Charlton Park
Proposed Skate Park

Approval of Details Reserved by Condition

Client:
Royal Borough of Greenwich
The Woolwich Centre
Wellington Street
London
SE18 6HQ

Date:
02 March 2017

Job No:
RBG2502/DA
Introduction

The purpose of this report is to provide additional information to address planning conditions (1-15) stated on the Outline Planning Permission (Reference 16/0058/O) for the proposed new skate park within Charlton Park.

The report seeks to supply information to vary all conditions (1-15) as listed below:

Condition 1 – Drawing Numbers
Condition 2 – Reserved Matters
Condition 3 – Expiration of Planning Permission
Condition 4 – Facing/Surface Materials
Condition 5 – External Illumination
Condition 6 – Construction of Development
Condition 7 – Work Method Statement
Condition 8 – Replacement Trees/Planting
Condition 9 – Landscape Management Plan
Condition 10 – RoSPA Operation Inspection Certificate
Condition 11 – Management and Maintenance Plan
Condition 12 – Tree Protection Plan
Condition 13 – Relocation of Table Tennis Tables
Condition 14 – Sustainable Drainage System
Condition 15 – Height of skate park above ground level
Condition 1- Drawing Numbers

The development hereby permitted shall be carried out in accordance with the following approved plans:

- GRCH-PSP01 Rev C
- 2502-MA-N-DR-2001
- Design & Access Statement
- Site Plan
- Block Plan
- Deficiencies & Benefits Briefing Note

Information Provided

It can be confirmed that the development shall be carried out in accordance with the plans listed above. For reference, the drawing numbers supplied as part of this application are listed below:

- CP17_DIMS_001
- CP17_CROSS_SECT_001
- CP17_DRAINAGE_BOWL01
- In-situ annotated
- Greenwich_Skatepark_In_situ_cropped
- CHARLTON PARK PROPOSED LAYOUT
- CP Render 1
- CP Render 2
- CP Render 3
- CP Render 4
- CP Render 5
Condition 2 – Reserved Matters

No development shall be started until detailed plans/section and elevations showing the following details in respect of the relevant parts of the development have been submitted to, and approved by, the Local Planning Authority and the relevant part of the development shall in all respects be carried out in accordance with the approve plans:

- Access
- Appearance
- Landscaping
- Layout; and
- Scale

Information Provided

Access – Level access will be provided to the proposed skate park via new pathways in locations as shown on “Greenwich_Skatepark_in_situ” plans. The pathways will match the existing pathways on site.

Appearance – The appearance of the proposed skate park will be in accordance with the following drawings:

- Greenwich_Skatepark_in_situ
- CP Render 1
- CP Render 2
- CP Render 3
- CP Render 4
- CP Render 5
- CHARLTON PARK PROPOSED LAYOUT
- CP17_DIMS_001
- CP17_CROSS_SECT_001
- CP17_DRAINAGE_BOWL01

Landscaping – The landscaping of the proposed skate park will be in accordance with the following drawings:

- Greenwich_Skatepark_in_situ
- CHARLTON PARK PROPOSED LAYOUT

Layout and scale – The layout and scale of the proposed skate park will be in accordance with the following drawings:

- CP17_DIMS_001
- CP17_CROSS_SECT_001
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Greenwich_Skatepark_In_situ
Charlton Park Proposed Skate Park
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CP Render 1
Charlton Park Proposed Skate Park
Approval of Details Reserved by Condition

CP Render 2
Charlton Park Proposed Skate Park
Approval of Details Reserved by Condition

CP Render 3
Charlton Park Proposed Skate Park
Approval of Details Reserved by Condition

CP Render 4
Charlton Park Proposed Skate Park
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CP Render 5
CHARLTON PARK SKATE PARK LAYOUT

- INSTALLATION OF 2 PICINC BENCHES
- INSTALLATION OF 2 LITTER BINS
- PLANTING OF TREE
- NEW LOCATION OF TABLE TENNIS TABLES
- BED FOR PLANTING OF ROSES

Charlton Park Skatepark, Greenwich
Charlton Park Proposed Skate Park
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Condition 3 – Expiration of Planning Permission

An application for the approval of the reserved matters pursuant to condition 2 and for each phase of the development shall be made to the Local Planning Authority before the expiration of 3 years from the date of the permission; and

The development to which this permission relates shall begin no later than whichever is the later of the following dates: - a) the expiration of 3 years from the date of this outline planning permission; or b) the expiration of two years from the approval on different dates, the final approval of the last such matter to be approved.

Information Provided

It can be confirmed that an application for the approval of reserved matters will be submitted within 3 years from the date of the Outline Planning Permission and the works on site shall start within 3 years.

The works are programmed to start in June 2017 and be completed in September 2017. A programme of works has been provided below.
Planning Stage

- 10/01/17: Award of contract
- 16/01/17: Drainage and ground investigations
- 23/01/17: Design phase
- 06/02/17: Sign off on design
- 07/02/17: Lighting design
- 14/02/17: Prepare documents for submission to planning
- 21/02/17: Planning docs submitted to council
- 23/02/17: Submit to close out Planning Permission requirements
- 25/05/17: Decision date for full planning permission application

Overall Project

- 23/03/17: Pre-works meeting on site
- 26/05/17: Planning / ordering of materials
- 06/06/17: SITE START DATE

Construction Phase

- 09/06/17: Put up road access signs
- 09/06/17: Set out site levels and positions
- 12/06/17: Excavate ground Levels
- 22/06/17: Install retaining walls & poly blocks for Floors
- 22/06/17: Drainage & soakaway/connection
- 30/06/17: Inspect works with client

Ground Works

- 03/07/17: Erect platform support/block walls
- 03/07/17: Erect shuttering for boxes
- 11/07/17: Pour boxes
- 11/07/17: Fix in cope rails
- 17/07/17: Inspect works with client

Construction Phase 1: Features

- 28/06/17: Installation of floodlights bases

Construction Phase 2: Skating Surfaces

- 17/07/17: Install reinforcement for transition spraying
- 26/07/17: Spray transitions
- 02/08/17: Install reinforcement for platforms
- 09/08/17: Pour lower platforms
- 14/08/17: Install mesh for lower skating surface

Other Works

- 28/08/17: Landscaping
- 07/09/17: RaSPA inspection
- 07/09/17: Handover
Condition 4 – Facing/Surface materials

Full details of the facing/surface materials including samples to be used on all other finishing materials including paving, roads, means of enclosure, shall be submitted to, and approved by, the Local Planning Authority before the relevant part of the development is commenced. The scheme shall thereafter be implemented in accordance with the approval.

Information Provided

The following materials/finishes will form part of the new proposed skate park:

- Concrete finish to main skate park
- Brickwork upstand
- Handrails
- Pathways

Example images have been provided below.
Examples images of upstands in the context of a skate park

Example of finish to upstand

Examples images of colour finish to upstand
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New pathways to match existing – example image of existing pathways in Charlton Park
Condition 5 – External Illumination

No means of external illumination shall be installed without the submission of details and their prior approval in writing by the Local Planning Authority.

Information Provided

No lighting will be installed as part of this development.
Condition 6 – Construction of Development

The construction, earth removal and mechanical building operations required to implement the development shall only be carried out between the hours of:

Monday to Friday – 8.00am to 6.00pm
And not at all on Saturdays, Sundays and Public and Bank Holidays

Information Provided

It is confirmed that the development shall adhere to the times stated above, as detailed in the Construction Phase Health and Safety Plan which will be presented as part of the additional information supplied for Condition 7.
Condition 7 – Work Method Statement

Prior to the commencement of any work and/or demolition/construction work on each relevant phase of the development a demolition/construction method statement shall be submitted to and approved by the Local Planning Authority. The method statement shall include details of the following:

- Haulage Routes;
- Measures to ensure the footway and carriageway is not blocked;
- Likely noise levels to be generated from plant;
- Proposals for monitoring of noise and procedures to be put in place where agreed noise levels are exceeded;
- Likely dust levels to be generated and any screening measures to be employed;
- Proposals for monitoring dust and controlling unacceptable releases; and
- Wheel washing facilities and facilities for discharging the water.

Information Provided

The following information has been provided to support this application:

- Construction Phase Health and Safety Plan
- Site Access Plan
- Method Statement
- Risk Assessment
- Health and Safety Policy
# Skatepark Construction Phase Health & Safety Plan

<table>
<thead>
<tr>
<th>Description of project</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Project description and programme details including any important dates.</strong></td>
<td>Construction of a reinforced concrete wheeled sports/skatepark comprising as per contract drawings. The park will be built in an existing recreation ground in Charlton Park, Greenwich. The park surface is to be constructed of in-situ spray concrete skate features. Galvanised mild steel coping will be fitted on the upper rim of transitions and galvanised angle iron will protect other edges. The skating surface at the bottom will be constructed from reinforced P420/450 power floated concrete to achieve a smooth hard finish. The completed skate park will comply with all current safety legislation, BSEN14974 and meet the requirements of RoSPA.</td>
</tr>
</tbody>
</table>

- **Start Date:** 9 May 2017
- **End Date:** 14 September 2017

<table>
<thead>
<tr>
<th><strong>2. Details of the project team, including:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) client</td>
</tr>
<tr>
<td>b) principal designer</td>
</tr>
<tr>
<td>c) designer(s)</td>
</tr>
<tr>
<td>d) principal contractor</td>
</tr>
<tr>
<td>Contract/Project Manager:</td>
</tr>
<tr>
<td>Site Foreman:</td>
</tr>
<tr>
<td>e) contractor(s)</td>
</tr>
<tr>
<td>f) other consultants.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>3. Extent and location of existing records and plans which are relevant to health and safety on site, including information on existing structures when appropriate.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>In relation to these works, the following documents are contained in the company’s health and safety folder within the site office:</td>
</tr>
<tr>
<td>• Health and safety policy</td>
</tr>
<tr>
<td>• RIDDOR reporting arrangements</td>
</tr>
<tr>
<td>• Risk assessments</td>
</tr>
<tr>
<td>• Training records</td>
</tr>
<tr>
<td>• Plant maintenance and inspection records</td>
</tr>
<tr>
<td>• COSHH safety data information sheets</td>
</tr>
<tr>
<td>• Service mark up drawings including relevant contact details</td>
</tr>
</tbody>
</table>

