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Our Ref: 70024705

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Subject: No. 4 Hexagon, Construction Traffic Management Plan - Technical Review

WSP | Parsons Brinckerhoff have been appointed by the Fitzroy Park Residents Association (FPRA) to review and advise them on the suitability and acceptability of the draft Construction Management Plan (CMP), dated 26 May 2016, submitted by Motion consultants for a residential development at No. 4 The Hexagon, London.

Documents reviewed include the Draft CMP and drawing number 160128-TK03 prepared by Motion consultants.
We understand that a planning application has been lodged with London Borough of Camden (LBC) planning ref 2016/3252/P.

We understand the Fitzroy Park Residents Association (FPRA) is primarily concerned about the potential impact of construction vehicles associated with the redevelopment of No. 4 Hexagon to the Hexagon and, to a lesser extent, Fitzroy Park.

We would note a key objective of Camden Planning Guidance (CPG) No. 6 relating to Construction Traffic Management Plans states they are essential to ensure developments do not damage nearby properties or the amenity of neighbours. Given the nature of Fitzroy Park and The Hexagon, this is particularly relevant.

WSP | PB has reviewed the CMP. We have made a number of observations and identified a number of areas which we feel should be addressed by the applicant (or their appointed consultant) to meet the objective of CPG 6 before the planning application is determined. The main points are summarised below and outlined in further detail in this letter.

1. Base Data & Information
2. Construction Vehicle Swept Path Analysis;
3. Construction Vehicles;
4. Cumulative Traffic Implications;
5. Allotment Parking; and
6. Existing Pavements Durability & Integrity – Tree Protection.

Base Data & Information
We would note that the majority of the swept path analysis of Fitzroy Park and The Hexagon submitted within the CMP has been undertaken based on specific topographical survey data.

However, the swept path analysis of the 4 Hexagon site itself submitted within the CMP has been undertaken based on Ordnance Survey mapping data.

As topographical survey has been used to assess Fitzroy Park and The Hexagon, it is therefore unclear why this has not been extended to include the development sites itself.

Given the existing site is both small in nature and spatially constrained and the Hexagon equally constrained we would expect the swept path analysis for access into the site to be carried out on site specific topographical survey data.

This data has a far higher degree of accuracy and therefore can better determine whether the analysis shown is realistic, accurate and fundamentally achievable to enable the CMP to be accepted or refined accordingly

Any decisions which rely and are based on this analysis, if not prepared using a Topographical survey, could be fundamentally flawed and could lead to traffic problems and issues for the contractor, local residents and members of the public alike.

We note the following in relation to the above:
- Ordnance Survey (OS) mapping data has an inherently limited level of accuracy;
- At its smallest (most detailed) scale of 1:1250 OS data's accuracy is reported by the Ordnance Survey to be ±0.5m; and

Furthermore CPG 6 states that 'accurate scaled drawings of any highway works necessary to enable construction to take place' are to be provided.

We recommend the additional survey data is obtained and the analysis updated accordingly.

Construction Vehicle Swept Path Analysis
Independent swept path analysis was undertaken by WSP | PB to inform our technical review, as presented on drawings 70024705-SK01, SK02, SK03 and SK04.

The swept path analysis was undertaken under the following conditions:
1. 6.5m 'skip' lorry - as the largest proposed construction vehicle;
2. 7.2m 'skip' lorry, representing a larger (and more commonly utilised) vehicle;
3. A tolerance / safe clearance zone of 500mm to any physical, vertical, constraints; and
4. Turning on the spot not permitted.

The CMP states construction vehicles will reverse down the Hexagon however the swept path analysis accompanying the CMP does not represent this. We have therefore undertaken the swept path analysis of this for the FPRA.

The results of our analysis for the 6.5m skip lorry are not very different from those prepared by Motion in terms of spatial requirements and implications on Fitzroy Park.

Hexagon
Our analysis indicates that the 6.5m lorry chassis will be within 0.5m of existing tree trunks located along the Hexagon while reversing into the site (refer drawing SK-02). As mentioned in the previous section, further topographical details are required to fully analyse the impact of construction vehicles reversing into the construction site itself to demonstrate the manoeuvre can be fully achieved without any adverse impacts to these trees.

The swept path analysis also suggests construction vehicles may encroach onto the neighbouring property; furthermore it is also unclear how the allowance of on-site parking for one car during deliveries will be accommodated. This should be analysed in further detail with the additional on-site

topographical data to confirm the proposal is practically achievable within the confines of the development site.

The analysis indicates that vehicles will impact tree foliage along the length of The Hexagon.

The left turn from The Hexagon back into Fitzroy Park is a very tight manoeuvre for even 6.5m vehicles. The swept path analysis indicates the vehicle wheels are very close to the edge of the pavement and will likely impact the foliage of trees at the entrance to The Hexagon.

The analysis of the 7.2m skip vehicle reversing manoeuvre indicates oversailing of the pavement at the intersection of Fitzroy Park and The Hexagon – either on the northern side of the intersection (as shown on inset B, drawing 70024705 SK-04) or The Hexagon side of the intersection if the movement is undertaken differently.

