RESPONSE to Q2.5.3.4b

In all honesty and quite simply No we cannot say our family life would be effected by this. In the context of wider issues, No, family life for us is not effected by loss of land. Yes it is frustrating and upsetting to lose outdoor space, to have a road closer to the house we had pinned as our “rural” forever home but it wouldn’t effect our lives.

Whilst there is a minority so willing to scream “mental illness” rather too quickly as a means to avoid unpleasant experiences we believe to do so cheapens the incredibly important debate of mental health.

Having said that and putting land loss as the end game there is an argument that the process we have been through effects mental health and family life. We understand there is currently a push in the industry to recognise the stress and strain this process puts on people. We believe it is appropriate that thought is given to this in the future. That moving forward there is more thought on how the actions of the Applicant effects people’s lives and yes their mental health.

We think often of the previous owner of Dove Farm who would not have had the knowledge of companies like WSP that can present alternative designs in an attempt not to lose as much land. We think how the situation we have found ourselves in would effect our parents or grandparents or those who don’t have the financial means to employ incredibly articulate experts to make written representations that deal with policy not personal feelings!

We are not attacking personal conduct but in our experience there has been an arrogance, that the Applicant is above scrutiny. In our case it has appeared that they don’t have to abide by obligations but just look as if they have! We have endured a hostile, attacking environment when all we wanted was to explore an alternative, to indulge the possibility that there was another way to deliver the scheme which would effect us less. When we sought clarity because the reasons were flimsy and unconvincing we were met with silence or a factually inaccurate response. We were not disputing the land is needed for this scheme but not as much of it as the current design takes.

The Examination process does call the Applicant to account but it is what happens to Interested Parties before you get to this stage. It is all consuming, frightening and frustrating the years before the Examination process begins.

With regard to the loss of land as development opportunity there is the likelihood this would have delivered a higher number of houses than the LPA stipulates as policy, as we have demonstrated in a recent development on the other side of the Lane in Wyboston which was deemed as a site of rural exception. We have a track record of delivering schemes that deliver to the wider community.

RESPONSE FOR EXAMINER Q2.5.3.4. c

Taking into account the response of the Applicant so far we feel it is necessary to include some background information which will explain how we have gone from accepting the scheme and it's design entirely to objecting to the amount of land being taken from us.
We note from the Statement of reasons (APP030) that the applicant has provided a justification of why our land is required to deliver the scheme however we remain unconvinced by the argument put forth for the amount of land that is needed when alternatives could have been adopted that required not only less land from us but also other land owners.
In 2019 we were presented with a design that was logical, fair and transparent. The 2019 design utilised a paddock of land that sits to the south of our land. The road went through our land and continued through this paddock. A google earth photograph attached as Paddock A will demonstrate it's location and how it could be seen as the logical design if minimal land acquisition is the objective.
We have been informed by the applicant that this 2019 design was changed to the current proposal in response to the objections of Nags head lane residents.
This meant the Paddock (Paddock A) which was the applicant's preferred route suddenly became off limits. The avoidance of this paddock resulted in more of our land being taken as the road in the current proposal swept across our entire boundary and into a paddock adjacent to paddock A.
At the public consultation we were told that changes couldn't be made to accommodate us, that our land was needed to appease local objections but that changes could be secured by Nags Head Lane residents. Whilst our preference would have been a revert to the 2019 proposal such was the David/Goliath position we found ourselves in we realistically knew our fears over unfair land acquisition, most prominently that more land is being taken from us than was necessary to deliver the scheme, would be drowned by the Nags Head Lane residents, none of whom were effected by permanent land acquisition in either design.
Combined with this the very first response before any reports, calculations or data came the frank admission from a project manager that they didn't want to change the alignment.
We then made the decision to employ an expert in the field of road design to present some minimal changes that would make the design less unacceptable!
This proposal was delivered to the team at a site meeting on 17/07/2019 and was well received.
Please note this is NOT the proposal that the Applicants responded to in REP3-008 points a-h.
We attach this proposal for MINIMAL changes as WSP1 and WSP1 technical note for your reference and will refer to it in this document as WSP1 proposal to avoid confusion. To clarify 2 alternatives were provided by WSP and paid for by us. One aforementioned WSP 1 and the other contained within Anthony's WSP report. We note the Applicant's response to Anthony's report in points a-h, but it is the 2019 design changes and Wsp's first proposal (WSP1) that we are seeking clarification.
The Applicant's justification thus far for these changes from the 2019 to the current design is what we remain unconvinced by. Additionally the refusal to accommodate any aspect of the WSP1 proposal
The Applicant has given the following reasons for both the failure to adopt WSP1 and the changes from the 2019 design in favour of the current one:

- Safety
- Light Pollution
- Listed Buildings
- Preservation of Habitat/ hedgerow removal.
- Nags Head Lane residents objections
- Keep Land Owners affected by permanent land take to a minimum/cost
- WSP1 proposal required more land take.

We remain unconvinced for the following reasons:

Safety:
The safety aspects of the double bend could still have been achieved without having to avoid Paddock A. Furthermore we have been told by the applicant that “safety is paramount” So we cannot understand then that a proposal was put to public consultation that was unsafe? Surely not? Are we to be believe that the design team, an accredited team of engineers supposed experts in their field designed a proposal and did not take safety into account? Was it really Nags Head Lane residents who pointed this out?
We seek clarification that the safety aspects of a double bend could not be achieved whilst still utilising Paddock A? In addition a clarification that the WSP1 proposal was not as safe as the current design.

Light Pollution:
We have tried unsuccessfully for years to obtain the report that informed this decision. We felt a report which supposedly drove the decision not to use Paddock A would justify the current design. We felt the report could explain to us how houses that front the opposite direction and are so adequately screened could be impacted by light pollution so extensively that it resulted in a redesigned alignment. Incredulously despite our first request on 17/07/2019 and it being promised plus repeated email requests the Applicant has finally admitted on 06/10/2021 that a light and impact assessment was never conducted!
Firstly why repeatedly promise a report could be provided to justify the design when surely the Applicant knew it never existed. Secondly how can a road be moved to mitigate light pollution without such a report which would firstly investigate the light pollution and if present how the later design mitigates?
Finally in understanding how the Applicant can then justify ignoring the WSP1 proposal in regards to light pollution we would need a response that details how the 2019 caused light pollution in comparison to the current design and secondly how the WSP1 proposal caused more light pollution (if indeed any at all) in comparison to the current design.

Listed Buildings:

Again we remain unconvinced that the 2019 design harmed the setting of a listed building and would again ask why a design was presented to the public that supposedly harmed the setting of a listed building? Surely the Applicant was aware of the listed building on Nags Head Lane? If they were not then perhaps this is because it is so extensively screened and set back it was not possible to see?! We do not accept the 2019 proposal would harm the setting of a listed building. Again we have sought clarity from the Applicant regarding this by email back in 2020 but have received no response.
In addition to our understanding the supposed harm caused by the 2019 proposal we would seek separate clarity in how the WSP1 proposal would harm the setting of a listed building. To date the applicant has not provided sufficient explanation as to how a balancing/drainage pond could harm a screened listed building or indeed how a suggested footpath which was almost 100m away could harm the setting of the said listed building?
Furthermore REP3-008 refers to the Scheduled Monument. We would seek explanation as to how the Applicant believes that WSP1 proposal would harm or effect this monument.

Preservation of Habitat/ hedgerow removal.

Again something we are struggling to comprehend. The WSP1 proposal has according to the applicant been dismissed because it would require the removal of part of a hedgerow. It appears to us somewhat hypocritical to change their own 2019 proposal which did not require the removal of a

hedgerow and replace it with the current scheme that requires the removal of in excess of 30m of hedgerow to avoid Paddock A! Surely if we are to accept that the Applicant's objective was habitat preservation and retention of hedgerows the 2019 proposal would be the logical choice since it did not require ANY hedgerows to be removed and additionally would utilise Paddock A which is a manicured Paddock where habitat has been destroyed by horses! The current proposal in comparison requires the removal of hedgerow and the use of the neighbouring paddock which affords the best opportunity at habitat preservation. This is our point, it is simply not acceptable to say the scheme was changed to preserve habitat without acknowledging this. If the Applicant wants to preserve habitat then revert to the 2019 proposal. If not the Applicant should acknowledge the hypocrisy of their current choice! Furthermore with further investigation the WSP1 proposal could retain additional hedgerow to the west and thus would afford a more sympathetic approach to habitat preservation.

