

Client: Merlin Magic Making
Document: Construction Environmental Management Plan
Reference: Safari Lodge Accommodation Chessington
Planning Ref 18/10413/FUL

Construction Environmental Management Plan
for the
Safari Lodge Accommodation on behalf of
Merlin Magic Making

At Chessington World of Adventures Resort

Report Prepared by Paul Crosbie

Position: Principal Designer

Date: 20th October 2021

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1 Introduction

This Construction and Environmental Management Plan (CEMP) has been prepared by PCA Safety Limited, the projects appointed Principal Designer. It provides details of the construction environmental management required by condition 16 of the planning permission (Ref: 18/10413/FUL) for new safari-themed lodge accommodation at 22 Acre Field, Chessington World of Adventures Resort.

2 Provisional Construction Traffic Management Plan

During the initial site preparation, and construction phase of the project, materials, equipment, and personnel will require movement to and from the site. This CEMP describes how these movements will be managed to protect the ecology and habitat.

The traffic numbers quoted within the plan are based upon the experience and knowledge of previous developments within the Chessington World of Adventure site.

The construction period is projected to last approximately 52 weeks.

3 Primary Site Entrance off Leatherhead Road

The existing main park entrance off Leatherhead Road A243 will be used in compliance with current arrangements.

The Principal Contractor will ensure the upkeep of the entrance and verges affected at the entrance and ensure that all vehicles accessing, and egressing site are of the correct dimensions to safely access/egress the public highway.

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4 Delivery Management and Routing

The onsite Principal Contractor Construction Manager will have full responsibility for the coordination and management of deliveries to and from site. The manager will ensure the safety of all on site personnel, the occupants of neighbouring properties, road traffic users and the public. The appointed manager's role will also include advising delivery drivers of the most appropriate routes to and from site, the most suitable times of deliveries and of any local restrictions on vehicle heights and widths and proposed events etc. Vehicle movements between school hours will be so far as practicably kept to a minimum. All traffic will comply with local rules and traffic conditions.

Deliveries will be outside the Chessington World of Adventures Resort operational times as per published web page below:

<https://www.chessington.com/plan-your-visit/before-you-visit/opening-hours/>

5 Deliveries to site

Deliveries of plant, materials and equipment will be made by 20T vehicles and smaller rigid vehicles. To assist with offloading deliveries on-site a Telescopic handler will be used as well as delivery vehicles having a Hiab Crane attachment. Deliveries will be organised and planned with liaison with the Principal Contractor.

Table 1 & 2 within the separate Construction Management Plan set out the estimated deliveries and specifications show the estimated vehicle movements to and from site. These values are based upon the information from previous similar developments on site.

Where practicable all materials, plant and equipment will be sourced from local suppliers to minimise the impact upon the highway network

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The hours of deliveries to the site of the development will be restricted to 08.00 to 1800 hours on Monday to Friday, 08.00 to 1300 hours on Saturday, with no work at any other time including Sundays and Public Holidays

6 Construction methodology and sequence

The site will be fully fenced off to prevent unauthorised access as per the requirement of the Construction Design and Management (CDM) regs 2015.

Suitable safety signage as per the Safety Signals Regulations will be posted at the site boundary.

The site will be surveyed by the principal contractor and all access routes, services and protected trees areas will be marked out before any work progresses. See Environmental risk assessment Appendix 1

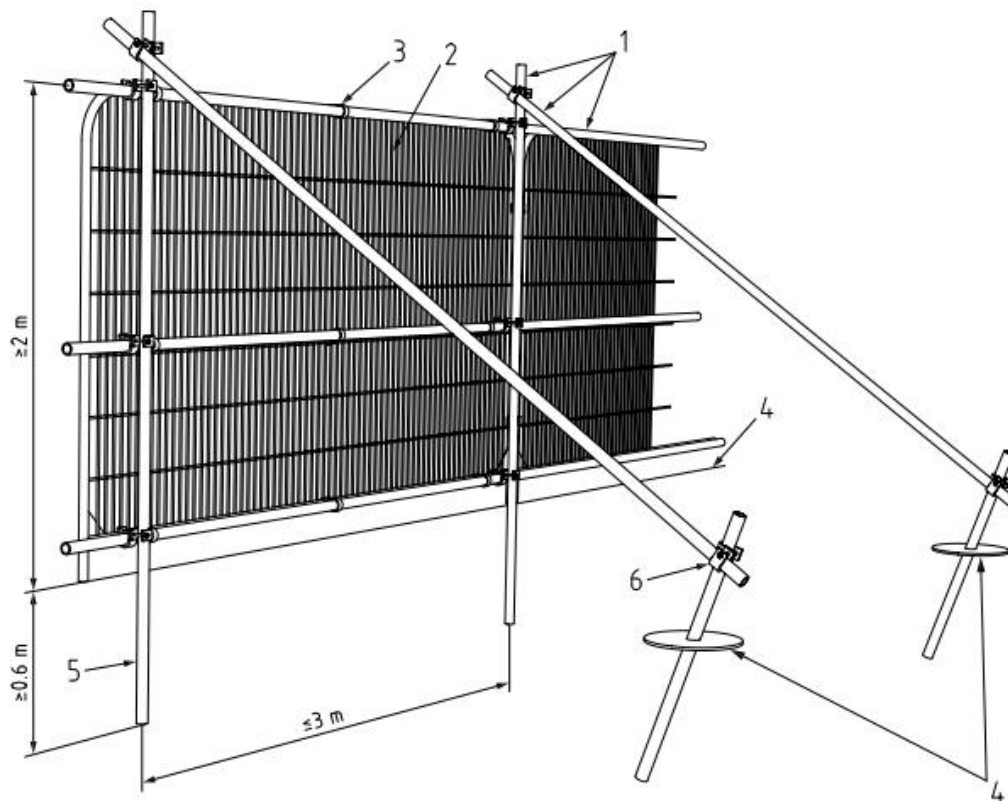
6.1 Tree/ root protection

All trees noted on the site plan will be identified as part of the site survey. Fencing will be as per BS.5837/2012.

This will be in line with CWoAR Lodges Arboriculture Method Statement (October 2018) submitted as part of the planning application (see 9128-KC-XX-YTREE-Method Statement-Rev F, Appendix 2).

The tree protection areas are noted on drawing CWoAR Lodges Tree Protection Plan (October 2018) which forms part of the application (see drawing no 9128-KC-XX-YTREE-TPP01Rev C, Appendix 3).

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Key

- 1 Standard scaffold poles
- 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
- 3 Panels secured to uprights and cross-members with wire ties
- 4 Ground level
- 5 Uprights driven into the ground until secure (minimum depth 0.6 m)
- 6 Standard scaffold clamps

Warning signs will be posted around the fencing "CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

All trees to be protected will be identified by the ecology / tree report carried out by the nominated ecologist and in consultation with the local authority tree protection officer.

See CWoAR Lodges Arboriculture Method Statement (October 2018) submitted as part of the planning application 9128-KC-XX-YTREE-Method Statement-Rev F Appendix 2

No machine excavation will be carried out within the RPA zone and any drainage installation within the RPA will be by hand dig in accordance with BS.5837/2012 and with direct liaison with the Tree protection officer on site.

6.2 biodiversity protection zones

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Fencing (Heras type) panels will be erected off set from the biodiversity protection zones 1m within the development area to form an exclusion zone as per the block plan showing constraints submitted .

The site manager will ensure the fencing remains insitu throughout the works and no plant will be located or works will take place within the exclusion zone.

6.3 Site works

The principal contractor will form all access routes and work areas by stripping back soils, top and sub (storing them for reuse on site).

An access road, as indicated on site plan 263/64 Block Plan, will be formed.

Cut off ditches will be formed around the excavation areas to divert any surface run off into setting holding areas, slit traps will be used to prevent any runoff, silt captured will be reused within the cut and fill areas.

All water runoffs will be diverted to the proposed SUDS area as indicated on the site plan 263_64_6.

