##### **Observations**

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| Officer | Matt Kolaszewski |
| Site | **FORMER NESTLE FACTORY NESTLES AVENUE**

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| Ref | 1331/APP/2017/1883 | Date | 11/10/2017 |

**Proposal:**

Part demolition of existing factory buildings and associated structures, and redevelopment to provide 1,381 dwellings (Use Class C3). office, retail, community and leisure uses (Use Class A1/A3/A4/B1/B8/D1/D2), 22,663sq.m (GEA) of commercial floorspace (Use Classes B1c/B2/B8 and Data Centre (sui generis)), amenity and playspace, landscaping, allotments, access, service yards, associated car parking and other engineering works.

**Site**

Hydrock response to LBH latest comments (in blue) are written in red

**RECOMMENDATIONS:**

**Summary**

A Flood Risk and Drainage Assessment has been submitted for the whole application.

This is divided into two parts. For Barrett and residential part of the site Hydrock Consultants have developed the plan and for Segro, R/C151867/001.04 the commercial part of the site, Capita consultants.CS-075666-PE-16-121-R revision G.

A subsequent letter has been written by Capita dated 17 July, and a note completed by Hydrock.

The site is located in Flood Zone1, however the site is over 1 hectare which means a flood risk assessment is required.

The site also lies alongside the Grand Union Canal and therefore the blue ribbon policy applies.

**Comments**

**Recommendation the proposal has improved significantly for the residential area however there are a number of final amendments need to be made before it the proposals can be considered acceptable.**

**Foul Water**

It is noted that a statement from Thames Water Siva Sivarajan Senior Adoptions Engineer 13th July 2016 has been submitted stating that the foul flows proposed will not have a detrimental effect based on the information submitted to them.

**Barratt London Residential**

**Surface Water**

**Strategy**

*Section 5.2 Strategy dismisses open water features as they would ‘compromise the site layout affecting the development space’.*

*A clear overall site strategy is required showing best practice and how water is controlled in all areas at source, and then has appropriate conveyance and regional controls before discharge.*

There appear to still be no overall local then regional controls, or is clear which catchment connect to each other. It is crucial if the development comes forward in phases how the drainage system can be undertaken to hold water on site during construction and if parcels are sold to other developers. Ideally the drainage strategy plan should be overlain with the catchment areas so it can be more clearly assessed.

Please see the revised catchment drawings C151867-C-101 P8 and 104 P4. The Outfalls and outfall boundaries have been added to illustrate the area draining to each discharge point. Unfortunately overlaying the drainage layout does not provide a clear plan.

The surface water is controlled close to source, regional controls are not required. The drainage network design allows the construction to be carried out in phases. Attenuation is provided within a Block or within the road/ parking that serves a Block. Therefore there is no reliance on other Blocks to be constructed at the same time to provide the required water storage.

Barratt London are committed to the site and shall be developing it fully.

**Catchment Areas**

*For each catchment area, surface water needs to be controlled within it and set a limit based on a clear figure drainage rate for each hectare.*

*The catchment draining to the north versus the south must be compared to the existing catchment.*

*Section 5.1 There is reference to a north / south divide where water draining to the south drains to the Thames Water Sewer, and to the North to the Canal. However there is no map provided showing these catchment areas previously in Appendix A s or clearly highlight proposed area in Appendix C C151867/C/101 /P6.*

Revised Catchment areas have been submitted C151867- C-100\_P2 Existing C151867 - C- 101\_P7 TW, C151867 - C- 104\_P3 Canal.

Total catchment area to Canal is

Existing 36,282m2

Proposed is 20,743m2 ( However Pathways and landscaped areas excluded)

Total catchment area to Thames Water is

Existing 35,229m2

Proposed 20,027m2 ( Pathways and landscaped areas excluded).

In this area the proposed impermeable area over the existing is significantly increased.

I would prefer to see this as the proposed total catchment including all areas although these may be “greenfield” areas, they still contribute to the overall area.

The Canal impermeable catchment has decreased from 32,391m2 to 20,743m2. 30% betterment has been provided over the discharge rate approved by Canal and River Trust.

The Thames Water catchment has increased from 16,137m2 to 20,027m2 which yes is an increase in catchment but as the calculation below shows the flow restriction to the TW sewers has provided a betterment of 93.5% for a 1 in 100yr +40%CC event. This far exceeds LBH and London Plan requirements.

