

From: [REDACTED]
To: [REDACTED]
Cc: [REDACTED]
Subject: RE: East Marsh
Date: 23 October 2013 13:10:20
Attachments: [East Marsh Hand Back.doc](#)

[REDACTED]
Thank you for producing the notes.

The only additional elements were the following:

- The final point should refer to the provision of sockets and goal posts by LLDC (not corner flags)
- We agreed that Hackney would own the Heras fencing after removal
- I think we need a more explicit action regarding the retention. It was agreed that this would be 5% and relate to issues around settlement / subsidence, not general maintenance. This needs to be encompassed in the legal process

Regards

[REDACTED]
-----Original Message-----

From: [REDACTED]@londonlegacy.co.uk]
Sent: 22 October 2013 09:08
To: [REDACTED]
Cc: [REDACTED]
Subject: East Marsh

All,
Please find a note of the meeting yesterday.

[REDACTED]
[REDACTED]
London Legacy Development Corporation
South Plaza,
Marshgate Lane,
Stratford,
London
E15 2NH

[REDACTED]
[REDACTED]
[REDACTED]@londonlegacy.co.uk
Web: www.londonlegacy.co.uk

****Please note: We have moved offices and are now located at 1 Stratford Place, Montfichet Road, E20 1EJ.**

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minutes



~MEETING TITLE~ East Marsh Hand Back

Date: 21.10.13 **Time:** 4.30pm **Location:** LBH Office

Attendees: [REDACTED]

Apologies: [REDACTED]

Circulation:

Meeting Aim: Agree Hand Back of Site to LBH

Document Ref:

Security Classification: **NOT PROTECTIVELY MARKED**

DISCUSSION POINTS				
No.	Scope Item	Action	Owner	By
1.	Physical Works Playing pitches are to be tested by [REDACTED]. Now estimated to take 5/6 days and two days to write the report. Works to start 22.10.13. Noted that this is not testing each pitch but carrying out representative sample tests. The main works should be complete by the 15.11.13. apart from the works on the underpass (E06) which are due for completion on the 29.11.13.	Note		
2.	Point of contact [REDACTED] confirmed that [REDACTED] would be the LBH point of contact for hand over matters.	Note All		
3	Hand Over Documentation [REDACTED] to send list of documentation to be produced at hand over. Discussion required as to how to get the information to LBH.	List to be sent and investigate if LBH can get access to BIW.	[REDACTED]	24.10.13

4	<p>Legal Process Noted that officially the lease requires notification of three months for surrender of the lease. It was agreed that this should be able to be varied with the agreement of both parties. Noted that the process will require LBH to return the £2m deposit less 5%.</p>	Legal process to terminate lease to be started immediately	■	22.10.13
5	<p>Completion It was noted that once the lease has been surrendered LLDC will have no legal right to remain on site so LBH would suggest that hand over should take place once the works to form the MBT under the underpass have been completed. This would mean a hand over on the 2.12.13. This is also the date of hand over to LVRPA.</p>	Note		
6	<p>Area owned by LBH Main area of site is well defined but LBH also probably own the area under the bridge. They are hoping that LVRPA will take over the maintenance of this area as part of the MBT. Noted that LBH would like to see the design standards used to design the underpass and will want to inspect the site to ensure that the interaction with the river has been properly assessed from a safety point of view.</p>	Note		
7	<p>Inspections Agreed two inspections required. One for the later part of the week commencing 4.11.13 and the second week commencing 18.11.13.</p>	Inspections to be set up	■	22.10.13
8	<p>Defects Main concern going forward was the possibility of settlement. Noted that agreement was required as to how to distinguish between a defect and a problem caused by inadequate maintenance.</p>	Note		
9	<p>L01 LBH have no information on the construction of the ramp. LBH are not taking over the bridge.</p>	ODA information to be checked	■	23.10.13

minutes



10	Fencing Agreed that the existing Heras fencing on the north and west sides of the site is to remain and the LBH to remove when required. The positions of the knee rail and gate have been agreed but Capita are producing a drawing showing these.	Note		
11	Feeder Pillar At present this is in the carpark and is due to be removed. LBH to confirm if any supply is required on the site.	Confirm if supply is required.	LBH	23.10.13
12	Planning Bam to produce a list of outstanding conditions that have not been signed off yet. Noted that at time of hand over the validation documentation will have been submitted but probably not signed off. ■ also questioned if LBN could assist in getting feedback on the documentation submitted to date.	List of outstanding conditions to be produced.	■	8.11.13
13	Pitch layout White lining is not required but Bam are to supply sockets for goalposts and corner flags for LBH to install.	Specification for sockets to be supplied.	LBH	25.10.13

NEXT MEETING To be confirmed.

Date:

Time:

Location:

From: [REDACTED]
To: [REDACTED]
Subject: East Marsh - site report
Date: 17 September 2013 12:20:27
Attachments: [HACKNEY EAST MARSH 09.09.2013-signed.pdf](#)

[REDACTED]

As mentioned to [REDACTED] just now, this is [REDACTED] site report from the end of August, which highlights some useful points to review again at next Wednesday's site visit, particularly weed control, progress with compaction relief and areas to overseed.

I will talk to colleagues about the timings and handover for the works to Ruckholt Road.