Nags Head Lane residents objections

We welcome the Applicant's response to Q2.5.3.4.f. To date we have not seen any evidence to suggest the objections of the Nags Head Lane residents warrant the change in alignment or justify taking more of our land. We understand thus far that the road was moved further into our land from the 2019 proposal as the surrounding residents felt like they would become an Island?! How does the current alignment alleviate that concern?
We also understand there was a concern that "the headlights would reflect off the water of the ponds" into a residents lounge? Again here we do not find this a valid objection that justifies the scheme changes from 2019 to the current proposal. Would it not be prudent to alleviate this concern with a simply explanation that the ponds very rarely hold water and therefore would unlikely reflect headlights?
Other objections we have been privy to is the argument that length of ownership should dictate who gets their objections upheld. We are not aware this would be part of the process but would welcome the Applicant's expertise!

Keep Land Owners affected by permanent land take to a minimum/cost

It has been explained the WSP1 proposal was not used as it would "introduce another landowner effected by permanent land take."
The Applicant has said it is "standard HE practice to keep land owners to a minimum". Is the Applicant therefore willing to acknowledge that the changes made from the 2019 to the current proposal did not follow standard practice? The 2019 proposal required 2 owners, the 2020 3 until a scheme wide landscape review removed one. Again the hypocrisy that when it suits, when it avoids Paddock A the Applicant will abandon "standard practice" but would not do so to entertain the WSP1 proposal in any way! Additionally the scheme wide landscape review does not, we believe, justify ignorance of the hypocrisies and inaccuracies highlighted.
As far back as 25/06/2019 we highlighted in an email that their chosen design did not adhere to standard practice but this issue has never been afforded a response.
At REP3-008 the Applicant refers to "affordability, value for money…" We would seek an explanation of the cost implications of the 2019 proposal and the current and also the WSP1 versus the current. Our belief that the 2019 was the cheaper option!

WSP1 proposal required more land take.

We will present in more detail in our response to Q.2.5.3.4d but would briefly add. The WSP1 proposal in both the technical note(WSP1 Technical Note) and Anthony's report(Anthony WSP Report) stresses the size of the ponds should not be relied upon as the information was supplied in the incorrect format for them to be calculated accurately. It is stated very clearly "sizing of the

ponds could be reduced if further design detail was provided by the Applicant." We battled for years to get the calculations needed to formally address this issue. Constant emails requesting it were either ignored or contained responses of We'll get it to you next week only then to be let down. After literally years of promises came the admission they didn't have them! Why promise information that was not available? Why delay a technical meeting for such information the Applicant never had any intention of supplying? Why misrepresent this issue in REP1-021 as us postponing a meeting "until their consulting engineers have spoken with them."?!
In a recent position statement meeting the Applicant has clarified that what they actually meant in the numerous emails promising the said information, that we misunderstood these promises and what they really meant was "all the information is on our website" you should find it yourselves!
We do not accept that the WSP1 proposal would take more land. In the technical note the applicant supplied in response to the WSP1 proposal the Applicant provides a table (Anthony's report Appendix A 1.1.15 Table 1 Areas of land acquisition) that is therefore misleading when the author of the WSP1 proposal stated from the outset that the detail of the ponds should not be relied on to determine land take.
However in the interests of transparency we would welcome additions to that table of land take figures to include the required land take of WSP1 with the correct size drainage ponds and the increase in land take from the 2019 proposal with and without the landscape review in comparison to the current scheme. We believe this demonstrates an example of the common theme of hypocrisy!
In responses so far the Applicant has said they would have used Paddock A had it been required. Again this summarises our point: Paddock A is required if the Applicant is to abide by it's obligation of "minimal" land take.

Taking into account the responses so far to the above we still remain unconvinced that the amount of land take from us is anything other than excessive. In addition the Applicant has failed to respond to any of the questions/queries/responses raised in Anthony's report. These were numerous and shown in italics for reference. (Anthony's WSP report page 2: "specific questions we wish to raise are shown in italics for ease of reference.") Additionally Anthony's report (Anthony WSP Report page 5) which clarifies that WSP "has provided responses to the main finds of the HE tech note (Anthony's WSP report: Appendix A) but we would point out the Applicant has not responded to this in REP3-008 or previously. The Applicant has merely adopted a cut and paste approach without backing up their assertions with evidence.
Furthermore there is no response to the drainage alternative provided in Anthony's report or any admission that there is no Light Pollution report.
The Applicant has provided the justification for the need for the drainage ponds REP3-008 i/ii/iii/iv but has not justified their location. They have failed to provide a response that details why their location is not up for negotiation. Yes they have provided an account of when they were added but not that alternative drainage has been sufficiently explored with detail so as to satisfy the obligation to keep land take to a minimum.
In relation to points i-1v (REP3-008) page 223, the Applicant admits these ponds have been "designed to fit within the land to the east rather than take additional land to the west." Surely a road should be designed first and deal with constraints rather than plot it where Nags Head Lane residents want it then design the ponds retrospectively to fit a design that silenced objectors. Also here we see a revert to the "keeping land owners to a minimum", as previously requested we are seeking a greater understanding of how keeping Land owners to a minimum sits within the matrix of cost, safety, and land take. This admission of "designing to fit within" our land summarises our objection perfectly: The scheme should have been designed with minimal land take not "designed to fit" into our land because we did not object to the 2019 draft proposal, because we supported the scheme and acknowledged the safety benefits of closing dangerous access to the A1 northbound.
Equally as concerning is that the responses provided at both REP1-021 and REP3-008 are factually incorrect. We have highlighted these inaccuracies to the Applicant in a recent position statement meeting and also in a detailed emailed on 11/10/2021 and a chase up of 25/10/2021 when no response was received. We expect the Applicant to acknowledge the corrections and evidence and in the interests of presenting an honest and accurate response amend their current responses in both REP3-008 and REP1 in light of this. Furthermore the Applicant has been made

aware of their inaccuracies. Emails and photos have been sent to the Applicant to demonstrate they are incorrect to suggest forms were not returned but AGAIN no response has been given to these emails.
We continue to work with the Applicant to produce a statement that is not only factually accurate but one which provides a more honest account of the treatment we have received during this process to date.

Response for Examiner to Q2.5.3.4 d.

We note the applicant's response to RR030 the proposal contained with Anthonys WSP report and their REP3-008 points a-h. We acknowledge this proposal suggested drastic changes and we thank the applicant for such a detailed response.
However we would draw to the attention of the Examiner that a previous proposal referred to in our responses as WSP1 and attached as WSP1, that was presented to the Applicant in July 2019 has not been afforded such a detailed response and it this this proposal that we refer to in our objections. It is this proposal that we remain unconvinced by and the Applicant's refusal to adopt or even consider any aspect of. It seems to us that if refutal is simple then the Applicant will respond in detail but if they can't justify we are met with silence or given a string of reasons that are not evidence based or supported by reports or data. Most recently when asked to justify, the Applicant's response was "We stand by our design!" We found this response to fall short of being evidence based.

We attach this proposal as WSP1 and accompanying technical note as WSP1 technical note.

For Clarity we provide the background detail in our response to Q.2.5.3.4.c

The WSP1 proposal would not we believe effect properties on The Lane, Chawston Lane or to any significant degree Nags Head Lane.

We refer to the WSP1 technical note and Anthony's WSP report which both clearly state the ponds are not to be relied upon in their current form.

