



LAND AT GREAT GROVEHURST FARM, SITTINGBOURNE: APPLICATION SW/18/502372/EIOUT

RESPONSE TO KENT COUNTY COUNCIL RESPONSE DATED 22 MARCH 2019

1. Introduction

- 1.1. This Technical Note sets out PFA Consulting's response to the consultation response from Kent County Council (KCC) dated 22 March 2019. The consultation response comments on recent amendments to the application, and also refers to outstanding issues from the response dated 9 July 2018.
- 1.2. PFA Consulting contacted KCC by telephone on 2 April 2019 to discuss and clarify the outstanding issues, which have been summarised below:
 - Site Access amended design – further details required
 - Site Layout – including parking and swept path
 - Connection to Godwin Close, specifically the adoptability of the proposed link, and drainage on Godwin Close
 - Sustainable transport contributions/mitigation
 - Travel Plan – A site specific Travel Plan is needed based upon the submitted Framework, but can be secured by condition
 - Junction Assessment/Impact – North West Sittingbourne (NWS) work by PBA should be resubmitted for Great Grovehurst Farm, and also reference made to recent emails between PBA and KCC requesting pedestrian/cycle works instead of offsite highway works.
- 1.3. As indicated above, KCC commented that much of this information has been submitted and agreed for the MU1 North West Sittingbourne allocation application (Ref: SW/18/502190/EIHYB), but needs to be resubmitted for Great Grovehurst Farm (Ref: SW/18/502372/EIOUT).
- 1.4. The Technical Note submitted by Peter Brett Associates (PBA) on 1 November 2018, which deals with the majority of the above issues is reproduced at **Appendix A**. The PBA Technical Note will be referred to as appropriate.
- 1.5. This Technical Note responds to the issues raised in turn below, and supersedes previous submitted information as appropriate.

2. Grovehurst Road Site Access Roundabout

- 2.1. The KCC response dated 22 March 2019 required further details to be submitted including:
 - Swept Path Analysis of an HGV
 - Further details of the proposed pedestrian/cycle crossing to the north of the roundabout
 - Assessment of the capacity of the roundabout
 - Stage 1 Road Safety Assessment
- 2.2. It is noted that the KCC response to MU1 North West Sittingbourne allocation application (Ref: SW/18/502190/EIHYB), dated 29 March, requested the following with respect of the Grovehurst Road access roundabout:

- The Toucan crossing should be relocated to 20m from the give-way line
- Swept Path Analysis of an HGV
- Full assessment of the capacity of the roundabout
- Stage 1 Road Safety Assessment
- Further details of the Toucan crossing
- Details of hard landscaping, lighting and services

Toucan Crossing Location

- 2.3. It is acknowledged that in line with paragraph 5.7 of TD 16/07 the Toucan crossing should be located 20m from the roundabout give way line. Drawing D118/12 Rev C, reproduced at **Appendix B**, shows the proposed roundabout with a relocated Toucan crossing, 20m from the give way line.

Swept Path Analysis

- 2.4. Swept path analysis of an 11.4m refuse vehicle and 16.5m articulated HGV, on all arms of the roundabout, was submitted as part of the PBA Technical Note in November 2018, reproduced at **Appendix A**. This swept path analysis remains relevant.

Capacity Assessment

- 2.5. Capacity assessment of the roundabout using JUNCTIONS 9 for 2031 AM and PM peak hours, with background growth, committed development and the Full MU1 North West Sittingbourne allocation (including Great Grovehurst Farm) was submitted as part of the PBA Technical Note in November 2018, reproduced at **Appendix A**. This JUNCTIONS 9 analysis remains relevant.

Stage 1 Road Safety Assessment

- 2.6. An independent Stage 1 Road Safety Audit (RSA) will be produced. It has been delayed due to the revised scheme for the A249 Grovehurst Interchange, as RSAs for all junctions, except the Redrow access were proposed to be undertaken at the same time.
- 2.7. The Stage 1 RSA, when completed, will be submitted to KCC, along with any associated designers response.

Further Details

- 2.8. Details sufficient for the planning submission are included on drawing D118/12 Rev C reproduced in **Appendix B**. The Toucan crossing will be a standard specification Toucan crossing of width 4m.
- 2.9. Further details including hard landscaping, lighting and services will be included as part of any future S278/S38 submission.

3. Site Layout

- 3.1. A revised Illustrative Masterplan was submitted in January 2019; it is essentially the same as that previously submitted except for the site access junction, which now shows a roundabout.
- 3.2. The application for Great Grovehurst Farm (Ref: SW/18/502372/EIOUT) is in outline. Parking standards, as set out in the Transport Assessment at Chapter 4, will be provided with a future detailed submission and will be in line with Kent adopted standards. Swept Path Analysis of refuse and emergency vehicles will also be submitted in any such future detailed submission.