The roadway will be made up of a geotextile membrane and clean compacted local stone (this will be covered with a porous block or tarmac surface prior to completion of the works) to allow access by road vehicles.

Drainage and water retention areas will be excavated. All arisings will be used as part of the cut and fill proposals.

The site boundary fencing and temporary access routes will be removed on completion of the works.

Soil strip will be by dumper and excavator with soils being spread in layers, sub soil and topsoils. The dumper will travel on stripped areas only to minimise compaction of the soil. Tipping will be a retreat operation to minimise running of dumpers over the tipped material. Recovery of the material will be carried out in reverse to minimise compaction of the soil.

All open excavations will be ramped or closed off to prevent accidental falling in of persons and animals.

The only excavation works are for the installation of surface water drainage collection and subbase excavation for hard surface installation. All excavation work will be carried out using hydraulic operated excavators. Rubber tyred dumpers will transport spoil and fill within the site boundary.

Piling operations will be carried as per Simpson TWS Civil and structural design report extract Appendix 4 Piling design Safari accommodation Chessington for all building foundations and board walks

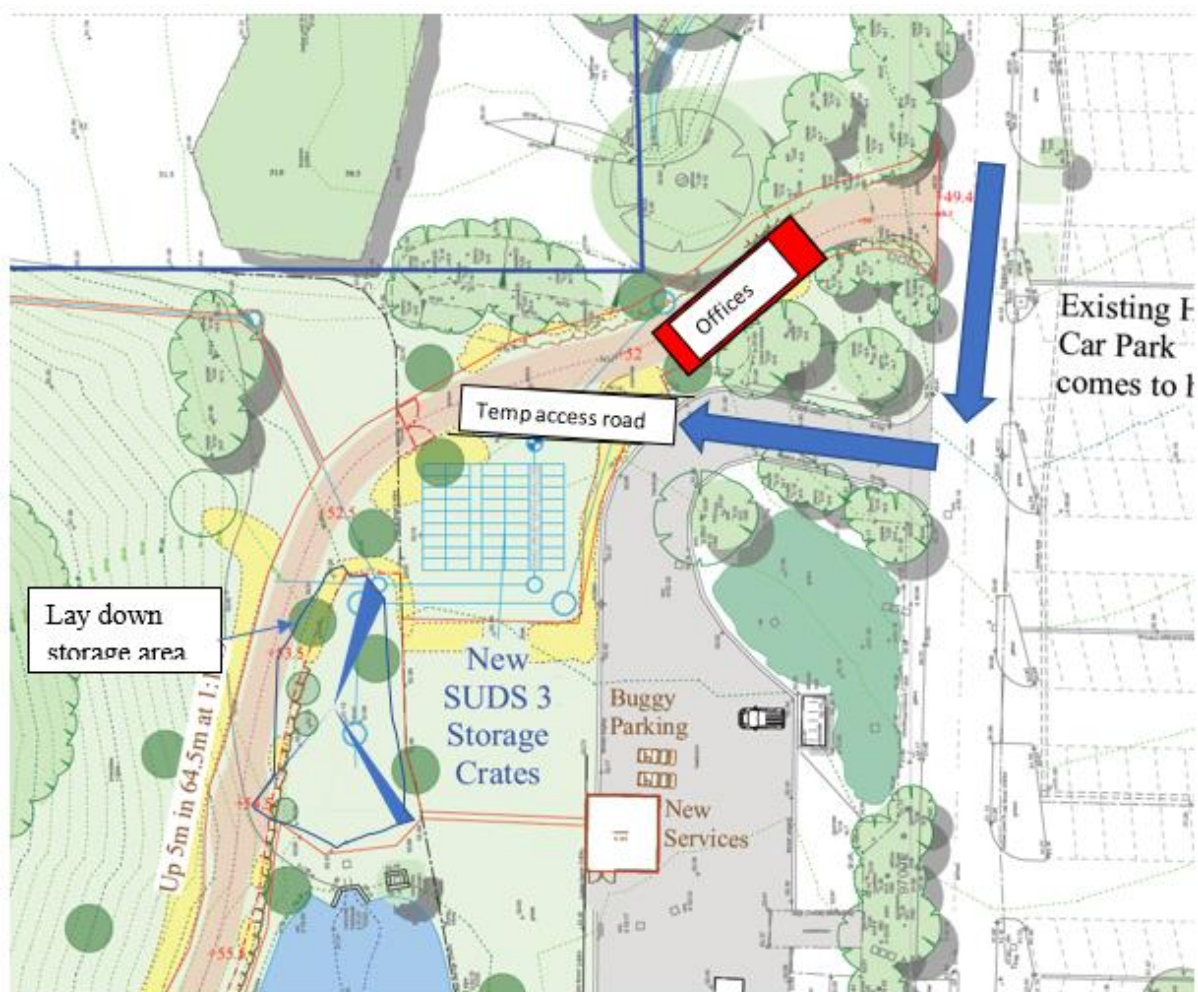
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Offsite traffic management

Temporary "Construction site Access warning signage will be displayed at the existing entrance during high vehicle movements. All signage will be in accordance with Chapter 8 Traffic Signs manual, the Construction Design and Management Regulations 2015 and will be provided and maintained for the duration of the construction phase on all approaches to the site were required.

All parking will be on site, no on road parking will be undertaken.

All plant, machinery and materials will be stored in the dedicated laydown storage area as indicated below:



7 Site Security

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The site will be secured by the existing boundary fencing of the Chessington World of adventure resort. Additional Heras security fencing will be erected at the site boundaries within the park area to delineate the construction site from the remaining theme park. Warning Notices and Company information will be displayed at the site entrance.

8 Complaint contacts

The Principal Contractors details for the person responsible for any problems for the site will be displayed on the site boundary so that local residents are able to contact the principal contractor to raise any issues that they may have and report complaints. The contractors will keep a record of all such complaints and respond to them as soon as possible.

The log of complaints and action taken should be made available to the local authority on request.

9. Local Ecology

- Birds & Bats:

No adverse impacts on bats or their habitat are anticipated as a result of the development. All ecology protective measures will be in compliance with Ecological Services findings and recommendations.

Impacts on nesting birds will be avoided by carrying out site clearance and similar operations outside of the bird breeding season (which is March-August).

See accompanying Ecological Survey Appraisal October 2018 by Baker Consultants (Appendix 5 for further ecology mitigation measures

- Protection of the local water courses:

The Principal Contractor will ensure that no solid or liquid waste products or contaminants enter the water courses.

All construction operations handling of building materials and mixing of concrete/mortar will be undertaken in seepage proof containers.

The construction design, hardstanding and building foundations will include groundwater seepage prevention. Ref Drainage Strategy.

A discharge monitoring and maintenance regime will be under the supervision of the principal contractor.

It is proposed that the development will have self-contained drainage containment systems installed.

The above strategy should ensure that the local water courses and the surrounding environment is protected from pollutants as a direct result of the project.

See separate report from Baker Consultants October 2018 Appendix 5750.04_rep_ca_combined v2

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10 Environmental Strategy - The Control of Dust and Emissions from Site Preparation and Construction

Control measures to control dust for the project also covers other emissions to air, including fumes and smoke. Prior to starting any works which would create excessive dust, site management will notify neighbours as to what activities we plan to do and for how long.

The basic precautions that will be taken to minimize dust generated on the site include covering waste skips, water suppression, segregation and exclusion using impermeable barriers, and avoidance of allowing equipment to run dry whilst engaged in operation. All vehicles carrying waste will be sheeted.

Haul roads will initially be hardcore/crushed material construction and can be sprayed to minimize dust. Once surface bound, they will be swept on a regular basis, the Site Manager will decide the necessary frequency based on the conditions on site. This will allow delivery trucks to be kept relatively clean and significantly reduce the likelihood of dust on roads outside the site.

Cleaning of surfaced site roads will be carried out weekly by a contracted road sweeper, however frequency will increase or decrease as the manager feels necessary. This would include site entrances and the immediate highway. It is important to recognise that this needs to be monitored consistently throughout the contract, in light of site operations and weather conditions and not just in the early stages.