## Management of the work

<table>
<thead>
<tr>
<th><strong>1. Management structure and responsibilities.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>See company H&amp;S policy.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>2. Health and safety goals for the project and arrangements for monitoring and review of health and safety performance.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. This project will be completed with no major injury accidents.</td>
</tr>
<tr>
<td>2. All workers will attend appropriate tool box talks and this will be recorded and monitored.</td>
</tr>
<tr>
<td>3. Independent audit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>3. Health and safety arrangements for the construction phase.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>As per Construction Phase Health &amp; Safety Plan and Appendices.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>4. Site rules.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Site rules will be given out at induction and available in the site office.</td>
</tr>
</tbody>
</table>
5. Arrangements for:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| **a)** | co-operation between the project team on site and co-ordination of their work  
Daily communication between Project Manager and Site Manager. |
| **b)** | consultation with the workforce  
Weekly toolbox talks.  
Hazard identification sheets.  
Face to face as changes arise.  
Written work instruction. |
| **c)** | the exchange of design information between the client, designers, principal designers and contractors on site  
Email and face to face discussions. |
| **d)** | handling design changes during the project  
Agreed in writing and signed off by client. |
| **e)** | the selection and control of contractors  
Use of Bendcrete’s Sub-contractor Evaluation Form. |
| **f)** | the exchange of health and safety information between contractors  
All health and safety information will be communicated to sub-contractors via the site manager during progress meetings. Any health and safety issues the sub-contractors may have can be raised with the site manager at any time. |
| **g)** | site security  
The working area will be surrounded by Heras fencing and will be secured each day.  
The container, plant and materials (where portable) will be kept within the compound. |
| **h)** | site induction  
Site induction will be carried out by the Site Manager as per Appendix H and records kept. |
| **i)** | on-site training  
Toolbox talks.  
Where appropriate, on the job training will be given under the supervision of a competent person. Details of training will be recorded and held in the company’s health and safety folder within the site office. |
| **j)** | welfare facilities and first aid  
Temporary facilities.  
Using nearby public facilities.  
First Aid kit in site office.  
First Aiders: Ken Jones, Phil Clarkson, Modestas Lazaukas. |
| **k)** | the reporting and investigation of accidents and incidents including near misses  
All accidents must be recorded (see health and safety folder located in the site office). An accident book can be used for this purpose.  
All accidents will be investigated to prevent any re-occurrence.  
The site foreman will be responsible for completing a RIDDOR form where necessary and will advise the site manager of all accidents, incidents and near misses.  
All RIDDOR forms will be forwarded to HSE by the Project Manager.  
NEAREST HOSPITAL WITH A&E FACILITIES IS  
Queen Elizabeth Hospital  
Stadium Rd, Woolwich, London SE18 4QH  
Dial 999 in an emergency  
Dial 111 for non-emergency |
| **l)** | the production and approval of risk assessments and written systems of work  
Method Statement and Risk Assessment for the Works can be found at Appendix D and Appendix E |
| **m)** | fire and emergency procedures  
Fire and evacuation arrangements will be displayed in the site office or canteen.  
The materials used our construction process mostly present a low fire hazard risk; however, fire could occur in the welfare area or there could be fire involving a construction vehicle. No materials, waste or otherwise, are to be burnt on the site, all rest and storage facilities are to be provided with suitable fire extinguishers, instructions for use and signs. In the event of fire the alarm is to be raised by the person finding the fire who is to shout a warning to those on site; some personnel may be wearing ear defenders and care must be taken to ensure that they are warned. The site area is to be evacuated in accordance with the fire procedures to the fire assembly point indicated by a sign and shown on the plan at Appendix A. The emergency |
services are to be called and the site foreman, Charles Cawood, will account for the whereabouts of all those on site at the time and ensure that the public are kept clear of the site at all times. In the event of a vehicle fire the driver is to turn off the engine and vacate the vehicle, the emergency services called and all people kept at a safe distance at the designated fire assembly point. The site foreman will also record the times at which any emergency services are called and the times at which they arrive at the site.

**Arrangements for controlling significant site risks**

1. **Safety risks, including:**

<p>| | |</p>
<table>
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</thead>
<tbody>
<tr>
<td>a)</td>
<td>delivery and removal of materials (including waste) and work equipment taking account of any risks to the public (for example during access to or egress from the site)</td>
</tr>
<tr>
<td></td>
<td>See Risk Assessment at Appendix E.</td>
</tr>
<tr>
<td>b)</td>
<td>dealing with services – water, electricity and gas, including overhead powerlines and temporary electrical installations</td>
</tr>
<tr>
<td></td>
<td>Client to provide services drawings. A CAT scan of the site is to be carried out prior to works commencing as a matter of course to identify the possibility of ‘rogue’ services. Investigative works will be carried out by both Bendcrete in house staff.</td>
</tr>
<tr>
<td>c)</td>
<td>accommodating adjacent land use</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>d)</td>
<td>stability of structures whilst carrying out construction work, including temporary structures and existing unstable structures</td>
</tr>
<tr>
<td></td>
<td>See Risk Assessment at Appendix E.</td>
</tr>
<tr>
<td>e)</td>
<td>preventing falls</td>
</tr>
<tr>
<td></td>
<td>See Risk Assessment at Appendix E.</td>
</tr>
<tr>
<td>f)</td>
<td>work with or near fragile materials</td>
</tr>
<tr>
<td></td>
<td>See Risk Assessment at Appendix E.</td>
</tr>
<tr>
<td>g)</td>
<td>work involving the assembly or dismantling of heavy, prefabricated components</td>
</tr>
<tr>
<td></td>
<td>See Risk Assessment at Appendix E.</td>
</tr>
<tr>
<td>h)</td>
<td>work near high-voltage cables</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>i)</td>
<td>work on excavations and work where there are poor ground conditions</td>
</tr>
<tr>
<td></td>
<td>See Risk Assessment at Appendix E.</td>
</tr>
<tr>
<td>j)</td>
<td>work on wells, underground earthworks and tunnels</td>
</tr>
<tr>
<td></td>
<td>See Risk Assessment at Appendix E.</td>
</tr>
<tr>
<td>k)</td>
<td>traffic routes and segregation of vehicles and pedestrians</td>
</tr>
<tr>
<td></td>
<td>Access to the park will be off Charlton Park Road. A banksman will be required to manage traffic. All vehicles will need to stop at the entrance to the park and phone the site for a banksman.</td>
</tr>
</tbody>
</table>
All skip vehicles/lorries will enter the site from Charlton Park Road. Special care will be taken and if required a banksman will be present whenever a vehicle needs to enter the site. All waste lorries will have their loads sheeted prior to leaving site.

It is noted that the site is adjacent to other recreation facilities and members of the general public will be accessing the area on foot.

All plant will be delivered to site by road going low loader, with no plant movements carried out on existing roadway to ensure that the road surface and also existing below ground sewers/drainage is not damaged through displacement.

Construction vans and cars are to be parked in the construction compound.

Visibility is good and vehicles are to display flashing beacons and observe a site maximum speed limit of 10 mph. All access roads and walkways are to be kept clear of mud and obstacles at all times.

**Summary of Vehicle Movements:**

| Fencing/plant Delivery | w/c 9 May |
| Works Van/cars | Morning and Evening |
| Containers | w/c 9 May |
| Concrete Pump | w/c 9 May |
| Materials Delivery: Aggregates by 8 wheelers, Steel bar by rigid with hi-ab: | w/c 9 May |
| Concrete Delivery: | From w/c 9 May provisionally around 8am and 11am |
| General Building Materials: | Duration of project - outside of school hours where possible |
| Collections: | During the project and at the end of the project |

**2. Health risks, including:**

a) the removal of asbestos

N/A

b) dealing with contaminated land

See Risk Assessment at Appendix E.

c) manual handling

All site crew have attended a Level 2 training course on Manual Handling. Regular Toolbox Talks cover Manual Handling to refresh crew of the risks. See Risk Assessment at Appendix E.

d) use of hazardous substances, particularly where there is a need for health monitoring

See Risk Assessment at Appendix E.

e) reducing noise and/or vibration

All areas of safety will be constantly evaluated with attention to detail being given the utmost concern at all times. Any secondary lighting required within the site will be the responsibility of, and provided by, Bendcrete in a safe and secure manner. The positioning of any lights will be in liaison with the client. The position of any lighting will be such that there is no risk imparted to the adjacent residential properties.

<table>
<thead>
<tr>
<th>Anticipated noise levels - Activity</th>
<th>Noise produced at Source</th>
<th>Noise produced at site boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demolition Breaking slabs</td>
<td>93db(A) 103db(A)</td>
<td>80db(A) 85db(A)</td>
</tr>
<tr>
<td>Crushing</td>
<td>89db(A)</td>
<td>75db(A)</td>
</tr>
<tr>
<td>Power Floating</td>
<td>105db(A)</td>
<td>85db(A)</td>
</tr>
</tbody>
</table>

Noise, will be kept to a minimum and work will only be carried out on site during the
hours listed in section 5.1. All vehicles, plant and machinery must be turned off when not in use and when unattended keys removed. Any complaints about noise are to be brought to the attention of the Site Foreman, Charles Cawood, who is to take and record details of the complaint, attempt to reduce the noise and pass the details to the Project Manager. Noise levels at the site generally will not be high enough to necessitate the wearing of hearing protection, however those carrying out power-floating of the concrete and drilling are to wear ear defenders.

<table>
<thead>
<tr>
<th>f) exposure to UV radiation (from the sun)</th>
<th>Site workers to wear appropriate clothing for the weather conditions and apply sun cream when required.</th>
</tr>
</thead>
<tbody>
<tr>
<td>g) any other significant health risks.</td>
<td>See Risk Assessment at Appendix E.</td>
</tr>
</tbody>
</table>

### The Health and Safety File

1. Layout and format.
   
   To be agreed with the Principal Designer.

2. Arrangements for the collection and gathering of information.
   
   The information for the health and safety file will be prepared and collated throughout the contract by the Principal Designer. The client will finalise the health and safety file and make it available to the Principal Designer on completion of the project.

   
   To be agreed with the Principal Designer.

### Significant Design and Construction Hazards

1. Significant design assumptions and suggested work methods, sequences or other control measures.
   
   See Method Statement at Appendix D and Risk Assessment at Appendix E.
   1. Install temporary facilities and Heras Fencing.
   2. Investigation of outlet drains.
   3. Install drainage for skatepark.
   4. Carry out the groundworks and construction of foundations for skate ramps.
   5. Compaction of type 1/suitable material for forming skate features. Use of high density polystyrene to build up levels.
   6. The final stone shaping and construction of boxes and ledges and surrounding platforms.
   7. Fixing of specialist steel edgings and copings.
   8. Pour/spray of skating surfaces.
   9. Reinstatement around skatepark.
   10. Re-align tarmac path.
   11. Seeding of earthworks.
   12. Removal of temporary facilities and Heras Fencing.

2. Arrangements for co-ordination of ongoing design work and handling design changes.
   
   The site manager will consult with the client, principal designer if any significant design changes arise during the course of construction, which give rise to additional significant risks. These can be discussed during the progress meetings.

3. Information on significant risks identified during design.
   
   Design complies to BS EN14974.

4. Materials requiring particular precautions.
   
   See Risk Assessment at Appendix E.

### The Works

#### Site Description

The site is in an existing recreation ground with a variety of play facilities on site. The site is accessed off the Charlton Park Road.

#### Sub-contractors

There will be no sub-contractors on this project.

#### Site Restrictions/Information

Site access is to be restricted to those authorised by the Principal Contractor. Charles Cawood will assume the responsibility of site management; there will be daily verbal contact between the Site Foreman and the Project Manager at Bendcrete who will visit the site at regular intervals.

All plant and delivery vehicles are limited to 10mph on site and are to follow the route indicated on the plan in Appendix A. Vehicles are to be made secure when remaining on site to ensure the safety of the public and those people employed on the site. During the excavation phase there will be regular traffic movements as materials are brought in. After this the majority of traffic movement will be in the morning as pre-mix concrete is imported to site. Care is to be taken to keep access areas and roads clear.
clean and free of mud and obstacles.

The proximity of local housing is to be considered at all times; any comments or complaints from residents or the general public are to be reported immediately, by the site foreman, Charles Cawood to the Project Manager Karen Bendall who will liaise with the Client.