Regards

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
London Borough of Hackney

[REDACTED]
www.hackney.gov.uk
www.destinationhackney.co.uk

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Sports Turf Consulting Limited

**A report on behalf of:
Hackney East Marsh**

**Date of Visit:
Thursday 29 August 2013**

Author:



Sports Turf Consulting Limited
PO BOX 257
FAIRFORD
GL7 9GX

info@sportsturfconsulting.co.uk
www.sportsturfconsulting.com



Advisory Report on the:

Site Works at Hackney East Marsh

Date of visit:

Thursday 29 August 2013

Present:

[REDACTED] Sports Turf Consulting Ltd)
representing Hackney Council

Object of Visit:

To undertake a late August visit as requested and ascertain further establishment of the sward since our previous visit.
Highlight any recommendations regarding maintenance required.

1.0 SITE NOTES

- **Grass cover** – viewed from the grandstand area revealed the site to have virtually full grass cover except for a number of localised areas around manhole covers. These were off the pitch areas and therefore not of undue concern.

Examining the surface at ground level found grass cover to be 100% throughout the pitch areas, although density is still slightly under developed at the current time. The grass was approximately 75-110mm (3-4½") in length at the time of our visit. The grass had good vigour and colour indicating that it was growing rapidly. Later discussions with maintenance staff confirmed this to be the case.

- **Weaker areas within the site** – these were generally few and far between but it was noted that the seed drill lines were much more observable on the first pitches that were seeded rather than the later ones. This may be due to any number of factors, but is worth bearing in mind. The areas at the far end of the site also appear to be slightly hungrier than the areas in the middle of the site, which appeared almost over-lush. A few small bare areas were noted within this far end zone of weaker grass establishment and we were very pleased to see that overseeding work had been completed already and grass seed germination was beginning to occur in these areas. Some further work may be required in some of these as the germination seems to be a little patchy at the current time.

Example of the best grass cover.



Example of the weakest grass cover:



- **Broadleaved weeds** – broadleaved weeds appeared to be restricted almost exclusively to fat hen and this appeared to be struggling under the mowing regime, although a large number of plants were noted, perhaps 20-30/m² in places. Grass clippings were noted to be bunching and collecting on the surface and this can present problems there distribution of clippings is an important element of the work that needs to be attended to.



- **Fertiliser** – the majority of the site does not require any further fertiliser however, some localised areas at the far end of the site show signs of paling somewhat, indicating a drop in nitrogen availability in all probability. The area affected appears to be small, and mainly located on the riverside of the irrigation line on the final one to two pitches. Hand fertiliser spreading may be sufficient in this instance if a tractor mounted device is not immediately available. However, I would suggest waiting a little or only using a product with around 5-6% Nitrogen applied at 35g/m².
- **Mowing** – in some areas the cutting decks appeared to be mowing unevenly (see photograph below) and later discussion with the maintenance staff revealed that a roller had become faulty during operation and was due to be mended that day.

Photograph showing the problem with uneven mowing due to roller failure.



- **Grass mowings** – clumps of grass accumulating on the surface have the potential to spark disease outbreak and cause bald spots within the pitches as mowing commences. In some areas of the site the growth seems a little excessive and perhaps is the first kick of fertiliser release following treatment and this has forced the growth somewhat. The site will require light harrowing or brushing in order to breakup these mats of grass clippings. The conditions have become less extreme recently and the release of fertiliser seems to be pushing on growth i.e. temperatures around the 20s, some rainfall, plus irrigation thereby suiting the grass to simply grow vigorously.

In view of the rate at which grass is growing the daily cutting regime may need to be supplemented with growth retardant unless colder weather restricts growth soon. We are slightly concerned that such vigorous growth could be prone to disease attack from Fusarium Patch (*Microdochium nivale*).

Photographs showing the excess clipping production occurring even though mowing is underway on a daily basis.



- **Soil Pit 1** – examination of soil profile (west side of irrigation line). The top 60mm or so comprised ameliorated sand and British Sugar topsoil material within which grass plant rooting was vigorous and widespread. Beneath this was the (i.e. un-ameliorated) British Sugar topsoil which grass roots were penetrating through well. Although roots inevitably tend to get broken during excavations on a small scale, the roots were extending at least 200mm (8") and probably deeper into the soil profile.

Soil consolidation – the upper 60mm of ameliorated sand/soil was quite loose and lacking in much cohesiveness. A good crumb structure was present which allowed easy grass plant rooting and development. The underlying British Sugar topsoil appeared to be reasonably friable but had clearly limited structure caused during handling and construction. Soil compaction relief works should be completed under suitable conditions when the sward has matured a little more.

Photograph soil pit one:



Soil Pit 2 – The second test pit was located on the eastern site of the site and revealed conditions similar to that observed in the first trial hole with approximately 60mm of sand/soil amelioration over the underlying silty loam British Sugar topsoil. Rooting was noted to a depth of at least 200mm. The underlying silty loam British Sugar topsoil appeared to be poorly structured and rooting within it was not as developed as the upper profile. Compaction relief operations will therefore form an important part of up and coming operations. The whole soil profile appeared to be moist and as the site moves into September, reducing irrigation inputs would probably be helpful in order to encourage deeper grass plant rooting and allowing the soil profile to gain more oxygen content.

Approximately halfway up the site on the eastern site an area of thinner grass cover was noted and this will require extra drill seeding or broadcast spreading with localised working-in of the seed. The area is not terribly large, being perhaps 10m x 5m in total but still worthy of further attention (see photograph) which indicated the position approximately 60m to the west of the silver coloured poplar trees as located halfway up the field between two oak trees.