The Site Manager must visually monitor dust production at regular intervals during the day and record their findings. Records will be kept on file in the site office and must be made available to the EHO upon request.

Materials will be stored on site. These will include reclaimed materials, and this will be closely monitored to reduce the potential for airborne dust. Material intended for the filling of the low area will be placed as soon as practical. In prolonged periods of dry weather, measures will be taken to keep the material in a damp condition by water spraying.

Dust suppression can be implemented on small plant when operations are being carried out adjacent to existing properties. Cutting and grinding on site should be kept to a minimum but where necessary; it should be carried out using equipment fitted with silencers and water suppression devices.

We will minimise creation of dust by Elimination – Substitution – Isolation – Control measures. This will be done by shutting plant down when not in use to eliminate the problem. If excessive dust is still a problem, then the problem will be isolated by moving plant to another area of site to isolate the problem away from neighbours. If the plant cannot be moved anywhere else, we will then control by erecting screens or enclosures.

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In the event of a complaint however received, the Site Manager will be responsible for following the complaint through to resolution and initiating any necessary enforcement or corrective action. Remedial action will then be taken to reduce levels and the Site Manager will check and verify that the corrective action has been successful in reducing dust production.

10.1 Local Air Pollution Prevention and Control (LAPPC)

These regulations apply to smaller industrial activities, known as Part B Installations, such as concrete batching or concrete crushing. Local authorities, as the regulators, are responsible for controlling emissions from these premises and set conditions in permits they issue to achieve this. Conditions are based on Best Available Techniques (BAT), which require that the cost of applying a technique is not excessive in relation to the environmental protection it provides. The Secretary of State for Environment, Food and Rural Affairs has produced Process Guidance Notes, which form the statutory guidance on what constitutes BAT for each regulated process. If the regulator believes the operator has contravened, or is likely to contravene any permit conditions, enforcement action can be taken.

Note: By following this Best Practice Guidance the Principal Contractor are identifying good practice methods for demolition, site clearance and construction activities. Compliance with this document does not necessarily offer exemptions from prosecution under any of the legislation impacting upon demolition and construction, though it should be recognised that using Best Practicable Means (BPM) could be used as a defence from prosecution under the S.80 of the Environmental Protection Act 1990.

Note: By following this Best Practice Guidance Principal Contractor are identifying good practice methods for demolition, site clearance and construction activities. Compliance with this document does not necessarily offer exemptions from prosecution under any of the legislation impacting upon demolition and construction, though it should be recognised that using Best Practicable Means (BPM) could be used as a defence from prosecution under the S.80 of the Environmental Protection Act 1990.

11. Site preparation activities dust and emissions control measures.

Potential dust hazards can be assessed according to BS 6187:2011 Code of Practice for full and partial demolition, which includes the initial stages of the project development and management from demolition techniques to re-using or recycling materials. All waste will be recycled and disposed of in compliance with current statutory duties and current best practice.

12. Asbestos

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There is no asbestos expected in the site vicinity therefore the site will not be subject to a survey in compliance with the Control of Asbestos Regulations 2012 and in compliance with HSG 264 The Survey Guide.

- If appropriate, Notify the Health and Safety Executive of any work
- Always employ competent and licensed contractors
- Clearly identify the location of asbestos containing materials before starting work.
- put in place procedures to sample and analyses suspect materials
- carry out independent air sampling to ensure standards are met
- dispose of asbestos-containing materials to licensed waste sites according to HSE guidelines before the demolition company is given access.

13. Fire Safety

There will be NO waste burnt on site. A specific site Fire Risk assessment will be compiled for the undertaking of all construction related activities.

14. Vibration

Prior to starting any works which would create excessive vibration, site management will notify neighbours as to what we plan to do and for how long. Generally, there shouldn't be any operations that create excessive vibration. We propose to use small scale screw piles as per appendix 4

However, In the event of a complaint being received, the Site Manager will be responsible for following the complaint through to resolution and initiating any necessary corrective action. Prior to starting any works which may affect surrounding properties, site management will carry out an existing condition survey of adjacent buildings externally and boundary structures to ensure the existing condition is maintained.

So far as is reasonably practicable all crushers and breakers will be sited upon crushed or soft materials to reduce the effects of vibration.

15. Noise Control

We will always employ the Best Practicable Means.

The other method we use to control noise from construction sites is to require that all contractors use the 'best practical means' to minimise noise from their activities. This can include matters ranging from the prohibition of the use of radios on site to the proper maintenance of plant and equipment. It can also include matters such as the choice of appropriate plant for a particular task or putting up noise barriers or screens.

Poorly maintained plant and equipment can give rise to excessive noise and the failure to use the built-in noise control shielding on plant can cause problems.

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We encourage the use of mains powered electrical equipment (rather than using generators) and hydraulic breaking or bursting techniques are preferable to impact breaking methods

The choice of equipment for a particular task is important in noise reduction. For example, bored piling is usually a lot less disturbing than hammered piling. We therefore insist on the use of bored piles whenever possible. However, sometimes it is necessary to use hammered piling techniques for engineering reasons.

16. Plant and Machinery

The rating level (LAeq,T) from any plant and equipment associated with the development, when operating simultaneously, shall not exceed the background noise level (LA90,T) at any time when measured at the nearest noise sensitive premises at the quietest time that the equipment would be operating/in use. Noise measurements and assessments will be compliant with BS 4142:2014 "Rating industrial noise affecting mixed residential and industrial areas".

All plant will be stored in the site compound when not in use. Engines will not be left running when not in use, noise mufflers will be used on plant and use of site radios will not be permitted. We will make sure that unnecessary metallic impact noise is avoided from dropping scaffolding poles, placement of roading plates, moving metal fencing and the clanking of chains on crane hoists. The machines we will use will have been maintained regularly. Simple maintenance can reduce noise levels by as much as 50 per cent.

We will position static plant and equipment as far as possible away from sensitive boundaries, as work allows. A distance of four times further away lowers the noise by 12 dBA. A reduction of 10 dBA will sound half as loud. In some cases, quiet plant and machines are available which are specifically designed to produce less noise, these will be used where possible. Examples are muffled breakers (the noise of a typical silenced breaker can be reduced by 16 dBA if a purpose-made muffler is fitted) and silenced diesel generators and compressors (some units are up to 15 dBA quieter). Generally, electrically powered equipment such as chain saws and cranes are noticeably quieter than diesel-powered equipment and hydraulically powered equipment is quieter than pneumatic power.

Where possible the following measures will be taken:

- Cutting metal using gas cutters rather than using grinding methods.
- When replacing exhaust and intake mufflers, quieter options will be requested.

Specified plant and equipment such as excavators can also operate at very different noise levels.

- Machinery covers and panels will be closed and well-fitted.
- Bolts and fasteners should be done up tightly to avoid rattles.

Overpowered or under powered equipment will be avoided. .

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17.1 Saw Cutting of Pavers and Pavement Slabs

A cutting station should be established with the saw enclosed in an acoustic enclosure. A simple screen is unlikely to be effective in residential streets due to reflected noise effects. A water supply should always be made available, and the saw blade changed regularly to avoid an annoying high pitched "whining" noise from developing. For any saw cutting choose a saw blade with the greatest number of teeth and of the smallest width. Choose a blade with gullets as small as possible.

17.2 Audible Reversing Signals

These signals are very penetrating by design and may be turned off, or the tone changed in some circumstances. This will be assessed and liaison with the company safety advisor must be undertaken to ensure that site safety requirements are maintained.

CCTV cameras and radar assisted reversing aids will be employed, reversing will be in a segregated area with no pedestrians

18. Waste Management

All waste must be segregated disposed of in the respective waste skips, to allow for recycling or disposal at a Licensed Off-site facility.

All soils arisings will be reused on site.

19 Conclusion

It is considered that with the environmental protection described above in place, the biodiversity and nature conservation value of the site will be protected.