4. Godwin Close – Pedestrian/Cycle Connection

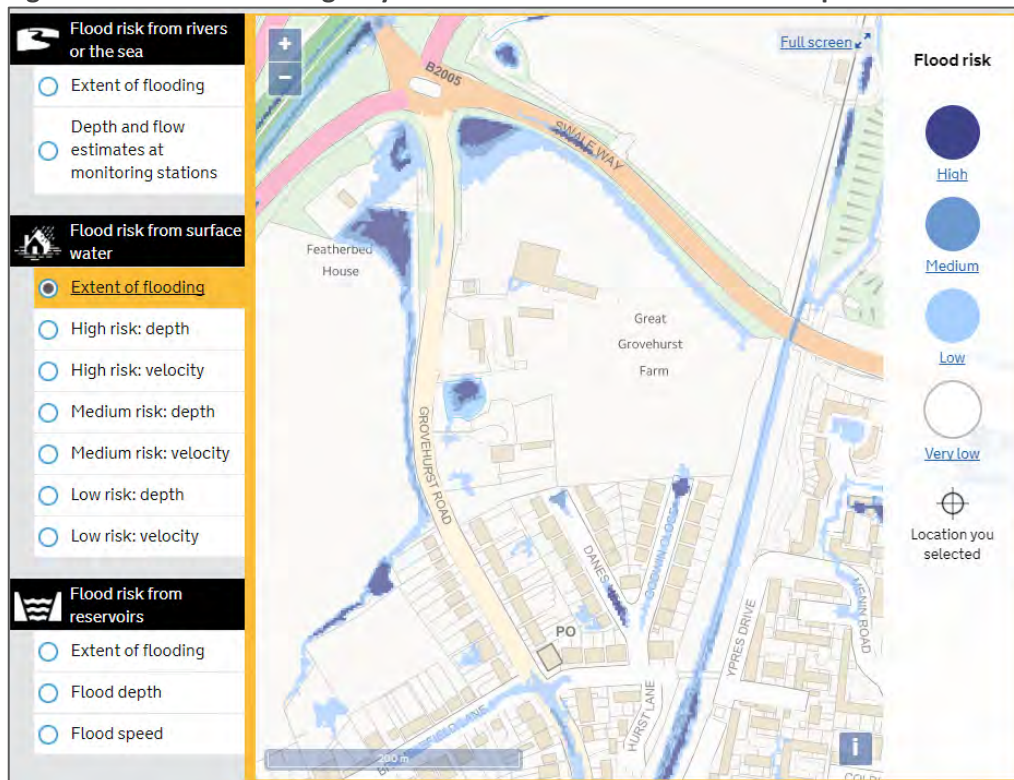
- 4.1. To accommodate revised Great Crested Newt Landscape Proposals, as submitted on 29 January 2019 and reproduced at **Appendix C**, the pedestrian/cycle link is now a 2m wide link surfaced in a cellular grass reinforcement system (ABG SuDS Pave 40 or similar approved with the local planning authority). This will allow north/south access for pedestrians and cyclists, whilst maintaining east/west connectivity for wildlife at ground level. The specification sheet, including an example cross-section for ABG SuDS Pave 40, is reproduced at **Appendix D**.

- 4.2. It is acknowledged that given the proposed surface to accommodate the Newts, the link would not be to KCC adoptable standards. It is therefore suggested that link is instead offered as a Permissive Path or similar arrangement as to be agreed, to ensure future access for pedestrians and cyclists.

Drainage

- 4.3. KCC have also identified existing surface water issues on Godwin Close, in respect of the proposed pedestrian/cycle link. It should be highlighted that a Flood Risk Assessment (FRA), including drainage strategy, was submitted to support Great Grovehurst Farm (Ref: SW/18/502372/EIOUT). KCC, as the Lead Local Flood Authority, have previously confirmed that in principle they have no objection to the proposal, subject to planning conditions.
- 4.4. A copy of the GOV.UK's Flood risk from surface water map (as included at Figure 4 of the FRA) is reproduced in **Figure 4.1**. The surface water flooding risk on Godwin Close can be seen to be highest at the northern end, which suggests there could be an issue with the fall of the existing highway drainage, or that it is blocked.

Figure 4.1: Environment Agency's Flood risk from surface water map



- 4.5. The brickearth extraction which is to precede development will reduce levels across the Great Grovehurst Farm site by up to about 1.7m. In order to drain the development site, the excavated site levels will be raised to create a gently sloping site, sloping from a level of above 13m AOD in the south, to a level of about 12m AOD to the north.
- 4.6. Overland flood flow paths would follow the natural topography of the land towards the proposed Detention Basin in the northern area of the site. The design of the internal road network would convey flows towards Grovehurst Road and the proposed Detention Basin, south of Swale Way. The site levels will be designed to direct exceedance flows to minimise the risks to people and property on the proposed development. Indicative overland flow paths for an extreme event are shown on Drawing No. D118/26 (as included at Appendix 12 of the FRA), reproduced at **Appendix E**.

- 4.7. By reducing the rate of runoff and intercepting uncontrolled overland flows the proposed development would reduce flood risk overall in the surrounding area, including Godwin Close.

