

# TECHNICAL NOTE

To: Oxfordshire County Council – LLFA  
 Cc: Charlie Merry (DWD); Serena Page (DWD); Kerry Bidwell (Lysander); Charlie Shanks (Lysander);  
 File  
 From: EirEng Consulting Engineers  
 Date: 23/02/2022  
 Project Title: Banbury 200, Southam Road, Banbury OX16 2FW  
 Project No: 212088  
 Re: Planning Application 21/04157/F – LLFA Response

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## Introduction

This Technical Note has been prepared to respond to LLFA Detailed Comments relating to Planning Application 21/04157/F and is included in Appendix A. This provides further information with reference to previously submitted documents and drawings, with supplementary documents and drawings prepared as part of this response.

## LLFA Detailed Comments

1. *For greenfield sites, existing greenfield runoff rates needs to be produced based on the site criteria. If brownfield sites, clearly state the existing impermeable area and calculate the rates of runoff from the site. If a piped drainage system already exists within the site, the existing capacity of these pipes will need to be estimated.*

The main change to impermeable areas at the site is at the existing western car park area, with the remainder of the site following the existing drainage strategy. As the site is classed as a brownfield site, the existing (1.088ha) and proposed impermeable areas (0.920ha) have been determined that represents a reduction of approx. 18% in proposed impermeable area. The existing and proposed main drainage serving this area has been modelled (where existing level information is available) and runoff rates quantified for the various return periods presented below.

| Return Period | Existing       |             | Proposed       |             | Betterment    |           |
|---------------|----------------|-------------|----------------|-------------|---------------|-----------|
|               | Imp. Area (ha) | Flows (l/s) | Imp. Area (ha) | Flows (l/s) | Imp. Area (%) | Flows (%) |
| 1 in 2yr      | 1.088          | 141.5       | 0.920          | 7.3         | 18            | 95        |
| 1 in 30yr     |                | 207.8       |                | 7.3         |               | 96        |
| 1 in 100yr    |                | 211.1       |                | 7.3         |               | 97        |

2. *Catchment area plan to be provided in relation to the MicroDrainage outputs.*  
The individual catchment areas draining to the modelled network have been included on a new drawing 212088-C005 – Modelled Network Details and is provided in Appendix B.
3. *Exceedance surface water flood plan to be provided to ensure surface water is kept away from structures.*  
The exceedance flow pathways have been included on a new drawing 212088-C006 – Exceedance Flow Pathways and is also provided in Appendix B.
4. *A detailed SuDS management plans to be provided alongside a maintenance plan.*  
A site-specific SuDS Management & Maintenance Plan has been produced and has been included as a standalone document with this Technical Note.
5. *Demonstration of the surface water drainage strategy following the Suds treatment train before discharging to the outfall.*  
The Drainage Strategy has been updated with an additional section provided on the SuDS Management Train and has been included as a standalone document with this Technical Note.
6. *Proposed development needs a water quality assessment in accordance with Section 4 and Section 26 of SuDS Manual.*  
In accordance with the SuDS Manual, a simple index approach has been used to demonstrate water quality compliance and results included in Appendix C. The proposed regraded van storage area at the existing western car park will be provided with a large interceptor to treat all surface water flows, prior to discharge to the on-site attenuation tank and then flow control restricting flows to the existing ditch. The pollution mitigation indices for this proprietary treatment are above the pollution hazard indices for the respective land use, thus providing sufficient treatment.
7. Proposed development must meet local standards, L19, “At least one surface feature should be deployed within the drainage system for water quality purposes, or more features for runoff which may contain higher levels of pollutants in accordance with the CIRIA SuDS Manual C753. Only if surface features are demonstrated as not viable, then approved proprietary engineered pollution control features such as vortex separators, serviceable/ replaceable filter screens, or pollution interceptors may be used”.  
It is proposed to provide filter drains for two specific areas that proposed hardstanding is being introduced, even though the overall proposed impermeable area of the site will be less than existing due to increased landscaping provision. This includes the full depth asphalt build-up area to the north of the existing western car park and the proposed sprinkler tank area situated at the southeast of the site. Model results have also been appended to the revised Drainage Strategy report.
8. *Surface water drainage model to include the 1:100 year storm event plus 40CC.*  
In accordance with OCC's LLFA Local Standards and Guidance for Surface Water Drainage (Appendix G), the results previously appended to the Drainage Strategy report included up to and including 1 in 100yr+20% return periods, with a sensitivity check undertaken for the 1 in 100yr+40% event. This resulted in no flooding up to and including the 1 in 100yr+20% event, with