(Calculation to support the above statement:

The total discharge to the TW sewers during a 1 in 100 yr +40% CC event is to be restricted to 44.5l/s, while the discharge from the existing site is:

For existing impermeable area 16,137m2

Rainfall intensity for 1 in100 yr +40% CC event = 151.2mm/hr

Thereby (151.2/3600) x 16137 = 677l/s. This is a 93.5% decrease in run off rate)

The areas of pathways and landscape that have not been included within the catchment do not have a positive drainage connection and therefore simply drain onto soft landscaping and into the ground reducing the volume of surface water that leaves the site. These areas shall not drain to either the Canal or the Thames Water Sewers and therefore are not included within the catchment.

**Discharge Rate**

*Canal and River Trust information provide more useful info stating 36,282m2 drain to the canal through 14 outfalls, 3 in Barratt London area. However they work out the predevelopment rate using a 1 in 100 year rate plus 30CC not the 40% stated the development will apply. Then later it is stated in the proforma that this only an allowance of 1 in 100 plus 20 %*

It is noted that this is mistake and the 1 in 100 year plus 40% allowance will apply.

**Condition of existing and retained assets**

*Appendix A Drawing 065-A0-500 P2 appears to just be a topographic survey and not an existing drainage survey. Locating the connection points and outfalls as existing. What is the condition of these where the proposals are to connect to existing. Does any remedial work need to be undertaken?*

*The plans refers to 3 outfalls, no information is provided to show this the same as existing. Although the Canal and River Trust proforma appear to indicate they are. Although this is not clear even on Appendix C C151867/C /001 P3*

*There appear to be new Thames Water connection to the south.*

*This must be provided to understand the statements that the proposed arrangements either mimic the current arrangement and or do not increase the risk to one catchment by increasing the area drainage to it.*

*The ability of the current outfalls to control the flow appropriately and the current condition is not understood, and if therefore they may need to be replaced, can considerably alter design if they can be replaced at different levels in different locations and angles etc.*

*The Thames Water surface water sewer actually discharges nearby to the Yeading Brook. There is no understanding of the condition of this outfall or its appropriateness to continue servicing the development over its lifetime, or the level of the outfall in comparison to river level and whether it is actually submerged therefore restricting presumed free discharge.*

It still stated that the intention is to re use these where possible and an assessment of the condition will be done later. However this can fundamentally influence design and what can be constructed within the site. This is disappointing when Capita on behalf of Segro have undertaken a Canal wall survey and provided it with their most recent iteration of proposals

With regards to the canal outfalls - It is preferable to refurbish existing outfalls rather than create new. The three outfalls that are intended for re-use shall require attention to ensure that they are serviceable. Flap valves will need replacing/ installing. A condition survey of the outfall pipe shall be required, if found to be in poor condition the pipes shall be replaced. If a pipe was to be replaced we may take the opportunity to locate it in a location that suits the layout better and at the required level which prevents it being surcharged (i.e the existing level). The outfall shall be 90degrees to the canal. The old outfall would be blocked off. More detail can be provided on this following detailed design.

With the wall survey report which we understand you have received from Capita, we intend to reuse the outfalls noted as being at changes 230, 265.5 and 287 though this will need to be confirmed following findings of the outfall pipe condition.

With regards to the discharge to the TW sewers – one connection is via an existing connection. This will be surveyed for condition and replaced is required. A further connection is via an existing TW manhole. When creating the connection, benching shall be adapted to allow for the connection. This shall be done to TW requirements and shall be inspected by them as is usual. The third outfall to TW sewers is via a new connection and manhole.

**Greenfield Rates**

*Strategy follows London Plan Guidance, and provides Canal and River Trust and Thames Water agreements.*

*However it is the Lead Local Flood Authority which is required to review drainage strategies for Major applications and no consultation has been made with the LLFA.*

*Its is LBH requirements to reduce to greenfield run off rates, not 3 x the greenfield rates which is being reviewed in the London Plan.*

*The proforma for the Canal and River trust appear to state that the status quo is being maintained in terms of discharge rates and there is no reduction which is not acceptable.*

 *24.9l/s 1 in 2 year event ( 3x 74.7 l/s)*

 *64.1 l/s 1 in 30 year event ( 3 x 192.3 l/s)*

 *90.21 l/s 1 in 100 year plus 40% CC ( 270.6 l/s)*

It is noted that the green field run off rate will be used and proposed discharge to the Thames Water Sewers will be 44.5ls and to the Canal 60l/s. Is this the rate for all events as shown above in order to be able to compare figures?

As noted on drawing C151867/C/002 P4 the discharge to the TW sewers shall be 12.3l/s for a 1 in 2 yr, 31.6l/s for a 1 in 30 yr and 44.5l/s for a 1 in 100 yr +40%CC.

The Council do not object to the discharge of water to the canal however the figures must be appropriate. The Canal overflows into the river network and they are closely interlinked in Hillingdon. In previous flood events overtopping and discharge from the canal caused flooding to residents when it has overflowed, it is important that the figures from development are limited appropriately to government standards.