Emergency Access

- 4.8. The Kent Design Guide was produced in 2005/06 and refers to specific numbers of dwellings for access types and requirements for emergency access. Manual for Streets (MfS) was subsequently published in 2007, providing more up-to-date guidance with respect to emergency vehicle access provision. MfS does not adopt a numbers driven approach, and instead states:

“the length of cul-de-sacs or the number of dwellings have been used by local authorities as criteria for limiting the size of a development served by a single access route. Authorities have often argued that the larger the site, the more likely it is that a single access could be blocked for whatever reason. The fire services adopt a less numbers-driven approach and consider each application based on a risk assessment for the site, and response time requirements.”

- 4.9. The site layout, as indicated on the Landscape Proposals plan reproduced at **Appendix C** is permeable with numerous route options to dwellings within the development. The initial access from Grovehurst Road is now from a roundabout, with splitter island, i.e. if the entry is blocked, emergency vehicle could access through the exit. The access road width from the access roundabout is 5.5m, which is of sufficient width for larger vehicles such as HGVs to pass, therefore even if a large vehicle has broken down, an emergency vehicle can pass. After 45m from the roundabout splitter island, dwellings can be accessed by a number of routes. It is therefore considered that based on MfS and the permeable nature of the layout an emergency access is not required.

5. Sustainable Transport

- 5.1. The applicant is committed to funding appropriate, proportional Section 106 contributions towards sustainable transport. These will be discussed and agreed through on-going Section 106 meetings.

6. Travel Plan

- 6.1. A Framework Travel Plan, produced by PBA, has been submitted for the wider MU1 North West Sittingbourne allocation application (Ref: SW/18/502190/EIHYB), reproduced at **Appendix F**.
- 6.2. It is intended that all future individual developer Travel Plans for North West Sittingbourne will comply within the PBA Framework document to ensure consistency.
- 6.3. As discussed at the S106 meeting on Tuesday 9 April 2019, certainly Persimmon at NW Sittingbourne and at Iwade and G H Dean at NW Sittingbourne and at Iwade have agreed to appoint a Travel Plan Co-Ordinator to administer Travel Planning across those sites. Therefore G H Dean at Great Grovehurst Farm will contribute to the Travel Planning proposals submitted by PBA on behalf of Persimmon in the Framework Travel Plan.

7. Junction Assessment/Impact

- 7.1. The KCC response dated 9 July 2018 requests that, in addition to assessment work previously undertaken for Great Grovehurst Farm, an assessment is also made of the St Pauls/Mill Way roundabout towards the town centre.
- 7.2. Assessments of a number of off-site junctions has been undertaken for the whole of the MU1 North West Sittingbourne allocation application (Ref: SW/18/502190/EIHYB), including impact of Great Grovehurst Farm, which forms part of the MU1 allocation.

- 7.3. PFA Consulting have been informed by PBA that KCC now require improvements to walk/cycle links to the town centre in lieu of roundabout upgrades at the St Pauls/Mill Way roundabout. It is understood that PBA are continuing negotiations with KCC to agree pedestrian/cycle improvements that will be funded by MU1 North West Sittingbourne, including Great Grovehurst Farm.
- 7.4. PBA are also undertaking ongoing discussions with KCC with respect to a revised interim improvement scheme for the A249/Grovehurst Road roundabouts. The aim of the revised interim improvements is to provide interim improvements to Grovehurst Road to/from Iwade as well improvements to the A249 off-slips. The most recent submissions to KCC were in the emails dated 22 and 25 March 2019; these emails and preceding discussions are reproduced at **Appendix G**.
- 7.5. The applicant is committed to fund appropriate, proportional Section 106 contributions towards off-site junction improvements, based on information submitted by PFA Consulting and PBA. These will be discussed and agreed through on-going Section 106 meetings.

8. Summary

- 8.1. On this basis, subject to the imposition of appropriate planning conditions and S106 contributions, there are no highways or transport-related reasons why planning permission for residential development at Great Grovehurst Farm should not be granted.

TECHNICAL NOTE

Job Name: MU1 (NW Sittingbourne) – application SW/18/502190/EIHYB
Job No: 27239-5504
Date: 31-10-2018
Prepared By: Gary Heard
Subject: **Response to KCC highway comments on application dated 8th October 2018**

Introduction

1. The following technical note has been written in response to further consultation comments received from Kent County Council (KCC) dated 8th October 2018, in respect of planning application SW/18/502190/EIHYB. This technical note specifically considers the Highways and Transportation comments within the KCC response.
2. The following technical note adopts the same structure and subject headings as the KCC note and reproduces the KCC comments in italics before providing a response.

Walking and Cycling Access

“The use of the at-grade Public Footpath ZU6 would likely be subject to substantial increase and our recommendation is that continued dialogue with KCC’s PRoW and Access Service and Network Rail is required to seek alternative facilities.”

3. Noted. We continue to await comments on the application from Network Rail. As discussed at the meeting on 16th July 2018 a bridge or underpass of the rail line is not viable here due to land ownership and costs. However, a diversion via the new access proposed on Quinton Road would be possible. This will be subject to securing a Footpath Diversion Order and requiring the support of KCC’s PRoW team and a valid planning permission. A diversion can be achieved within the masterplan and highway boundary and this has been discussed with KCC. Whilst KCC have accepted the principle of this, we will open a specific discussion on how to procure this with the KCC PRoW team.