The principal contractor will accept, that if circumstances change which result in changes to the proposed project construction and environmental management plan, they and the Chessington World of Adventure will enter discussions of the proposed changes with the local authority and ensure that the necessary permissions are granted to allow for those changes to take place.

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Principal Designer


Client: Merlin Magic Making

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Appendix 1

	Risk Assessment Form	Version 1
	Location: Safari Lodges Chessington	

Description of Activity / Task Assessed: Construction Environmental works assessment	Site: Chessington World of adventure safari Lodges	Assessment carried out by: Name: Position: Signature:
	Date of Assessment:	

Activity - is the type of work being carried out in the workplace.

Hazard - is the potential to cause harm e.g., Environmental pollution


Control Measures - are the actions taken to prevent occurrence Control Measures include such areas as training, supervision, instruction, information, safe systems of work, proper maintenance procedures, as well as physical measures such as a thorough housekeeping regime to prevent build up of combustible waste.

Risk - is the likelihood that harm will occur, after the control measures have been carried out.

		Likelihood				
		1	2	3	4	5
Severity	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5	10	15	20	25


Likelihood x Severity = Risk Rating			
Likelihood	Severity	Rating	Action
5=inevitable	5=Fatality or major incident	Over 20	Intolerable risk - Immediate action required.
4=highly likely	4=Serious incident resulting in days lost	15-19	Substantial risk - action within 1 week, consider suspending work.
3=possible	3=Requiring remedial action	10-14.	Moderate risk - All actions to be completed within 1 month.
2=unlikely	2=Action may be required	6-9	Tolerable risk - All actions to be completed within 3 months.
1=highly unlikely	1=Unlikely to cause harm	5 and below	Trivial - Risk considered LOW implement action if indicated

Key for Table Abbreviations – L = Likelihood; S = Severity; RR = Risk Rating

	Risk Assessment Form Location: Safari Lodges Chessington	Version 1
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Task	Nature of hazard	Areas at risk	Actions to Reduce Risk	Residual Risk Rating		
				L	S	RR
Site set up	Ground disturbance	Whole site	<ul style="list-style-type: none"> Site boundaries set out and put in place prior to any works on site Roadways marked out for plant movement Areas for roadways compounds soil stripped and stored Area over covered with clean free draining hard standing Vehicles all parked off site in existing Chessington car park Access roads barriered off to prevent use 	3	2	6
Site set up and operations	Plant movement close to tree areas	Tree protection areas	<ul style="list-style-type: none"> Tree protection area set out by engineer BS 5837/2012 fencing erected Warning signs in place Information communicated as prestart induction to all 	2	2	4
Drainage	Ground disturbance Soil contamination Fauna destruction Failure of joints / ground contamination	Drainage runs / ground	<ul style="list-style-type: none"> Drainage runs designed in 1 trench Surface runs from lodges to multi manholes Excavation by mini excavators Topsoil's stripped and stored separately for reinstatement Inert fil used around pipe runs Plans of locations updated and stored for reference Drainage tested for leaks before back filling 	3	2	6
Drainage	Existing services disturbance	Drainage runs / ground	<ul style="list-style-type: none"> Ground penetration survey undertaken Areas scanned for services Drainage design avoids known services Existing services hand dug around 	2	2	4

Key for Table Abbreviations – L = Likelihood; S = Severity; RR = Risk Rating

	Risk Assessment Form Location: Safari Lodges Chessington	Version 1
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Task	Nature of hazard	Areas at risk	Actions to Reduce Risk	Residual Risk Rating		
				L	S	RR
Plant movements	Ground disturbance Soil contamination Fauna destruction	Whole site	<ul style="list-style-type: none"> Location of access roadways marked out and demarcation barriers in place Topsoil's and sub soils stripped separately for reuse Soils stored in bunds and seeded Soils formed in bunds by excavator no running of plant over stored soils Any contaminated ground stored separately 	3	2	6
Site strip	Habitat disturbance	Whole site	<ul style="list-style-type: none"> Area has wildlife barriers in place Inspected by ecologist in line with report Methodology approved for soil removal Soil strip in advance to prevent overrun by plant and compaction Area of strip marked out Area pre inspected by ecologist Soil strips outside nesting and fauna growing seasons 	1	2	2
Site strip	Contaminated ground disturbance	Whole site	<ul style="list-style-type: none"> Soil surveys undertaken prior to work on site Any areas found are isolated and fenced off Samples taken for analyse Plant quarantined Plant and equipment cleaned off in quarantined area All cleanings disposed of through waste licensed site Waste carriers' certificates obtained and checked 	1	2	2

Key for Table Abbreviations – L = Likelihood; S = Severity; RR = Risk Rating




Risk Assessment Form

Version 1

Location: Safari Lodges Chessington

Task	Nature of hazard	Areas at risk	Actions to Reduce Risk	Residual Risk Rating		
				L	S	RR
Site strip	Unexploded ordnance	Whole site	<ul style="list-style-type: none"> • Desk top study under taken • Any suspected ordnance disposed of by ordnance contractor • Any found ordnance are cordoned off • Any contaminated ground removed post ordnance removal • Disposed of through licenced waste carrier 	1	3	3
Fencing	Ground penetration	Site boundary	<ul style="list-style-type: none"> • Site boundary fencing installed by small machinery • Minimum ground disturbance • Driven rather than dug in minimum of anchor concrete used • Dry mix only 	3	1	3
Surveys	Ground disturbance	Whole site	<ul style="list-style-type: none"> • Surveys carried out pre commencement • Aerial information used • Surface surveys only • Work carried pre nesting times • Surveys on foot no vehicles 	3	1	3
Waste storage	Ground disturbance Wastage Packaging Vermin	Compound area	<ul style="list-style-type: none"> • Dedicated waste storage area • Skips in place • Skips with closed lockable lids used • Area fenced off with Heras to prevent unauthorised access • Regular removal of waste • Licenced waste carrier used • Multi skips used to recycle waste • Regular daily site inspection • Waste removal procedure communicated as part of prestart induction • Deliveries requested with minimum packaging • Reusable pallets used 	2	2	4

Key for Table Abbreviations – L = Likelihood; S = Severity; RR = Risk Rating

	Risk Assessment Form Location: Safari Lodges Chessington	Version 1
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Task	Nature of hazard	Areas at risk	Actions to Reduce Risk	Residual Risk Rating		
				L	S	RR
Material storage	Isolation of ground area	Compound area	<ul style="list-style-type: none"> • Materails brought to site just in time use • Minimum time in storage area • Materials stacked to reduce ground impact • Dedicated storage area on site 	2	2	4
Vehicle movements	Compaction disturbance of ground	Whole site	<ul style="list-style-type: none"> • Set out dedicated traffic routes • Vehicle moveemnts minised • Delivers were possible direct to work area • Lifting operations from minimum crane set up points • Green areas cordoned off to prevent vehicle movement • Tree protection areas fenced off • Bio divesity areas ideantoified by the ecolgist fenced off signs in place 	2	2	4
Access and egress to site large plant	Compaction disturbance of ground Emissions from combustion engines	Access road tree area	<ul style="list-style-type: none"> • Off loading of plant in the compound are aonly • Minuum plant moveemnts planned by dail site coordination by manager • Plant operations kept to minuumm • Boi fues used in mobile plant • Plant fitted with emission filters 	3	2	6
Heavy plant movements	Compaction disturbance of ground	Access roads	<ul style="list-style-type: none"> • Low ground baeraing pressure machines used were possible les than 0.3Kg/cm² 	2	2	4
Heavy plant movements	Noise	Whole site	<ul style="list-style-type: none"> • Niose levels less than 78DbA at 15m • Operation times limited • Auto idle set when not operating • Reversing horns switched to low resolution • No pedestians in reversing areas (horns switched to CCTV and radar 	2	1	2