only minor flooding predicted at the northern extent of the western van storage area (<10m<sup>3</sup>) for the 1 in 100yr+40% return period. This would typically be temporarily stored on-site up to kerb level and would be conveyed to existing road gullies and drainage. Revised results for the new drainage arrangement (including filter drains) have been appended to the revised Drainage Strategy report.

9. *Pipe numbering to be added to the drainage plans which needs to reflect the drainage model.*  
Pipe numbering has been included on the new drawing 212088-C005 – Modelled Network Details and is provided in Appendix B.
10. *Pipe gradients to be shown on the surface water drainage drawing.*  
Pipe gradients of proposed drainage were previously included on drawing 212088-C002 – Proposed Drainage Layout. These have also been included on the new drawing 212088-C005 – Modelled Network Details for completeness and is provided in Appendix B.
11. *The surface water drainage plan do not show the ditch details and ditch outline which the existing and proposed surface water will be connecting to.*  
The extent of the existing ditch has now been added to all drawings for clarity.
12. *Ownership of the ditch needs to be confirmed and permission to connect the proposed surface water drainage.*  
The ditch has been confirmed as being within the Landlords demise and is the 'riparian' owner - Paloma I Propco Limited are the Landlord entity. The proposed drainage follows the existing drainage strategy on site with existing connections to the ditch being utilised and permission has been obtained from the Landlord to connect the proposed surface water drainage from the site.
13. *Capacity of the ditch needs to be confirmed in order to ensure additional proposed surface water network can connect without causing flooding issues.*  
Refer to previous email correspondence dated 7<sup>th</sup> February 2022 and 11<sup>th</sup> February 2022, which has been included in Appendix D for completeness. These responses included details on the incoming and outgoing pipe full capacities of the ditch (based on currently available level and diameter information), together with details of all known incoming pipe capacities to the existing ditch.

## Appendix A

### LLFA Detailed Comments

**Application no: 21/04157/F**

**Location:** Banbury 200, Southam Road, Banbury

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### **Lead Local Flood Authority**

#### **Recommendation:**

Objection

#### **Detailed comments:**

- For greenfield sites, existing greenfield runoff rates needs to be produced based on the site criteria . If brownfield sites, clearly state the existing impermeable area and calculate the rates of runoff from the site. If a piped drainage system already exists within the site, the existing capacity of these pipes will need to be estimated.
- Catchment area plan to be provided in relation to the Microdrainge outputs.
- Exceedance surface water flood plan to be provided to ensure surface water is kept away from structures.
- A detailed SuDS management plans to be provided alongside a maintenance plan.
- Demonstration of the surface water drainage strategy following the Suds treatment train before discharging to the outfall.
- Proposed development needs a water quality assessment in accordance with Section 4 and Section 26 of SuDS Manual.
- Proposed development must meet local standards, L19, “At least one surface feature should be deployed within the drainage system for water quality purposes, or more features for runoff which may contain higher levels of pollutants in accordance with the CIRIA SuDS Manual C753. Only if surface features are demonstrated as not viable, then approved proprietary engineered pollution control features such as vortex separators, serviceable/ replaceable filter screens, or pollution interceptors may be used”
- Surface water drainage model to include the 1:100 year storm event plus 40CC.

- Pipe numbering to be added to the drainage plans which needs to reflect the drainage model.
- Pipe gradients to be shown on the surface water drainage drawing.
- The surface water drainage plan do not show the ditch details and ditch outline which the existing and proposed surface water will be connecting to
- Ownership of the ditch needs to be confirmed and permission to connect the proposed surface water drainage.
- Capacity of the ditch needs to be confirmed in order to ensure additional proposed surface water network can connect without causing flooding issues.