“The overlooking of the proposed route to Kemsley Halt remains of concern and is not considered to be secure by design. A recommendation is made that the masterplan is amended that allows overlooking from homes to the Southern end of the route.”

4. This is currently being considered in further detail by the masterplanner and developer.

“The Technical Note acknowledges the need to connect the 3m footway/cycleway along the Quinton Road and North/South through the entire allocated site. This is demonstrated in drawing 27239_5504_201 F and is agreed.”

5. Noted. No further action required.

“Mitigation has been proposed to include a Zebra crossing on Sonora Way. This change in position is welcomed and will facilitate safe access for existing residents to bus stops and amenities. The exact position of this should be informed by the predicted demands and we will engage further with the applicant on the specific detail.”

6. Comment noted. It is proposed that the applicant will provide funding for a crossing and hence allow KCC to implement this facility at a location of their choosing. On this basis, no further action required.

“The applicant has advised that the previously proposed pedestrian/cycle link can no longer be used for Emergency access due to the existence of Great Crested Newts. The applicant is requested to demonstrate the design of the pedestrian/cycle link in order for us to establish whether this would meet adoptable standards. The applicant is also encouraged to review the



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internal layout of this part of the allocation to ensure suitable options are available for emergency access.”

7. Comment noted. This is a matter that will be addressed by the Great Grovehurst Farm application 18/502372 EIOU.

“The Technical Note proposes improved mitigation by way of a Zebra crossing at the vicinity of the school. Whilst this is welcomed it is considered that a Puffin crossing would be the most appropriate solution due to the large volumes wanting to cross over a short period of time. This would also assist in reducing speeds in the area at busy times.”

8. Comment noted. A Puffin crossing can be provided if KCC consider this more appropriate. No further action required.

Bus Access

“The applicant has advised that it maybe possible to divert the 334, hourly service through the site with the operator suggesting that a minimum service of 2 per hour is provided. In order to establish patronage at earlier stages of the development the link road would need to be complete. It will be essential that the bus access and services are available from the spine road prior to the opening of the secondary school. The concept of the proposed strategy is however agreed subject to Section 106 requirement to ensure this is established and patronage encouraged.”

9. Comment noted. It is anticipated that the through route (spine road) trigger will be conditioned against number of housing occupations. KCC will be in control of delivery timing of the school as the developer will make the land available to KCC. No further action required.

Rail Access

“Site specific policy requires opportunities for improved patronage of the Kemsley Halt station and whilst measures have been identified these will need to be detailed. We will be holding a meeting with the developers and Education colleagues to see how access to the schools, residential areas and train station can be achieved in the most direct and secure way.”

10. Comment noted. The developer and / or representatives will attend meeting when arranged.

Existing Traffic Conditions & Baseline Traffic Flows

“The applicant has indicated that a new priority crossing which should assist in reducing speeds at the proposed school access location.”

11. Comment noted. No action required.

“The assessment years have previously been agreed and have been presented as requested. The forecasting horizon of 2031 is agreed as appropriate. The 2031 date coincides with the completion of the previously proposed end of the local plan period and presented completion of the development. In our previous response we had suggested that the quantum of development assessed at 2023 was no longer appropriate. This has been acknowledged by the applicant and it has been agreed that mid term assessments will be dealt with at a later time to assist in establishing appropriate trigger points for the implementation of any required junction mitigations.”

12. The applicant has not necessarily acknowledged that the 2023 assessment is no longer appropriate. However, it is agreed that alternative interim assessments can be provided (through agreement with KCC) once the end state assessments and mitigations are agreed if this is required to define suitable trigger points.

“Distribution has subsequently been sensitivity tested against that of the census wards in the immediate vicinity of the development. On the basis of the evidence provided it is agreed that the distribution submitted is appropriate. The levels of traffic generation South however remain a concern and we remain of the view that vehicle access to the A249/Grovehurst junction should be made as efficient as possible.”

13. Comment noted. The access junction to the north has been revised to a roundabout proposal and this is considered below. No further action required.

Development trip generation rates



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“Primary school staff trip generation had previously not been included in the assessment and the accompanying note suggests that the site would generate 25 inbound movements. This rate remains unacceptable with a suggestion that consideration be given to the SPG parking requirements for such a facility. The SPG 4 policy advises that parking needs to be provided at a rate of 1 space per member of staff plus 10%. The note suggests that 50 staff would be expected at the site and we would therefore require an additional 55 trips to be included in the junction assessment.”

