impacts of the development proposals on the trees within the site and the measures to be adopted to carry out the construction works where these encroach on root protection areas.

During the initial site set up works, tree protection fencing in the form of heras fencing will be erected, to form construction exclusion zones (CEZ) at tree root protection boundaries. These are shown on the Tilbury Douglas Construction site logistics plans include in Appendix A. The Heras system of fencing or similar, will be used to provide the necessary protection to the CEZ. All Heras fence panels will be joined using a proprietary coupling system using a minimum of two clamps per panel side. Each panel will be fitted securely to a rubberised foot that will in turn be pinned to the ground using metal stakes driven into the ground. The fence will have signs attached to it stating that it defines a CEZ and that no works are permitted within the fence. No notice boards, cables or other services will be attached to any tree.

It is noted that no foundations fall within the root protection areas of any tree associated with the Leisure building. There are however limited areas of work, particularly to the access road, car parking, footway and some landscaping works where it will be necessary in work within the root protection areas, therefore methods of excavation using compressed air, vacuum systems or by hand, will be adopted. All such works shall be carried out using tools appropriate for working around tree roots. Where root pruning is required to accommodate the new construction this will be carried out under the supervision of an Arboriculturist.

All construction operatives will be advised of the actions required for tree protection on the site at the site induction briefing which is attended by all operatives before they commence work on their first day on site.

13. Ecology

We are committed to protecting and enhancing biodiversity. At Cascades Leisure Centre a preliminary ecological appraisal has been undertaken to review the site and impact of the project. The details of the survey are recorded in Lloyd Bore document Preliminary Ecological Appraisal ref. 6183-LLB-RP-EC-0001 dated 24/11/23. This document identifies appropriate and proportionate avoidance, mitigation, and compensation measures.

The Ecological Impact Assessment identified the following mitigation actions for Cascades Leisure Centre, and we propose to implement the following processes during the construction.

- Ensure implementation of measures in the project environment management documents to prevent pollution (dust, noise, pollution etc.) in compliance with industry best practice.
- Retention of deciduous and mixed woodland where possible to provide habitat for wildlife.
- Implementation of the Arboricultural Impact Assessment measures.
- Lighting during construction and in the proposed development considers bats e.g. low-level security lighting on a timer at night.
- Workforce to do bat toolbox talk
- Workforce to do badger toolbox talk.
- Cover excavations or provide way out of them at night to prevent possible injury to mammals such as foxes and hedgehogs.
- Avoid site clearance during hedgehog hibernation period (Nov-Mar). If clearing dense scrub search for hedgehogs hibernating under leaf debris.
- Avoid clearance of vegetation and trees during bird nesting season (Mar-Aug). If cleared during nesting season, they should be checked by a suitably qualified ecologist.
- Provision of alternative nesting habitat such as bird boxes.
- Plan a sequence of work to allow tree and shrub clearance to be carried out a programmed providing alternative locations for reptile and amphibians' hibernation. Working in conjunction with the employed Ecologist.
- Implement invasive non-native species management.

Following the implementation of these, there are unlikely to be any adverse significant effects to biodiversity as a result of the development. The residual effects on biodiversity will be "Negligible" or "Not significant".

The landscape strategy for the project incorporates habitats within the site that are in line with the Environment Act 2021, NPPF, regional and local policies. The landscape strategy will add wildlife value to the current site. Further biodiversity enhancements will be delivered where possible:

14. Construction and Demolition Method Statement

The works on site are due to commence in June 2023 and complete December 2024. The works comprise the construction of a new build two story Leisure Centre, the demolition of the existing leisure centre and forming external areas providing parking.

Site establishment and access

The site access will be from Thong Lane, where temporary site welfare facilities, provided by self-contained Oasis units, will be sited to allow site hoardings to be erected to secure the site perimeter.

Once access into site is established, the internal access / egress road will be formed. The full site offices and welfare facilities for the construction workforce will be installed once the hard standing areas and the site through road have been established.

The toilet facilities will be connected to a septic tank with regular pump outs. Power for the office facilities will initially be provided by a generator until a permanent builder's supply is established from the local electricity network.

Demolition works

The demolition of the Regans Bar is required to facilitate the works. This will be carried out with a tracked excavator as one of the first site activities. An Asbestos Refurbishment and Demolition survey will be carried out for this building. Any asbestos materials identified will be removed by a licensed asbestos removal contractor prior to demolition works commencing. The small quantities of demolition arisings are not suitable for re-use on site and these will be removed for crushing and recycling off site.

Material distribution

Horizontal distribution of materials will be facilitated by the installation of a hard standing on the main site area which will be formed of imported recycled aggregate which will also serve as a firm base for foundation operations. Hard standing will also be formed around the building footprint.