For clarity:

Anthony's report states:

. Whilst the alternative design may require more land than the proposed layout, according to HE's calculations this would equate to 0.0386 hectares of additional land which is considered to be a modest amount in the overall context of the Scheme. Furthermore, due to the drainage design issues described on pages 3 & 4 of this note, subject to further design iteration there would appear to be an opportunity to reduce the land requirement of the alternative design such that the overall land requirement of each design could be broadly similar.

. ii) These comments are largely due to drafting issues when preparing the alternative design as it was only possible to use pdf versions of the Scheme drawing to generate the alternative design. They could be satisfactorily addressed through further design iteration and through the availability of drawings and topographical information in AutoCAD format.

This demonstrates that whilst currently the proposal may require marginally more land, if the calculations for drainage were available then there would be an "opportunity to reduce land requirement."

Thus confirming the Applicant's reasons for refusal to adopt minimal changes could be "satisfactorily addressed" through further design and availability of drawings.

In unison with this WSP1 Technical note (WSP1 Technical note) acknowledges that:"…the accuracy of measurements taken cannot be guaranteed as the applicant provided the drawings in PDF format…"

We would draw to your attention the table of land take from the Applicant's technical note which can be found in Anthony Wsp report, Appendix A 1.1.15 Table 1 Areas Of Land Acquisition.

We find the nominal amount could be addressed if further design detail was provided by the applicant. Despite being promised for literally years the Applicant has now clarified their position on this detail that we should seek to find it ourselves. We note in the REP3-008 responses that other interested parties are being provided with requested information and find it frustrating that we are being told despite promises spanning 2 years that the applicant won't provide us with the detail needed here. There has also been the suggestion that this detail is not yet available. This is disappointing as we maintain our view that once available this would clearly demonstrate the WSP1 proposal would not mean increased land acquisition but would indeed provide reduced land take and thus provide an opportunity to (REP3-008) "avoid unnecessary land take"

To conclude we feel the Applicant should not consider that the land included in the draft DCO to be the "minimum land take" required when an alternative is being dismissed for unsubstantiated reasons without the detail needed to ascertain land take. By their own admission the "ponds could be located on either side…" To this end we have approached the Applicant for meetings to discuss this in detail and also present areas where we as the landowner could compromise further to allow the Applicant to deliver this scheme BUT importantly deliver it with their promise of minimal land take.

TECHNICAL NOTE

(Doc Ref: 1368-WSP-00-XX-RP-CV-0002)

DATE:	09 June 2021	**CONFIDENTIALITY:**	Restricted
SUBJECT:	Alternative highway and drainage options for Roxton Road link (north)		
PROJECT:	70061368 – Dove House Farm, Wyboston	**AUTHOR:**	Anthony Groom / Joe Leslie
CHECKED:	Livio Martelli	**APPROVED:**	Livio Martelli

INTRODUCTION

This technical note has been prepared to assist our clients, Duncan & Maxine Buchanan, of Dove House Farm, The Lane, Wyboston, with making a formal representation to the Planning Inspectorate (PINS) in relation to the following elements of Highways England's A428 Black Cat to Caxton Gibbet proposed highway improvement scheme (the Scheme) that would directly impact on their property:

- Roxton Road link (north)
- Two attenuation basins on either side of the proposed Nags Head Lane link
- Two flood compensation areas on either side of Roxton Road link (north)

JULY 2019 REVIEW & ALTERNATIVE DESIGN

In July 2019, WSP provided an outline engineering assessment of the proposed Roxton Road link (north) that also included an alternative design proposal. Highways England (HE) provided a response to this alternative design proposal in September 2020 (see Technical Note ref HE551495-ACM-GEN-GEN_ZN1_SR_Z_ZZ-TN-CH-0001 in Appendix A) with the following main findings:

- The Scheme design would require less land than the alternative design;
- Comments regarding the alignment of the horizontal radii forming the double bend;
- The alternative design moves the road closer to existing residential properties; and
- The alternative design requires the removal of at least 25m of existing hedge.

Our response to these findings is summarised below, in order of the above bullet points:

i) Whilst the alternative design may require more land than the proposed layout, according to HE's calculations this would equate to 0.0386 hectares of additional land which is considered to be a modest amount in the overall context of the Scheme. Furthermore, due to the drainage design issues described on pages 3 & 4 of this note, subject to further design iteration there would appear to be an opportunity to reduce the land requirement of the alternative design such that the overall land requirement of each design could be broadly similar.

ii) These comments are largely due to drafting issues when preparing the alternative design as it was only possible to use pdf versions of the Scheme drawing to generate the alternative design. They could be satisfactorily addressed through further design iteration and through the availability of drawings and topographical information in AutoCAD format.

iii) As the extent and amount by which the link road (alternative design) is closer to residential properties is localised, this is not considered to be a significant issue and appropriate noise mitigation measures could be provided if necessary.

iv) Similar to iii) above, the nature of this issue is not considered to be significant and could be addressed through localised landscape mitigation works.

JUNE 2021 FURTHER REVIEW

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 require that the Environmental Statement contains a description of the reasonable alternatives studied by the applicant and describes the main reasons for the options chosen taking into account the effects of the development on the environment. With this in mind, and having reviewed HE's Assessment of Alternatives (Application document reference TR010044/APP/6.1), the principal matters regarding the Scheme we wish to draw to the attention of PINS as part of this further review are summarised below (specific questions we wish to raise are shown in italics for ease of reference).

A. Lack of alternative options/corridors for Roxton Road Link

It is unclear what alternative alignments for the proposed Roxton Road link HE has investigated and why it considers that the proposed alignment is the most appropriate.

We are aware that HE undertook a consultation event in December 2018 specifically for the Roxton Road link road, where it only proposed a single route corridor for the proposed link road. We note that the proposed Roxton Road link road alignment essentially follows this single route corridor. We also note that alternative routes (Orange, Purple & Pink) for the proposed dual carriageway between the Black Cat and Caxton Gibbet junctions have been investigated, however, it is unclear why a similar level of assessment has not been undertaken with respect to the Roxton Road link. *Can HE please clarify the optioneering process it has undertaken in selecting the route corridor for the Roxton Road link and how this satisfies the above EIA Regulations?*

Appendix B contains an example of a concept design for an alternative Roxton Road link layout. It should be noted that this concept design assumes that, instead of using the proposed Roxton Road link (south), traffic would use the existing Roxton Road between Chawston Lane and the proposed Roxton Road bridge over the realigned A421. *Would HE consider an alternative design for the Roxton road link, such as the one illustrated in Appendix B? If not, can HE please provide clear reasons that support such a decision?*

TECHNICAL NOTE

(Doc Ref: 1368-WSP-00-XX-RP-CV-0002)

DATE:	09 June 2021	**CONFIDENTIALITY:**	Restricted
SUBJECT:	Alternative highway and drainage options for Roxton Road link (north)		
PROJECT:	70061368 – Dove House Farm, Wyboston	**AUTHOR:**	Anthony Groom / Joe Leslie
CHECKED:	Livio Martelli	**APPROVED:**	Livio Martelli

B. Drainage proposals

In terms of proposed drainage catchments, the Drainage Strategy (Application document ref. TR010044/APP/6.3) and Drainage Engineering Plan HE551495-ACM-LSI-ZN1_SW_Z_ZZ-DR-DC-0502 indicates that Roxton Road link is split into two catchments, as follows:

- Roxton Road link (north) Catchment 1 (covering the extents of the link road between South Brook and Begwary Brook); and
- Roxton Road link (north) Catchment 2. (covering the proposed link road north of Begwary Brook)

Catchment 1 is proposed to discharge to the Begwary Brook via a flow control and the two un-numbered ponds either side of the proposed Nags Head Lane link, however it is assumed based on required volumes the southern pond is Pond 1 and the northerly pond is Pond 2.

Catchment 2 is proposed to discharge to the Begwary Brook via a flow control with required attenuation volumes fulfilled by oversized pipes.