14. The assessment should not be based upon the number of parking spaces provided, but should instead be based upon the anticipated vehicle movements for the peak hour assessed (0750-0850). A proportion of staff will arrive early (between 0700-0800) to set up lesson plans for the day and complete administrative tasks before pupils arrive and hence these movements would not occur during the assessment hour. Hence, 55 car parking spaces will not necessarily fill up during the assessment period.
15. Nevertheless, PBA have completed a sensitivity assessment that assumes 55 additional vehicle movements associated with the primary school for the access junction arrangement submitted with the right turn bay included. This is included as an appendix to this document and the results summarised below. This assessment also includes the additional secondary school traffic described below. The model also assumes that the school traffic is concentrated within a half hour period during the morning peak hour as requested previously by officers.

2031	AM		PM			
	RFC	Delay (mins)	Max Q	RFC	Delay (mins)	Max Q
Turn out of site	0.60	0.48	1	0.28	0.23	0
Right turn in to site	0.66	0.28	2	0.07	0.11	0

16. It is demonstrated that the school access would operate within capacity parameters with the assumptions requested by KCC. No further action required.

“The Secondary school trip rates have been adjusted to take into account the additional pupils uplift taking into consideration of Grammar school placements generated from the development. The assessment now assumes 268 vehicle trips for the AM peak. required by the development. In addition to the information provided we will require details of the multi model trip generation. It will be important to establish the number of dedicated bus services that would be required to assess the appropriateness of the junction. It is our opinion that the trip generation for the Secondary School and junction access at the Medical Centre at Grovehurst Road will require re-assessment.”

17. As advised within the previous technical note, adopting KCC assumptions for the secondary school would increase vehicle movements at the medical centre access junction by 16 vehicles. This has been included in the junction assessment described above. No further action required.
18. With respect to the number of bus services that may be required to serve the secondary school this will be a matter for KCC to review when submitting a planning application for a school on this site. The applicant is providing the land for KCC to provide a school within this application. No further action required.

“The Technical Note confirms that 83% of school generated vehicular traffic uses the Medical Centre access with 17% using the Spine Road and an assumed pedestrian link. Whilst it would certainly be appropriate to provide a direct pedestrian link to the Secondary school from the West, no such route has yet been demonstrated. Neither is the layout of the Spine Road conducive for direct pedestrian drop offs to the school. As mentioned earlier we will be holding a meeting between the developer, KCC Highways and KCC Education in an attempt to resolve the issue. At present the assessment of the school access is not considered robust.”



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19. Comment noted. The detailed design of the school will be the remit of KCC when they bring forward a planning application for the school site. The developer and / or representatives will attend a meeting to discuss this when this has been arranged.

Junction Assessments

Sonora Way Capacity

“The Transport Note advises that Sonora Way has a width of above 7m North of Amber Rise and 8m South of Cinnabar Drive. A capacity assessment using Table 2 of the DfT document Ta79/99 is agreed as appropriate for measuring the capacity of the two-way flow of the road. The widths and category of road are however contested. The section between Amber Rise and Cinnabar Drive is generally less than 6m and specifically designed to be such. In general, the overall road width is measures as around 6.2 in the North. In the South the road is an average of 7m wide other than at the approaches to roundabouts and includes bus stops within a street lit zone. As such we would consider the road as a UAP3 category. Irrespective of the difference in assessment it is agreed that the road is capable of accepting the flows of traffic predicted in the AM. The PM movements at the Southern end of the road are predicted to be 1277 against a capacity of around 1200. Taking into account that parking restrictions apply in the Southern section then flows could be accommodated although it would be operating at the limit of its capacity. The predicted reach of capacity remains of concern. Measures that reduce the levels of distribution to the site from the A249 Bobbing junction will be required.”

20. Comments with respect to the difference of opinion of road widths are noted. However, it is noted that there is agreement that the roads can accommodate the predicted traffic flows. Whilst physical measures to reduce distribution of traffic to Bobbing junction would be difficult to define, the access junction to the north is now proposed as a roundabout to ease movement at this location.
21. In addition, Travel Plan measures will be implemented at the site and this has not been allowed for within the Transport Assessment for the purposes of a worst case assessment. Hence, the vehicular trips on the highway network would be expected to be lower than assessed in practise.
22. No further action required.

A249/Grovehurst Junction

“The developer is requested to provide a cost evaluation of their proposed scheme in order that this can be independently assessed.”

23. A costing exercise will be undertaken as requested.
“A scheme that accommodates all local plan traffic will be required as there are other sites within Swale’s adopted local plan that necessitate improvements to this junction. Proportionate contributions will be required to cover the costs of delivering the local plan scheme.”
24. The assessment completed includes Local Plan growth within the baseline assessment. This is standard practise. The application sets out a mitigation scheme that is required to offset the effect of the proposed development as a minimum, and this will be funded by the applicant. This is standard practise. The mitigation scheme proposed achieves better than nil detriment and would be the scheme implemented should the HIF bid scheme not be realised. No further action required.

A249/Bobbing junction

“The applicant has confirmed that the proposed scheme would be fully funded by themselves.

The applicant has further agreed to review the design to consider the intrinsic relation exists between this junction and those immediately to the West for Sheppey Way(Northbound) and the Co-op, Bobbing Apple and McDonalds junction.”