During groundworks operations material will be moved by excavators and dumpers. Bulk materials will be removed from site in standard tipper vehicles.

Lifting activities associated with construction of building substructure and frame will be carried out by suitably equipped excavators and mobile cranes. Mobile cranes will be utilised on site for components such as movement of shutters, precast stairs, the steel frame, metal slab decking, roof finishes and erection of roof plant. External cladding will be carried out using mobile elevated work platforms supported by mobile cranes or mini spider cranes located on the concrete slabs.

As the works advance, the perimeter hard standings around the building will be used for materials movement, and mobile elevated work platform (MEWP's) access to facilitate external cladding installation.

Vertical lifting of materials for finishing works will be facilitated by loading platforms at the building perimeter.

Fuel Storage

All fuel stored on site is to be located on hard standing and contained within a double bunded vessel in line with best practice. Drip trays are to be provided with each fuel container to control small scale discharge associated with re-fuelling. Spill kits will also be supplied in close proximity to fuel storage areas and operatives working in these areas will be trained in the use of the spill kits provided.

Lighting

Site lighting will be designed to avoid light spill into nearby properties. Design features will include hoods, cowls, louvres or shields to direct lighting to the intended area only, avoiding or minimising spill into boundary vegetation or lighting above the horizontal. All lighting not required for safety purposes will be shut off between the hours of 23:00 and 07:00.

Construction sequence and operations

Groundworks and piling

The site will be cut to level following establishment of the new site access. A haul road will be established to the edge of the new building. Excavated material will be removed from site by tracked 360 excavators loading into rigid axle tipper vehicles. Wheel cleaning will be carried out within the site boundary before lorries are cleared to exit the site onto the public highway from Thong Lane. Recycled crushed concrete will be delivered to site to form the site hard standings.

An initial UXO risk assessment has identified the site area as low risk. A UXO safety briefing will be made in advance of groundworks commencing. Foundation operations will follow. Arisings will be removed from site and disposed of at appropriately licensed tips.

Under slab drainage connections will follow the foundations. Once the swimming pool walls are formed, arising materials will be used as back fill material. Premixed concrete will be delivered to site for foundations and slabs. The foundations will be formed using small excavators and dumpers. Premixed concrete will be used for all substructure and foundation works.

When the foundations and underslab drainage are complete, works will commence on the ground floor slab. The ground floor slab comprises a reinforced concrete suspended slab. The ground floor slab will be formed from pre mixed concrete delivered to site in standard mixer vehicles, placed by a mobile concrete pump.

Superstructure works

The two-storey superstructure comprises a structural steel frame, ground to roof level, with floor plates formed by composite concrete and steel metal decking.

All steel frame and slab elements will be erected using mobile cranes. The building location on the site allows for the frame erection to be carried out on site without oversailing of the public highway.

Materials for the frame construction will be delivered by either fixed or articulated vehicles. Concrete for the floor slabs will again be delivered to site in standard mixer vehicles. Concrete will be placed by mobile concrete pumps.

The internal precast concrete stairs will be installed using mobile cranes.

External Envelop

The building cladding comprises brickwork or a proprietary panel system incorporating double glazed aluminium windows and areas of curtain walling. The inner skin of the internal cladding comprises 'metsec' cold rolled steel stud walling which supports the external cladding panels. The inner skin stud wall will be erected from within the building from the floor slab at each level. The external cladding will be accessed by mobile elevated work platforms (MEWP's) working from a hardstanding installed to the perimeter of the building. Materials for the external cladding will be delivered to site using both rigid and articulated vehicles.

Brickwork from ground level will be constructed, using standard scaffolds for access.

Roof works will continue in parallel with elevation cladding. Materials for roof coverings will be hoisted by mobile crane lifts. The mechanical services plant located within the roof level plant room will be placed on the roof by mobile cranes.

Internal finishing

Internal fit out will commence as the building becomes weather tight allowing services installations and finishes to progress. Management of deliveries will continue to be maintained as the numbers of subcontractors on site will peak during this phase. Both finishing and mechanical and electrical services installations will be progressed. As the building will become fully enclosed at this stage, any noise generated by construction works will be contained by the building envelope.

External works

External works around the new building will be progressed simultaneously with the main construction activities. Hardstanding areas / path ways around the building will be formed during the cut and fill exercise at project commencement and the necessary, retaining walls, drainage, fencing and specialist surfacing will follow.

External works adjacent to the building facades will follow completion of the roofing and cladding activities.

Plant will include dumpers and excavators. Materials deliveries will include crushed stone for road, car park and play area sub-bases, concrete for bases, paving and tarmac surfacing.