Your comment has been noted and accepted. The Canal & River Trust have stated that the canal is a form of attenuation releasing the water into the natural river gradually. With the correct operation of the canal there will be no detrimental effect on the downstream watercourse.

**Climate Change**

*It is noted that it is planned that there will be no flood in the 1 in 100 year plus 40% Climate change events. However the working for the Canal and River Trust proforma appears to show uses of different Climate change levels.*

This is noted that this is in error and 1 in 100 year plus a 40% allowance is used.

**Sustainable Drainage Measures**

*This list is not exhaustive:*

*It is noted that the proposals include blue podiums but no detail of what that looks like.*

*Has sufficient space been left in the design of the blocks for this.*

*The design and look of these are crucial to the feasibility and acceptability of utilising this type of SuDs and works with other landscaping requirements and design considerations.*

*No rainwater harvesting or recycling measures seem to have been considered within the development, which is unacceptable.*

*Initially rainwater recycling was provided for irrigation of the allotment areas. The tank shall be increased to a suitable size where it can be used to irrigate landscaping throughout the site. A van mounted bowser shall be filled from this tank possibly accessed from Viveash yard. During a 1 in 2 year event of 15min duration the rainfall intensity would be 41mm/hr. From the running track which is 770m2 in area a yield of almost 8m3 would be generated. Block E1 (this will still be attenuated on the roof ) run off will also be directed to the tank to increase yield. This shall be sufficient to provide significant water volumes to irrigate throughout the site during dry periods.*

*This shall be included within the site maintenance manual.*

*Footpaths throughout the site could be made permeable.*

*There is significant opportunity to provide above ground conveyance even in the form of more urban environment SuDs of channels.*

*Sandow square and walk appear to be service by a surface water drainage channel - what does this look like? it appears to be located within the tree canopy of proposed trees, there is space to employ more sustainable methods and or above ground techniques.*

*There is no permeable paving for the carparking of the former nestle office building, why?*

It is noted that in addition that originally proposed

* further Blue podiums have been incorporated in the new blocks.
* Rainwater harvesting utilised for the running track.
* Sandow walk will drain to tree pits, and there is additional information on the proposals for the tree pits contained in the landscaping proposals by Gilsepies.

It is not acceptable to state that SUDs are not suited to areas where playgrounds are located as SuDs are utilised in a number of these locations on other developments and in schools.

A rubber crumb surfacing is proposed for the play areas. This is a permeable surface. The build up of this is includes a Type 3 stone which is voided and shall store the water which drains through. Surplus water shall be drained via a perforated land drain into the network.

There is no further information on the provision of rainwater recycling greywater reuse on the rest of the site, which is not considered adequate for a site of this size and to be such a flagship for development in Hayes.

Green roofs have been provided to all new builds, sunken tree pits have been provided to drain Sandow Walk, rainwater recycling will be installed for irrigation of the allotments and throughout the site. These are all ways in which water is being recycled and reducing the volume of surface water leaving the site. In addition to this the rate at which surface water discharges has been greatly reduced due to the use of permeable paving and blue roofs as mentioned in previous paragraphs. This is a significant commitment to the SUDS philosophy and the control of water at source. These elements are all worthy of a flagship development.

**Exceedance events**

*What happens with an exceedance event in these podiums and the impact to occupants, and in exceedance events across the site.*

*How are heavy rainfall events managed. For example in the sandow square where there is a surface water drainage channel ie what level of intense storm can this take so that water can actually enter the drainage system.*

It is noted that levels will be designed to flow away from residences, and a cross section has been provided. As well as contingency in the road network through the kerbs.

**Long Sections**

Appendix C There only appears to be a detailed design of an underground network.

There are some detailed calculations, however no long sections from the source to the outfall point.

These will be required at detailed design stage. Noted

**Future Provision**

*Appendix A LG 101 and 102. It appears that the drainage design is based on permeable paving provided for the future proof design, ie with additional spaces. However the current landscaping design shows it green so how is this to be dealt with. Although the current drainage design is based on the worse case scenario if these permeable paving spaces are not to be constructed initially, additional space for water may need to be provided elsewhere.*

It is noted that the design incorporates the need for the additional bays as a worst case scenario and the creation of these in the future will not increase risk.