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25. It is understood that the KCC comment above relates to a local perception of a poor crash record, speed of vehicles and the available visibility on the side roads (from Bobbing Apple access and from Sheppey Way north).
26. A review of CrashMap indicates a total of 2 slight crashes over the preceeding 3 year period (2015, 2016 and 2017) at the Bobbing Apple junction and no crashes at the Sheppey Way (north) junction. This would not suggest a current poor crash record.
27. With respect to visibility splays available at the Sheppey Way (north junction) this can achieve the 120m required for a 40mph highway in accordance with DMRB TD 9/93. At the Bobbing Apple access junction it also appears that 120m splays can be achieved within the site frontage. This is illustrated at drawing 27239-5504-054 appended to this note.
28. If there is an existing problem with vehicular speed on this section of road then it would be for KCC to manage this through installation of speed remedial measures, such as physical constraints (potentially signing, carriageway narrowing, islands, gateway feature).
29. The existing junction of Sheppey Way is a large priority give way junction with a right turn bay, separate left and right turn lanes at the give way and large bellmouth radii. It is difficult to see what further improvements could be made to improve the operation of a priority junction at this location.
30. The proposed development is predicted to increase traffic flows on Sheppey Way at this location by 24 vehicles eastbound and 25 vehicles westbound during the morning peak hour, and 14 vehicles eastbound and 10 vehicles westbound during the evening peak hour. This is shown on Figures 8.3 and 8.4 within the TA. This modest volume of vehicles is not considered significant and would not justify major junction improvements.
31. No further action considered required.

Staplehurst Road/Crown Road Roundabout

"Further discussion on mitigation for this junction is required."

32. Comment noted. We will arrange to meet with highway officers to discuss outstanding items, including this one.

St Pauls St/Mill Way Roundabout

"Further discussion on mitigation for this junction is required."

33. Comment noted. We will arrange to meet with highway officers to discuss outstanding items, including this one.

B2006/Sonora Way Roundabout.

"An amendment to the junction has been presented that could operate effectively in the future year scenarios. Further discussion is required with the applicant following discussions with other applicants."

34. It is understood that the Redrow consultant and KCC have discussed a potential scheme for this junction and that a scheme suggested by KCC officers is currently being modelled. We will await the outcome of this exercise but anticipate that it will resolve this item to the satisfaction of KCC.

Grovehurst Site Accesses

"The applicants have agreed to review the site access designs following our earlier comments. Our opinion is that roundabout junctions will be required to be in keeping with the layout of the road further South, to reduce speeds and to operate efficiently with the increasing flows. The exception to this could be the medical centre access although this would require drop off access to be possible from the West."

35. The site access to the north has been revised to a roundabout layout. This has been submitted to KCC for comment. KCC officers have confirmed suitability of the roundabout subject to tracking, modelling and RSA.



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36. The tracking for this junction has been appended to this note. It is demonstrated that the junction can accommodate a refuse vehicle and Swale HGV for all movements.
37. With respect to modelling, this is also appended to this technical note and summarised in the tables below. It is demonstrated that the roundabout would have sufficient capacity to serve the site and background traffic.

2031	AM			PM		
	RFC	Delay (secs)	Max Q	RFC	Delay (secs)	Max Q
Great Grovehurst Farm	0.07	5	0	0.04	5	0
Grovehurst Road (S)	0.53	5	1	0.51	5	1
Site access	0.11	4	0	0.05	4	0
Grovehurst Road (N)	0.56	5	1	0.64	6	2

Detailed submission

38. We will allow other members of the consultant team to comment on detailed matters of design.



TECHNICAL NOTE

Medical centre access – model output



Junctions 9
PICADY 9 - Priority Intersection Module
Version: 9.5.0.6896 © Copyright TRL Limited, 2018
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Filename: J4 - Grovehurst Rd - Medical Centre (Right turn bay) peak 30 assessment.j9
Path: J:\27239 - GH - NW Sittingbourne\BRIEF 5504 - Transport Assessment (revised)\Modelling\TRANSPORT\ JUNCTION FOLDERS\J4 - Grovehurst Rd - Medical Centre
Report generation date: 26/10/2018 15:54:07

»Grovehurst Rd - Medical Centre - 2031 with Dev (ALL DEV IN PEAK 30), AM
 »Grovehurst Rd - Medical Centre - 2031 with Dev (ALL DEV IN PEAK 30), PM

Summary of junction performance

	AM			PM		
	Queue (Veh)	Delay (min)	RFC	Queue (Veh)	Delay (min)	RFC
Grovehurst Rd - Medical Centre - 2031 with Dev (ALL DEV IN PEAK 30)						
Stream B-AC	1.4	0.48	0.60	0.4	0.23	0.28
Stream C-AB	2.2	0.28	0.66	0.1	0.11	0.07