Photograph 2 - soil pit 2: soil structure is limited in the lower profile quite clearly.



- **Soil Pit 3** – Located approximately 100m from the car park on the east side. The top 150mm of the soil was quite easy to penetrate with the spade but it quickly became hard underneath making further penetration more difficult. Soil consolidation therefore confirmed to be an issue across the site at lower depths. Rooting appeared to extend 150+mm in this particular sample but was limited in the lower part of the profile below 100mm.

Photograph Soil pit 3:



- **Soil Pit 4 over drain runs** – this showed approximately 50mm of British Sugar topsoil ameliorated with sand over the top of a sandy rootzone profile. Rooting penetrated to a depth of over 250mm (10"). The gravel layer was encountered at a depth of around 250-300mm.

Grass on the drain lines appears to be establishing satisfactorily, though inevitably tends to be a little weaker and hungrier than the surrounding turf on normal soil due to the high sand content and reduced nutrient and moisture availability in these situations. Nevertheless, the drain runs all appear to be fully established very well and will develop further with the onset of wetter autumn weather.

Photograph Soil Pit 4: Drain run



- **Soil questions** – a small area of ground near the road/water tank was reported by the Agripower site operative on mowing to be struggling to establish seed. To this end we would suggest testing the area to see if there is any contamination that may be preventing germination and establishment. This appeared to relate to a single load of soil.
- **Stones** – no stones were encountered during any of the soil profile examinations, however some clunks were heard from the mowing equipment during operations.
- **Overall Interpretation** – I interpreted that the grass has established well and is having no difficulty rooting within the soil profile until it reaches the lower British Sugar topsoil where rooting is occurring but at lower density than the upper profile, almost certainly due to less structure and condition within the material. Furthermore, the grass has had plenty of irrigation and this has reduced the need to search for water though we understand that some reduction in irrigation had taken place at the time of the visit which is desirable and to be recommended.

There is the risk of a horizon developing between the ameliorated material and the underlying soil material unless this becomes conditioned and soil structure is improved in the underlying soil. However, we are generally pleased to observe a good standard of establishment within the subterranean rooting system of the plants. Compaction relief works should commence soon.

Some overseeding work is clearly still required and will be needed on the irrigation lines as previously documented.

Weed control is still a serious issue and must be brought under control now. Mowing is not quite tight enough to limit the fat hen weed quickly and should be tightened up if growth will allow.

The rate of growth is of some concern entering into autumn and I very much hope that the rapid shooting of overlush growth will subside now or disease will be a real and high risk to the turf.

We would recommend another visit in late September to assess progress.

2.0 FINAL COMMENTS

We trust this advice is clear and concise but if you have any further queries please do not hesitate to contact me on my mobile [REDACTED]

Signed

[REDACTED]

[REDACTED]

Date: 11 September 2013

Contact Details

[REDACTED]

Sports Turf Consulting Limited
PO Box 257
Fairford
GL7 9GX

Mobile: [REDACTED]

Email: info@sportsturfconsulting.co.uk

Sports Turf Consulting Limited, Company Number 4919462 – Registered in England and Wales
Registered Office: Swatton Barn, Badbury, Swindon, Wiltshire. SN4 0EU

From: [REDACTED]
To: [REDACTED]
Cc: [REDACTED]
Subject: RE: East Marsh - Site Visit 14th August 2013
Date: 14 August 2013 14:01:26

Hi [REDACTED]

Thank you for your time on site today. By way of progress update against the 23rd June meeting actions:

1. LLDC to confirm to LBH what it is proposing to do to address concerns relating to the 5-10m wide strip of ground running alongside the foot of the LO1 terrace/LO1 ramp and the edge of the first set of pitches, which is very stony, potentially poor draining and likely to be heavily used. *This area is now seeded and is growing inline with other newly seeded areas on the east marsh. There are three manhole covers at the edge of the playing area in front of the steps. The middle of the three is raised by approximately 25mm above ground level - a trip hazard. LLDC to investigate lowering this cover to ground level.*
2. LLDC to confirm to LBH that they will be flat rolling the pitches after seeding
Underway
3. LLDC to confirm to LBH what is being done to address the presence of debris in the sub-soil as on recent visits in areas that have not been finished off the presence of reinforcing rods and similar was noted *Complete*
4. LLDC to confirm to LBH what the conditions would be if LBH wanted to retain the irrigation tank on site after transfer *LLDC to advise.*
5. LLDC to confirm to LBH the details of the proposed boundary fence and gate they are planning to put in place to prevent unauthorised access to the site. *A knee rail has been proposed and is acceptable to the Council if confirmation can be issued that this is an 'industry standard' suitable deterrent to prevent unauthorised vehicular access.*
6. LBH to confirm to LLDC that the proposed car park edging proposal tabled at the meeting is acceptable to them. *Accepted and viewed on site. Outstanding elements (reference 8th July email attached) are: The gap between the edging and the paviers is to be in filled with concrete rather than sand; Emergency access gate onto the marsh; levelling and relaying paviers to the side of the entrance gate and access road and gate works.*
7. LLDC to confirm to LBH the proposed solution for protecting the East Marsh from unauthorised vehicle access through the emergency / maintenance vehicle access point *See points 5 and 6 above.*
8. LLDC to confirm to LBH the details of what process and ecological assessments took place to inform the design and construction of the Mountain Bike Trail on East Marsh *Complete*
9. LLDC to confirm to LBH that the bridge clearance problems with the Mountain Bike Course have been resolved to the satisfaction of LVRPA *LLDC to confirm. This has the potential to delay handover. Confirmation at the earliest opportunity would be appreciated.*
10. LLDC to write to LBH setting out their suggestions for the mechanism and transfer of East Marsh. Specifying how this relates to the achievement of the PQS. *All parties agreed that the mechanism for handover should commence in August. 2 further sites visits would be arranged (for late August and late September). Depending on climatic*

(and therefore growing) conditions it is anticipated that PQS testing will take place late September/early October. Handover will not be undertaken until PQStandards are met.