### Working Hours

**Standard working hours are:** 08:00 – 18.00 Monday – Friday.

On the days concrete is to be poured the site may need to operate outside of these hours; possibly between 07.00 – 21.00. These days are dictated to by the weather and initial set of concrete. Bendcrete will keep the client informed of any changes to these days. Work after 18.00 will be very quiet as the concrete is being hand troweled, the exception is the floor surfaces which are power floated.

### Standards to be adhered to on site

The Site Foreman, Charles Cawood, is to maintain a daily log on site and all works are to be carried out in accordance with CDM Regulations, Health and Safety Regulations and Bendcrete’s own Health and Safety Statement.

Protective clothing is to be worn on site: high visibility clothing, and safety boots, vehicles secured at all times and any breach of security of safety is to be reported immediately to the Site Foreman. Hard hats are only required to be worn during craning of materials. The site will be cleared before work begins but the Site Foreman is to report contamination on site including, used hypodermic needles to the Project Manager at Bendcrete.

### Site establishment

New operatives will attend a site induction briefing with the Site Manager. A general toolbox talk will also be given by the Site Manager/Site Supervisor identifying specific items relevant to the works programme. After completion operatives are then to put on suitable PPE and transfer all necessary equipment to the working area. All power tools to be used are to be either 110V or cordless. A small generator will be used for 110v power.

### Resources

<table>
<thead>
<tr>
<th>Plant</th>
<th>Labour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Pump</td>
<td>Site Supervisor</td>
</tr>
<tr>
<td>Compressor</td>
<td>Groundworkers</td>
</tr>
<tr>
<td>Container/skips</td>
<td>Concrete Finishers</td>
</tr>
<tr>
<td>Small welding machine</td>
<td>Site operators</td>
</tr>
</tbody>
</table>

### Personal protective equipment

All personnel will be issued with the necessary PPE and will be expected to wear it at all times on site. Special PPE will be issued as necessary in the hazardous locations following site induction and or issue of a permit to work. Each operative will have general protection issued by the Site Supervisor dependent upon the work in hand. Safety wear will comprise of the following: Hard hats, ear and eye defenders, dermal protection to exposed vulnerable areas and footwear against risk of penetration and impact. High visibility vests/jackets.

### Legislation and codes of practice

All work will be carried out in accordance with current legislation, which is applicable to their respective industry, with particular regard to the following.

- The Health & Safety at Work etc Act 1974
- The Construction (Health, Safety & Welfare) Regulations 2015
- The Control of Asbestos at Work Regulations 2012
- The Control of Lead at Work Regulations 1998
- Control of Pollution Act (Amendments) 1989
- The (Lifting Operations & Lifting Equipment) Regulations 1998 (LOLER 98)
- Factories Act 1961
- Health and Safety at Work Regulations 1999
- The Control of Substances Hazardous to Health Regulations 2002 (Amended)
- The Management of Health & Safety at Work Regulations 1999
- Personal Protective Equipment at work Regulations 1992
- The Construction (Head Protection) Regulations 1989
The Health & Safety (Safety Signs & Signals) Regulations 1996
The Noise at Works Regulations 1989
The Health & Safety (First Aid) Regulations 1981
The Workplace (Health, Safety & Welfare) Regulations 1992
The Reporting of Injuries, Diseases & Dangerous Occurrences Regulations 2013 (RIDDOR)
The Provision & use of Work Equipment Regulations 1998
The Manual Handling Operations Regulations 1992

References
BPG The control of dust and emissions from construction and demolition (GLA and London Councils)
BS6187 Code of Practice for Demolition
BS5240 Industrial Safety Helmets
BS2092 Industrial Eye Protectors
BS1397 Industrial Safety Belts and Harnesses
BS5228 CP for noise control on construction and open sites
BS/EN14974 Facilities for users of roller sports equipment – Safety requirements and test methods

Information for Contractors and Employees
Those employed in the construction of the skate park are Bendcrete Agents and as such have been through induction and familiarisation courses. They are current in the construction and installation procedures necessary to ensure the safe progress of the project within the regulations.

Consultation with the work force will be conducted through induction and regular site meetings, tool-box talks held weekly by the Site Foreman, Charles Cawood, and whenever significant change occurs. These will include the arrangements necessary for communication and co-ordination for safe working whenever work activities impinge and effect those of others; eg: shared access etc. Those working on a Bendcrete site who cannot read or write English will receive instructions from another member of the team in their own language.

All groups involved in the project are to be issued with the Method Statement, and the Construction Phase Health and Safety Plan; the Site Foreman, Charles Cawood, is to maintain an accident/incident log and ensure that all those on site are able to communicate in the event of abuse, vandalism or the presence of contaminated items.

Surface Material
Concrete is the quietest material available for skate parks. The current legal requirement for noise transmission is to ensure that adjoining properties should not experience levels in excess of 55 decibels at the boundary of their property. No distance limit is required, but NPFA standards require a 30m space between housing and formal play areas. Both these conditions are met by the design.

Overlap with clients undertakings
None known.

Comments

Name: Wendy Davies Position: Commercial Director
Signature: Wendy Davies Date 21/2/2017

Appendices
Appendix A Site Access Plan
Appendix B Utility & Services
Appendix C Programme
Appendix D Method Statement
Appendix E Risk Assessment
Appendix F COSHH Sheets
Appendix G H&S Policy
Appendix H Site Induction
Appendix A: Site Access

Skatepark Construction Site, Charlton Park, Charlton Park Road, Greenwich, SE7 8JB

Site contact: Charles Cawood 07713 353384
Office: 01235 534359

Site rules

- Access to the park will be off Charlton Park Road.
- A banksman will be required to manage traffic into the park to the skatepark.
- All skip vehicles/lorries will enter the site from Charlton Park Road. All waste lorries will have their loads sheeted prior to leaving site.
- It is noted that the site is adjacent to other recreation facilities and members of the general public will be accessing the area on foot and in vehicles.
- All plant will be delivered to site by road going low loader, with no plant movements carried out on existing roadway to ensure that the road surface and also existing below ground sewers/drainage is not damaged through displacement.
- Construction vans and cars are to be parked in the construction compound or in the car park.
- Visibility is good and vehicles are to display flashing beacons and observe a site maximum speed limit of 10 mph. All access roads and walkways are to be kept clear of mud and obstacles at all times.
Construction methodology for sprayed concrete skateboard parks

1. **Design**
   
   Prior to the design completion, a designer’s risk analysis and hazardous risk analysis is carried out and checked to ensure that it conforms with BSEN14974, RoSPA guidelines and the Equalities Act 2010. We also confirm the designer’s qualification and experience as required by CDM regulations.

2. **Pre Start Checks**
   
   1. Planning issues
   2. Contractual matters
   3. H&S plans, incl. F10, where necessary, preparation of H&S Site File
   4. Access constraints and permissions – info to suppliers
   5. Notices and signs
   6. Soil surveys and geotechnical information
   7. Site survey and boundaries
   8. CAT scan over working area

3. **Site Set Up**
   
   1. Mark out the working area, storage areas and compound and spoil heap.
   2. Install: Security fence and signs
   3. Establish working levels
   4. Check access route and install signs as needed
   5. Receive hired plant

4. **Groundwork Preparation**
   
   1. Strip top soil and stock pile less then 2m high.
   2. Excavate sub-soil to design levels and stockpile.
   3. Excavate and install drainage to either main drain or soakaway as specified by the construction drawings. Protect drain outlet from silt. Carry out absorbency test on the soak away pit.
   4. Compact ground to 75kN/m$^2$.
   5. Excavate and install ducting for floodlighting, if required.
   6. On horizontal and shallow inclined surfaces install 150mm of MOT type 1 and compact to 75kN/m$^2$.

5. **Concrete Installation**
   
   1. Install 50mm concrete blinding material to transition surfaces with templates and compact.
   2. Re-check working levels.
   3. Install steel copings and grinding edge to skate levels.
4. Cover transitions ramps and blocks with steel reinforcing mesh to provide minimum 40mm cover.
5. Install shuttering to the design shape of the horizontal skate surfaces.
6. Check levels and install any fine grading falls for water discharge.
7. Powerfloat these areas as a continuous operation.
8. As each one is contact hard – fit or spray curing membrane.
9. When hard remove the shuttering.
10. Cut any designed expansion joints.
11. Install templates and shuttering to transition ramps, steps and blocks.
12. In a continuous operation, spray concrete to the prepared areas, compact the concrete to template shape and steel trowel to a smooth matt finish.
13. When hard apply curing membranes.
14. Remove shuttering and templates.
15. Repair any chips on edges following template removal.
16. Clean off surfaces and allow concrete to cure.

6. Surrounding Area and Landscaping

1. Where requested, grade the sub soil into banks and cover with topsoil.
2. Grade and remove stones.
3. Check that the soil is slightly below the concrete height where water is discharging to open ground.
4. Where grouting is required, check discharge heights.
5. Install planting as requested.
6. Install seating and bins as requested.
7. Remove surplus excavated material to authorised tip.

7. Project Management, Site Management and CDM

The project will be managed by our Technical Director, Karen Bendall, who is a civil engineer (Tel: 07818 085374). Site Management will be provided by a Bendcrete’s in-house site manager, Charles Cawood (Tel: 07713 353384).

Communication with the CDM site supervisor will be maintained as necessary by our engineer and site manager and routine meetings agreed. The operational staff will also be responsible for day to day matters. CDM regulations are adhered to on site with appropriate welfare facilities provided. The Construction Phase Health & Safety Plan (CPHSP), Health & Safety File, Visitor Book, Accident Book, F10 etc are maintained on site and kept in the site office for reference and inspection. Our engineer ensures that the CPHSP is adhered to by staff and visitors.

Please see attached document: CDM and the construction of skateparks.

8. Health and Safety

Bendcrete have an excellent H&S record with no accidents or incidents on site. We have CHAS and ACCLAIM certificates for Health and Safety accreditation. A H&S file is kept on site and all site crew and visitors must adhere to the rules. This is managed by the Site Manager and checked by the Project Manager. Safety checks are made regularly on site to ensure standards are maintained. All site crew are CSCS certificated as a minimum.

9. First Aid and Welfare Facilities

Bendcrete comply with CDM regulations and provide adequate facilities for the site crew and visitors to site. This includes a chemical toilet which is serviced weekly, as well as an office/canteen.

The Site Foreman holds a First Aid Certificate and Modestas Lasaukas is also a fully trained paramedic.
10. **Access and Security**

The access will be properly signed and where required banksman will accompany vehicles for access and egress. To reduce the impact of traffic on the local community, deliveries of material and plant will be arranged to avoid peak traffic flows, especially school drop off and collection times. An access plan will be agreed with the Council before construction commences and the routes and parking areas pre-planned. This will form part of the Construction Phase Health & Safety Plan.

The construction site and compound will be fenced off with Heras fencing and appropriate signs put up. Visitors are required to report to the site cabin and receive an H&S briefing before accessing site. In areas prone to vandalism, and advised by the client, security will be arranged during the spray and powerfloating works to ensure that there is no vandal damage on site whilst the concrete is curing and the site personnel have left site.

11. **Defects and Post Installation Inspection**

Bendcrete base their construction philosophy on zero defects and snagging. Having constructed over 250 skate parks we have a very low rate of defect liability and we are able to offer 20 year guarantees on our work.