**Officer's Name:** Kabier Salam

**Officer's Title:** LLFA Engineer

**Date:** 07 January 2022

Appendix B  
Drawings

LEGEND

DENOTES CONTRIBUTING  
CATCHMENT AREAS



MODELED NETWORK ANALYSIS  
SCALE: 1 : 500 @ A0

|     |          |    |                |
|-----|----------|----|----------------|
| PL2 | 23.02.22 | LL | PLANNING ISSUE |
| PL1 | 21.02.22 | LL | PLANNING ISSUE |
|     |          |    |                |

REVISIONS

CLIENT

LYSANDER

PROJECT TITLE

BANBURY 200  
SOUTHAM ROAD  
BANBURY

DRAWING TITLE

MODELED NETWORK  
DETAILS

eIRENG  
CONSULTING ENGINEERS

48a Patrick Street, Dun Laoghaire, Co.Dublin, Ireland.  
Tel: +353 1 6638957 Email: info@eireng.ie

DRAWN BY

L Lonergan 18-02-2022

ENG CHECK

M Allen 18-02-2022

APPROVED

E Deasy 18-02-2022

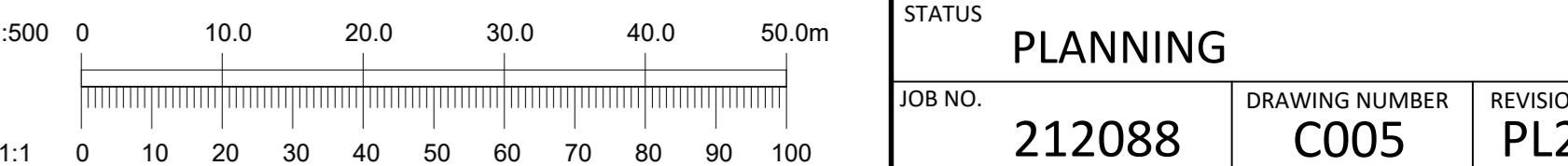
SCALE

1:500 SHEET A0

STATUS PLANNING

JOB NO. 212088 DRAWING NUMBER C005

REVISION PL2



Ordnance Survey information used under licence no. 100055189.



EXCEEDANCE PATHWAYS LAYOUT  
SCALE: 1: 500 @ A0

**eIRENG**  
CONSULTING ENGINEERS  
48a Patrick Street, Dun Laoghaire, Co.Dublin, Ireland.  
Tel: +353 1 6638957 Email: info@eireng.ie

DRAWN BY P Herangi DATE 09-08-2021

ENG CHECK M Allen DATE 09-08-2021

APPROVED E Deasy DATE 09-08-2021

SCALE 1:500 SHEET A0

STATUS PLANNING

JOB NO. 212088 DRAWING NUMBER C006

REVISION PL2

Ordnance Survey information used under licence no. 100055189.

1:1 0 10 20 30 40 50 60 70 80 90 100

LEGEND  
DENOTES EXCEDENCE  
PATHWAY FLOW DIRECTION

|     |          |    |                |
|-----|----------|----|----------------|
| PL2 | 23.02.22 | LL | PLANNING ISSUE |
| PL1 | 21.02.22 | LL | PLANNING ISSUE |
| REV | DATE     | BY | DESCRIPTION    |
|     |          |    | REVISIONS      |

|               |  |
|---------------|--|
| CLIENT        | LYSANDER                               |
| PROJECT TITLE | BANBURY 200<br>SOUTHAM ROAD<br>BANBURY |
| DRAWING TITLE | EXCEEDANCE PATHWAYS<br>LAYOUT          |

|           |           |                |            |
|-----------|-----------|----------------|------------|
| DRAWN BY  | P Herangi | DATE           | 09-08-2021 |
| ENG CHECK | M Allen   | DATE           | 09-08-2021 |
| APPROVED  | E Deasy   | DATE           | 09-08-2021 |
| SCALE     | 1:500     | SHEET          | A0         |
| STATUS    | PLANNING  |                |            |
| JOB NO.   | 212088    | DRAWING NUMBER | C006       |
| REVISION  | PL2       |                |            |