Additional actions generated:

1. The grass cutting regime will remain at 50mm for August, lower to 35mm during September (to expose any areas with poor coverage and for testing to be undertaken) and returning to 50mm at the beginning of October.
2. BRIDGE: Turf on bridge step areas to be replaced in September/October
3. BRIDGE: Pathway finishes (on steps) to be completed
4. Handover - Year 5. [REDACTED] to develop an outline of maintenance expectation from handover to year 5. This will be used to discuss and agreement maintenance regime and warranty inspection/issue escalation procedure.

I trust this is an accurate record - if not please let me know.

With regards

[REDACTED]

[REDACTED]

-----Original Message-----

From: [REDACTED]@londonlegacy.co.uk]
Sent: 10 July 2013 13:55
To: [REDACTED]
Cc: [REDACTED]
Subject: RE: East Marsh

[REDACTED]

To clarify;

Points 2 and 3 were resolved at the site meeting on the 3.7.13. 4 I am awaiting a cost from Bam. 8 I am awaiting statement from Bam/Capita. 9 I am awaiting design from Bam/Capita. Due in ten days time. 10 Internal discussion ongoing within LLDC.

I will chase up these points today.

[REDACTED]

-----Original Message-----

From: [REDACTED]@Hackney.gov.uk]
Sent: 10 July 2013 12:25
To: [REDACTED]
Cc: [REDACTED]
Subject: RE: East Marsh

[REDACTED]

Apologies for pushing on this but we are fast approaching August and we still have a number of unresolved matters outlined in my e-mail of the 23 June. It appears we have addressed points 1, 5,

6 and 7. Could we please have a response on the other points so we have clarity moving forward.

Thanks

■

-----Original Message-----

From: ■
Sent: 01 July 2013 14:54
To: ■@londonlegacy.co.uk'
Cc: ■
Subject: FW: East Marsh
Importance: High

■

Further to my email below I wondered whether there had been any progress on confirming any of the below - particularly in relation to LLDC's proposals in relation to the mechanism for transfer. Work is progressing and we are quickly approaching August with a number of issues still to resolve.

Regards

■

-----Original Message-----

From: ■
Sent: 23 June 2013 06:29
To: ■@londonlegacy.co.uk'
Cc: ■
Subject: East Marsh
Importance: High

■

Good to speak to you on Friday. Just to confirm the agreed actions from the meeting:

1. LLDC to confirm to LBH what it is proposing to do to address concerns relating to the 5-10m wide strip of ground running alongside the foot of the LO1 terrace/LO1 ramp and the edge of the first set of pitches, which is very stony, potentially poor draining and likely to be heavily used (see attached)
2. LLDC to confirm to LBH that they will be flat rolling the pitches after seeding
3. LLDC to confirm to LBH what is being done to address the presence of debris in the sub-soil as on recent visits in areas that have not been finished off the presence of reinforcing rods and similar was noted
4. LLDC to confirm to LBH what the conditions would be if LBH wanted to retain the irrigation tank on site after transfer
5. LLDC to confirm to LBH the details of the proposed boundary fence and gate they are planning to put in place to prevent unauthorised access to the site
6. LBH to confirm to LLDC that the proposed car park edging proposal tabled at the meeting is acceptable to them
7. LLDC to confirm to LBH the proposed solution for protecting the East Marsh from unauthorised vehicle access through the emergency / maintenance vehicle access point
8. LLDC to confirm to LBH the details of what process and ecological assessments took place to inform the design and construction of the Mountain Bike Trail on East Marsh

9. LLDC to confirm to LBH that the bridge clearance problems with the Mountain Bike Course have been resolved to the satisfaction of LVRPA

10. LLDC to write to LBH setting out their suggestions for the mechanism and transfer of East Marsh. Specifying how this relates to the achievement of the PQS.

I look forward to receiving the information from LLDC as soon as possible.

Regards

██████████

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From: [REDACTED]
To: [REDACTED] @HACKNEY.GOV.UK; [REDACTED]
Subject: Meeting to agree LLDC handover protocol
Date: 11 July 2013 15:21:54
[REDACTED]

[REDACTED]

To follow up your conversation with [REDACTED] yesterday we would like to set up a meeting with you and your team to agree the protocol and programme for LLDC handing over assets to Hackney on completion of the works (and associated obligations).

The meeting will cover the handover protocol for all of the 'Hackney land' but focus on East Marsh as the immediate priority:

- East Marsh: 31 August 2013
- North Park: Jan 2014
- Playing Field: May 2014
- Canal Park: July 2014 (possibly sooner)

[REDACTED]

From our end will be [REDACTED]

I understand you would like to invite [REDACTED] Sports Turf Consulting Limited. We are happy to meet at your offices but the only two dates we can meet in the next fortnight are 4pm Wednesday 24th July or 9am on Friday 26th July. Please confirm if either work for you

By way of a brief update, the current state of the works is that seeding has happened but germination has not. Irrigation is taking place and so germination should happen shortly. [REDACTED] will monitor regularly to see if standards are acceptable. Note that the wet spring has pushed seeding out.