Key for Table Abbreviations – L = Likelihood; S = Severity; RR = Risk Rating




Risk Assessment Form

Version 1

Location: Safari Lodges Chessington


Task	Nature of hazard	Areas at risk	Actions to Reduce Risk	Residual Risk Rating		
				L	S	RR
Heavy plant movements	Emissions from combustion engines	Whole site	<ul style="list-style-type: none"> Bio fuels used Minimum use of heavy plant Auto switch to idle when not working 	2	1	2
Piling	Noise	Lodges building area	<ul style="list-style-type: none"> Screw piling used Low revolution small piles used Attached to small low ground bearing excavator Multi installation from 1 location 	3	1	3
Piling	Vibration	Whole site	<ul style="list-style-type: none"> No Vibrating plant to be used Speed limit in place for all plant movement on site Movement along dedicated marked out traffic routes only 	1	3	3
Lifting operations	Ground disturbance / compaction	Access roads	<ul style="list-style-type: none"> Lifting plan from limited locations Multi lifts from 1 location planned Crane to use ground mats to limit ground pressure 	2	2	4
Refuelling plant	Spillage of fuel	Compound	<ul style="list-style-type: none"> Refueling at dedicated compound Spill trays in place Fuel tank banded Spill kits in place Trained person to carry out refuelling only Bio fuels used where possible Minimum amount of fuel stored on site 	2	2	4
Servicing of plant	Contamination from fluids	Compound	<ul style="list-style-type: none"> Services were possible carried out off site On site servicing within compound area Spill trays in place Spill kits in place Waste from servicing recycled off site All oils bio degradable synthetic 	1	3	3
Plant break down	Contamination from fluids	Whole site	<ul style="list-style-type: none"> Spill kits on site Bio synthetic hydraulic oils and fuels used 	2	2	4

Key for Table Abbreviations – L = Likelihood; S = Severity; RR = Risk Rating

	<h2>Risk Assessment Form</h2> <p>Location: Safari Lodges Chessington</p>	<p>Version 1</p>
--	---	------------------

Task	Nature of hazard	Areas at risk	Actions to Reduce Risk	Residual Risk Rating		
				L	S	RR
Deliveries to site	Ground compaction Noise	Access road / compound	<ul style="list-style-type: none"> • Access roads in place • Roads built with terram/ geomembrance • Free draining inert material • Deliveries coordinated for singlehandling straight to work area • Multiply deliveries on materials in 1 vehicle where possible • Small loads dropped at compound No traffic on site 	2	2	4
Landscaping	Disturbance of fauna flora	Whole site	<ul style="list-style-type: none"> • Landscaping restricted to pre nesting and pre growth times <p>All works in line with ecologist guidance</p>	1	3	3
Materials	Packaging wind blown	Whole site	<ul style="list-style-type: none"> • Packaging kept to a minimum • Contractors remove their own packaging off site • Dedicated skip recycling area for packaging • Lids fitted to all skips bins • Regular removal off site • Daily walk round / inspection by site manager for good house keeping • Waste disposal communicated as part of pre start induction 	2	2	4
Extreme weather	Heat	Whole site	<ul style="list-style-type: none"> • All plant and offices well ventilated • Extreme weather conditions work restricted to cooler times • Fire watches introduced • No work in high fire risk areas • Damping down carried out where possible 	2	2	4
Extreme weather	Airborne Dust	Whole site	<ul style="list-style-type: none"> • Weather forecasts obtained • Damping down of dust areas carried out dust suppression • No plant movements if areas not damped do • Speed limit on site of 5mph 	1	3	3
Extreme weather	Cold ground break up	Whole site	<ul style="list-style-type: none"> • Ice areas dealt with using grit and limited salt • Minimum ground breaking carried out to ensure sealed up areas 	1	2	2

Key for Table Abbreviations – L = Likelihood; S = Severity; RR = Risk Rating

	Risk Assessment Form Location: Safari Lodges Chessington	Version 1
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Task	Nature of hazard	Areas at risk	Actions to Reduce Risk	Residual Risk Rating		
				L	S	RR
Extreme weather	Excessive water run off Suspended solids Erosion	Whole site and external drainage	<ul style="list-style-type: none"> • Ground undisturbed where possible • Run off channels in place • Suspended solids caught in treatment / settlement tanks • Limited work ground works in wet weather 	2	2	4
Plant movement to site	Contaminated plant	Whole site	<ul style="list-style-type: none"> • Plant delivered to site fully clean • Plant inspected before off loaded • Plant cleaned prior to removal off site 	2	2	4
Site operations	Fire	Whole site	<ul style="list-style-type: none"> • Fire watch in place • Hot works permits control all works • Site rules no smoking on site • No fires on site 	1	3	3
Site operations	Unauthorised access	Whole site	<ul style="list-style-type: none"> • Site fully fenced off • Site boundary warning signs in place • CCTV in place 	1	2	2

Key for Table Abbreviations – L = Likelihood; S = Severity; RR = Risk Rating

Appendix 2

Arboricultural Method Statement

*relating to development at
Proposed Safari Lodge Accommodation
Chessington World of Adventures Resort*

Client
Merlin Attractions Operations Limited
Leatherhead Road
Chessington
Surrey

October 2018

9128-KC-XX-YTREE-Method Statement-RevF

13 Farnham Business Centre, Dogflud Way, Farnham, Surrey, GU9 7UP
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CONSULTANTS

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Document history

Revision	Issue Status	Details	Approved/Date
Rev0	Final	Updated Arboricultural Method Statement	AP / 01 March 2017
RevA	Final	Updated Arboricultural Method Statement	AP / 08 March 2017
RevB	Final	Updated Arboricultural Method Statement	AP / 21 March 2017
RevC	Final	Updated Arboricultural Method Statement	AP / 05 April 2017
RevD	Final	Updated Arboricultural Method Statement	JK / 10 October 2018
RevE	Final	Amended Arboricultural Method Statement	JK / 18 October 2018
RevF	Final	Amended Arboricultural Method Statement	JK / 23 October 2018

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ABSTRACT

Protective barriers are required throughout the construction process to protect the retained trees on the site.

Tree removal is required.

Utility installation is required within root protection areas but is erected above existing levels.

1.0 Statement of purpose

- 1.1 The purpose of this method statement is to demonstrate how works will be undertaken at proposed lodge accommodation, Chessington World of Adventures Resort, Leatherhead Road, Chessington, Surrey, to avoid unacceptable arboricultural impact and provide an adequate level of protection for those trees that are to be retained.
- 1.2 This method statement has been produced for Merlin Attractions Operations Limited in order to inform the construction team and satisfy the requirements of the Local Planning Authority (LPA), Royal Borough of Kingston upon Thames. The works are the subject of a planning application and this arboricultural method statement has been prepared to support the application.
- 1.3 This method statement merely considers the systems of work in relation to the health and safety of retained trees. It does not address requirements of the Health and Safety Executive that should be considered in detail by those parties involved.

2.0 Related documents and drawings

- 2.1 This method statement should be read in conjunction with the documents in Table 1 below.

Table 1: Documents referred to

Originator	Title/Reference
British Standards Institute	BS5837:2012 <i>Trees in relation to design, demolition and construction – Recommendations</i>

and the following drawings in Table 2

Table 2: Drawings referred to

Originator	Drg No	Title	Scale
Nichols Brown Webber	263/64/4	Proposed Site/Block Plan inc. Landscape	1:500@A1
Keen Consultants	9128/01 Rev B	Tree Constraints Plan	1:500@A1
Keen Consultants	9128-KC-XX-YTREE-TPP01RevC	Tree Protection Plan	1:500@A1

3.0 Arboricultural issues & implications

- 3.1 The buildings are located outside the optimum root protection areas of all retained trees.
- 3.2 Portions of proposed hard surfaces require the removal of trees.
- 3.3 Supervision and monitoring of works is not required as most operations are remote from retained trees.
- 3.4 Utility provision is remote from trees other than a section of pipe that is installed above existing levels.

4.0 Facilitation tree works

- 4.1 Tree removal is required to accommodate the proposed development.
- 4.2 Details of the tree work are given in the schedule on the Tree Protection Plan referred to in Table 2 above.
- 4.3 All tree work shall be undertaken in accordance with BS3998:2010:Tree Work – Recommendations.