## Appendix C

### Simple Index Approach

| SUMMARY TABLE   |   |  | DESIGN CONDITIONS  |  |  |  |
|---|---|--|--|--|--|--|
|   |   | 1  | 2  | 3  | 4  |  |
| Land Use Type   | Non-residential car parking with frequent change (eg hospitals, retail) |  |  |  |  |  |
| Pollution Hazard Level                                    | Medium  |  |  |  |  |  |
| Pollution Hazard Indices                                  |   |  |  |  |  |  |
| TSS   | 0.7   |  |  |  |  |  |
| Metals  | 0.6   |  |  |  |  |  |
| Hydrocarbons  | 0.7   |  |  |  |  |  |
| SuDS components proposed                                  |   |  |  |  |  |  |
| Component 1   | SPEL Puraceptor   | Detailed assessment of performance of designed component in reducing inflow concentrations of each pollutant type required as evidence of adopted indices.<br>Enter indices approved by the environmental regulator in appropriate 'User Defined Indices' row below                            | SEPA only considers proprietary treatment systems as appropriate in exceptional circumstances where other types of SuDS component are not practicable. Proprietary treatment systems may also be considered appropriate for existing sites that are causing pollution where there is a requirement to retrofit treatment. WAT-RM-08 (SEPA, 2014) also provides a flow chart with a summary of checks on suitability of a proprietary system          | See Chapter 15 Proprietary treatment systems for approaches to demonstrate product performance. Note: a British Water/Environment Agency assessment Code of Practice is currently under development that will allow manufacturers to complete an agreed test protocol for systems intended to treat contaminated surface water runoff. Full details can be found at: <a href="http://www.britishwater.co.uk/Publications/codes-of-practise.aspx">http://www.britishwater.co.uk/Publications/codes-of-practise.aspx</a> . |  |  |
| Component 2   | None  |  |  |  |  |  |
| Component 3   | None  |  |  |  |  |  |
| SuDS Pollution Mitigation Indices                         |   |  |  |  |  |  |
| TSS   | 0.8   |  |  |  |  |  |
| Metals  | 0.7   |  |  |  |  |  |
| Hydrocarbons  | 0.9   |  |  |  |  |  |
| Groundwater protection type                               | SPEL Puraceptor   | Detailed assessment of performance of designed component in reducing inflow concentrations of each pollutant type required as evidence of adopted indices.<br>Enter indices approved by the environmental regulator in appropriate 'User Defined Indices' row below                            | All designs must include a minimum of 1 m unsaturated depth of subsoil or aquifer material between the infiltration surface and the maximum likely groundwater level.<br>Infiltration components should always be preceded by upstream component(s) that trap(s) silt, or designed specifically to retain sediment in a separate lined zone, easily accessible for maintenance, such that the sediment will not be re-suspended in subsequent events | SEPA only considers proprietary treatment systems as appropriate in exceptional circumstances where other types of SuDS component are not practicable. Proprietary treatment systems may also be considered appropriate for existing sites that are causing pollution where there is a requirement to retrofit treatment. WAT-RM-08 (SEPA, 2014) also provides a flow chart with a summary of checks on suitability of a proprietary system  | See Chapter 15 Proprietary treatment systems for approaches to demonstrate product performance. Note: a British Water/Environment Agency assessment Code of Practice is currently under development that will allow manufacturers to complete an agreed test protocol for systems intended to treat contaminated surface water runoff. Full details can be found at: <a href="http://www.britishwater.co.uk/Publications/codes-of-practise.aspx">http://www.britishwater.co.uk/Publications/codes-of-practise.aspx</a> . |  |
| Groundwater protection<br>Pollution Mitigation<br>Indices |   |  |  |  |  |  |
| TSS   | 99  |  |  |  |  |  |
| Metals  | 99  |  |  |  |  |  |
| Hydrocarbons  | 99  |  |  |  |  |  |
| Combined Pollution Mitigation<br>Indices                  |   |  |  |  |  |  |
| TSS   | >0.95   |  |  |  |  |  |
| Metals  | >0.95   |  |  |  |  |  |
| Hydrocarbons  | >0.95   |  |  |  |  |  |
| Acceptability of Pollution Mitigation                     |   |  |  |  |  |  |
| TSS   |   |  |  |  |  |  |
| Metals  |   |  |  |  |  |  |
| Hydrocarbons  |   |  |  |  |  |  |
|   | Sufficient  |  |  |  |  |  |
|   | Sufficient  |  |  |  |  |  |
|   | Sufficient  |  |  |  |  |  |
|   |   | Note: In order to meet both Water Quality criteria set out in the SuDS Manual (Chapter 4), Interception should be delivered for all impermeable areas wherever possible. Interception delivery and treatment may be met by the same components, but Interception requires separate evaluation. |  | Reference to local planning documents should also be made to identify any additional protection required for sites due to habitat conservation (see Chapter 7 The SuDS design process). The implications of developments on or within close proximity to an area with an environmental designation, such as a Site of Special Scientific Interest (SSSI), should be considered via consultation with relevant conservation bodies such as Natural England  |  |  |