In preparation of the meeting both sides will need to review obligations relating to the deposit deed, performance quality standards, warranties, £2m deposit and surrender/break of the LLDC leases.

Apologies for the long email, I hope this all makes sense but please shout if not

Regards,

[REDACTED]

[REDACTED]

[REDACTED]

London Legacy Development Corporation

Level 10

1 Stratford Place, Montfichet Road

London

E20 1EJ

[REDACTED]

[REDACTED] [@londonlegacy.co.uk](mailto:[REDACTED]@londonlegacy.co.uk)

Web: www.londonlegacy.co.uk

We have a new website. To find out more on the future Queen Elizabeth Olympic Park – Opening from July 2013 – visit: www.noordinarypark.co.uk

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www.londonlegacy.co.uk.

From: [REDACTED]
To: [REDACTED]
Cc: [REDACTED]
Subject: East Marsh
Date: 23 June 2013 06:30:02
Importance: High

[REDACTED]

Good to speak to you on Friday. Just to confirm the agreed actions from the meeting:

1. LLDC to confirm to LBH what it is proposing to do to address concerns relating to the 5-10m wide strip of ground running alongside the foot of the LO1 terrace/LO1 ramp and the edge of the first set of pitches, which is very stony, potentially poor draining and likely to be heavily used (see attached)
2. LLDC to confirm to LBH that they will be flat rolling the pitches after seeding
3. LLDC to confirm to LBH what is being done to address the presence of debris in the sub-soil as on recent visits in areas that have not been finished off the presence of reinforcing rods and similar was noted
4. LLDC to confirm to LBH what the conditions would be if LBH wanted to retain the irrigation tank on site after transfer
5. LLDC to confirm to LBH the details of the proposed boundary fence and gate they are planning to put in place to prevent unauthorised access to the site
6. LBH to confirm to LLDC that the proposed car park edging proposal tabled at the meeting is acceptable to them
7. LLDC to confirm to LBH the proposed solution for protecting the East Marsh from unauthorised vehicle access through the emergency / maintenance vehicle access point
8. LLDC to confirm to LBH the details of what process and ecological assessments took place to inform the design and construction of the Mountain Bike Trail on East Marsh
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10. LLDC to write to LBH setting out their suggestions for the mechanism and transfer of East Marsh. Specifying how this relates to the achievement of the PQS.

I look forward to receiving the information from LLDC as soon as possible.

Regards

[REDACTED]

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From: [REDACTED]
To: [REDACTED]
Subject: East Marsh Car Park plan
Date: 03 April 2013 14:10:02
Attachments: [East Marsh Car Park FRA April 2013.pdf](#)

Dear Both

FYI: Please find attached a PDF of the east marsh car park for our planning application.

With regards

[REDACTED]

[REDACTED]

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EAST MARSH CAR PARK, HACKNEY

FLOOD RISK ASSESSMENT

2 APRIL 2013



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CONTENTS

1.0	INTRODUCTION	2
2.0	DEVELOPMENT DESCRIPTION & LOCATION	3
3.0	DEFINITION OF THE FLOOD HAZARD & PROBABILITY	4
4.0	DETAILED DEVELOPMENT PROPOSALS	7
5.0	FLOOD RISK MANAGEMENT MEASURES	8
6.0	OFF-SITE IMPACT	8
7.0	RESIDUAL RISKS	8
8.0	CONCLUSIONS	8

APPENDICES

APPENDIX I	Location Map
APPENDIX II	Environment Agency Flood Mapping Data
APPENDIX III	General Arrangement Plans
APPENDIX IV	Micro Drainage Calculations

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1.0 INTRODUCTION

Hemsley Orrell Partnership (HOP) has been instructed by the London Borough of Hackney to undertake a Flood Risk Assessment (FRA) for the proposed car park development at the football grounds on the East Marsh in Hackney.

The site lies approximately 100m to the northeast of the River Lee and with a culverted tributary running adjacent to the southern boundary of the site under the A16 Eastway.

The north eastern part of the site lies just within the mapped extent of Flood Zone 2 as classified by the Environment Agency (EA). This flood zone allocation gives rise to the requirement for a site specific Flood Risk Assessment to accompany a planning submission for the proposed car park.

Details of the site and the proposals have been provided by the Client and form part of the London 2012 Olympic Park legacy programme, which is returning the East Marsh to its former use as sports pitches with associated car parking after the majority of the site was developed to accommodate temporary parking for the Olympic Games.

This report has been carried out in accordance with guidance provided by the EA; the Strategic Flood Risk Assessment (SFRA) for the Borough; and is in line with the guidance on Flood Risk and Development as provided in the National Planning Policy Framework (NPPF) and its associated Technical Guidance.

Information in this report has been received from a number of external parties and HOP does not accept liability for the accuracy of this information. Should there be a material change to the development proposals or a change in use then this report will need to be revised to reflect those proposals.

2.0 DEVELOPMENT DESCRIPTION & LOCATION

The site is currently used as a coach and car park that was used to serve the London 2012 Olympic Games and is currently being transferred back to its former use as sports pitches with associated car parking and access.