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

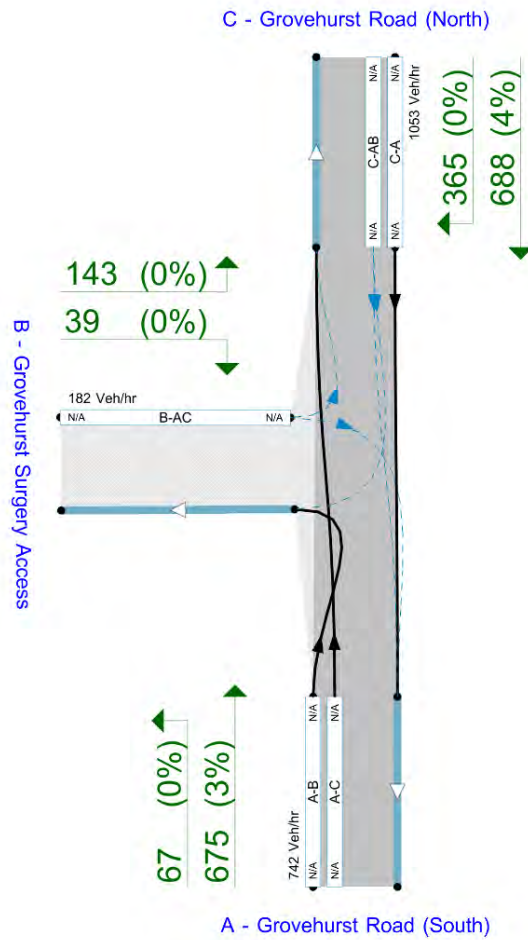
File summary

File Description

Title	(untitled)
Location	
Site number	
Date	01/09/2015
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	PBA\mglanfield
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	min	-Min	perMin



Flows show original traffic demand (Veh/hr).

Time Segment: 08:20-08:35

The junction diagram reflects the last run of Junctions.

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (min)	Queue threshold (PCU)
		0.85	0.60	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D15	2031 with Dev (ALL DEV IN PEAK 30)	AM	DIRECT	07:35	09:05	90	15
D16	2031 with Dev (ALL DEV IN PEAK 30)	PM	DIRECT	16:45	18:15	90	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Grovehurst Rd - Medical Centre	100.000

Grovehurst Rd - Medical Centre - 2031 with Dev (ALL DEV IN PEAK 30), AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (min)	Junction LOS
1	Grovehurst Road/Grovehurst Surgery Access	T-Junction	Two-way		0.05	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	Grovehurst Road (South)		Major
B	Grovehurst Surgery Access		Minor
C	Grovehurst Road (North)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C - Grovehurst Road (North)	6.00		✓	3.00	250.0	✓	5.22

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B - Grovehurst Surgery Access	One lane	4.26	24	28

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	562	0.102	0.259	0.163	0.370
1	B-C	723	0.111	0.280	-	-
1	C-B	781	0.303	0.303	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D15	2031 with Dev (ALL DEV IN PEAK 30)	AM	DIRECT	07:35	09:05	90	15

Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A - Grovehurst Road (South)		✓	100.000
B - Grovehurst Surgery Access		✓	100.000
C - Grovehurst Road (North)		✓	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
07:35 - 07:50	From			
	A - Grovehurst Road (South)	0	17	675
	B - Grovehurst Surgery Access	9	0	3
	C - Grovehurst Road (North)	688	24	0

Demand (Veh/hr)

		To		
		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
07:50 - 08:05	From			
	A - Grovehurst Road (South)	0	17	675
	B - Grovehurst Surgery Access	9	0	3
	C - Grovehurst Road (North)	688	24	0

Demand (Veh/hr)

		To		
		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
08:05 - 08:20	From			
	A - Grovehurst Road (South)	0	67	675
	B - Grovehurst Surgery Access	39	0	143
	C - Grovehurst Road (North)	688	365	0

Demand (Veh/hr)

		To		
		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
08:20 - 08:35	From			
	A - Grovehurst Road (South)	0	67	675
	B - Grovehurst Surgery Access	39	0	143
	C - Grovehurst Road (North)	688	365	0

Demand (Veh/hr)

		To		
		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
08:35 - 08:50	From			
	A - Grovehurst Road (South)	0	17	675
	B - Grovehurst Surgery Access	9	0	3
	C - Grovehurst Road (North)	688	24	0

Demand (Veh/hr)

 08:50 -
09:05

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	17	675
	B - Grovehurst Surgery Access	9	0	3
	C - Grovehurst Road (North)	688	24	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	0	3
	B - Grovehurst Surgery Access	0	0	0
	C - Grovehurst Road (North)	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS
B-AC	0.60	0.48	1.4	D
C-AB	0.66	0.28	2.2	C
C-A				
A-B				
A-C				

Main Results for each time segment

07:35 - 07:50

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	12	293	0.041	12	0.0	0.213	B
C-AB	24	566	0.042	24	0.0	0.111	A
C-A	688			688			
A-B	17			17			
A-C	675			675			

07:50 - 08:05

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	12	293	0.041	12	0.0	0.214	B
C-AB	24	566	0.042	24	0.0	0.111	A
C-A	688			688			
A-B	17			17			
A-C	675			675			