Completion

The complete works will include installation of all furniture and equipment for operation of the new leisure centre. Loose furniture and equipment will not be installed into the building until the internal finishing works have been completed and the external works areas have been sufficiently completed and cleared to allow access for delivery vehicles and safe movement operatives loading out equipment into the building.

Following full commissioning and proving of the building mechanical and electrical services a full programme of training activities will be scheduled with the Leisure Centre operators and facilities managers to ensure safe use of the new building from the first day of full operation.

Demolition of Existing Leisure Centre & External Works

Following handover of the new leisure the existing leisure centre will be decommissioned and a R&D asbestos survey will be carried out. Any asbestos materials identified will be removed by a licensed asbestos removal contractor prior to demolition works commencing. The quantities and type of demolition arisings are not suitable for re-use on site and these will be removed for crushing and recycling off site.

External landscaping and forming of the car park will progress once the demolition is complete.

Final surfacing of the internal access road and car parking will be carried out towards project completion so these areas are not exposed to construction traffic.

15. Noise, Dust and Vibration Plan

Dust, Noise and Vibration Control

Details of measures that will be applied to control the emissions of noise, dust and vibration are recorded below. Best Practice guidance is detailed within BS5288-2:2009 Code of practice for noise and vibration control on construction and open sites. Kent County Council document 'Guidelines for Noise and Vibration Assessment and Control – January 2022 also refers. Tilbury Douglas Construction operates an ISO14001 certified management system which will ensure that the best practical means outlined in this document will be subject to regular inspection and audit.

Potential Dust Generating Activity

The majority of the construction works comprises of the concrete foundations, steel frame for the building superstructure. There is also a large area of the site which requires imported materials to form the car parking area to the north of the new building.

The groundworks and carpark construction have the potential for dust generation.

The application of good housekeeping measures which will include regular cleaning, vacuum equipment on small plant and wetting down, in conjunction with the measures noted above, will avoid dust break out from the building and groundworks and frame activities.

Dust Mitigation measures

The following mitigation measures will be adopted, where practicable, to reduce and manage dust and other emissions from site activities and minimise disruption or nuisance to neighbouring occupiers:

A) Pre-project planning & effective management

- Method statements to include processes for controlling dust
- Setting of speed limits at maximum 5mph
- Preventative measures such as those detailed below.

B) Site preparation and construction

- Keeping fencing, barriers, scaffolding and screening clean; and
- Construction areas to be clean and regularly swept to prevent the build-up of dust
- Vacuum plant to be used with all dust generating equipment

C) Haulage routes, vehicles and plant

- Unnecessary vehicle movements and maneuvering will be avoided
- Location of plant and vehicles away from sensitive areas, or housed in closed environments where possible
- Use of vehicles and plant with low emission levels
- Regular maintenance of engines, plant, maintenance of pumps and bowser jets
- Use of jet wash wheel-washes
- Use of enclosed and sheeted lorries
- Prevention of unnecessary engine idling
- Avoid heating with open flame burners
- Using water sprays
- Use of particle control measures on all machinery which can generate dust.

D) Materials handling, storage, stockpiles, spillage and disposal.

- Use of handling methods to minimise dust generation
- Keeping handling areas clean and free of dust
- Damping down with water when loading materials onto vehicles, or into and skips;
- Storage of fine dry materials in enclosures or given adequate protection from wind, by sheeting;
- Ensure that skips are securely covered;
- Ensure methods and equipment are in place for immediate clean-up of accidental spillages of dusty or potentially dusty materials
- Use wet handling methods for cleaning up spillages of cement powder; and
- No burning of waste wood or other materials on site

Potential Noise and Vibration Generating Activities

The majority of the construction noise will be generated during the following operations:

- Groundworks which will utilize mechanical plant
- Frame construction utilising mobile cranes
- External brick cladding
- Internal works using battery and 110v power operated hand tools
- External works including construction of play areas

Noise and Vibration Mitigation Measures

The following mitigation measures will be implemented by all contractors at all times to minimise noise and vibration generated from site activities and disruption to any sensitive receptors:

- Site hoarding to public boundaries
- Controlled lorry movements
- Use of modern plant with inherent noise suppression
- Use of screens around static plant, and other temporary acoustic barriers where appropriate
- Switching off plant which is not in use
- Appropriate handling of storage materials
- Consideration of working hours, particularly for noisy activities
- With larger impact breakers, acoustic screens to be utilised
- Regular maintenance of plant in accordance with manufacturer's instructions, and
- Regular communications held between contractors, local authority officers and neighbours

Likely noise levels to be generated and screening measures

It is not expected that the sound level at the boundary will exceed an action level of 75 dB.

Assessment of local receptors

Residential properties on the west of the site are approximately 15m from the site boundary, and approximately 70m away from the new building, but are screened by a tree buffer and Thong Lane running between the properties and the site, so is unlikely to be impacted by construction noise.