**Maintenance**

*Any maintenance plan should also include the specified times frame for complete replacement. Over the lifetime of the development this must be factored into any plan for the PMC to allow for appropriate costs etc.*

*Standards of response if there are issues should be set out, specification for competent persons qualified for inspections required etc*

*Are the green roofs actually the blue podiums in the maintenance plan in which case they have above ground conveyance pipes which will need to be maintained.*

*The maintenance plan doesn’t include all the elements of the design as it is shown ie Attenuation section is too generic. such as Stilling Chamber, Surface water drainage channels etc*

*Please separate inspections and actions as these may be done by different teams etc and require different qualifications.*

*All the maintenance will depend on what is being adopted by whom. Is there any area being offered for adoption by the HIghway Authority or Thames Water?*

A revised Maintenance plan has been submitted with additional detail specifying that maintenance will be dealt with by a PMC. Ideally this should include standards of response if issues are reported by residents.

This maintenance plan will be subject to a Section 106 Legal agreement to ensure this is done in perpetuity. Noted

**Segro Capita Commercial Development**

Flood Risk Assessment and Drainage Strategy Ref N April 2017 and subsequent letter dated July 2017 and supporting

*Section 5.2 the statement that a green roof is not compatible within the proposed development is insufficient justification for not considering a ‘living roof’ within this development.*

It noted the points made however the encouragement is for both living roofs and walls. to maximise the options.

*Adopting the London plan recommendation of 3x greenfield run off rates does not meet LBH requirements. This should be greenfield run off rates.*

It is noted that a reduction of 93% is considered acceptable, however this should still be through the most sustainable option.

*Section 5.7 which appears to state that below ground Suds which are the least favoured option in the hierarchy are the appropriate sustainable drainage method is not acceptable.*

*Detailed drawing 075666 CA 0 GF DR S 010 P04 layout drawing permeable paving is included in the drawings in the car parking area, which is considered acceptable.*

*There also appears to be a land drain around the perimeter and a block dished channel. no details of these are provided.*

These details will be requested as part of a condition.

*All of this site is proposed to drain to the south, is this the same as existing?*

It is noted that it is stated that discharge is to be to the south and it is confirmed that this is the same as existing.

It is noted that exceedance flooding is to be contained within the dock loading areas.

*There appears to be retention of some of the existing network that the proposed scheme will connect to but there is no info on the current condition and appropriateness of these assets.*

It is noted that a Hayes Wall Condition survey has been provided. This appears to show that all of the outfall points are currently seized in a closed position allowing no discharge from the current site. This will need to have a clear an appropriate plan to rectify and implement the recommendations and a condition will be requested to show these are undertaken prior to commencement. These must also be part of the maintenance programme.

*There is no consideration of the foul flows from the site as proposed in comparison to that which is existing. This appears to be to a new connection.*

It is noted that the information from Thames Water has been provided showing there is considered to be no detriment to the public sewer network.

There are no objections to the proposals on drainage grounds however an appropriate condition will be requested.

**Blue Ribbon Network Policy**

*Although the proposed treatment of the Canal edge there are improvements over the existing, there are considerable more improvements that could be made.*

**Commercial**

*There doesn't appear to be sufficient space to allow Cycling alongside the canal in addition to pedestrian access as certain sections are restricted in width.*

Further cross sections have been provided within the landscaping TALA most recent submission showing the proposed width of the walk and cycleways alongside the canal.

These don’t appear to include the drainage at points and the widths are smaller than those recommended by Sustrans Design manual for routes where pedestrian may walk more than one abreast. Preferred widths for two way are 7m and not the 3.9m proposed.

*There is in the Commercial development no consideration or link with the overall cycle masterplan, which appears to then limit the use of cycling within the Commercial development.*

*The access alongside the commercial development for the trim trail from its entrance needs to be widened to fit cycle way and pedestrian and prevent anti social behaviour in confined spaces. There appears to be limited views and landscaping plans for this in order to assess proposals.*

Section AA and BB is particularly narrow considering the location on the corner of the Trim trail and the Canal.

There are still improvements to the Cycle entrance on North Hyde gardens that were discussed and were going to be investigated in terms of the location of the existing island and relocating it in accordance with desire lines for pedestrian and cycle access.

*MS 904\_Unit 03 and 04 view from across the canal\_A3*

*The views from the towpath do appear to show the height difference between the height of the development and the water level in canal accurately.*

*It is unclear how and where the access points for the Canal boats will be created considering the height difference, are stairs and walkways to be created?*

*The proposal adjacent to the Commercial section appear to introduce a mound in front of the development to obscure the fencing and will obscure further the view along the canal.*

***Residential Development***

*There appears to be limited information on or landscaping plan of Canal Square or view along the Canal, and indication of how that area is treated. It is supported that land is left for the provision of a bridge.*

There is no additional material submitted to help assess this proposal.

**Vicky Boorman Date: 11/10/2017**

**Flood and Water Management Officer**