5.0 General site care

- 5.1 To ensure that the trees to be retained are afforded an adequate degree of protection during the works, the following general precautions will be observed:
 - 5.1.1 No fires will be lit on site
 - 5.1.2 No access will be permitted within the temporarily barriered areas, unless and only where otherwise approved herein. Ground levels will not be changed within them and existing vegetation and topsoil will be left undisturbed but may be treated with approved herbicides if eradication is required.

- 5.1.3 No materials, equipment or debris will be stored within any of the barriered areas and no chemicals, petrol or diesel will be allowed to spill where they may contaminate the root protection areas of retained trees
- 5.1.4 All heavy plant, machinery, cranes and delivery vehicles shall be excluded from the areas demarcated for protection on the Tree Protection Plan.

6.0 Sequencing of works

6.1 A logical sequence of events is to be observed as follows:

- Stage 1 Pre-commencement site meeting (See Section 12)
- Stage 2 Remove trees as shown on the Tree Protection Plan
- Stage 3 Erect protective barriers as shown on the drawing in Table 2 (specifications given in Section 7)
- Stage 4 Implement development construction
- Stage 5 Take down protective barriers and complete soft landscape works.

7.0 Protective barriers and ground protection

- 7.1 Temporary barriers will be erected as indicated on the Tree Protection Plan listed in Table 2. The specification for this barriers will be in accordance with the recommendations given in BS5837:2012 Trees in relation to design, demolition and construction – Recommendations Section 6.2 and will comprise 2.0m mesh barriers (Heras type panels are a simple, readily available solution) attached to a scaffold framework. Support scaffolds will be attached to the scaffold framework as necessary at an angle of 45 degrees on the side of the trees and anchored by further scaffold poles carefully firmed into the ground. Alternatively, the alternative specification of Heras type panels, fitted with stabiliser struts as per Figure 3 of BS5837, may be used. Clear signs will be attached at 6 metre intervals along the line of barriers stating 'Tree Protection Area – No Access'.
- 7.2 The barriers shall remain in place until soft landscape operations require its full or partial removal (see section 11). No other construction activity will take place within those areas formerly protected by the fence (see Section 5).

8.0 Treatment of existing hard surfaces

- 8.1 Where existing hard surfaces are present within the root protection area they shall be broken up and removed by hand.
- 8.2 Roots often exist in the substrate below hard surfaces and extreme care must be taken to avoid damage to them.
- 8.3 Immediately after, the void left as a consequence of their removal shall be filled with good quality topsoil as a prelude to soft landscape unless a replacement hard surface is proposed whereupon it shall be completed in accordance with the instruction contained herein.

9.0 Creation of new hard surfacing within root protection areas

- 9.1 No new areas of hard surfacing are proposed within root protection areas.

10.0 Utility installation within root protection areas

- 10.1 All utility installations are remote from root protection areas except for a SUDS pipe that runs through tree group 17.
- 10.2 The pipe will be installed above the existing ground levels and between existing trees. It will be installed with shallow earth mounds on either side to hold the pipe in place. Where the pipe requires taller support timber trestles shall be used.
- 10.3 No machinery shall operate within the root protection area.
- 10.4 The construction team can see similar installations at the Legoland Resort.

11.0 Reinstatement and landscaping

- 11.1 Final grading to marry in new levels with existing ground will be achieved by importing topsoil and spreading by hand equipment only. The newly graded areas will be grass seeded or turfed by hand.
- 11.2 All tree and shrub planting pits will be dug by hand within the root protection areas of existing trees.

12.0 Planning, communication and supervision

- 12.1 A pre-commencement meeting will take place on site attended by the appointed arboricultural consultant, the tree contractor, the site manager and the local authority arboricultural officer. The purpose of this meeting is to ensure that everyone fully understands the implications of the arboricultural method statement and to agree on finer points of detail prior to any works commencing.
- 12.2 As works are mostly remote from root protection areas there is no need for an arboriculturist to supervise or monitor the works.
- 12.3 It shall be the duty of the site manager to conform with the requirements of this method statement and any planning conditions imposed by the Council.
- 12.4 A list of contacts is attached at Appendix 2.

13.0 Transgression

- 13.1 Failure to adhere to the requirements in this method statement may result in a Stop Notice being issued by the local authority. This will bring all operations at the site to a halt until the local authority permits resumption.
- 13.2 Failure to adhere to the requirements of this method statement that results in damage to a tree subject to a Tree Preservation Order may result in prosecution of the individual, the contractor and the client.
- 13.3 The following measures will be required, but do not absolve the perpetrator from action, if the identified transgression occurs:
- a) Breakage of branches – the damaged shall be assessed by an arboriculturist, they shall advise on requirements and any pruning shall be undertaken in accordance with BS3998:2010 to remove the damaged section.
 - b) Damage to bark – the damage shall be assessed by an arboriculturist and they shall advise on the measures that can be taken to optimise the reparation of the damage. Some paring back of damage may be required.

- c) Damage to roots – the damage shall be assessed by an arboriculturist and they shall advise on the pruning or reparation required.

- d) Compaction of soil – where machinery operates outside of ground protection and hard surfaces, leading to the compaction of soil, the compaction shall be alleviated by using compressed air injected to circa 1m deep to create fissures in the ground and lift the compacted areas. The compaction shall be assessed by an arboriculturist. A specialist company (for example Terrain Aeration Ltd) shall be appointed by the contractor to undertake the work.

13.4 All items of transgression shall be reported to the Local Authority tree officer to consider if action should be taken.

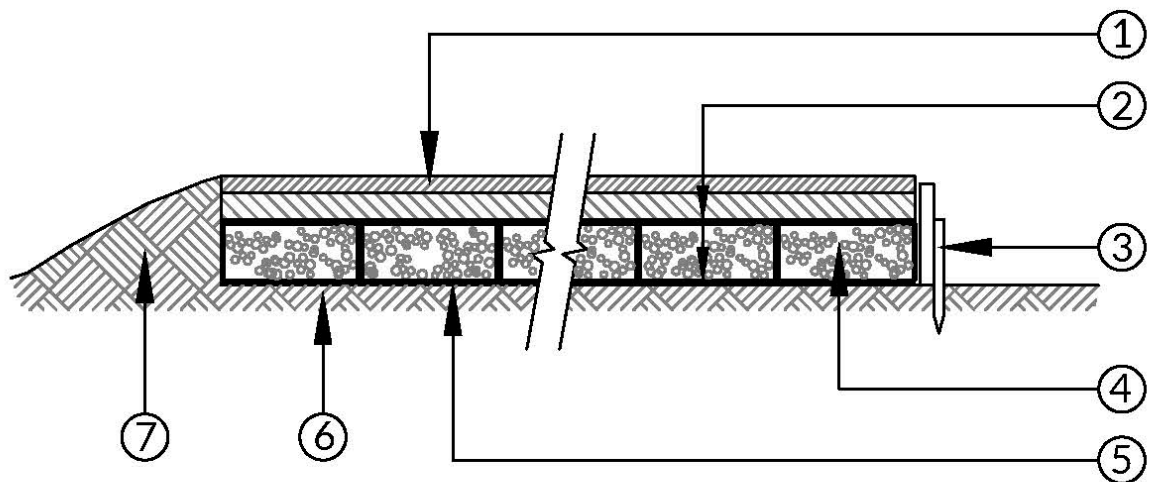
14.0 Conclusion

14.1 If the provisions of this arboricultural method statement are complied with in full, the proposed works will be able to proceed without detrimental impact to retained trees.