During construction the work is carried out by our in-house experienced team and supervised by our own in-house engineer. The work is inspected as it progresses and defects at the end of construction are rare. If these occur they will be dealt with before the staff leave site or handover is carried out. Defects which arise after handover are covered by a 20 year guarantee, although the defects liability period would be 12 months.

During the first six to twelve months a member of the Bendcrete Team will make an inspection of the skatepark and forward a report to the client. The report will highlight any work that is required as part of the defects liability period and ensure that the works are carried out promptly and before the end of the defects liability period. In the unlikely event that any defects arise before the inspection the client should contact Bendcrete immediately, with appropriate photos, who will arrange a repair team to attend site within five to ten days for minor defects or 2 days if there is a significant Health & Safety issue.

12. **Specification of Materials**

We specify the highest quality materials, ensuring that value for money is obtained. Having said that, it is only part of the longevity factor as the preparation of the ground and the structure to receive the materials is probably more important. We use a P450 concrete mix wherever possible as this provides the hardest wearing surface. We have developed our own concrete recipe.

The stability of the ground is a major issue and we believe in adequate compaction and the use of MOT Type 1 as a stone base as this gives a consistent performance.

We also use mild steel for the grinding edges and cope rails. This is galvanised to BS standards and provides a more satisfactory performance than stainless steel, which tends to be ‘sticky’. Clearly the galvanised material will disappear from the wearing face, but the coating will protect it from corrosion, and therefore should last a long time. In our 17 year record we have not yet needed to replace any steel edges from fair wear and tear. We find that 5-6mm is going to give a 20-30 year life, partly because the youngsters will wax the grinding surfaces, which helps to protect them.
13. **Handover and RoSPA Inspection**

If we have been asked to include a RoSPA inspection as part of the contract, the park will be RoSPA inspected on the last day of construction, so that in the unlikely event of any issues arising, these can be dealt with whilst the construction crew are on site and call backs and delays can therefore be avoided. We also encourage the client to attend the inspection so they can clarify any matters with either the RoSPA inspector or the site manager.

14. **Maintenance and durability**

We generally advise that a repairs and renewals fund be built up based on an annual contribution of 1% of capital cost. This can ensure that minor repairs are dealt with quickly so that frustration does not arise in the users causing them to go elsewhere. Maintenance costs are very low, we have built over £12 million skate parks over 17 years and to our knowledge maintenance costs are approximately £65,000.00 and this includes unusual damage caused by earth tremors which have affected 4 or 5 parks in the UK. We can offer a planned maintenance scheme, but experience to date has shown it is more economic to rely on regular routine inspections on a local basis and treat any occurrences as quickly as possible – please see our maintenance sheet.

15. **Risk Management**

Our approach to risk management is an essential part of the Construction Phase Health and Safety Plan and also the preliminary design work of the features on the park. We are obliged by our own insurance to construct every park to be BSEN14974. The building operations are all low level, excavations are rarely vertical sided and the plant used is relatively small in building terms. We emphasise the early identification of risk and deal with it accordingly. A comprehensive risk assessment will be undertaken as part of the Construction Phase Health & Safety Plan.

The skatepark is to be construction in a public recreation ground and care will need to be taken of the safety of the general public. The site will be securely fenced off and the general public will not have access to the construction site. The rest of the park will remain open and the egress will be kept clear of debris daily.

Deliveries will be seen in by a banksman. We work with a carefully selected list of suppliers who are use to bringing in materials and plant into public areas and are advised of the precautions required. We do not anticipate needing any sub-contractors on this project.

16. **Disabled Access**

All our parks have access for the disabled and also provide viewing points where they can enjoy watching the users. We have done considerable work with disabled organisations to explore the potential for wheelchair use. This is an extension of the many disabled climbing facilities we have built in the last 30 years.

17. **Quality Plan**

Our quality plan is partly covered by our accreditation to ISO 9001:2008, but it is also encompassed by the construction plan and Health and Safety Plan. It is also ensured by adequate supervision and in this regard our own clerk of works plays an important part to ensure that structures are built to design and finished with a quality surface.

18. **Sustainability**

Sustainability can be divided into:
1. The specification of the structure
2. The design of the park and its ability to maintain long term interest over several generations.
We believe our design and construction techniques will ensure the sustainability of this project. Bendcrete are advising that the park substructure be of a lightweight technique to reduce the adverse impact of the latent ground conditions. Sustainability will also be achieved through the quality of construction, which should be robust enough to survive without routine maintenance. Local authorities will endure the peaks and troughs of financial stress and it is important that the skate park does not make financial demands for regular maintenance. It is vital to get it all right first time.

In terms of the design it is important to avoid fashionable quirks that may not have lasting appeal and be expensive to maintain. The core of the design should incorporate some of the classic features, which develop all-round riding skill. The design lends itself to future development.

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**Appendix 1: Site Investigation - where required**

The site investigation will be carried out to investigate:-

- a) existing site levels
- b) soil type
- c) water table
- d) drainage potential
- e) chemical contamination
- f) mains services

The mains services will be checked by consultation with the utility companies and an additional CAT scan will be made before work commences. Our preferred technique is to excavate six trial pits to a depth of 2-3 metres. Each pit will have the soil strata measured and photographed and the soil type recorded. Water penetration will also be recorded and allowed to leach into the pit over a 1 hour period. 5 pits will be excavated on the skate park site and the 6th pit in the position where a soak away can be constructed. An absorbency test will be conducted on this pit to provide information for the design of the drainage system. The pits will be filled in immediately after the data has been collected. The results will be examined by our engineer to confirm the construction technique.
## Appendix F: Environmental, Health and Safety Risk Assessment

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hazard</th>
<th>Risk</th>
<th>Personnel or Grouping Affected</th>
<th>Normal Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Site Work</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Heavy plant movement/operations| Workers could suffer serious or even fatal injuries from vehicles and machines on site – particularly when reversing. | Med  | All personnel plant and equipment on the worksite or in contractors vehicles | 1. Traffic management plan to be followed in particular Pedestrian and traffic management during heavy plant accessing and leaving the site.  
2. Heavy plant to have Banksmen in constant attendance.  
3. Reverse horns and lights to be implemented.  
4. High visibility vests to be provided. |
| Unauthorized access by members of the public | Public could suffer serious or even fatal injuries | Med  | Public                         | 1. Entire site perimeter to be fully enclosed with Heras type fencing.  
2. Warning notices displayed at vantage points.  
3. Employ suitable third parties or in house security to patrol site during hours of darkness after concreting(subject to client's requirements) |
| Injury to public during deliveries and craning | Public could suffer serious or even fatal injuries | Med  | Public                         | 1. Traffic management plan to be followed |
| **Live Services**              |                                                                        |      |                                |                                                                                                                                                    |
| Interruptions to services      |                                                                        | Med  | All personnel                  | 1. Services to be identified before work starts                                                                                                      |
| Electrocution                  |                                                                        |      |                                |                                                                                                                                                    |
| **Refueling of plant**         |                                                                        |      | All personnel                  | 1. Hand pump to be used to refuel plant and generators. Gloves to be worn. Drip trays to be used                                                                 |
| **Dust**                      |                                                                        |      | All personnel                  | 1. Water to be available on site to damp down activities involving dust  
2. Appropriate filter masks to be used during concrete grinding activities, demolition and skip loading |
| **Noise**                     |                                                                        |      | All personnel                  | 1. Ear protection to be worn  
2. Proruding rebar to be capped.                                                                                                                        |
| **Starter bars**              |                                                                        |      | All personnel                  | 1. Site to be kept tidy at all times.  
2. Good housekeeping maintained at all times.  
3. Waste disposed of into skip.  
4. Safety footwear provided to all workers.  
5. Safe route to workplace agreed with principal contractor based on construction phase health and safety plan. |
| **Slips, trips & falls**       | Minor to major personal injuries                                      | Med  | All personnel                  | 1. Gloves to be worn at all times.  
2. Materials to be transported by excavator wherever possible.                                                                                         |
| **Manual Handling**           | All workers could suffer from back injury and long-term pain           | Med  | All personnel                  | 1. Site to be kept tidy at all times.  
2. Good housekeeping maintained at all times.  
3. Waste disposed of into skip.  
4. Safety footwear provided to all workers.  
5. Safe route to workplace agreed with principal contractor based on construction phase health and safety plan. |
| **Vibration**                 | Exposure to vibration can lead to the development of 'vibration white finger' (VWF). | Med  | All personnel using hand held tools (power float, grinders, wacker plates) | 1. Hand Held vibratory equipment (angle grinders, wacker plates, power floats) to be used with vibration damping gloves.  
2. Daily Time limits to be displayed in welfare facilities and observed                                                                                     |
| **Mud on road**               | Skidding on Roads                                                     | Low  | All personnel, public          | Road to be swept after each delivery  
Road to be cleaned once a week.                                                                                                                           |
| **Uncontrolled collapse**     | Personal injuries                                                     | Med  | All personnel                  | Method statement to be followed. All personnel to be behind marked fencing when huts demolished. Huts to be demolished into themselves. |
| **Asbestos during demolition**| Sickness and organ failure                                            | Low  | All personnel                  | Asbestos survey carried out and asbestos materials removed by specialist subcontractor. |