The site is located on the eastern side of the wider open space of Hackney Marsh and is bordered to the north by the New Spitalfields Market; and to the south and east by the A106 Eastway. Football pitches are currently being reinstated to make up the remainder of the open space between the proposed car park and the River Lee which forms the west and southern boundary of the East Marsh as can be seen on the Location Plan included in Appendix I and extract shown in Figure 2.1.

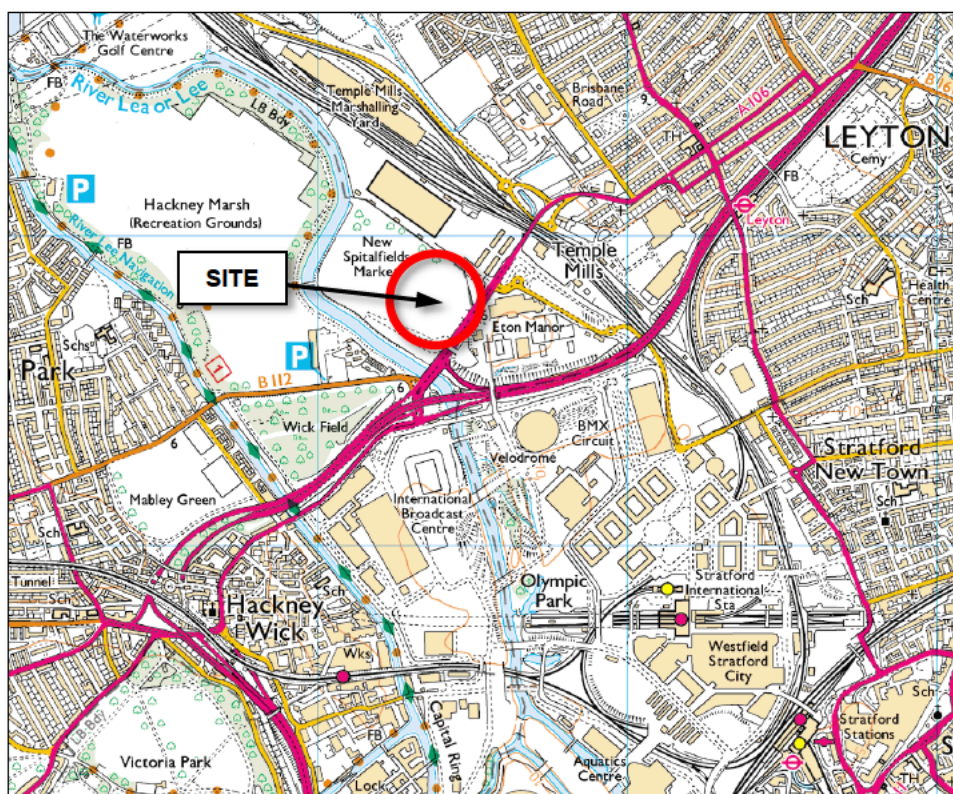


Figure 2.1 Site Location plan.

The site of the proposed car park is currently 100% hardstanding as it is currently used for the temporary car parking serving the Olympic Games, as can be seen in the aerial image on the cover of this report. Prior to the temporary car park development a car park of similar size to the proposed was located further to the south and west, serving the football pitches. This car park was of impermeable construction, as shown in Figure 2.2 below.



Figure 2.2 Previous car park facilities

Hackney Borough Council have confirmed that the new car park acts as a replacement of this previous facility and there is no overall increase in the hard standing and number of car parking spaces to the East Marsh recreation grounds. The proposed car park is to be of permeable construction which will be a betterment of the previous situation.

The site is generally flat, with site levels at the entrance to the car park shown on the General Arrangement drawings as being at around 6.3m Above Ordnance Datum (AOD).

Additionally, the existing car park make up is of a permeable construction and it is proposed to maintain this construction for the area of car park that is to remain as part of the legacy infrastructure.

British Geological Survey (BGS) online maps show that the site is underlain by superficial deposits of Silty Peaty Sandy Clay Alluvium over Lambeth Group Clay, Silt and Sands. However, the level of the Hackney Marshes were raised at the end of the Second World War as rubble and waste from London's bomb damaged sites was dumped on the open areas. It is therefore assumed that there could be made ground present at the site.

3.0 DEFINITION OF THE FLOOD HAZARD & PROBABILITY

Flood extents mapping has been obtained from the Environment Agency website and shows that the extreme north and east of the site is located within Flood Zone 2 with the remainder of the car park, including the site entrance, located within the low risk Flood Zone 1 area. Figure 3.1 shows the extent of Flood Zone mapping in relation to the site location.