## Appendix D

### LLFA Correspondence

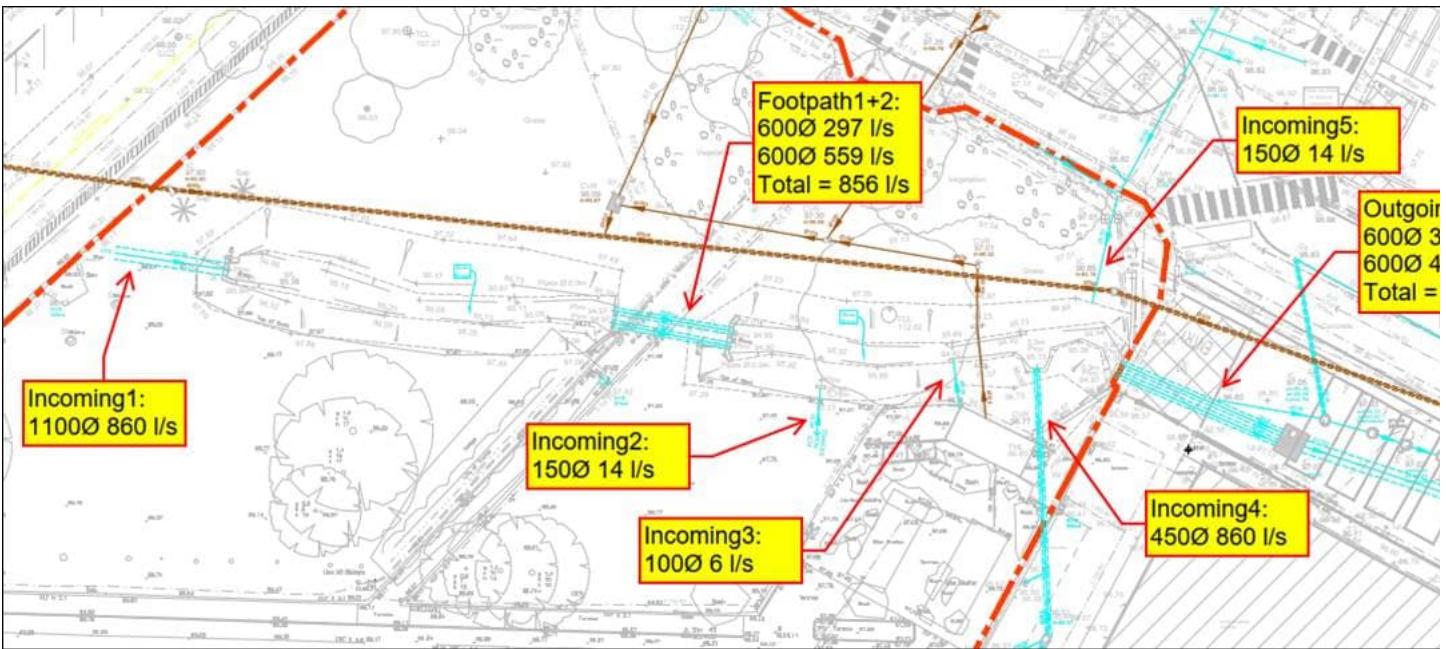
From: Michael Allen  
Sent: 11 February 2022 13:11  
To: 'Salam, Kabier - Oxfordshire County Council'  
Cc: Charlie Merry; Eoghan Deasy; Jeremy Lamb; Kerry Bidwell; 'Sarah.Greenall@Cherwell-DC.gov.uk'  
Subject: RE: 212088 Banbury 200 - OCC LLFA Responses (Ref: 21/04157/F)  
Attachments: 212088 C-001-PL7.pdf; IMG\_1555.JPG; Simple Index Approach Tool - Banbury 200.pdf; Thames Water Record Maps.pdf