The location of the two ponds within the catchment would appear to be appropriate based on the Roxton Link Road (North) - Work No. 29a long-section found on plan HE551495-ACM-LSI-ZN1_SW_Z_ZZ-DR-DC-2418, as they are located at a low point of the proposed road catchment. However, on examination of the long-section, Roxton Road Link (South) – Work No.18 on plan HE551495-ACM-LSI-ZN1_SW_Z_ZZ-DR-DC-2417, a further sag/low point at approximate chainage 990m is noted which has prompted us to investigate an alternative outline drainage design (see plan at Appendix C). The main features of this alternative design would involve removing the impermeable area south of Chawston Lane (shaded red on Appendix C plan) from the current catchment 1 and providing an additional pond west of Roxton Road link (south), adjacent to the above low point and within the current order limits, to attenuate flows from the additional catchment area before discharging into South Brook. The size of this additional pond has been calculated as follows:

i) South of Chawston Road the catchment comprises approx. 0.28ha of impermeable area. Based on a source control storage estimate utilising FSR data in Microdrainage and an assumed discharge rate of approx. 0.6 lites/sec (from the HR Wallingford Greenfield estimation tool), a storage requirement of 220m3 would be required in a 1 in 100 + 40% climate change allowance storm event.

ii) At a depth of 1.5m (including a 300mm freeboard) and 1 in 3 side slopes a pond of top area of 335m2 would appear to be sufficient for this additional pond.

iii) Referring to the Microdrainage output in Appendix D, the calculations undertaken are considered to be a conservative approach and the sizing could be reduced if further design detail was provided by HE.

Can HE please clarify why an alternative drainage design, as illustrated on the plan included in Appendix C, has not been considered and why their proposed drainage design for Roxton Road link (north) is the most appropriate?

It is anticipated that this alternative design would enable the size and associated land-take of Ponds 1 & 2 to be reduced and could enable the proposed alignment of Roxton Road link (north) to be amended such that the impact on our client's land would be reduced and land-take from other landowners identified in the HE Technical Note in Appendix A could be reduced.

Furthermore, it is also not clear from the drainage strategy report which rainfall data has been used for the sizing of Ponds 1 & 2 or whether they are based on greenfield discharge limits or 5 litres/sec to prevent blockage as stated (or if this is a recommendation for future work). *Can HE please clarify the position in this regard so that further investigation of the size of Ponds 1 & 2 can be undertaken?*

C. Flood compensation areas

The Flood Risk Assessment (FRA), Application document ref. TR010044/APP/6.3, details flood risk from different sources and states that flood compensatory storage is required to offset new permanent construction within identified floodplain.

Plan HE551495-ACM-LSI-ZN1_SW_Z_ZZ-DR-DC-2302 (WORKS PLAN REGULATION 5(2)(j) Sheet 2) shows flood compensation areas adjacent to Begwary Brook, directly east and west of the proposed Roxton Road link (north). It is assumed this is to compensate for the loss of flood plain caused by the link road, as this is not detailed within the FRA. Assuming this is the case, *can HE please confirm whether compensatory storage has been considered further upstream, as an alternative?* This would present an opportunity to relocate the proposed storage (Work No's 34 & 35) further away from Dove House Farm and other nearby properties between the existing A1 and proposed Roxton Road link (north).

TECHNICAL NOTE

(Doc Ref: 1368-WSP-00-XX-RP-CV-0002)

DATE:	09 June 2021	**CONFIDENTIALITY:**	Restricted
SUBJECT:	Alternative highway and drainage options for Roxton Road link (north)		
PROJECT:	70061368 – Dove House Farm, Wyboston	**AUTHOR:**	Anthony Groom / Joe Leslie
CHECKED:	Livio Martelli	**APPROVED:**	Livio Martelli

CONCLUSION

The purpose of this technical note is to assist our clients, Duncan & Maxine Buchanan, with making a formal representation to PINS regarding aspects of the Scheme that would impact on their property at Dove House Farm.

Firstly, and further to the submission of an alternative design for the Roxton Road link (north) in July 2019, WSP has provided responses to the main findings from the HE Technical Note in Appendix A and requests that the alternative design is reconsidered in light of these responses.

Secondly, having undertaken a further review of the Scheme in June 2021, WSP has identified a number of additional queries (shown in italics) described in parts A, B & C above for which responses are requested.

APPENDIX A

TECHNICAL NOTE

Project:	**A428 Black Cat to Caxton Gibbet**				
Title:	**Roxton Road Link Alternative Design Proposal at Dove House Farm**				
Doc ID:	**HE551495-ACM-GEN-GEN_ZN1_SR_Z_ZZ-TN-CH-0001**				
Date:	**September 2020**	Version:	**P01**	Status:	**S2**

Revision	Date	Prepared by	Reviewed by	Approved by
P01	24/09/2020	PS		

1 Alternative Design Proposal at Dove House Farm

1.1 WSP Alternative

1.1.1 The owners of Dove House Farm have employed WSP to develop an alternative alignment for the northern section of the Roxton Road Link.

1.1.2 This is described in a WSP technical note “Engineering assessment of the proposed link road between “The Lane” and “Chawston Lane”, Wyboston, Bedfordshire“ (document no. 1368-WSP-00-XX-RP-CV-0001) and shown on WSP drawing no. 1368-WSP-00-XX-SK-CV-0001 rev P02 “LINK ROAD BETWEEN "THE LANE" AND "CHAWSTON LANE" GEOMETRIC ASSESSMENT OF THE HIGHWAY SCHEME”.

1.1.3 The stated objective of the WSP technical note is to “*provide an outline engineering assessment of the proposed road between Chawston Lane and The Lane in Chawston, Wyboston, Bedfordshire*” and is to “*focus on the horizontal geometry of the proposed alignment as well as the drainage strategy employed*”.

1.1.4 Although WSP did not have the design parameters available at the time of writing the technical note, they correctly concluded from the information made available by their Client that the Roxton Road Link (north) had been designed using a Manual for Streets approach rather than the DMRB.

1.1.5 With reference to the horizontal alignment it correctly concludes that the design complies with the minimum radius for a design speed of 60kph, and that the forward visibility provided is towards the lower end of the stopping sight distance required for a 60kph road.

1.1.6 The WSP technical note correctly states that the main principle influencing the design was to control vehicle speeds. It suggests that a design speed of 50kph rather than 60kph would perhaps be more appropriate. It goes on to suggest that a better (i.e. higher standard) horizontal geometry “*would likely promote speeding through the road*.”

1.1.7 The technical note then considers the reason for the landscape strip on the west side of the new road. It was stated that "*the reason for the wide buffer zone (approx. 10m) on the western side of the road is not clear. From a highway engineering perspective, this has no effects in terms of road safety/performance. Nevertheless, it may be related to the construction phase or utilities diversion*." Without full knowledge of the scheme drawings this is an understandable statement and it may not have been clear that this area was intended for landscaping. The landscape design has since been reviewed throughout the whole scheme and this is one of the landscape areas that has been removed.

1.1.8 The WSP technical note suggests an alternative design for the horizontal alignment at the location of the double bend. This uses a 70m stopping sight distance and horizontal radii of 54m and 100m at the double bends. It states that this allows for more flexibility around the central section of the scheme without compromising forward visibility, swept path analysis or safety.

1.1.9 Whilst the use of the 54m radius bend may have a greater speed control effect on vehicles, it is applied over a shorter distance than the equivalent 64m radius used in the scheme design (approximately 56m compared to 77m) so may not have a sustained effect. The suggested use of the 100m radius would reduce the speed control effect when compared to the 64m radius used in the scheme design. The forward visibility along this section is also greater (it was measured from the PDF drawing provided as approximately 85m). Whilst the difference in speed control between the scheme design and WSP suggestion is likely to be marginal, MfS2 Cl. 8.3.8 and MfS1 7.4.4 imply both of these changes could either individually or in combination encourage higher speeds along the section from Chawston Lane to the first bend.

1.1.10 The 100m radius bend also starts closer to Chawston Lane and would result in the removal of approximately 30m of established hedge that would provide visual and noise screening between the new road and the residential properties on Nags Head Lane. It also brings the road closer to these properties. The new road in the scheme design is approximately 120m from the properties but this would reduce to 100m. The loss of part of the hedge would also result in a modest loss of habitat.