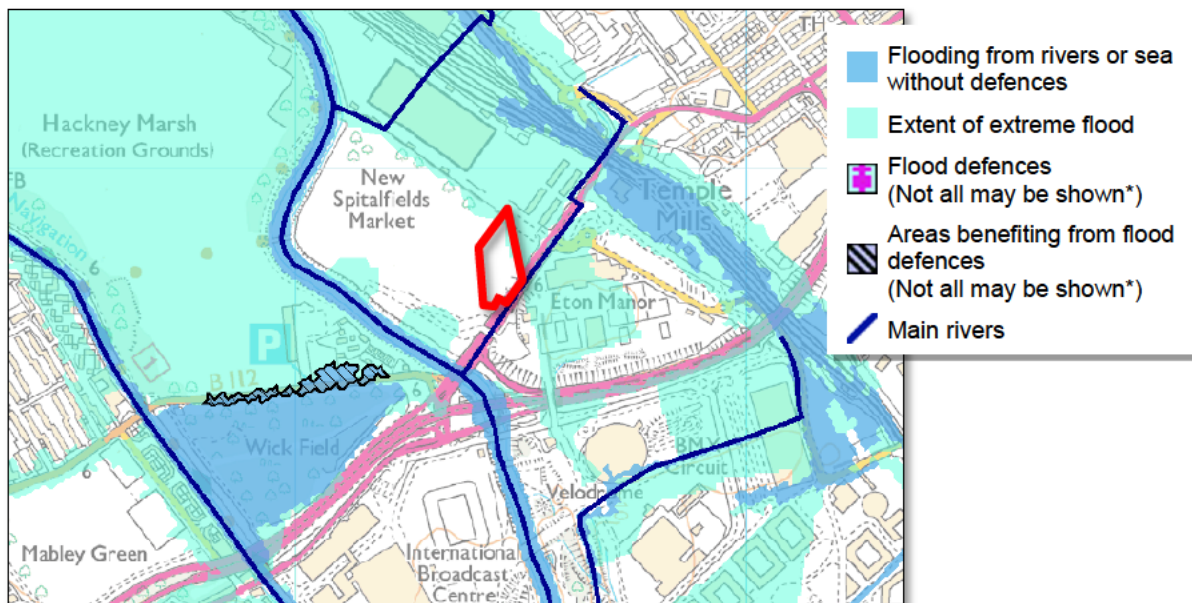


Figure 3.1 EA online Flood Zone map.

In addition, flood data from the EA has been purchased and is included in Appendix II. This data shows the results of the latest modelling and confirms the online mapping classification of the Flood Zone for the site with the extent of Flood Zone 2 encroaching further into the car park site than the online mapping suggests.

Technical guidance to the NPPF defines the land within Flood Zone 2 as having between a 1 in 100 and 1 in 1000 annual probability of fluvial flooding (1% - 0.1%), with Flood Zone 1 having a lower annual probability of flooding than 1 in 1000 years. Furthermore, the NPPF states that outdoor sports and associated essential facilities are considered as water compatible development and as such are deemed appropriate development within all Flood Zones without the need for the Sequential or Exception tests to be applied. Relevant table extracts from the NPPF Technical Guidance are shown below.

<p>Zone 2 - medium probability</p> <p>Definition This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.</p> <p>Appropriate uses Essential infrastructure and the water-compatible, less vulnerable and more vulnerable uses, as set out in table 2, are appropriate in this zone. The highly vulnerable uses are <i>only</i> appropriate in this zone if the Exception Test is passed.</p> <p>Flood risk assessment requirements All development proposals in this zone should be accompanied by a flood risk assessment.</p> <p>Policy aims In this zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage systems.</p>

Extract of Table 1 (NPPF 2012) Flood Zones

- Water-compatible development**
- Flood control infrastructure.
 - Water transmission infrastructure and pumping stations.
 - Sewage transmission infrastructure and pumping stations.
 - Sand and gravel working.
 - Docks, marinas and wharves.
 - Navigation facilities.
 - Ministry of Defence defence installations.
 - Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
 - Water-based recreation (excluding sleeping accommodation).
 - Lifeguard and coastguard stations.
 - Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
 - Essential ancillary sleeping or residential accommodation for staff required by uses in this category, *subject to a specific warning and evacuation plan.*

Extract of Table 2 (NPPF 2012) Flood risk vulnerability classification

Flood risk vulnerability classification (see table 2)	Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception Test required	✓	✓
Zone 3a	Exception Test required	✓	x	Exception Test required	✓
Zone 3b functional floodplain	Exception Test required	✓	x	x	x

Key: ✓ Development is appropriate.
 x Development should not be permitted.

Extract of Table 3 (NPPF 2012) Flood risk vulnerability and Flood Zone ‘compatibility’

The primary flood risk to the site is fluvial and arises from the proximity of the River Lee, some 50m to the south and west. Other sources of flooding are considered below.

TIDAL FLOODING

The SFRA notes that whilst the main source of flood risk facing Hackney is fluvial, there is a tidal influence on the River Lee watercourse. The tidal reach of the River Thames extends up the Lower Lee Valley to the Lee Bridge sluices. It is possible that the part of the River Lee within Hackney may be influenced by tidal processes.

However, the Thames Barrier currently provides protection in excess of the 0.1% annual probability event. The presence of this defence, coupled with local defences means that any extreme tide level would have to be accompanied by a breach in flood defences to result in severe flooding. An allowance for the tidal influence on the River Lee has been included within the hydrodynamic modelling undertaken for the River Lee, as included in the Flood Zone modeling.

GROUNDWATER FLOODING

The SFRA for the district does not indicate that the Hackney Marsh site is historically susceptible to groundwater flooding. The proximity of the site to the main river would indicate that the groundwater level is relatively shallow and therefore the risk of groundwater flooding would manifest itself in higher river levels leading to fluvial flood outlines as shown on the EA mapping.

SURFACE WATER FLOODING

The environs of the East Marsh have been free from development (excluding the historic

post-war fill operations) and surface water runoff from the area is assumed to drain naturally to the River Lee. Again, the SFRA does not include any records of surface water flooding at or close to the site. The construction of the car park with permeable methods should replicate the existing situation of surface water draining to land and therefore the risk of surface water flooding at the site is considered to be low.