1
## Appendix F: Environmental, Health and Safety Risk Assessment

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hazard</th>
<th>Risk</th>
<th>Personnel or Grouping Affected</th>
<th>Normal Control Measures</th>
</tr>
</thead>
</table>
| Concrete work | Direct skin contact with the concrete could also cause contact dermatitis and burns. | Med | All personnel | 1. See separate Risk Assessment  
2. Risk of dermatitis or cement burns and precautions explained to all workers.  
3. Use cement or cement containing products within the use-by date.  
4. Direct skin contact to be avoided, CE marked PVC gloves used when handling mortar.  
5. Good washing facilities on site, with hot and cold water, soap and basins large enough to wash forearms.  
6. Principal contractor’s first aid includes emergency eyewash. |
| Steeping on nails and sharp objects | Foot injuries, tetanus | Low | All personnel | 1. Safety boots with steel toecaps and mid-soles provided to all workers.  
2. Waste disposed of in skips.  
3. All shuttering to be denial when stripped  
4. All personnel to be advised to be up to date with tetanus vaccination |
| Security | Loss or damage to plant or equipment. | Low | All personnel on the worksite or in contractors vehicles | 1. The working area will be classed as an exclusion zone for all contractors not involved in the works, and the general public. Enforced by the use of suitable barriers & signs.  
2. All equipment is to be kept in secure, locked containers.  
3. It is recommended that property is not left in view in vehicles parked away from the workplace. |
| Personnel working at height | Injury or death from personnel fall. Injury or death to personnel on the ground caused by falling objects. | Med | All personnel working at height and personnel working under them. | 1. Handrail to be fixed to platforms within 24 hours of craning.  
2. Provision of edge protection to prevent objects falling.  
3. Tools are to be securely attached to the appropriate anchor points, not the personnel. |
| Noise | Hearing injury | Med | All personnel within the workplace | 1. Ear protection will be worn when necessary within the workplace. |
| Underground services | Damage to services. Collapse of equipment. | Med | All personnel and property within the load collapse radius of the crane. Relevant underground services. | 1. The existence of underground services in the vicinity of the crane standing area will be determined by survey prior to the craning operations  
2. Any services in the immediate vicinity should be clearly marked and adequately protected. |
| Fuels | Fire or explosion leading to personal injury or property damage. | Low | All personnel and property within the workplace. | 1. Fuel on site will only be stored in purpose-designed containers, clearly labelled with their contents.  
2. Smoking will be prohibited in the vicinity of the fuel. |
| Environmental | Loss of Fuel/Oil | Low | Environmental Contamination | 1. Bendcrete Leisure Ltd will ensure that all Plant and machinery is maintained and inspected by a competent person for any defect in accordance with an examination scheme.  
2. Fuel and oil will be stored in approved containers only.  
3. Care will be taken when transferring fuels or oils from one container to another. All transfers will be supervised at all times.  
4. Any spillage will be prevented from entering any drainage system.  
5. Any spillage will be prevented from entering any watercourse.  
6. Any spillage will be cleared immediately.  
7. All spillages will be reported to the Appointed Person. |
<p>| <strong>CONCRETE WORK</strong> | <strong>INC PUMPING</strong> | | | |
| Concrete splashing into eyes from the end | Eye injuries possible | H | Concrete Gang | Goggles must be worn |</p>
<table>
<thead>
<tr>
<th>Subject</th>
<th>Hazard</th>
<th>Risk H M L.</th>
<th>Personnel or Grouping Affected</th>
<th>Normal Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>hose</td>
<td>Concrete burns to hands and feet</td>
<td>Dermatitis</td>
<td>L</td>
<td>Concrete Gang</td>
</tr>
<tr>
<td></td>
<td>Falls or injury to hands, arms, ankles, legs etc from falling on mesh</td>
<td>Cuts and scraps</td>
<td>M</td>
<td>Concrete Gang / Pump Operator</td>
</tr>
<tr>
<td></td>
<td>Back injury due to moving ground pipes</td>
<td>back injury and long-term pain</td>
<td>M</td>
<td>Concrete Gang / Pump Operator</td>
</tr>
<tr>
<td></td>
<td>High pressure concrete and aggregate going into eyes, face or any exposed skin due to standing or working in front of end hose, or opening up pipe joints when pumping</td>
<td>Severe – can result in loss of sight</td>
<td>M/H</td>
<td>Concrete Gang / Persons working around concreting area General Public</td>
</tr>
<tr>
<td></td>
<td>Moving boom</td>
<td>Head injury from suspended hoses from boom</td>
<td>L</td>
<td>Concrete Gang</td>
</tr>
<tr>
<td></td>
<td>Whiplash from hoses.</td>
<td>Broken limbs, severe injury</td>
<td>L</td>
<td>Concrete Gang</td>
</tr>
<tr>
<td></td>
<td>Injury from splash due to blow back from concrete pump hopper</td>
<td>Eye injuries possible</td>
<td>L</td>
<td>Truck Mixer Drivers</td>
</tr>
<tr>
<td></td>
<td>Crushing when mixer lorry is backing onto the pump hopper</td>
<td>Severe or death</td>
<td>L</td>
<td>Person backing truck mixer into pump hopper</td>
</tr>
<tr>
<td></td>
<td>Concrete Spills</td>
<td>Concrete stains on tarmac or grass</td>
<td>L</td>
<td>Public/personnel</td>
</tr>
</tbody>
</table>

CRANE

| Safety of the public and contractors not involved in the lifting operation. | Personal Injury or death. | Med | The public and contractors not involved in the lifting operation. | 1. The working area of the crane will be classed as an exclusion zone for all contractors not involved in the works, and the general public. Enforced by the use of suitable barriers & signs. 2. The Appointed Person will stop the lifting operations immediately if the work area is entered. |
| Lifting gear failure | Equipment or load collapse | Low | All personnel and property within the load collapse radius of the crane. | 1. Equipment is to be maintained and inspected by a competent person for any defect in accordance with an examination scheme. 2. Lifting equipment shall be of an adequate strength and stability for each load. These requirements are to be determined by survey and analysis undertaken by a competent person. 3. The working area of the crane will be classed as an exclusion zone for all contractors not involved in the works, and the general public. Enforced by the use of suitable barriers & signs |
| Equipment overload | Equipment collapse | Low | All personnel and property within the load collapse radius | 1. Lifting equipment shall be of an adequate strength and stability for each load. These requirements are to be determined by survey and analysis undertaken by a competent person. 2. The lift will be undertaken as per the approved Safe Method of Work Statement. |
# Appendix F: Environmental, Health and Safety Risk Assessment

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hazard</th>
<th>Risk</th>
<th>Personnel or Grouping Affected</th>
<th>Normal Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blind working</td>
<td>Equipment collision. Load collision. Injury to personnel. Damage to property.</td>
<td>Med</td>
<td>All personnel and property within the working radius of the crane.</td>
<td>1. Communication between the Crane Operator and the designated Banksman will be continuous utilising two way radios.</td>
</tr>
<tr>
<td>Manoeuvring vehicles around the workplace</td>
<td>Collision</td>
<td>Low</td>
<td>All personnel and property</td>
<td>1. Routes are to be established across the worksite noting Ground Conditions and Proximity Hazards. 2. Flashing amber lights will be used by all vehicles. 3. Audible alarms will be used whilst reversing. 4. The crane will be manoeuvred across the worksite, as per the established routes, and into its designated lifting position in accordance with the Craneage Plan and under the direction of the Slinger/Banksman. 5. Personnel are to be vigilant at all times when working near public highways.</td>
</tr>
<tr>
<td>Weather and wind effects</td>
<td>Load/Equipment collision. Load/Equipment collapse. Injury to personnel. Damage to property.</td>
<td>Med</td>
<td>All personnel working at height and personnel working under them.</td>
<td>1. Crane to be fitted with wind meter. 2. Weather conditions to be reviewed on-site throughout the working period. 3. The work will be stopped if the weather conditions are deemed to present and unacceptable risk to the lifting operation.</td>
</tr>
<tr>
<td>Personnel working at height</td>
<td>Injury or death from personnel fall. Injury or death to personnel on the ground caused by falling objects.</td>
<td>Med</td>
<td>All personnel within the workplace</td>
<td>1. Provision of fixed handrail or scaffold. 2. Provision of edge protection to prevent objects falling. 3. Tools are to be securely attached to the appropriate anchor points, not the personnel. 4. Personnel working at a height where they could fall 2m or more, where fixed fall protection is unavailable, will wear safety harnesses with lanyards attached to an appropriate anchor point. 5. All ladders will be fixed at the top and the bottom, or a person will be positioned at the bottom to ‘foot’ the ladder.</td>
</tr>
<tr>
<td>Noise</td>
<td>Hearing injury</td>
<td>Med</td>
<td>All personnel within the workplace</td>
<td>1. Ear protection will be worn when necessary within the workplace.</td>
</tr>
<tr>
<td>Underground services</td>
<td>Damage to services. Collapse of equipment.</td>
<td>Med</td>
<td>All personnel and property within the load collapse radius of the crane. Relevant underground services.</td>
<td>1. The existence of underground services in the vicinity of the crane standing area will be determined by survey in prior to the craning operations. 2. Any services in the immediate vicinity should be clearly marked and adequately protected.</td>
</tr>
<tr>
<td>Fuels</td>
<td>Fire or explosion leading to personal injury or property damage.</td>
<td>Low</td>
<td>All personnel and property within the workplace.</td>
<td>1. Fuel on site will only be stored in purpose-designed containers, clearly labelled with their contents. 2. Smoking will be prohibited in the vicinity of the fuel.</td>
</tr>
<tr>
<td>Environmental</td>
<td>Loss of Fuel/Oil</td>
<td>Low</td>
<td>Environmental Contamination</td>
<td>1. Bendcrete Leisure Ltd will ensure that all Plant and machinery is maintained and inspected by a competent person for any defect in accordance with an examination scheme. 2. Fuel and oil will be stored in approved containers only. 3. Care will be taken when transferring fuels or oils from one container to another. All transfers will be supervised at all times. 4. Any spillage will be prevented from entering any drainage system. 5. Any spillage will be prevented from entering any watercourse. 6. Any spillage will be cleared immediately. 7. All spillages will be reported to the Appointed Person.</td>
</tr>
</tbody>
</table>
### Appendix F: Environmental, Health and Safety Risk Assessment

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hazard</th>
<th>Risk</th>
<th>Personnel or Grouping Affected</th>
<th>Normal Control Measures</th>
</tr>
</thead>
</table>
| Security | Loss or damage to plant or equipment. | Low | All plant and equipment on the worksite or in contractors vehicles | 4. The working area will be classed as an exclusion zone for all contractors not involved in the works, and the general public. Enforced by the use of suitable barriers & signs.  
5. All equipment is to be kept in secure, locked containers.  
6. It is recommended that property is not left in view in vehicles parked away from the workplace. |
BENDCRETE LEISURE LTD

Health and Safety General Policy Statement

At Bendcrete Leisure Ltd we recognise our duties under current health and safety legislation and we will endeavour to meet the requirements of this legislation and maintain a safe and healthy working environment. Our Managers and Supervisors are informed of their responsibilities to ensure they take all reasonable precautions, to ensure the safety, health and welfare of those that are likely to be affected by the operation of our business.

Bendcrete Leisure Ltd recognises its duty to make regular assessment of the hazards and risks created in the course of our business.

We also recognise our duty, so far as is reasonably practicable:

- to meet our legal obligations to maintain safe and healthy working conditions;
- to provide adequate control of the health and safety risks so identified;
- to consult with our employees on matters affecting their health and safety;
- to provide and maintain safe plant and equipment;
- to ensure the safe handling and use of substances;
- to provide information, instruction, training where necessary for our workforce, taking account of any who do not have English as a first language;
- to ensure that all workers are competent to do their work, and to give them appropriate training;
- to prevent accidents and cases of work related ill health;
- to actively manage and supervise health and safety at work;
- to have access to competent advice;
- to seek continuous improvement in our health and safety performance and management through regular (at least annual) review and revision of this policy;
- to provide the resource required to make this policy and our Health and Safety arrangements effective.

We also recognise:

- our duty to co-operate and work with other employers when we work at premises or sites under their control to ensure the continued health and safety of all those at work;
- our duty to co-operate and work with other employers and their workers, when their workers come onto our premises or sites to do work for us, to ensure the health and safety of everyone at work.

To help achieve our objectives and ensure our employees recognise their duties under health and safety legislation whilst at work, we will also inform them of their duty to take reasonable care for themselves and for others who might be affected by their activities. We achieve this by explaining their duty and setting out our company health and safety rules in an Employee Safety Handbook which is made available to every worker employed by us.

In support of this policy a responsibility chart and more detailed arrangements have been prepared.

Signature

Date 28.07.16

Position Managing Director

The policy is reviewed on a periodic basis.
Condition 8 – Replacement Trees/Planting

Details of replacement trees and planting (including location, species, size, height and spacing) shall be submitted to and approved by the Local Authority prior to the completion of the Skatepark. The approved species should be planted within one year or the next planting season whichever is the earliest.

Information Provided

Details/location of replacement trees/planting has been illustrated on document ‘CHARLTON PARK SKATE PARK LAYOUT’.