1.1.11 Other aspects of the design (carriageway/verges/footpaths width, kerb radii, 2m widening on curves, buffer zone width) are stated to have been replicated. This is not the case for the widening on the 54m radius bend, which measures (from the PDF copy available) as 7m. This would cause safety issues for two HGVs trying to pass one another. The extent of the earthworks replicates the original design, which is not an unreasonable assumption, but it does not fully do this through the realigned section and the overall extent of the earthworks and verge is approximately 1m narrower than shown for the original design.

1.1.12 It is stated that the attenuation basins associated with the road have been reshaped to increase their land usage efficiency. The overall area of each pond is stated as being retained to ensure their capacity. The areas of the two ponds in the scheme design, including the maintenance access berm around each is 1040m^2 and 1495m^2 (north and south of the Nagshead Lane access respectively). The reshaped ponds measure as 1048m^2 and 2287m^2. The smaller pond is obviously intended to be the same area and the small difference in areas is negligible. The reason for the increase in area of the larger pond is not clear. A small landscape planting area has been retained.

1.1.13 The tie in with "The Lane" at the northern end of the link road was considered also. An option to change the proposed layout to a simple T-junction is discussed. It states the merits of doing this but acknowledges that "*it is not ideal from a highway*

engineering perspective" and "*Despite the reduced land take, this is a less desirable scenario and cannot be justified*". The scheme design uses a 64m radius curve to tie-in to The Lane, whereas the alternative design has modified this to use a 54m radius curve. This would slightly reduce the land required, however, the carriageway width of 8m maintains the same widening through the bend as the original design, whereas a width of 8.5m would be more appropriate to avoid issues as two HGVs pass one another.

1.1.14 It is stated that the proposed layout would reduce land take by approximately 2300m^2 on the western side of the road, while increasing the land take on the eastern side by approximately 1960m^2.

1.1.15 The table below compares the permanent areas of land acquisition for the scheme design, the scheme design following review of the landscape strip and the WSP alternative alignment. All areas were assessed using the WSP PDF drawing to ensure areas are measured relative to one another, although the actual areas may be different if measured using the original CAD drawings. Minor adjustment was made to the earthworks extent for the area required for the WSP alternative with landscape review, to accommodate the minor differences in earthwork extents mentioned in 5.1.11.

Table 1 Areas of land acquisition

	Acquisition from Dove House Farm (m^2)	**Acquisition from others** (m^2)	**Total area** (m^2)
Scheme design	17428	0	17428
Scheme design after landscape review	13910	0	13910
WSP alternative	15590	1943	17533
WSP alternative with landscape review	12353	1943	14296

1.1.16 The total area values in Table 5 show that each case, with or without the landscape review, the scheme design requires less land than the WSP alternative.

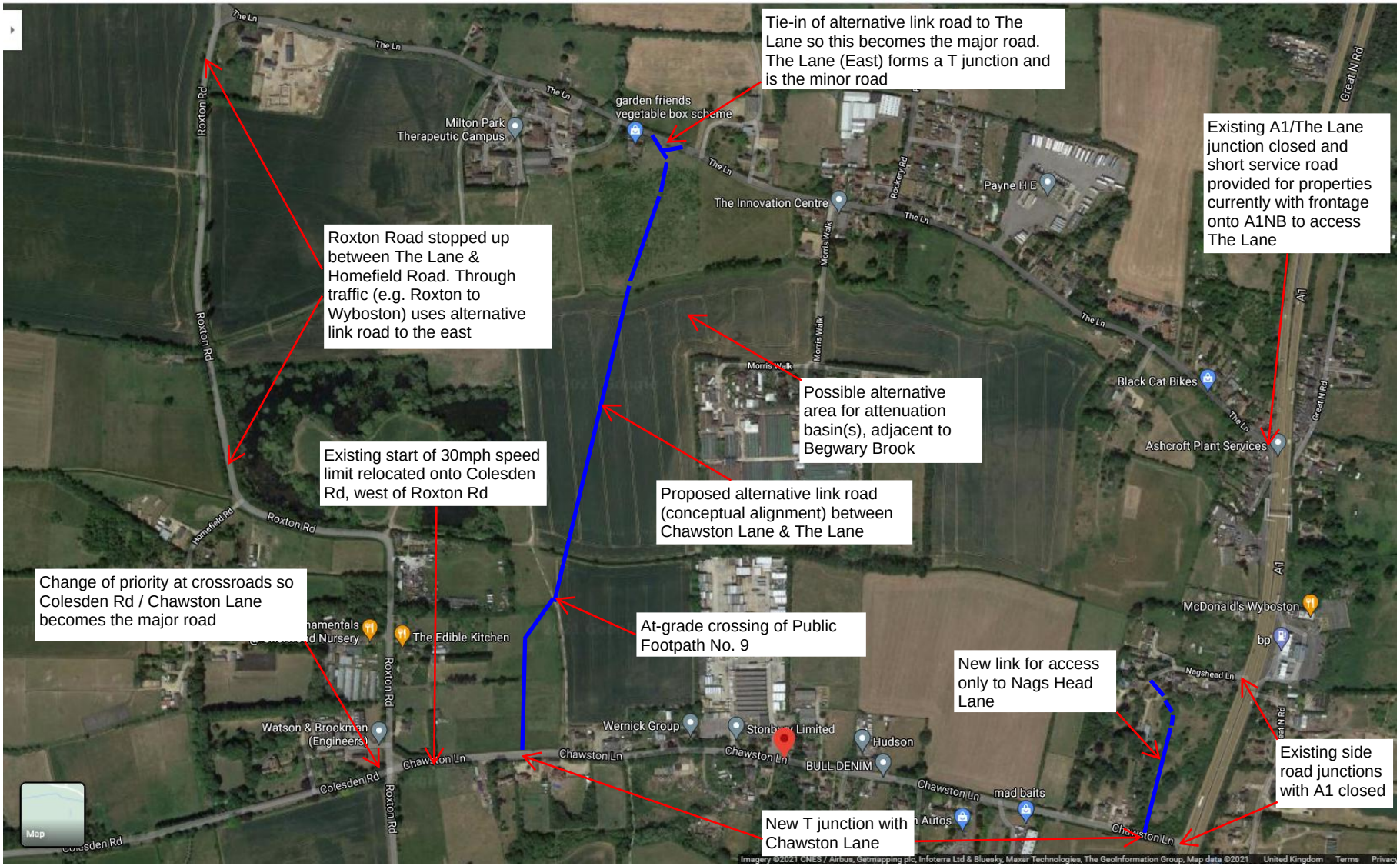
1.1.17 The WSP design does require less land to be acquired from Dove House Farm, but requires land from another landowner in order to achieve this.

1.1.18 In summary, comparing the two designs;

- The two designs will both provide speed control at the double bend.
- MfS2 clause 8.3.8 and MfS1 clause 7.4.4 imply that the alternative design would not provide as much speed control as the scheme design, firstly because the first bend uses a larger radius and secondly the forward visibility around both bends is greater than required by standards. The impact of the shorter application of the tighter radius is probably marginal.
- The alternative design moves the road closer to existing residential properties.
- The alternative design requires the removal of at least 25m of existing hedge that provides a noise and visual screen to properties on Nags Head Lane.
- The alternative design does not reduce the area of land that Highways England would need to acquire permanently. It does reduce permanent land acquisition at Dove Farm, but requires permanent acquisition of land elsewhere to mitigate.