Good afternoon Kabier

Thank you for your prompt response. Please find our comments as follows:

Firstly, we have determined the pipe full capacities of all known incoming and outgoing pipes at the ditch, based on currently available level and diameter information. The results are summarised as follows together with accompanying extract showing locations:

| Pipe Reference | Diameter (mm) | Gradient (1/x) | Pipe Full Capacity (l/s) | Total Pipe Full Capacity (l/s) | Comments   |
|----------------|---------------|----------------|--------------------------|--------------------------------|--|
| Incoming1      | 1100          | 1500           | 860                      | 860                            | Incoming Thames Water pipe to ditch. This has been surveyed previously as Thames Water record maps show the pipe diameter changes somewhere to photo of ditch which shows a 1100mm pipe. |
| Footpath1      | 600           | 212            | 297                      | 856                            | Twin pipes under existing footpath   |
| Footpath2      | 600           | 151            | 559                      |                                |  |
| Incoming2      | 150           | 150            | 14                       | 0                              | Incoming pipe to ditch previously ab   |
| Incoming3      | 100           | 100            | 6                        | 6                              | Incoming pipe to ditch from existing   |
| Incoming4      | 450           | 200            | 228                      | 228                            | Incoming pipe to ditch from our site   |
| Incoming5      | 150           | 150            | 14                       | 14                             | Incoming pipe to ditch from norther  |
| Outgoing1      | 600           | 306            | 392                      | 855                            | Twin outgoing pipes from ditch   |
| Outgoing2      | 600           | 220            | 463                      |                                |  |
| Outgoing3      | 1100          | 68             | 4088                     | 4088                           | Next pipe downstream from ditch  |
| Outgoing4      | 1275          | 76             | 5688                     | 5688                           | First Thames Water pipe downstream   |



The ditch has also been assessed and it seems reasonable it has been designed to attenuate the incoming flows prior to discharge from the site. We have provided a revised existing site plan with sections through the ditch which shows there is a significant element of local storage. With the reduction in flows into the ditch being reduced by as much as 95%, there will be greater storage availability prior to discharge from the site. The outgoing flows from the ditch are then conveyed by a culverted system beyond the site boundary for several kilometres downstream before it discharges to the River Cherwell.

With respect to your second query on loads, the use of the existing site is a car park whereas the proposed usage will be for van storage. Both these land uses have the same pollution hazard index classification of 'Medium', therefore there will be no perceived increase in pollutant loads from the proposed development. The proposed regraded van storage area will be provided with a large interceptor to treat all surface water flows prior to discharge to the on-site attenuation tank and then flow control restricting flows to the ditch. The pollution mitigation indices for this proprietary treatment are above the pollution hazard indices thus providing sufficient treatment. We have undertaken a simple index approach to demonstrate water quality compliance in accordance with the SuDS Manual and is attached for reference.

With reference to the 'ordinary watercourse', this was taken from the Flood Risk Assessment submitted with this planning application. From further inspection, the incoming flows to the ditch are from a catchment area to the west of the site which is under Thames Water ownership from review of their record maps (attached for reference). The outgoing pipe then conveys to a 1275mm diameter pipe beyond the east of the site along Southam Road, which then adjoins a pipe that then continues to be under Thames Water ownership and increases in pipe diameter further downstream. The 1275mm diameter pipe has been assessed as having a pipe full capacity of 5688 l/s (based on Thames Water records).

We trust that the above responses address your queries and earlier concerns.

Regards

Michael Allen  
+44 7761 379 159



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From: Salam, Kabier - Oxfordshire County Council <[Kabier.Salam@Oxfordshire.gov.uk](mailto:Kabier.Salam@Oxfordshire.gov.uk)>  
Sent: 08 February 2022 09:56  
To: Michael Allen <[mallen@eireng.ie](mailto:mallen@eireng.ie)>  
Cc: Charlie Merry <[charlie.merry@dwdlip.com](mailto:charlie.merry@dwdlip.com)>; Eoghan Deasy <[edeasy@eireng.ie](mailto:edeasy@eireng.ie)>; Jeremy Lamb <[jlamb@eireng.ie](mailto:jlamb@eireng.ie)>  
Subject: RE: 212088 Banbury 200 - OCC LLFA Responses (Ref: 21/04157/F)

Morning Michael,

I would like to understand what the existing watercourse currently is taking (Topo shows incoming pipes), and how the additional surface water loads impacts the watercourse. I appreciate the fact the surface water discharge is reduced significantly, however as there is still an increase in surface water loads compared to its previous state it can pose flooding risk.