Details of the replacement tree and planting is included within the Management Plan which is included under Condition 11.
CHARLTON PARK SKATE PARK LAYOUT

- INSTALLATION OF 2 PICINC BENCHES
- INSTALLATION OF 2 LITTER BINS
- PLANTING OF TREE

NEW LOCATION OF TABLE TENNIS TABLES

BED FOR PLANTING OF ROSES
Condition 9 – Landscape Management Plan

A landscape management plan shall be submitted to and approved in writing by the Local Planning Authority before any part of the landscaping works are begun. The landscape management plan shall include a plant schedule related to the proposed skate park (including details of species, age, height, rootstock, number and spacing); details of timing of planting, plant staking and ties, plant protection, soil and planting specification, and a 5-year maintenance programme (including watering, mulching, weed control, pruning, hedge and grass cutting and plant feeding).

Information Provided

A landscape management plan has been provided below within the contents of the Management Plan which is included under Condition 11.
**Condition 10- RoSPA Operation Inspection Certificate**

The development shall achieve “RoSPA” certification for wheeled sports facility. Full details of the proposed measures to achieve “RoSPA” certification shall be submitted and approved by the Local Planning Authority, in consultation with the Councils Parks and Open Spaces prior to the commencement of construction for each phase of development.

**Information Provided**

At the end of construction, the skate park will be inspected by an independent inspector to BSEN14974 for Wheeled Sports and the report forwarded to the client and the Local Authority planning department. The inspection will take place whilst Bendcrete still have possession of the site and any recommendations will be carried out immediately.

It is recommended that the park is annual inspected and that all reports are kept for a minimum of 7 years.

The commercial director of Bendcrete is the Chair of the UK BSI Committee for Wheeled Sports and UK Technical Expert for the European EN14974 Meetings.
Condition 11 – Management and Maintenance Plan

A skate park management plan shall be submitted to and approved in writing by the Local Planning Authority prior to the use of the skate park. The management plan shall set out:

- Maintenance Plan for the skate park facilities;
- Management of the skate park facilities;
- Details of skating rules;
- Operating hours; and
- Health and safety guidance

Information Provided

A management and maintenance plan has been provided below.
CHARLTON PARK

MULTI WHEELED SPORTS FACILITY

MANAGEMENT PLAN

January 2017
Background

The multi-wheeled sports facility, (skate park), has been provided to replace the skate park in Royal Arsenal Gardens that closed in 2015. This skate park was developed and opened in 2017.

Management

The management of the skate park described in this management plan is the responsibility of the Parks, Estates & Open Spaces (PEOS) Department of the Royal Borough of Greenwich. The Senior Management Team within PEOS is accountable for the overall management responsibility of the Service.

Description

The skate park is a 900m² modern facility made of concrete, incorporating a series of elevations and dips to be used by the general public and is designed to suit a range of wheeled sports participants from beginner to advanced users. The drawing below shows the design of the skate park:

It is situated around the South and East of the ‘Adizone’ facility within Charlton Park. The nearest site entrance adjacent to the facility is located on Charlton Park Road.

Public transport access to the site is either via Charlton Rail Station (approximately 0.9 miles away), or local bus routes 53, 54, 422 and 486. Bus stops are directly outside the entrance. Bus route 380 also serves Charlton Village which is approximately 0.3 miles walking distance away.

There is also a public car park with 38 parking bays and 5 disabled bays within the park. This is located 250 metres east of the skate park.

Outline of commitments
The Royal Borough of Greenwich Parks, Estates and Open Spaces commit to:

- Provide the skate park for the use and enjoyment of the community
- To maintain the skate park
- To keep the facility clean
- To carry out regular inspections of the facility
- To maintain the signage
- To monitor the skate park

Wheeled and roller sport users are expected to:

- To respect the skate park, Charlton Park and the Royal Borough’s decisions
- To use the Skate park responsibly, safely and sensibly
- To help keep the facility clean
- To respect other users, park users the public and householders/businesses in the surrounding area

**Operating Hours**

The skate park will be available for use daily from 8.00 AM until dusk 7 days per week.

**Staffing**

The skate park does not have a dedicated member of staff but two Royal Borough Park Rangers have a base in Charlton Park and have duties in Charlton, Maryon and Maryon Wilson Parks.

These site based staff carry out daily duties in relation to Charlton Park and the skate park and are supported by mobile Park Ranger teams and other Royal Borough staff when required. Royal Borough Wardens also regularly visit the park.

On occasion the number of staff will fluctuate in line with priorities in the service, resources, annual leave, etc.

**Safety Inspections**

The skate park will be visually inspected on a daily basis by Royal Borough of Greenwich Parks Rangers, who will assess that it is safe to use.

Unauthorised objects found in the skating area that presents a hazard will be removed immediately or within one hour of being reported.

If a minor defect is found but the skate park remains safe to use this will be reported and where appropriate arrangements for repair will be made.

If a more serious defect is found that makes an area of the skate park unsafe to use then the area of the defect will be closed off from use. Signage will be posted to explain that the area is closed for safety reasons and the Park Ranger will report a repair is required.
Cleansing

The cleanliness of the skate park will be assessed and undertaken by Parks employees on a daily basis prior to 12pm.

Routine sweeping and/or blowing of the facility will be carried out on a weekly basis, unless rubbish is identified that presents a hazard e.g. broken glass, then it will be removed immediately or within one hour of being reported.

Graffiti will be removed in line with Royal Borough timescales. Currently racist or offensive graffiti will be removed within 24 hours of being reported. Other graffiti will normally be removed within 3 working days of being reported. Large amounts of graffiti requiring specialist equipment for removal may take longer to arrange.

Additional bin/s installed as part of the facility will be emptied as part of the overall routine servicing of the other litter bins within the park or if identified as necessary by staff whilst carrying out inspections.

Additional benches installed as part of the facility will be routinely cleaned as part of the overall schedule for other benches within the park or if identified as necessary by staff whilst carrying out inspections.

The signage at the facility will be routinely cleaned as part of the overall schedule for other signage within the park or if identified as necessary by staff whilst carrying out inspections.

Infrastructure Maintenance

Repairs and maintenance will be undertaken by either the Royal Borough’s term contractors or a specialist contractor if appropriate. This includes the surface of the skate park and other facilities in the park. All repairs and maintenance that is required will be arranged via the Park Rangers reporting the defect to the appropriate officer.
Soft Landscape Maintenance – 5 Year maintenance Plan

Soft landscaping will be maintained by the Royal Borough PEOS Department by on-site gardeners at the standard and frequencies set for the park. The park is currently accredited with the internationally respected Green Flag status.

The table below shows the current frequencies of soft landscape maintenance within the park.

<table>
<thead>
<tr>
<th>Line</th>
<th>Description</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>spray all hard standing areas &amp; weedkill channels</td>
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<td></td>
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<td>3</td>
<td>edging half moon</td>
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</tr>
<tr>
<td>9</td>
<td>pedestrian grass mowing</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
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<td>rose bed maint</td>
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<tr>
<td>13</td>
<td>rose bed maint</td>
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<tr>
<td>19</td>
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</tr>
<tr>
<td>22</td>
<td>brushcutting &amp; obstacles</td>
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<td>1</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>tree feathering, stake/tie &amp; base weeding</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Operations will be carried out as far as is reasonably practicable, regardless of weather or climatic conditions. In the event of exceptionally adverse weather conditions, all or part of the works may be suspended and deferred, until such time as weather, climate or ground conditions improve, for services to resume.

Tree Planting

As the removal of a Cherry tree was necessary for the installation of the skate park, the Royal Borough will be replacing the tree with a 10-12cm or 12-14cm heavy standard containerised *Prunus avium* (Cherry tree).

It will be planted incorporating a tree planting and mulching compost. The tree will be wire cage guard protected with a single stake with ties and an irrigation pipe. It will be mulched with woodchip to depth of 10cm with a 0.5-1 metre diameter pit. The tree will not be close mown or trimmed around. The surrounding pit will be kept weed free using hand tools in accordance with the schedules for the rest of the park. It will be watered during dry periods or as required for the first two years by GM staff in the park. The stake, tie and guard will be inspected routinely twice a year and after strong winds and adjusted and/or repaired as necessary. Any damage identified to the tree itself will be reported to the arboriculture manager for further assessment and recommended actions taken.

Once the tree is deemed suitably established, the stake, tie and guard will be removed and soil backfilled into any depressions left. It will be adopted into the 5 year arboriculture survey that applies to the rest of the park.
Grass Areas

The grass shall be cut as per the schedule for the rest of the park as shown on the work programme table, subject to weather and seasonal variations. It may be necessary to adapt the timing in some years to commence sooner and complete later in the season. Each cut will be uniform and as even and consistent as ground conditions will allow.

Grass shall be mown with a minimum of overlap, leaving no areas uncut and grass cuttings discharged by the machines shall be left, not collected.

Relocation of Roses

As the removal of a rose bed was necessary for the installation of the skate park, the Royal Borough will be replanting the roses in an established rose bed at nearby Charlton House. Should the roses be deemed as not in a suitable condition to transfer, the Royal Borough will purchase the equivalent number of Margret Merrill or Iceberg variety white roses to plant as replacements.

Planting will be carried out between November and the end of March in accordance with standard horticultural practice. Planting will be suspended during periods of frost, heavy rain or water-logged conditions. Roots of plant material will be protected at all times including during transport, with suitable covering materials or heeled in to avoid damage by frost. Container-grown plants will not be removed from containers until the planting areas have been prepared. Maximum care will be taken at all times when handling plants to ensure that as little damage or disturbance as possible occurs to roots or the root mass.

All plants will be planted in accordance with good Horticultural practice, upright with the roots well spread out and at the same depth at which they have been grown in the nursery.

After planting, the site is to be left clean and tidy with any rubbish, debris, packing materials and labels removed.

The roses shall be pruned and dead-headed, and the bed area cultivated as per the schedule for the rest of the park as shown on the work programme table.

The PEOS team is committed to ensuring that its activities are undertaken in an environmentally-friendly manner and that effects on the environment are controlled. The Royal Borough’s PEOS Department is accredited with the EN ISO 14001 Environmental Management Standard.
**Toilet facilities**

The Park has a set of public toilets that are located adjacent to the Adizone and skate park area.

The Royal Borough of Greenwich has employed a cleaning company to undertake daily cleaning of the public toilets and they are contracted to open the toilets by 9am each morning.

They toilets are locked at dusk either by the Park Rangers or by staff from the café. Keys can be supplied to a responsible person from a skate park organisation/s for use outside normal opening hours.

**First Aid**

All Royal Borough’s Park Rangers have had basic first aid training and can provide assistance/advice in relation to minor injuries.

A first aid kit is available from the park staff.

In case of a serious injury the closest hospital A & E Department is:

Queen Elizabeth Hospital,
Stadium Rd, Woolwich,
London SE18 4QH

The A& E Department It is located 0.9 miles by road, from the skate park and is shown in the plan below:
Safety and Security of the Park

Park Rangers and Wardens are available to deal with minor issues and are able to enforce Byelaws and Dog Control Orders.

During office hours i.e. Monday to Friday between 8.30am and 5pm the PEOS Office at the Oxleas Woods Centre can be contacted by telephone on 020 8856 0100.

The Royal Borough operates an ‘Out of Hours’ service (all night, weekends and bank holidays) through the main Council switchboard on 020 8854 8888. Depending on the nature of the incident, the Parks Officer on call will be contacted or if the incident is serious then the Police may be contacted.