We would also note our analysis indicates that the length of time required for a 6.5m skip lorry to complete the 80m reverse manoeuvre into site is 115 seconds (refer drawing 70024705 SK-02).

Under the CMP it is proposed that vehicles audible reversing warnings will be switched off given that a banksman will be instructing the vehicle and will be aware of any pedestrian movement (in order to avoid creating unnecessary noise for local residents). Given the duration for which vehicles will be reversing this can be a reasonable course of action and if preferred by the local residents we recommend the City of Camden conditions this as part of the CMP approval.

Merton Lane Junction
Motions swept path analysis of the Merton Lane junction indicates that 6.5m construction vehicles can negotiate this corner. We would observe that to execute this turn vehicles have to fully cross on the opposing side of the carriageway, which neither is ideal nor should be encouraged if predicted to occur on a regular basis.

Construction Vehicles
The CMP states that no construction vehicles greater than 6.5m are employed that the largest vehicle expected to access the site is a small skip lorry. Given the above and the constraints of Fitzroy Park this is sensible. However it is unclear how this will be enforced or what will happen should contractor or suppliers arrive in larger vehicles.

More common in construction are the 'skip' type delivery vehicles at 7.2m but also larger 10m vehicles can be used for removal or delivery of materials and many suppliers may have few 6.5m long vehicles. As a sensitivity test and for comparative proposes we have carried out swept path analysis of the more commonly used 7.2m 'skip' vehicle (refer drawing 70024705 SK-04) and a typical 10m rigid HGV as a worst case for accessing the site (refer drawing 70024705 SK-03).

The analysis indicates that the 10m vehicles will not be able to negotiate the Merton Lane / Fitzroy Park intersection without significantly over running the existing footways. They will also not be able to reverse into The Hexagon without conflicting with existing trees and other features at this junction.

Measurements of The Hexagon indicate a pavement width of up to 2.9m at one pinch point, and 2.8m or less if there is no encroachment into the verge (rather than the 3.04m minimum width shown in drawing number 160128-04 of the CMP). This leaves very little room to manoeuvre a 6.5m or 7.2m long skip vehicle, especially reversing. The 6.5m skip and 7.2m skip vehicles are 2.5m and 2.6m wide respectively, leaving only 200mm clearance either side in the worst case.

A further consideration for proposed vehicle size is the fact that The Hexagon slopes downwards towards the development site. Vehicles will be required to use significant engine effort to exit the site up the hill which will be noisy for neighbours.

We recommend that the City of Camden conditions the use of 6.5m 'skip' vehicles as the largest allowed to access the site as part of the CMP approval and the applicant provides more detail on how this will be enforced.

Cumulative Traffic Impact
We are aware of the other local committed developments currently on site or due to be in the near future. These are 2 Fitzroy Close and 53 Fitzroy Park.

A construction vehicle travelling at 4 mph from the Merton Lane junction a distance of approximately 475m to the site will take vehicles at least 4 minutes to travel one way to the site. The impact to residents of multiple vehicles (from multiple development sites) travelling up and down Fitzroy Park could be significant during the working hour periods and should be closely coordinated.

Given the proposed delivery hours we expect the loading or unloading of construction vehicles will be complete within 20 minutes and it is plausible that within 30 minutes a construction vehicle may be returning back along Fitzroy Park.

If not properly addressed indiscriminate arrivals of construction vehicles could create traffic and access issues for residents, patrons of the bowling club and the allotments throughout the duration of the developments construction activities.

We understand that generally speaking, Camden will limit the number of allowed construction vehicles to 8 per site per day. With the other two developments occurring simultaneously, 24 vehicles per day (3 x 8) with turnaround periods of 30 minutes obviously need to be carefully coordinated if not to severely restrict residents' movements.

No cumulative construction traffic impact appraisal has been provided within the CMP. Liaison with the Project Managers of the consented developments has been mentioned but with insufficient detail on the outcome or proposals for greater coordination or collaboration. As a key requirement of compliance with CPG 6 we would expect the matter to be considered in detail, even if to be demonstrated as unnecessary as part of the CMP.

Given the proximity and nature of the other local developments we believe it is necessary and we recommend the omission is rectified by the applicant (or their consultant) to consider and establish any potential traffic issues to allow mitigation measures or alternative arrangements agreed accordingly to protect the amenity of the local area.

The CMP notes that a banksman will be stationed at the intersection to monitor vehicle movements and pedestrians; this is a good, responsible proposal and we strongly advise that the banksman strategy is enforced.

As it is not possible for construction vehicles to pass each other on Fitzroy Park or The Hexagon, it is imperative that entry to the site is closely managed alongside other developments.

We understand from the CMP that vehicles will not be permitted to stop, be held or wait on the public highway (or Fitzroy Park). Vehicles will instead be waved on by a banksman stationed at the top of Merton Lane down Highgate West Hill into a circling pattern if either Merton lane or Fitzroy Park is occupied by an existing construction vehicle.