If discharge is to an ordinary watercourse, evidence will need to be provided to ensure that the system can accept the proposed flows to an acceptable downstream point without increasing risk to others.

Kind Regards  
Kabier Salam  
LLFA Planning Engineer  
Oxfordshire County Council | Environment and Place | Growth and Place  
Oxfordshire County Council

---

From: Michael Allen <[mallen@eireng.ie](mailto:mallen@eireng.ie)>  
Sent: 07 February 2022 18:56  
To: Salam, Kabier - Oxfordshire County Council <[Kabier.Salam@Oxfordshire.gov.uk](mailto:Kabier.Salam@Oxfordshire.gov.uk)>  
Cc: Charlie Merry <[charlie.merry@dwdlip.com](mailto:charlie.merry@dwdlip.com)>; Eoghan Deasy <[edeasy@eireng.ie](mailto:edeasy@eireng.ie)>; Jeremy Lamb <[jlamb@eireng.ie](mailto:jlamb@eireng.ie)>  
Subject: 212088 Banbury 200 - OCC LLFA Responses (Ref: 21/04157/F)

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Good afternoon Kabier

We have prepared responses to the three points raised specific to the existing ditch from OCC's LLFA detailed comments for Reference 21/04157/F. However, we would like to clarify the last point of your response with respect to confirming the capacity of the existing ditch ahead of a full response to the other points:

- The surface water drainage plan do not show the ditch details and ditch outline which the existing and proposed surface water will be connecting to.  
The extent of the existing ditch has now been added to the drawings for clarity.
- Ownership of the ditch needs to be confirmed and permission to connect the proposed surface water drainage.  
The ditch has been confirmed as being within the Landlords demise and as an 'ordinary watercourse' the Landlord is the 'riparian' owner - Paloma I Propco Limited are the Landlord entity. The drainage follows the existing drainage strategy on site with existing connections to the ditch being utilised

and permission has been obtained from the Landlord to connect the proposed surface water drainage.

- Capacity of the ditch needs to be confirmed in order to ensure additional proposed surface water network can connect without causing flooding issues.

The extent of the hardstanding for the existing site will essentially be unchanged for most of the proposed site, with the exception of the new sprinkler tank area and the northern extent of the existing western car park. These additional hardstanding areas will be served by new filter drains and flow controls limited to greenfield runoff rates, prior to discharge to the existing ditch via the existing main drainage.

The existing surface water main drainage for the eastern part of the site (around existing warehouse) will be retained as existing, but with new slot drains to intercept runoff from the existing regraded eastern car park, thus no increase in existing hardstanding.

New proposed drainage will be provided for the regraded western car park. Flows will be conveyed to a new interceptor prior to discharge to a new attenuation tank. The flows from the existing drainage in this area is currently unrestricted, whereas the proposed flows to the existing drainage will be restricted to greenfield runoff rates under this development.

Table below summarises the expected flow reductions for the various return periods for the western car park, which is the main area to be provided with new drainage:

| Return Period | Existing       |             | Proposed       |             | Betterment    |           |
|---------------|----------------|-------------|----------------|-------------|---------------|-----------|
|               | Imp. Area (ha) | Flows (l/s) | Imp. Area (ha) | Flows (l/s) | Imp. Area (%) | Flows (%) |
| 1 in 2yr      | 1.088          | 141.5       | 0.920          | 7.3         | 18            | 95        |
| 1 in 30yr     |                | 207.8       |                | 7.3         |               | 96        |
| 1 in 100yr    |                | 211.1       |                | 7.3         |               | 97        |

The capacity of the existing ditch will involve additional prohibitive survey costs, particularly considering that the proposed flows from the development to the existing ditch will be significantly reduced, thus providing a significant betterment with respect to flood risk to the existing situation. With consideration of the above, please can you confirm that this approach is acceptable.

Regards

Michael Allen  
+44 7761 379 159



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