The existing Leisure Centre on the north of the site is approximately 30m from the site boundary, and approximately 35m from the new building, so is unlikely to be impacted by construction noise.

Noise, Dust and Vibration monitoring

In view of the sensitive receptors on the north and west boundaries it is proposed to carry out noise

dust and vibration monitoring at the south boundary at the location indicated on Figure 2 below.

Monitoring conducted, will where practicably using the following equipment:

Class 1 or 2 sound level meter measuring LAeq, LAmx and LA90 with a time base of 15mins and 1 hour

Real time dust monitor measuring Ug or Mg per m3 Tri Axel

vibration monitor measuring PPV

Background levels and measurements will be taken prior to or during a zero-impact activity to establish levels for the noise.

Trigger levels will be agreed for action to be taken on site to address any activities exceeding the permitted values.



Figure 2 Proposed Dust and Noise Monitoring location at the site boundary.

Proposed Noise duct and vibration trigger levels at the site boundary

Noise

Event	Reading	Action
1 = High	75dB	Stop works – re-assess method of operation

Dust

Event	Reading	Action
1 = Medium level of dust build up evident	150ug	Be aware, take steps to reduce the dust levels
2 = High level of dust build up evident	250ug	Take action. Reduce the dust levels by suppressing with water and or by changing the work method being used.
3 = Heavy dust build up evident	500ug	Stop works and asses. Suppress dust levels with water and change the work method.

Vibration

Event	Reading	Action
1 = Low	Up to 5mm/s	Advise the works supervisor of vibration being generated.
Event	Reading	Action
2 = Medium	6mm/s	Advise the works supervisor of vibration being generated. Consider alternative working methods to reduce vibration level.
3 = High	7mm/s	Stop work. Determine revised method of working to reduce vibration. Implement revised method of working and monitor vibration.

16. Works outside the Site Boundary

Existing Bellmouths on Thong Lane

The existing bellmouths on Thong Lane are being retained. The road surfacing will be replaced in the latter stage of the programme after the demolition of the existing leisure centre. A Kent Council approved Highway contractor will carry out these works.

The works themselves will be carried out under a Road Space Application to agree access and working times for the highway activities.

Thong Lane Pedestrian Entrance

A new pedestrian entrance is to be formed from Thong Lane into the new leisure centre.

Statutory Utilities

New water and electricity supplies are required for the new leisure centre. Points of connection have yet to be confirmed by the utility providers but these are expected to be from Thong Lane.

A new connection to the Thames Water storm system is proposed. The new foul water connection will be carried out inside the site boundary connecting to an existing sewer which crosses the site.

17. Residents Liaison

The new Cascades Leisure Centre is located between the Gravesend Golf Club and the residential areas to the west. The residential properties are likely to form the most sensitive receptors to noise and dust generated within the site. The following will be implemented to control our impact on the local environment.

Considerate Constructors Scheme

The new Cascades Leisure Centre site will be registered with the Considerate Constructors Scheme. The aim of the Considerate Constructors Scheme is to improve the image of construction by encouraging good communications with site neighbours and the general public, improved welfare facilities and greater environmental awareness. Tilbury Douglas Constructions are associate members of the Considerate Constructors, and all sites are registered.

Neighbour and Local Community Liaison

Prior to commencement of the construction works, all neighbouring occupiers will be contacted by Tilbury Douglas Construction to explain the activities to be undertaken and duration of the works. A letter of introduction will be issued to all neighbouring properties identifying the anticipated start and completion date and Tilbury Douglas Construction contacts for the site. We will maintain a full-time site contact for the public to obtain information, register a complaint or request action. The sign board at the main entrance to the site will provide the name and contact telephone number for the liaison manager. The sign board will also advise the 24-hour emergency contact number.

Management of Complaints

In the event of a complaint from a neighbour or a member of the public in relation to noise, dust or other event, it will be recorded in a designated logbook, stating the nature of the complaint, the cause and, where appropriate, the remedial action taken. Sub-contractors shall immediately notify the Site Manager should they receive any complaints.

Should complaints about noise or dust be received, they will be addressed directly by the Site Manager to enable results at the time of the complaint to be reviewed, and where appropriate immediate actions employed to rectify the problem.

All complainants will be contacted by the Site Manager or his representative for further discussion and identification of a mutually acceptable solution if the problem persists. Where a valid grievance is raised measures will be put in place where practicable to avoid recurrence of the complaint.

Update newsletters and programme information

Tilbury Douglas Construction will produce a monthly newsletter which will be distributed by hand to all residents around the site. The newsletter will contain details of the progress of the works, update on the activities to be carried out in the following period, details of any special delivery activities and provide an update on the overall programme.