Appendix 1

Typical detail of no-dig construction

Figure 3: Typical detail of 'no-dig' surfacing



1. Surface material to engineer's specifications
2. Geotextile separation fabric as specified by engineers
3. Treated timber edging if required (sleepers can be used for a more robust edge)
4. 40/20mm clean angular stone
5. Cellular confinement system to engineer's specification and depth
6. Existing ground levels retained (no excavation)
7. Soil fillet can be used at edges

Appendix 2

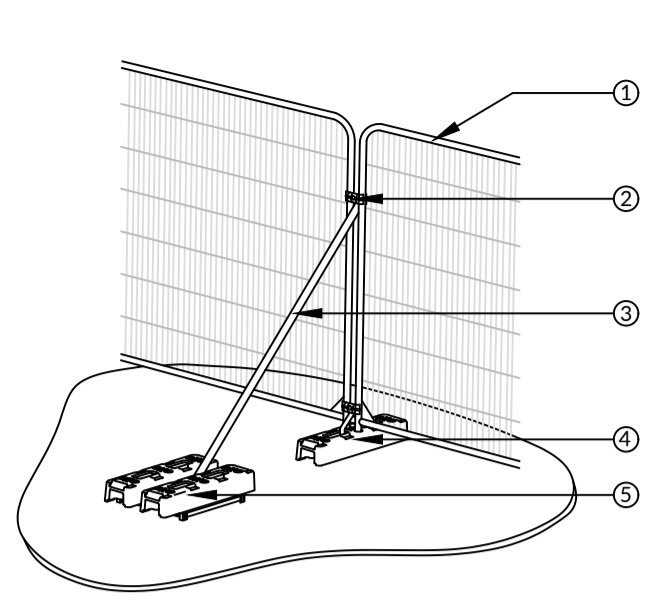
List of contacts

List of contacts

Site Address:	Chessington World of Adventures Resort, Leatherhead Road, Chessington, Surrey	
Site Manager: *		Tele No: *
Builder:		
Address:		
Contact Name: *		
Arboricultural Consultant:	Jago Keen	
Address:	Keen Consultants, 13 Farnham Business Centre Dogflud Way Farnham Surrey GU9 7UP	
Tele No:	01252 850096 (office)	07836 279935 (mobile)
Local Authority Tree Officer	Marcus Brooke	
Address:	Guildhall 2 High Street Kingston upon Thames KT1 1EU	
Telephone No.:	0208 547 5002	

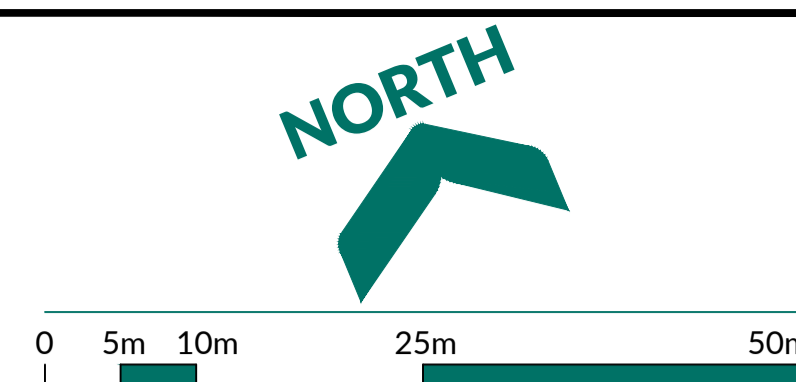
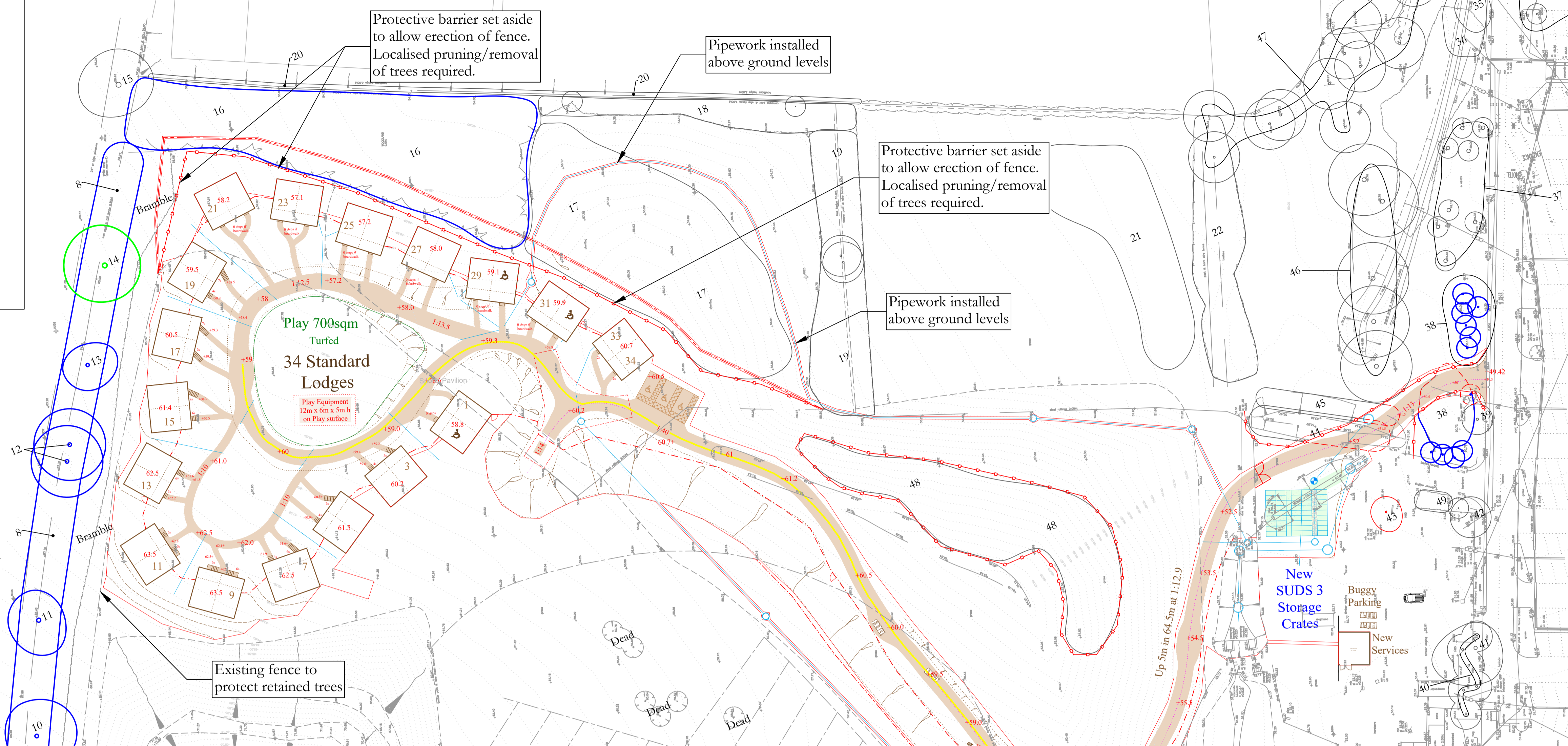
Appendix 3

Figure 1: Example of a protective barrier



- 1. Steel mesh panel
2. Connectors fitted to secure panels
3. Diagonal strut
4. Block feet to avoid driven scaffold poles
5. Block tray weighted with blocks