If anti-social incidents occur PEOS will work closely with the local police & PCSO’s from the local Metropolitan Police Safer Neighbourhood Team.

In the event of a major incident the park should be left via the closest exit point.

Risk assessment/management

In addition to the daily visual inspection carried out by the Park Rangers for obvious risk i.e. broken bottles, vandalism etc. a three monthly inspection to be carried out by the PEOS playground fitter.

An annual independent inspection will also be carried out with all playgrounds to make sure there is compliance with EU1176, EU1177 and EU14974 for roller sport equipment.

Events

The Royal Borough will consider applications for formal wheeled sports events to be held with the skate park. These events will be subject to an application and approval process managed by the PEOS Department.
Conditions of Usage

Conditions of use have been discussed and agreed with formal user groups and will be displayed on site for all users. These conditions are as follows:

- The skate park is for a range of wheel sports: inline skating, kick scooters, skateboards and BMX bikes
- No bikes with stabilisers, three wheeled scooters, training bikes, motorbikes, electric/petrol scooters or powered vehicles are allowed
- It is important that this skate park is used correctly to avoid accident or injury
- This skate park is for users of all abilities
- Children under 8 years old must be supervised by a responsible adult
- Respect each other. Watch out for each other. Remember everyone was a beginner once
- Respect other park users and local neighbours
- Be aware of what other users are doing – don’t cause an obstruction
- Use an appropriate part of the skate park to reflect your skill level
- Skate and ride to your ability
- Appropriate safety equipment should be worn
- No sitting on the obstacles
- Wait your turn. No snaking
- Litter must be put in a bin
- No alcohol or glass bottles on the skate park
- No smoking
- No ball games
- No dogs
- No graffiti
- The facility should only be used during permitted hours of use
- Any criminal/anti-social activity will be reported to the Police
- In an emergency dial 999
- If there is a repair/cleansing issue with this skate park, please report it. Call 020 8856 0100 or email: parks@royalgreenwich.gov.uk
- Users take part and use the facility at their own risk

Management Plan Review

This management plan will be subject to an annual review and will be undertaken by the PEOS Management.

Royal Borough of Greenwich
Parks, Estates and Open Spaces
Oxleas Woods Centre
Crown Woods Lane
London
SE18 3JA

Tel: 020 8856 0100
Email: parks@royalgreenwich.gov.uk
**Condition 12 – Tree Protection Plan**

Full details of the tree protection measures shall be submitted to and approved by the Local Planning Authority prior to the commencement of works on the site and shall be installed and maintained during the implementation of the development in accordance with BS 5837:2012.

**Information Provided**

There is one tree located within the boundaries of the footprint of the proposed skate park which will be removed and replaced with a tree planted in the location shown on documentation attached to condition 8 – ‘CHARLTON PARK SKATE PARK LAYOUT’. Site boundary fencing will ensure trees are protected. Site vehicles already use the pathways within the park and do not affect the existing trees. This will be monitored at the start of the works to ensure no site vehicles affect trees.
Condition 13 – Relocation of Table Tennis Tables

The development hereby permitted shall not be commenced until the two existing table tennis tables have been relocated within Charlton Park and made available for use.

Information Provided

Details of relocation of table tennis tables has been illustrated on document ‘CHARLTON PARK SKATE PARK LAYOUT’.
CHARLTON PARK SKATE PARK LAYOUT

- Installation of 2 picnic benches
- Installation of 2 litter bins
- Planting of tree

NEW LOCATION OF TABLE TENNIS TABLES

Bed for planting of roses
Condition 14 – Sustainable Drainage System

Prior to the implementation of the development, details of a surface water drainage scheme based on sustainable drainage principles and an assessment of the hydrological and hydro geological context of the development, shall be submitted to and approved in writing by the Local Planning Authority. The scheme shall subsequently be implemented in accordance with the approved details before the development is completed. The scheme shall include details of how the scheme will be maintained and managed after the completion and calculations to demonstrate the adequacy of the soakaways and surface water drainage proposals.

Information Provided

A drainage report and detailed plans for the proposed skate park will be in accordance with the following:

- Greenwich Drainage Report Jan 2016 Rev A
- Appendix Ca Drainage
- CP17_DRAINAGE_BOWL01
Bendcrete Leisure Ltd
7 Nuffield Way
Abingdon
OX14 1RL

Bendcrete Leisure Limited has prepared this report for the Royal Borough of Greenwich for their sole and specific use. Any other persons who use any information contained herein do so at their own risk.
Pre-Construction Drainage Report

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1 Executive Summary ....................................................................................................... 3
2 Location History ............................................................................................................. 4
3 Local Conditions ............................................................................................................ 4
  3.1 Flood Risk from Groundwater, rivers and surface water ........................................ 4
  3.2 Location Hydrology ................................................................................................. 5
  3.3 Local geology ........................................................................................................... 5
  3.4 Existing site run-off ................................................................................................. 6
  3.5 Proposed site run-off ............................................................................................... 6
4 Analysis ......................................................................................................................... 6
  4.1 Options ................................................................................................................... 6
5 Site Investigations ......................................................................................................... 7
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7 Drainage Proposal ........................................................................................................ 14
1 Executive Summary

It is proposed to build an impermeable skatepark in Charlton Park, Greenwich. This report examines the available data and possibilities for the drainage system.

Charlton Park is not in a flood Zone. There is no groundwater flooding vulnerability for this site and the surrounding areas are considered at low risk from both fluvial and surface water flooding.

We have identified 2 possibilities for the drainage of this skatepark:
• To use a soakaway to dissipate the rain water, using the pump sump only as a backup.
• to drain straight into the pump sump with a holding tank to reduce surcharging the drainage system.

We propose the following scheme

Key

- Existing French Drainage
- Diversion for existing drainage
- New deep drainage from bowl
- Soakaway
- New shallow drainage from street section
- Existing Pump Manhole
- Gullys and Manholes
2 Location History

The skatepark is being built adjacent to the north-eastern floodlit training area of Charlton Park Sports Area. Charlton Park was improved in 1929 by top filling, and it is at this point that a cinder running track was put in. During the Second World War, the park had trenches dug through it to prevent German planes from attempting to land in the park.

The floodlit training area was used as a running track until around the mid 1990’s. At this point, the cinder track was in a considerable state of disrepair and was not being used. The track was removed, and the track lighting was left in place.

The track area is 120m x 90m wide and is now used for football training. In 2011, a multi-use games area was built and the spoil from this formed into a stock pile alongside the games area. This will need to be moved again for the skatepark.

Further back in time shows that this has always been open land:

3 Local Conditions

3.1 Flood Risk from Groundwater, rivers and surface water.

Historical maps, flood maps and available bore hole information suggest that the land is not at risk from fluvial or tidal flooding but there is some minor surface water flooding in the football pitches adjacent to the skatepark site. Looking at the maps from the Environment Agency, there is little risk of flooding within Charlton Park. The Ha-ha of Charlton House is identified as at risk of Groundwater flooding but this will be very localised. There has been no mention of sewer flooding.
3.2 Location Hydrology

3.3 Local geology

The local geology showed clay deposits with an underlying layer of Harwich formation (locally known as ‘Blackheath Member or Beds’) which is a round flint gravel and sand which suggested that a soakaway will be an option for drainage. This was confirmed by our bore holes: we located the Blackheath Member from about 1.5m deep. Borehole was stopped at 4m but this layer can be 12m thick.

There are quite a few borehole data reports available around the edge of the park which show some overlying clay, but with underling sands and gravels. In the historic Maps there are sand extraction pits within the vicinity of the park. There is no data available within the park boundaries, which has always been open land.

Historic Bore Holes in the other are all showing sand and gravels at varying depths between 1 and 3m.

The Harwich formation (Blackheath Member/Beds) is dominated by flint gravel, partly clast-supported, in a matrix of fine- to coarse-grained sand, with lenses of sand and thin clay.
layers. The gravel is almost exclusively black and well-rounded, and composed of flint, and rare siliceous sandstones and conglomerates (resembling sarsen stones and ‘puddingstone’ and probably representing silcretes from the Lambeth Group). The clasts are generally less than 20 mm in diameter although cobbles up to 150 mm long are known.

3.4 Existing site run-off

The site would have had a slight gradient towards Charlton Park Road but has been levelled in the 1930s to form the athletics track. The existing park had a drainage systems installed about 10 years ago. This has not been hugely successful. This is in the form of a grid of French drains approx. 1 to 1.2 m deep with no pipe or geotextile layer. There appears to be some herringbone drains feeding into these. The lack of geotextile causes the top grass layer to continually be washed down into the drains and this constantly needs topping up. It may be beneficial for the council to dig back onto the drains and cover them to prevent this continuing and the eventual silting of the drains. The drainage scheme also incorporated a soakaway of undetermined size and a sump pump which appears to be designed to take any overflow.

3.5 Proposed site run-off

We will divert the existing field drainage where appropriate to so that this system is not compromised. We do not intend to carry out any drainage of the surrounding field beyond this.

We propose to set the skatepark to falls where ever possible to minimise the number of drainage gratings and gullies in the concrete footprint. This is to minimise the need for maintenance and because grates and gullies always add a potential risk to the skaters of caught wheels etc.

The drains will be taken to a soakaway dug into the Blackheath Member with an outflow pipe onto the sump pump for any overflow scenario.

4 Analysis

The terms of reference for these calculations are based on the area of the Bendcrete design which is approximately 900m². The calculations have been done using the rational method with the following variables stress tested:

• 1 in 10 year storm event,
• Using conservative rainfall figures

The numerical results of the analysis are attached in Appendix B.

4.1 Options

Following the priorities set out in the building regulations code we have looked at draining into:

1. A soakaway
2. A water course
3. A sewer

We have looked at the possibility of soakaways, water course and sewers, pump and gravity fed, and combinations thereof.

**Option 1**

To drain the park into a suds soakaway drainage system by gravity. The suds soakway will need to be constructed at approximately 10m from the skatepark at a depth of around 2.5m.

This would require a maximum capacity of around 8.5m$^3$ of storage volume for a one in 10 year event. A storm event greater than 1:10 year would percolate through to the field drainage and then into the sump pump.

Variables: percolation test results estimated from falling head test in bore holes. Figure to be confirmed during construction phase through full soakaway tests.

**Option 2**

To drain the whole park to the existing sewer.

This would still require a storage capacity of around 2m$^3$ of to limit the discharge into the sewers to a greenfield runoff. This will require a slightly increased need for maintenance of the drainage system.

5 Site Investigations

Bendcrete carried out a site investigation early January 2016. Investigation of the original field drains was also undertaken.

Falling head test were done in fully cased two bore holes. This gave an infiltration rates of 9 x 10^{-4}m/s and 1 x 10^{-4}m/s. We have used 5 x 10^{-4}m/s as an average but will do a soakaway test to BRE digest 365 when we are on site to confirm. The actual size of the required soakaway will be based on the soakaway test results.
Bore hole 1

Sand and gravel at 0.3m deep

Dense brown sand at 1.5m deep (nb sand saturated from drilling process)
### SOUTH EASTERN DRILLING SERVICES LTD.