CPG 6 states 'vehicles must not wait or circulate on the public highway'. If this is anticipated to happen the applicant and / or the CMP would be in contravention of CPG 6.

This is particularly relevant given the number of developments planned to be occurring simultaneously on Fitzroy Park and The Hexagon therefore much greater consideration needs to be given to enforcing a planned and coordinated logistics plan for the proposed developments.

Allotment Parking
We understand parking for the allotments regularly occurs along the north side of Fitzroy Park road prior to entering The Hexagon, and that allotment residents have permits to park in this location only (100 permits).

Under the CMP a length of approximately 95m of parking has been proposed to be suspended during construction. This results in the loss of approximately 19 parking spaces.

Given the relatively narrow and variable width of Fitzroy Park parking could impede or restrict the ability for construction vehicles to pass.

A restriction on parking along Fitzroy Park at this location may ultimately be the right solution however there is insufficient consideration in the CMP of what the impacts of suspending this parking are on the patrons of the allotment and therefore the operation and use of the wider Fitzroy Park.

If inadequately mitigated or insufficiently planned for, indiscriminate parking may occur elsewhere on Fitzroy Park. This could simply create traffic issues elsewhere and have a further undue impact on local residents.

We understand that the developer and/or contractor do not have the authority to implement or enforce such a parking suspension.

Further assessment should include surveys of the typical number and location of parking during the stipulated working hours.

Once the potential impact has been fully quantified we would then expect the potential to mitigate these construction impacts to be evaluated for wider discussion with the allotment patrons and local residents.

We would recommend this is addressed prior to approving the CMP and determination of the planning application.

Existing Pavement Durability & Integrity – Tree Protection
Of major concern to local residents is the protection of 10 mature trees along The Hexagon cul de sac.

Considering the historic nature and age of The Hexagon road pavement, it would not be unreasonable to assume it does not meet modern road design or construction standards. There is no precedent on The Hexagon for large construction vehicle access as all existing buildings are 'light build' dwellings with no basements.

When you factor in the observations about the necessary manoeuvres into and out of site it is not unreasonable to conclude the pavement surface and supporting layers are at risk of deterioration and failure due to the sustained and dynamic impact of the imposed vehicle loads. The risk will also be increased due to the narrow nature of Fitzroy Park and The Hexagon and the channelization of construction vehicles along it. These failures, should they occur, present themselves in a number of different ways, the most common are as rutting, cracking or potholes.

A thorough assessment should therefore be carried out on the existing condition of The Hexagon pavement and the risk posed by the construction traffic to its integrity to enable adequate provision to be made for preventative works or the risk of corrective works upon cessation of the construction phase.

We understand CBR tests of The Hexagon have been carried out to determine the bearing strength of the existing pavement. CBR values at the locations tested 4.0% (The Hexagon) and 3.9% (The Hexagon / Fitzroy Park intersection).

As these values are so low, the existing build-up of the concrete cul de sac known as The Hexagon will need to be improved before works commence if damage to the roads is to be prevented. The existing material will either need to be reengineered or removed and replaced with suitable engineering fill such as a Type 1 stone to improve the existing access strength and stiffness. The normal minimum desired performance to be achieved on completion is 30% CBR. The exact depth will need to be determined, but reconstruction in the order of 300-400mm may be required.

We note that the addendum to the CMP discusses the need for protection of tree roots and services in The Hexagon. An arboricultural impact assessment report has been undertaken by Landscape Planning Ltd. (dated 26/07/2016) which asserts that the required reconstruction of the road will

damage the existing trees. Any temporary pavement protection measures (such as ground mats) are unlikely to adequately protect the existing trees from permanent damage.

Summary

WSP | PB have undertaken a review of the No. 4 The Hexagon Construction Management Plan, dated 26 May 2016, on behalf of the Fitzroy Park Residents Association to review and provide them with independent advice on the suitability and acceptability of the proposed construction management plan.

We note the following in summary:

- Insufficient survey data has been utilised to assess the impact of construction vehicles on surrounding properties;
- The vehicles proposed to be used (6.5m skip) and those likely to be used (7.4m box) will likely impact the foliage of trees along The Hexagon and other properties, especially while completing turning movements;
- A potential maximum of 24 construction vehicles a day (due to multiple developments occurring simultaneously) requires significant traffic management coordination in order to not adversely affect residents;
- Parking should not be suspended outside the allotments on Fitzroy Park without alternative arrangements being provided for residents;
- The existing road pavement of The Hexagon was likely not designed to cater for construction vehicles and would require reconstruction (which could damage existing trees). Temporary pavement protection measures are unlikely to provide sufficient protection to the trees.

In our professional opinion, greater detail on certain aspects of the CMP should be provided.

We therefore would strongly recommend the CMP is revisited by the applicant, addressing the points we have raised, before any decisions are taken on about the suitability of the proposed development and the impacts on the amenity of the surrounding area.

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