APPENDIX B

70061368 - Appendix B - Example alternative concept layout for Roxton Road link (north)
June 2021



APPENDIX C

N

CONTINUATION 2.A

SEE CONTINUATION 2.A

ROXTON ROAD LINK NORTH CATCHMENT - 2, USES OVERSIZED PIPES & FLOW CONTROL TO ATTENUATE FLOWS

ROXTON ROAD LINK NORTH OUTFALL 2 - -PROPOSED MAINTENANCE BY BEDFORD BOROUGH COUNCIL

ROXTON ROAD LINK NORTH OUTFALL 1- PROPOSED MAINTENANCE BY BEDFORD BOROUGH COUNCIL

A1 BEGWARY BROOK WEST OUTFALL - PROPOSED MAINTENANCE BY HIGHWAYS ENGLAND

A1 BEGWARY BROOK EAST OUTFALL -PROPOSED MAINTENANCE BY HIGHWAYS ENGLAND

ROXTON ROAD LINK PONDS - PROPOSED MAINTENANCE BY BEDFORD BOROUGH COUNCIL

A1 NORTH BEGWARY BROOK WEST CATCHMENT - NO ATTENUATION REQUIRED

A1 NORTH BEGWARY BROOK EAST CATCHMENT- NO ATTENUATION REQUIRED

FILLING STATION SERVICE ROAD BEGWARY BROOK CATCHMENT - USES OVERSIZED PIPES & FLOW CONTROL TO ATTENUATE FLOWS, DRAINS TO EXISTING HIGHWAY DITCH

OUTFALL TO BEGWARY BROOK VIA AN EXISTING HIGHWAY DITCH - PROPOSED MAINTENANCE BY HIGHWAYS ENGLAND

ROXTON ROAD LINK NORTH CATCHMENT - 1

A1 SOUTH BROOK CATCHMENT - USES A SWALE AND FLOW CONTROL TO ATTENUATE FLOWS

SOUTH BROOK

A1 SOUTH BROOK OUTFALL - PROPOSED MAINTENANCE BY HIGHWAYS ENGLAND

Additional pond here to outfall south to South Book?

ROXTON ROAD LINK SOUTH OUTFALL - PROPOSED MAINTENANCE BY BEDFORD BOROUGH COUNCIL

Additional Catchment between Chawston Lane and South Brook - approx. area 0.28Ha

FILLING STATION SERVICE ROAD SOUTH BROOK CATCHMENT 1- USES OVERSIZED PIPES & FLOW CONTROL TO ATTENUATE FLOWS

POND BC2 OUTFALL - PROPOSED MAINTENANCE BY HIGHWAYS ENGLAND

FILLING STATION SERVICE ROAD SOUTH BROOK OUTFALL 1 - PROPOSED MAINTENANCE BY BEDFORD BOROUGH COUNCIL

FILLING STATION SERVICE ROAD SOUTH BROOK OUTFALL 2 -PROPOSED MAINTENANCE BY BEDFORD BOROUGH COUNCIL

CUT LINE

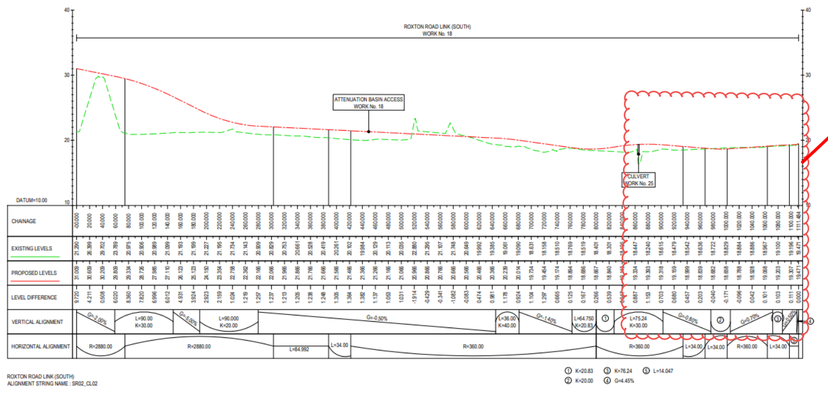
SHEET 1

CUT LINE

CHAWSTON LANE

OLD GREAT NORTH ROAD

A1



LONGSECTION
SCALE: H:1:250/ V:1:250

Scale
0 25 50 100 200m
Original Size (A1) 1:2500 @ A1 1:5000 @ A3

Plot Date: Wednesday, February 10, 2021 5:22:23 PM
File Name:C:\PVWORKING\GA-AECOM_EU\WORKING\HE551495-ACM-LSI-ZN1_SW_Z_ZZ-DR-DC-0502

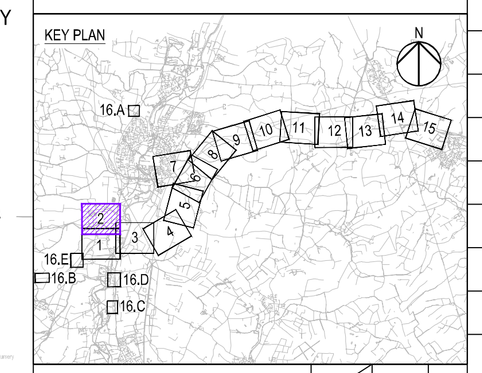
NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS STATED OTHERWISE.
2. DO NOT SCALE FROM THIS DRAWING, USE ONLY PRINTED DIMENSIONS.
3. THE PROPOSED WORKS SHOWN ARE ILLUSTRATIVE ONLY AND WILL BE SUBJECT TO CHANGE AS PART OF DETAILED DESIGN DEVELOPMENT. ANY CHANGES WILL BE LIMITED TO BEING WITHIN THE ORDER LIMITS AND ANY OTHER CONSTRAINTS INCLUDED IN THE DEVELOPMENT CONSENT ORDER.
4. ALL SOLID FILL HATCHES SHOW HIGHWAY CATCHMENTS INCLUDING CARRIAGEWAYS, VERGES AND CUTTINGS.
5. THE NAMING OF THE CATCHMENT AREAS ARE TO DIFFERENTIATE BETWEEN THEM AND ARE THE PURPOSE OF THE DRAINAGE ENGINEERING PLANS ONLY.
6. THESE DRAINAGE PLANS SHOULD BE READ IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTATION, IN PARTICULAR THE ROAD DRAINAGE STRATEGY REPORT [TR010044/APP/13.3]

LEGEND

- ORDER LIMITS
- LAND SURROUNDED BY, BUT NOT INCLUDED WITHIN THE ORDER LIMITS
- EXISTING WATERCOURSE
- OUTFALL MAINTAINED BY HIGHWAYS ENGLAND
- OUTFALL MAINTAINED BY LOCAL HIGHWAY AUTHORITY
- POND BC2 HIGHWAY CATCHMENT
- A1 SOUTH BROOK CATCHMENT
- ROXTON ROAD LINK NORTH CATCHMENT - 1
- ROXTON ROAD LINK NORTH CATCHMENT - 2
- FILLING STATION SERVICE ROAD SOUTH BROOK CATCHMENT 1
- FILLING STATION SERVICE ROAD BEGWARY BROOK CATCHMENT
- A1 NORTH BEGWARY BROOK WEST CATCHMENT
- A1 NORTH BEGWARY BROOK EAST CATCHMENT

KEY PLAN



Revision Details	By	Check	Date	Suffix
Final for DCO Application	JB	TD	03/02/21	P04

Purpose of issue

DCO APPLICATION

Client
Highways England
Woodlands
Manton Lane
Manton Industrial Estate
Bedford
MK41 7LW

Working on behalf of highways england

Development Consent Order Number

TR010044

Project Title

A428 BLACK CAT TO CAXTON GIBBET IMPROVEMENTS

Drawing Title

DRAINAGE ENGINEERING PLAN
REGULATION 5(2)(O) & 6(2)
SHEET 2

Designed	Drawn	Checked	Approved	Date
JJP	JB	JMW	TD	03/02/21

Internal Project No.	Suitability
60541541	D7
Scale @ A1	Zone
1:2500	ZN1

Drawing Number				Rev
Highways England PIN	Originator	Volume		
HE551495	-ACM	-LSI	-	P04
ZN1_SW_Z_ZZ	-DR	-DC	-0502	
Location	Type	Role	Number	