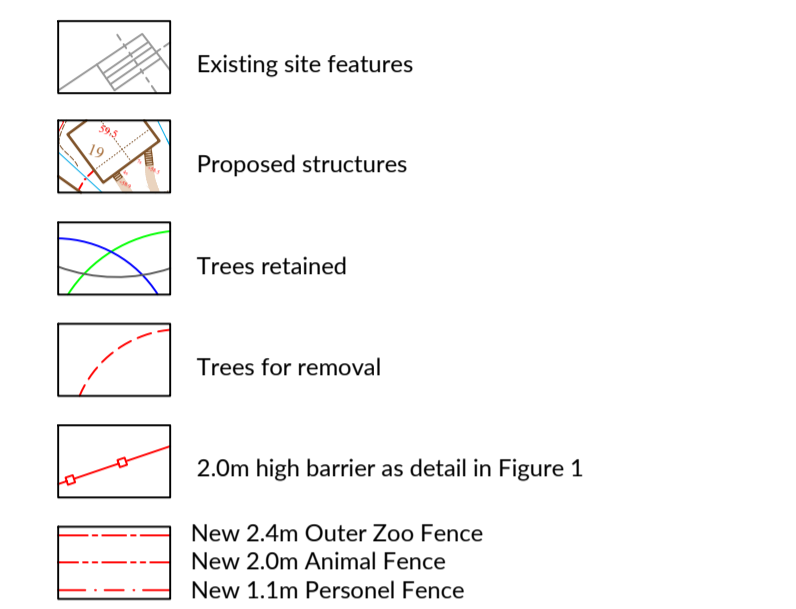
© Keen Consultants



NOTES

- 1. The original of this drawing was produced in colour - a monochrome copy should not be relied upon.
2. Scale for planning purposes only.
3. All dimensions to be checked on site.
4. The copyright of this document resides with Keen Consultants unless assigned in writing by the company.
5. Details shown on this drawing are devised with reference to BS5837:2012: Trees in relation to design, demolition and construction - Recommendations.
6. Check if Tree Preservation Order or Conservation Area protection applies to trees before undertaking tree works.
7. Tree survey based on Nicholas Brown Webber project number 263/47 drawing number 3.
8. Proposed Site/Block Plan based on Nicholas Brown Webber LLP project-drawing number 263/64-4.

KEY



KEY TO TREE SCHEDULE

Table defining abbreviations and symbols used in the tree schedule, including Tree No., Species, HT (m), Branch Spread, Stem Dia, Height of crown clearance, Height of first major branch, Abbreviations, Age Class, Category grading, and Estimated remaining contribution (yrs).

Table 1: SURVEY OF TREES AT CHESINGTON WORLD OF ADVENTURES - LODGES. Columns include Tree No., Species, Branch Spread (N, E, S, W), Stem diameters (cm), Height of crown, Height of first branch, Category grading, Condition, Tree Works to BS 3998, Root protection radius, and Root protection area.

Table 2: Tree Schedule. Columns include Tree No., Species, HT (m), Branch Spread, Stem Dia, Condition, Tree Works to BS 3998, Root protection radius, and Root protection area. Includes detailed work descriptions for each tree.

Table 3: Summary of tree works. Columns include Category grading and Estimated remaining contribution (yrs), Latest layout overlay, and Date.

Rev Description Date table and Keen Consultants logo with address: 13 Farnham Business Centre, Dogflud Way, Farnham, Surrey GU9 7UP.

Client MERLIN ATTRACTIONS OPERATIONS LTD

Project CHESINGTON WORLD OF ADVENTURES RESORT - SAFARI LODGE ACCOMMODATION

Title TREE PROTECTION PLAN

Date OCT 2018 Scale 1:500@A1

Drawn by ML Checked by JTK

Drawing Number 9128-KC-XX-YTREE-TPP01RevC

Appendix 4



SIMPSON TWS
8 FRIDAY STREET
HENLEY ON THAMES
RG9 1AH

Chessington World of Adventures Safari Lodges Development

Issue 01
12.03.2020

Civil and Structural Design Stage 3 Report

13730



Introduction

Simpson TWS has been commissioned by Merlin Entertainments to develop civil and structural engineering design towards a RIBA Stage 3 tender design pack for the ‘Safari’ Lodge development at Chessington World of Adventures.

17 pairs of pre-fabricated semi-detached Lodges (34 keys) will be grouped around a central green space located in the north west corner of an existing wild animal enclosure to the north of the Safari hotel. The site is located on existing undulating ground that will afford the front-line lodges an elevated view of the animal enclosure.

The site can be regarded as ‘green field’ in respect of statutory services serving the Lodges. As such a new network of foul and surface water drainage will be installed specifically to service this development.

Design Philosophy

To take advantage of existing site topography, lodge units will be set in elevated positions, with the entrances to the rear being set sympathetically with the sloping site. In some cases, this results in the downslope elevation of the lodges being somewhat elevated as the ground drops away to give a raised aspect to the dwelling.

A substantial ground remodelling exercise will be undertaken on site in order to enhance the existing site contours and create suitable zones to elevate lodges to levels that will afford the occupants views of the park wherever possible. A formation level earthworks exercise has been undertaken by Simpson TWS in order to confirm the required volumes of imported material and muck cart away. This has also informed site levels in relation to providing access roads and pathways that will be at a suitable and serviceable gradient. Bunds have been introduced in the landscape areas surrounded by the lodges to ensure any surplus material can be disposed of on site.

Earthworks quantities are noted on the formation level earthworks drawing to inform the Stage 3 cost plan.

Existing Ground Conditions

An intrusive Phase 2 site investigation was undertaken in April 2016 by Risk Management to facilitate a full understanding of the underlying ground conditions across the site.

The existing topography that forms the undulating landscape comprises varying depths of made ground above London clay. The undulating ground profile to the east of the site are probably spoil heaps from groundworks arising from adjacent developments within the park and have been identified to comprise a significant depth of made ground.

LODGES ON PILED FOUNDATIONS

Where lodges are located above ground comprising a significant depth of made ground, the most effective foundation solution for these lightweight structures is steel helical mini-piles to support columns which in turn support the lodge unit sub-frames. This form of piling is suitable for use where loads from the structures above are relatively light and have the benefit of not generating spoil which would need disposal either on or off site. As the piles are steel, they can be loaded immediately, which will assist in keeping installation time as short as possible for all piled lodge units.

Helical mini-piles have the advantage that they can be installed from relatively small construction vehicles, such as back loaders which can traverse the undulating landscape. This avoids the otherwise necessary piling platform that is required by more traditional bored pile rigs.



Typical helical mini-pile installation method

Piles will be installed to ground level. Due to the sloping nature of the site, a survey of as-installed pile heads will be required in order to determine the required lengths of the columns that will connect at pile head and support the sub-frames beneath the lodge units.

LODGES ON TRADITIONAL FOUNDATIONS

Where the geotechnical site investigation has identified only shallow depths of made ground above virgin clays, a traditional form of trench fill footing has been proposed for the foundations. Footings of various widths will be taken through the made ground into the Superficial Clay or Weathered London Clay to achieve a minimum bearing pressure of 100kN/m².

Clay at this site would fall into the 'medium' to 'high' shrinkage potential in accordance with the National House Building Councils (NHBC) classification system given in Part 4 of their Standards. Therefore, heave precautions, in the form of compressible material, is required against foundation sides at this site where they fall within the 'zone of influence' of any past, existing or any proposed trees.

Footings will also be made deeper to resist the effects of adjacent trees in the clay soils, again in accordance with the design recommendations of the NHBC Standards.

Following casting of the footings, concrete block sleeper walls will be constructed from top of foundation level up to underside of lodge floor level, ready to accept the lodge units placed from above.

Lodge Buildings

It is proposed that the lodge buildings will be of pre-fabricated, modular construction. This form of building has been used successfully at other parks within the Merlin portfolio. It is being put forward at CWoA as an effective, tested method of providing a quick and economic form of construction.

LODGES ON PILED FOUNDATIONS

In order to support the elevated forward sections of the prefabricated units, a floor level sub-frame will be required to form a platform on which to sit the units. This sub-frame is constructed in galvanised steel and will form a 'landing stage' on which to sit the integral frame that forms the ground floor of the lodge.

The lodge sub-frame will be within the supply of the main contractor with the ground floor and veranda and walkway frames to the front-line units also within the supply of the prefabricated unit manufacturer.

Small galvanised steel tube column sections will form the 'stilts' that support the sub-frame above ground level. These will be clad to give the appearance of wooden poles or the like, for aesthetic reasons.

Stability of the sub-frame platforms will be by diagonal vertical raking helical piles to provide lateral stiffness to the elevated sections of the platform. Plan bracing will afford a rigid, serviceable platform from which to support the lodge units.

Lodges will be connected to the steel sub-frame to details as designed by the lodge manufacturer.