**BoREHoLe No.**

- **Project Name:** Bonacette
- **Rig Type:** D-1000
- **P/O No.:**
- **SPT Hammer No.:** S6051
- **Project No.:**
- **Date:** 16-1-17

### DESCRIPTION OF STRATA

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<th>SoIL TYPE</th>
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<th>boulders etc</th>
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<tbody>
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### DEPTH TO BASE OF STRATA

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### CASING & WATER DEPTH

- **TIME:** 05:00
- **Start of day's drilling**

- **TIME:** 11:30
- **End of day's drilling**

### GROUNDWATER DETAILS

- **DATE:**
- **TIME:**
- **DEPTH OF INFLOW:**
- **RATE OF INFLOW:**
- **RISING TO MINS:**
- **CASING DEPTH:**
- **SEALED:**

### REMARKS

- **INSTALLSlug:**
- **Feas:**
- **Sluggers:**
- **Flow:**
- **Pen:**
- **Flow:**
- **Pen:**
- **Flow:**
- **Pen:**

### NAMES & SIGNATURES

- **DRILLER:**
- **CLIENT:**

---

* SPT if 25 seating blows are achieved, record the penetration, i.e. 25/10mm and restart penetration
Bore hole 2

Sand, gravel and brick at 0.3m deep

Dense rounded gravel and sand at 1.50m deep (washed from drilling process)
**SOUTH EASTERN DRILLING SERVICES LTD.**

**Client:** BONNICOTT

**BOREHOLE No.** Br 2

**Project Name:** Sand Pit Groundwater

**RO No.:**

**Rig Type:** DTH 100

**SPT Hammer No.** SD C1

**Date:** 16-1-17

---

### DESCRIPTION OF STRATA

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<th>Sandy etc</th>
<th>SCILL TYPE</th>
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### DEPTH TO BASE OF STRATA

- **TIME:** 11:30 Start of day's drilling

---

### SAMPLES & INSITU TESTING

- No Sample taken

---

### CASING & WATER DEPTH

- **TIME:** 14:30 End of day's drilling

---

### GROUNDWATER DETAILS

- **DATE:**
- **TIME:**
- **DEPTH OF INFLOW:**
- **RATE OF INFLOW:**
- **RISING TO MINS:**
- **CASING DEPTH:**
- **SEALED:**

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### DELAYS / BAD ACCESS / PIT / HARD STRATA etc

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<th>Time (hr)</th>
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<td>Agitating</td>
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<td>Pumphouse Immers</td>
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<td>1.12</td>
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</tbody>
</table>

### NAMES & SIGNATURES

**DRILLER:**

**CLIENT:**

---

**Weather:** Fine / Dry / Rainy / Stormy / Snowy / Freezing

---

*Note: SPT if 25 seating blows are achieved, record the penetration, i.e. 25/50mm and restart penetration.*
**Existing Field Drain**

The existing field drains construction is very basic. The trenches consist of a 1.2m deep layer of pea shingle, but no teram or perforated pipe, as you would normally expect.

The existing field drains are seen on the image below. The skatepark will be built over the drain (blue line on diagram) connecting the side field drains with the soakaway.

This drain will be relocated so that the field drainage is not compromised.
6 Existing drainage

The photo below shows the existing connection of the field drains to the large drain with automatic pumps that operate when the water levels rise.

3.2m deep drain. Field drains enter from small diameter pipe from the soak away at a depth of 2.2m. In times of heavy water discharge the automatic pumps pump the water out of this drain to the sewer.
7 Drainage Proposal

For full drainage design and details see the attached drawings in Appendix C

1. New field drain installed to divert water around the skatepark. This will be done to match the existing levels.
2. Small section south of skatepark will be picked up in our new system at G3.
3. The skatepark will be constructed with falls of 1:100 falling towards drains in the skatepark. This minimises the number of grates and gullies in the skatepark so there is very little to block up (and maintain).
4. Acco channel drains or similar will be installed alongside the street section of the skatepark. This will be picked up by several gullies and water directed around the skatepark for ease of maintenance in future years.
5. Skatable covers will be installed within two of the bowls to take water away.
6. A silt trap will be installed at MH3 to protect the soakaway.
7. A new soakaway will be built to allow water from the skatepark to dissipate into the gravel beds.
8. The soakaway will have an over flow pipe over the top which will drain into the large existing manhole. At rare times of peak flow water this will be automatically pumped out into the mains drainage system (which is the current arrangement for the field drainage).

Key

- Existing French Drainage
- Diversion for existing drainage
- New deep drainage from bowl
- Soakaway
- New shallow drainage from street section
- Existing Pump Manhole
- Gullys and Manholes
### Appendix A – Numerical Calculations

#### Trench Soakaways

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<th>Width of Trench (mm)</th>
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<th>8000</th>
<th>9000</th>
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<tr>
<td>Required Trench Length (m)</td>
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#### Ring Soakaways

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<th>1500</th>
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<tr>
<td>Required Pit Diameter (m)</td>
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*Based on effective depth and number of pits as in Soakaway Data table*

### General Data

- **Site Location**: England and Wales
- **Soakaway Type**: Infilled Pit or Trench

### Soakaway Data

- Soakaway Width $W$ [m] = 1.00
- Soakaway Length $L$ [m] = 8.50

- Total Depth from Ground Level $D_G$ [m] = 2.50
- Depth to Drain Invert Level $D_I$ [m] = 1.50
- Soakaway Effective Depth $D_{eff}$ [m] = 1.00
- Free Volume in Infill Aggregate [%] = 97

### Soil Infiltration Data

- Allowance for infiltration through soakaway base: No
- Available on-site infiltration test results: Yes
- Soil Infiltration Rate $I$ [l/min] = 5.008-04

### Required Storage Capacity Per Rainfall Duration

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<tr>
<th>Rainfall Duration (min)</th>
<th>Rainfall Factor Z</th>
<th>M5-D Rainfalls (mm)</th>
<th>Z2 Rainfalls (mm)</th>
<th>Inflow (m³)</th>
<th>Z2 Rainfalls (mm)</th>
<th>Inflow (m³)</th>
<th>Outflow from Soakaway (m³)</th>
<th>Required Storage (m³)</th>
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*Z2 is a growth factor from M5 rainfalls

Calculations are based on BRE Guidelines (Digest 365)
Appendix B – General skatepark drainage & materials to be used

Skateparks are impermeable open areas that can at times be required to deal with great volumes of storm water in a short period of time, because of the nature of these sites they are also prone to litter, leaves and silt, all of which affect and dictate the type of drainage required.

Drainage systems are prone to silting up after many years of neglect and if the drainage at surface level is not maintained on a regular basis, localised flooding occurs because the rain water run-off cannot enter the below ground drainage fast enough.

We design our drainage to be as maintenance free as is possible.

Theory

Whenever we built a skatepark we carefully consider, the size of the skatepark, ground conditions, flood event we are looking to accommodate (how much water and how fast!), and where we can put that water. The extreme events are considerably larger than a typical day’s rainfall. For a 900m² skatepark a 1:100 year this can be around 30m³ of water that needs to be stored.

Outlets would in order of preference be either a soakaway, natural watercourse, swale or sewer. We can carry out the necessary calculations in house. Most drainage systems are quite simple in nature but can range up to a fully adopted sewer connection. We may need to carry out some or all of the following:

Preliminary Site Investigation Works.
Initial site visit to ascertain possible connection points including confirmation of manhole invert levels.

Preliminary Private Drainage Design
Confirming the line, level and size of the private drainage network for the agreed working layout plan. Liaising with the Water Authority with regards connections and anticipated flows as required.

Full Private Drainage Design & Layout Plan
Producing the detailed layout plan, manhole schedules, setting out information and suitable details and calculations for Building Regulations approval.

Preliminary Section 104 Drainage Design
Confirming the line, level and size of the S104 Adoptable drainage network for the agreed working layout plan. Liaising with the Water Company with regards connections and anticipated flows as required.

Attenuation/Soakaway Design & Detail

Attenuation systems
Full design and detailing including attenuation sizing, type, location and flow control chamber and device. Attenuation designed in accordance with the relevant standards and Environment Agency requirements.
Soakaway systems

Full design and detailing including sizing, type and location. A complete set of soakaway calculations will be provided for Building Regulations or Highways approval.

Full Section 104 Drainage Design & Layout Plan
Producing the detailed layout plan, manhole schedules, longitudinal sections, setting out information and suitable details for Section 104 approval. All details will be produced in accordance with the current Sewers for Adoption and Water Company requirements including coloured layout plans.

Full Section 104 Calculations
A complete set of adoptable drainage calculations produced using a hydraulic model of the system will be provided for Section 104 approval.

Combined Drainage Layout Drawing
Adoptable and private drainage details will be combined to produce a generic coloured plan clearly defining private and adoptable foul and surface water drainage.

Drainage Details
Producing all necessary detail drawings including standard manhole details, catch pit details, etc.

Section 104 Technical Approval Submission
Submit copies of all relevant adoptable drainage drawings and calculations for Section 104 Technical Approval.

Section 104 Technical Approval Comments
Reply to any technical approval comments from the Water Company and amend details as necessary for re-submission.

Full Section 104 Submission
Submit the required number of drawings and calculations along with the application documentation for the formal Section 104 agreement.

Practice

Wherever possibly we try to avoid putting any drainage gratings or slots in the actual concrete skate surface as this interferes with its skate-ability. Instead water is redirected by Falls built into the concrete to an area which can be provided with drainage i.e. the flat concrete is always at a slight gradient about 1cm fall over every meter.

There are two main ways of draining the Skate surface:

- Linear Drainage
- Gully
- French Drainage
Linear Drainage

There are a number of manufacturers of Linear Drainage:

These can sometimes cause maintenance problems as the grates can be removed by the skaters.

*Our preferred linear drainage is the Safety Kerb (above). This is basically a solid concrete block with a slit in it. However it is robust and easy to clean and importantly vandal resistant.*

*Or concrete dish channel, which is very low maintenance and cannot be vandalised.*

Gully

Gullies are inevitably in bowls; there are several commercial available covers available, we have had our own cover made up to fit our preferred gully pot.

The pots we use are large and deep trapped gullies that as with traditional gullies allow water to pass through the trap whilst retaining any silt and debris.

We can also have silt buckets fitted internally to make the emptying process a bit easier.

*Above is our typical grating cover. This can be made bespoke for the project with the project or council logo in it.*

French Drainage

Around the skatepark we may also need to install some French Drains to cut off water running from other parts of the park.
Typical soakaway crate
These maximise the volume of water that can be held with the least amount of disturbance to the park. Crates are wrapped in geotextile to protect from silting up. A silt trap will also be installed in the pipe run up stream of the soakaway. This will need periodic emptying to be effective.

Solution
Every skatepark will need its own individual solution based on the site’s ground conditions, size of skatepark, design of skatepark and the flood event the drainage system is to be designed to. The drainage solution will be developed by our in house civil engineer who will discuss the implications of the different systems before the final scheme is agreed.
Charlton Park Proposed Skate Park
Approval of Details Reserved by Condition

Appendix Ca Drainage
Charlton Park Proposed Skate Park
Approval of Details Reserved by Condition

CP17_DRAINAGE_BOWL01
Condition 15 – Height of skate park above ground level

The height of the skate park above ground level shall not exceed 750mm.

Information Provided

The height of the skate park will not exceed 750mm as per the below plans:

- CP17_CROSS_SECT_001