WSP Mark - Up
20210607

By: JJL Checked:AG

APPENDIX D

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	0.544	0.544	0.4	74.8	O K
30 min Summer	0.663	0.663	0.5	96.3	O K
60 min Summer	0.770	0.770	0.5	117.5	O K
120 min Summer	0.867	0.867	0.5	138.1	O K
180 min Summer	0.918	0.918	0.5	149.5	O K
240 min Summer	0.950	0.950	0.5	157.0	O K
360 min Summer	0.990	0.990	0.6	166.6	O K
480 min Summer	1.017	1.017	0.6	173.2	O K
600 min Summer	1.036	1.036	0.6	177.8	O K
720 min Summer	1.049	1.049	0.6	181.1	O K
960 min Summer	1.066	1.066	0.6	185.3	O K
1440 min Summer	1.077	1.077	0.6	188.0	O K
2160 min Summer	1.066	1.066	0.6	185.3	O K
2880 min Summer	1.044	1.044	0.6	179.6	O K
4320 min Summer	1.001	1.001	0.6	169.1	O K
5760 min Summer	0.961	0.961	0.5	159.6	O K
7200 min Summer	0.925	0.925	0.5	151.3	O K
8640 min Summer	0.892	0.892	0.5	143.8	O K
10080 min Summer	0.861	0.861	0.5	136.9	O K
15 min Winter	0.596	0.596	0.4	83.9	O K
30 min Winter	0.723	0.723	0.5	107.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	143.506	0.0	33.4	27
30 min Summer	92.482	0.0	36.9	42
60 min Summer	56.713	0.0	74.0	72
120 min Summer	33.633	0.0	79.5	132
180 min Summer	24.479	0.0	82.1	190
240 min Summer	19.441	0.0	83.7	250
360 min Summer	13.973	0.0	85.5	370
480 min Summer	11.062	0.0	86.5	488
600 min Summer	9.223	0.0	87.1	608
720 min Summer	7.947	0.0	87.3	728
960 min Summer	6.278	0.0	87.3	966
1440 min Summer	4.498	0.0	85.8	1444
2160 min Summer	3.218	0.0	166.7	2160
2880 min Summer	2.536	0.0	165.2	2516
4320 min Summer	1.811	0.0	157.7	3248
5760 min Summer	1.424	0.0	285.6	4040
7200 min Summer	1.182	0.0	282.8	4896
8640 min Summer	1.015	0.0	273.1	5704
10080 min Summer	0.892	0.0	263.7	6472
15 min Winter	143.506	0.0	35.0	27
30 min Winter	92.482	0.0	38.6	41

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	0.838	0.838	0.5	131.8	O K
120 min Winter	0.942	0.942	0.5	155.1	O K
180 min Winter	0.996	0.996	0.6	168.0	O K
240 min Winter	1.032	1.032	0.6	176.6	O K
360 min Winter	1.076	1.076	0.6	187.7	O K
480 min Winter	1.106	1.106	0.6	195.4	O K
600 min Winter	1.127	1.127	0.6	201.0	O K
720 min Winter	1.142	1.142	0.6	205.1	O K
960 min Winter	1.162	1.162	0.6	210.5	O K
1440 min Winter	1.180	1.180	0.6	215.1	O K
2160 min Winter	1.178	1.178	0.6	214.6	O K
2880 min Winter	1.160	1.160	0.6	209.8	O K
4320 min Winter	1.111	1.111	0.6	196.9	O K
5760 min Winter	1.066	1.066	0.6	185.3	O K
7200 min Winter	1.021	1.021	0.6	173.9	O K
8640 min Winter	0.977	0.977	0.5	163.4	O K
10080 min Winter	0.935	0.935	0.5	153.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	56.713	0.0	77.8	70
120 min Winter	33.633	0.0	83.3	130
180 min Winter	24.479	0.0	85.9	188
240 min Winter	19.441	0.0	87.4	246
360 min Winter	13.973	0.0	89.1	364
480 min Winter	11.062	0.0	90.1	482
600 min Winter	9.223	0.0	90.5	598
720 min Winter	7.947	0.0	90.7	716
960 min Winter	6.278	0.0	90.5	950
1440 min Winter	4.498	0.0	88.7	1412
2160 min Winter	3.218	0.0	174.4	2084
2880 min Winter	2.536	0.0	172.2	2736
4320 min Winter	1.811	0.0	164.0	3424
5760 min Winter	1.424	0.0	305.1	4336
7200 min Winter	1.182	0.0	298.9	5264
8640 min Winter	1.015	0.0	292.2	6144
10080 min Winter	0.892	0.0	282.0	7064

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.446	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.280

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.093	4	8	0.093	8	12	0.093

Model Details

Storage is Online Cover Level (m) 1.500

Tank or Pond Structure

Invert Level (m) 0.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	105.0	1.200	276.5	1.500	332.1

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0034-6000-1200-6000
Design Head (m)	1.200
Design Flow (l/s)	0.6
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	34
Invert Level (m)	0.000
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	0.6	Kick-Flo®	0.304	0.3
Flush-Flo™	0.152	0.4	Mean Flow over Head Range	-	0.4

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.4	1.200	0.6	3.000	0.9	7.000	1.3
0.200	0.4	1.400	0.6	3.500	1.0	7.500	1.4
0.300	0.3	1.600	0.7	4.000	1.0	8.000	1.4
0.400	0.4	1.800	0.7	4.500	1.1	8.500	1.4
0.500	0.4	2.000	0.8	5.000	1.1	9.000	1.5
0.600	0.4	2.200	0.8	5.500	1.2	9.500	1.5
0.800	0.5	2.400	0.8	6.000	1.2		
1.000	0.6	2.600	0.8	6.500	1.3		

1368-WSP-00-XX-RP-CV-0001

DATE:	22 July 2019	**CONFIDENTIALITY:**	Internal
SUBJECT:	Engineering assessment of the proposed link road between “The Lane” and “Chawston Lane”, Wyboston, Bedfordshire		
PROJECT:	70061368 - Dove House Farm, Wyboston	**AUTHOR:**	MSF, JJL, DHP
CHECKED:	AG	**APPROVED:**	GM

AVAILABLE INFORMATION AND OBJECTIVES

The objective of this technical note is to provide an outline engineering assessment of the proposed road between *Chawston Lane* and *The Lane* in Chawston, Wyboston, Bedfordshire. These works form part of the A428 Black Cat to Caxton Gibbet improvements scheme. This note focuses on the horizontal geometry of the proposed alignment as well as the drainage strategy employed.

The following assessment is based on information available from the A428 Black Cat to Caxton Gibbet improvements public consultation documentation and additional landowner information provided by the client. All drawings were provided in pdf format, therefore the accuracy of measurements taken cannot be guaranteed.

ROAD GEOMETRY ASSESSMENT

The existing speed limit on “The Lane” and “Chawston Lane” is 30mph, thus it is reasonable to assume that the proposed link road will retain this existing limit for consistency. According to the *Design Manual for Roads and Bridges (DMRB)* (reference Volume 6 Section 1, TD 9/93, Table 2 and 3), roads subject to a 30mph (48kph) speed limit need to be designed to a 60kph speed limit standard. The design parameters related to this speed can be found in the following table.

Table 1 – design parameters for a 30mph road according to DMRB standard

Parameter	Value
Desirable minimum R with 5% superelevation	*255m*
Two steps below desirable minimum R with 7% superelevation	*127m*
Desirable Stopping Sight Distance (SSD)	*90m*
One step below desirable minimum SSD	*70m*

The horizontal geometry of the road has been assessed based on the drawings published by Highways England, available for consultation on their website. According to the drawing *HE551495-ACM-LSI-ZN1_SW_Z_ZZ-DR-DC-2652 P01 “General Arrangement Plans Regulation 5(2)(O) Sheet 2 of 16”*, the three curves have radii of approx. 65m. Based on the highway boundary extent, the forward visibility provided resulted approx. 70m.

Based on what can be measured from the drawing, the proposed scheme does not meet the DMRB minimum requirements. This is due to the fact that this standard was created for trunk roads and

motorways, hence it is sometimes considered unsuitable for application to low-standard infrastructure (e.g. roads subject to a 30mph speed limit).