SEWER FLOODING

The car park does not require any foul sewer connections and it is assumed that public and highways sewers are located within the Eastway. Should these become surcharged any overland flows that may be established should be limited to the extent of the highway and would flow to lower lying areas towards the River Lee to the southeast and southwest of the development site and therefore the risk of sewer flooding adversely affecting the proposed car park is considered to be low.

RESERVOIR FLOODING

Two reservoirs are located to the north of Hackney Marshes in Stoke Newington. These reservoirs are pumped storage reservoirs, which are classified as non-impounding. Although the EA online flood maps show that the East Marsh site is located within the maximum extent area of inundation from failure of these reservoirs, the SFRA states that the flood risk associated with these waterbodies is low.

CLIMATE CHANGE

Increased rainfall intensity, longer storm durations and rising sea levels are all attributed to global climate change. The Technical Guidance to the NPPF shows that surface water drainage for commercial developments should include an allowance for an additional 30% of rainfall intensity to be taken in to account in designing surface water run-off.

4.0 DETAILED DEVELOPMENT PROPOSALS

As can be seen on the General Arrangement plans shown in Appendix III the proposals are for a car park to remain at the site providing car parking for 60 cars including 4 disabled bays and an additional 5 bays for minibus parking. Access is off the Eastway via the existing temporary car park bellmouth and the car parking is served by a looping access road that utilises a one way system for traffic control.

Details of the permeable construction have been provided by Hackney Borough Council and this method has been used for the construction of the temporary car park at the site, used for the Olympic Games. It is assumed that the design of the permeable car park construction meets the requirements of managing surface water runoff at the site through the use of infiltration Sustainable Drainage Systems (SuDS).

The proposed car park has been modelled using Micro Drainage software, based on the proposed specification supplied by the London Borough of Hackney, included in Appendix IV. These calculations show that for a 100 year return period with a 30% climate change allowance, based on an assumed soakage rate of 2×10^{-6} m/s soakage rate, the proposed car park is not at risk of surface water flooding. The calculations also show the proposed runoff rate to be 2.8l/s. Soakage testing to BRE 365 is needed to confirm the soakage rate on site.

Ground levels for the car park will remain as existing at around 6.3m AOD. All the development area is external and there are no proposals for structures included within the car park proposals.

5.0 FLOOD RISK MANAGEMENT MEASURES

The proposed car park is outside of the extent of the extreme flood limits and is classified in the NPPF as appropriate development for all flood zones. The permeable construction of the surfacing will allow surface water run-off to be managed at source using infiltration sustainable drainage systems (SuDS) which is the preferred method of managing surface water run-off according to the SuDS manual and the management train hierarchy.

The new car park does not interfere with existing overland flood routes and nor does it represent a reduction in available flood storage volumes. It, therefore, is not considered to have an adverse effect on the existing site or to downstream properties or the wider area of Hackney Marsh.

6.0 OFF-SITE IMPACT

The proposed retention of an area of the existing car park and the reinstatement of sports pitches at the site greatly reduces the current hardsurfaced area. Furthermore, the proposed car park area does not represent an increase in the pre-Olympic hardsurfaced area provided by the original car park at the East Marsh.

Surface water runoff is proposed to be managed through permeable paving which could be considered to be an improvement over the historic car park facility, in that the use of infiltration at source is more favourable in the SuDS hierarchy than site control with a direct discharge to watercourse.

Runoff rates and volumes will be reduced through the proposed use of SuDS which represents betterment over the historic car park arrangement. It can be seen that off-site impacts of surface water runoff are minimal and the development proposals do not adversely affect neighbouring or downstream properties.

7.0 RESIDUAL RISKS

Residual risk stems from extreme rainfall events, infrastructure failure or a breach of the flood defences that protect the wider area of London from tidal flooding. As discussed in Section 3, overland flows from existing sewers that may be surcharged through blockages should be restricted to the highway which is at a lower level than the development site.

Sewer flooding or surface water flooding flows would be conveyed to lower lying areas as the East Marsh site is raised above the immediate environs of the Eastway, and the main Hackney Marsh recreation grounds on the opposite bank of the River Lee.

The Thames flood defences are located some 5km south of the East Marsh where the Lee joins the Thames. As such there would be considerable warning within the Borough if the capital's flood defences were compromised. As the site is to be used for sports and recreation, any risk of forecasted extreme tidal flooding could be reasonably expected to be mitigated through closure of the site prior to potential inundation.

8.0 CONCLUSIONS

The proposed car park at the East Marsh lies partly within Flood Zones 1&2 and a site specific FRA is required to accompany a planning submission in accordance with the guidance of the NPPF.

Development proposals are for a car park to serve the sports pitches that are being reinstated at the site as part of the Olympic Legacy. Such development is considered to be water compatible in accordance with the NPPF guidance on development and flood risk without the need for the Sequential or Exception Tests to be applied.

This report demonstrates that the primary risk of flooding to the site arises from fluvial sources due to the proximity of the River Lee. Other sources of potential flooding are considered to be of low risk.

The proposed car park is to be constructed of permeable paving and replaces the historic car park facility with an equal area of development. This is considered to provide a reduction on flood risk to the site and downstream properties through the use of infiltration source control SuDS which replace the site control SuDS formerly employed at the site to manage surface water runoff.

Considering the above points, this report demonstrates that the proposed East Marsh car park is appropriate development for the Flood Zone and further accords with the principles of the NPPF in that the proposals offer a betterment over the existing and former use of the site in that the risk to the site, neighbouring properties and downstream areas is reduced through the development of the new car park facility in the East Marsh.