A valid reference in this case, and one widely used in the industry, is the *Manual for Street 2 (MfS2)*. This document sets standards that better relate to low-speed roads. According to MfS2 (Table 8.1 and Chapter 10) the minimum recommended curve radii are as follows;

Table 2 – design parameters for 50kph and 60kph roads according to MfS2

Parameter	Value
Minimum recommended radius for 50kph design speed	*44m*
Minimum recommended radius for 60kph design speed	*64m*
SSD at 60kph	60-95m
SSD at 50kph	*45-70m*

Considering the forward visibility and the radii measured from the drawing, the scheme appears to comply with the minimum radius for 60kph. Nevertheless, the forward visibility provided by the boundary conditions are on the lower end of the SSD range required for a 60kph road.

It is our understanding that the main principle that guided this design was to avoid speeding. Therefore, it appears reasonable to design the road for 50kph limit rather than 60kph (30mph is equal to 48kph in exact terms). Since DMRB standards have not been followed using 50kph as the design speed would comply with the approach used in MfS2 and help reduce vehicle speeds. Providing a superior horizontal geometry would likely promote speeding through the road.

Considering the information available, the reason for such a wide buffer zone (approx. 10m) on the western side of the road is not clear. From a highway engineering perspective, this has no effects in terms of road safety/performance. Nevertheless, it may be related to the construction phase or utilities diversion.

Considering the extent of the 70m forward visibility splay and the need for a widening on tight radii curves, a new alignment was sketched using radii of 54m and 100m (drawing reference *1368-WSP-00-XX-SK-CV-0001 P02*). This value allows for more flexibility around the central section of the scheme without compromising forward visibility, swept path analysis or safety.

DATE:	22 July 2019	**CONFIDENTIALITY:**	Internal
SUBJECT:	Engineering assessment of the proposed link road between “The Lane” and “Chawston Lane”, Wyboston, Bedfordshire		
PROJECT:	70061368 - Dove House Farm, Wyboston	**AUTHOR:**	MSF, JJL, DHP
CHECKED:	AG	**APPROVED:**	GM

The other elements of the scheme (carriageway/verges/footpaths width, kerb radii, 2m widening on curves, buffer zone width) were replicated as measure from the original drawing. Considering that the alignment did not move much compared to the original scheme, the extent of the earthworks was assumed consistent with the original layout.

The ponds have been reshaped to increase the land usage efficiency. The overall area of each pond has been retained to ensure their capacity. The unidentified landscape area (the oval shaped, green hatched area near the north-eastern pond), was relocated to the other side of the road. Shape and area of this latter were retained.

The proposed layout (drawing reference *1368-WSP-00-XX-SK-CV-0001 P02*) would save approx. 2300m^2 of land on the western side of the road, while increasing the land take on the eastern side by approx. 1960m^2. The feasibility of the above is yet to be confirmed by a formal design stage.

Regarding the tie in with “The Lane” (located at the northern end of the link road), the option to modify the proposed layout to include a simple T-junction with right angles was considered. Although this would represent the best option in terms of land take, it does not appear ideal from a highway engineering perspective. In this scenario, “The Lane” would maintain its main road configuration. Although, because of the cul-de-sac resulting from the closure of the A1 junction at the end of “The Lane”, most of the traffic flow would have to turn right on a T-junction. Despite the reduced land take, this is a less desirable scenario and cannot be justified.

PROPOSED DRAINAGE ASSESSMENT

From the drawing titled *HE551495-ACM-LSI-ZN1_SW_Z_ZZ-DR-DC-2652 P01 “General Arrangement Plans Regulation 5(2)(O) Sheet 2 of 16,* the proposed drainage strategy appears to be to direct all carriageway drainage to a pair of attenuation basins, which then outfall into an existing watercourse running south-north along the eastern perimeter of the site. This ditch appears to outfall into Begwary Brook, which itself discharges to the River Great Ouse, to the East of the Site, classified as a main river by the Environment Agency. From the available drawings the method of conveyance of the water to the attenuation ponds is not clear. It would be advisable to establish the method of conveyance from the scheme promoter, as this may result in a reduced basin storage volume, e.g. in the case of swales.

It does not appear that infiltration to ground has been utilised, this is likely due to ground conditions, access to soakage test results and/or a ground investigation report could confirm this. Unfortunately, no British Geological Survey Borehole Logs of value are available in proximity to the site, for historic ground water level and geological information. However, the entirety site does appear to be underlain by clays at a bedrock level.

DATE:	22 July 2019	**CONFIDENTIALITY:**	Internal
SUBJECT:	Engineering assessment of the proposed link road between “The Lane” and “Chawston Lane”, Wyboston, Bedfordshire		
PROJECT:	70061368 - Dove House Farm, Wyboston	**AUTHOR:**	MSF, JJL, DHP
CHECKED:	AG	**APPROVED:**	GM

Basins

It is assumed that placement of the basins on the eastern side of the carriageway is to allow proximity to the outfall watercourse (and alignment low point) and that the storage has been split into two to allow for the available space and topography rather than for the primary to act as a sediment fore-bay.

With access to information regarding the existing and proposed levels, the proposed catchments, impermeable areas and outfall discharge rates, it may be possible to approximate a model for storage requirements in the attenuation basins.

PROPOSED LAYOUT

DO NOT SCALE

KEY

- LANDSCAPE AREA
- PROPOSED FOOTPATH
- PROPOSED VERGE
- PROPOSED CARRIAGEWAY
- ASSUMED EXTENT OF EARTHWORKS
- PROPOSED RESHAPED PONDS
- REDUCED EXTENT OF LAND INTAKE (APPROX. 2350m²)
- INCREASED LAND INTAKE (APPROX. 1950m²)
- 70m VISIBILITY SPLAY

DRAWING NOTES:

1. THIS DRAWING IS INTENDED AS A PRELIMINARY, HIGH LEVEL GEOMETRY STUDY. NO INFORMATION MORE PROVIDED ON GROUND CONDITION. WSP IS NOT AWARE OF ANY EXISTING SPECIFIC RESTRICTION OR CONSTRAINT IN THE AREA.
2. THE ORIGINAL LAYOUT DRAWINGS WERE PROVIDED ON PDF FORMAT. FOR THIS REASON, ACCURACY OF MEASUREMENT CANNOT BE ENSURED.
3. THE FEASIBILITY OF THE SCHEME HAS TO BE CHECKED ON A 3D MODEL TO TAKE INTO ACCOUNT THE TOPOGRAPHY OF THE AREA. AT THIS LEVEL, THE EXTENT OF EARTHWORKS WAS BASED ON THE ORIGINAL SCHEME.
4. APART FROM THE CENTRE LINE RADII OF THE ROADS, ALL OTHER DESIGN PARAMETERS HAVE BEEN RETAINED FROM THE ORIGINAL SCHEME (I.E. KERB RADII, WIDENING ON CURVES, FORWARD VISIBILITY, CLEARWAYS WIDTH).
5. THIS DRAWING IS INTENDED FOR DISCUSSION AND INFORMATION PURPOSES, NOT FOR DESIGN/CONSTRUCTION.
6. THIS DRAWING HAS TO BE READ IN CONJUNCTION WITH THE TECHNICAL NOTE 1-388-WSP-00-XX-RP-Cv-0001 AND ALL OTHER RELEVANT DOCUMENTS RELATED TO THE SCHEME.

REV	DATE	BY	DESCRIPTION	CHK	APP
P02	23/01/2014	DHP	HORIZONTAL ALIGNMENT ADJUSTED AND LAND TAKE FIGURES AMENDED	--	--
P01	11/07/2014	MST	FIRST ISSUE	--	--
REV	DATE	BY	DESCRIPTION	CHK	APP

S2 - FOR INFORMATION

wsp
62-64 Hills Road, Cambridge, CB2 1LA, UK
T+ 44 (0) 1223 559 000, F+ 44 (0) 1223 559 001
wsp.com

CLIENT
D.A.B BUILDERS & CONSTRUCTION SERVICES

ARCHITECT

SITE/PROJECT
DOVE HOUSE FARM
WYBOSTON