08:05 - 08:20

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	182	308	0.590	177	1.3	0.440	D
C-AB	418	631	0.663	410	2.1	0.265	C
C-A	635			635			
A-B	67			67			
A-C	675			675			

08:20 - 08:35

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	182	305	0.597	182	1.4	0.484	D
C-AB	418	631	0.663	418	2.2	0.283	C
C-A	635			635			
A-B	67			67			
A-C	675			675			

08:35 - 08:50

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	12	323	0.037	18	0.0	0.200	B
C-AB	24	568	0.042	32	0.0	0.114	A
C-A	688			688			
A-B	17			17			
A-C	675			675			

08:50 - 09:05

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	12	293	0.041	12	0.0	0.214	B
C-AB	24	566	0.042	24	0.0	0.111	A
C-A	688			688			
A-B	17			17			
A-C	675			675			

Grovehurst Rd - Medical Centre - 2031 with Dev (ALL DEV IN PEAK 30), PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (min)	Junction LOS
1	Grovehurst Road/Grovehurst Surgery Access	T-Junction	Two-way		0.01	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D16	2031 with Dev (ALL DEV IN PEAK 30)	PM	DIRECT	16:45	18:15	90	15

Vehicle mix varies over time	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A - Grovehurst Road (South)		✓	100.000
B - Grovehurst Surgery Access		✓	100.000
C - Grovehurst Road (North)		✓	100.000

Origin-Destination Data

Demand (Veh/hr)

16:45 - 17:00

		To		
		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
From		0	18	682
	A - Grovehurst Road (South)	24	0	33
	B - Grovehurst Surgery Access	847	17	0
	C - Grovehurst Road (North)			

Demand (Veh/hr)

17:00 - 17:15

		To		
		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
From		0	18	682
	A - Grovehurst Road (South)	24	0	33
	B - Grovehurst Surgery Access	847	17	0
	C - Grovehurst Road (North)			

Demand (Veh/hr)

 17:15 -
17:30

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	23	682
	B - Grovehurst Surgery Access	32	0	69
	C - Grovehurst Road (North)	847	39	0

Demand (Veh/hr)

 17:30 -
17:45

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	23	682
	B - Grovehurst Surgery Access	32	0	69
	C - Grovehurst Road (North)	847	39	0

Demand (Veh/hr)

 17:45 -
18:00

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	18	682
	B - Grovehurst Surgery Access	24	0	33
	C - Grovehurst Road (North)	847	17	0

Demand (Veh/hr)

 18:00 -
18:15

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	18	682
	B - Grovehurst Surgery Access	24	0	33
	C - Grovehurst Road (North)	847	17	0

Vehicle Mix

Heavy Vehicle Percentages

 16:45 -
17:00

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	6	2
	B - Grovehurst Surgery Access	5	0	0
	C - Grovehurst Road (North)	1	0	0

Heavy Vehicle Percentages

 17:00 -
17:15

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	6	2
	B - Grovehurst Surgery Access	5	0	0
	C - Grovehurst Road (North)	1	0	0

Heavy Vehicle Percentages

 17:15 -
17:30

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	5	2
	B - Grovehurst Surgery Access	3	0	0
	C - Grovehurst Road (North)	1	0	0

Heavy Vehicle Percentages

 17:30 -
17:45

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	5	2
	B - Grovehurst Surgery Access	3	0	0
	C - Grovehurst Road (North)	1	0	0

Heavy Vehicle Percentages

 17:45 -
18:00

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	6	2
	B - Grovehurst Surgery Access	5	0	0
	C - Grovehurst Road (North)	1	0	0

Heavy Vehicle Percentages

 18:00 -
18:15

		To		
From		A - Grovehurst Road (South)	B - Grovehurst Surgery Access	C - Grovehurst Road (North)
	A - Grovehurst Road (South)	0	6	2
	B - Grovehurst Surgery Access	5	0	0
	C - Grovehurst Road (North)	1	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (min)	Max Queue (Veh)	Max LOS
B-AC	0.28	0.23	0.4	B
C-AB	0.07	0.11	0.1	A
C-A				
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	57	335	0.170	56	0.2	0.215	B
C-AB	17	565	0.030	17	0.0	0.109	A
C-A	847			847			
A-B	18			18			
A-C	682			682			

17:00 - 17:15

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	57	335	0.170	57	0.2	0.216	B
C-AB	17	565	0.030	17	0.0	0.109	A
C-A	847			847			
A-B	18			18			
A-C	682			682			

17:15 - 17:30

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	101	364	0.277	100	0.4	0.228	B
C-AB	39	563	0.069	39	0.1	0.114	A
C-A	847			847			
A-B	23			23			
A-C	682			682			

17:30 - 17:45

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	101	364	0.277	101	0.4	0.228	B
C-AB	39	563	0.069	39	0.1	0.114	A
C-A	847			847			
A-B	23			23			
A-C	682			682			

17:45 - 18:00

Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	57	336	0.170	58	0.2	0.214	B
C-AB	17	565	0.030	17	0.0	0.110	A
C-A	847			847			
A-B	18			18			
A-C	682			682			

18:00 - 18:15

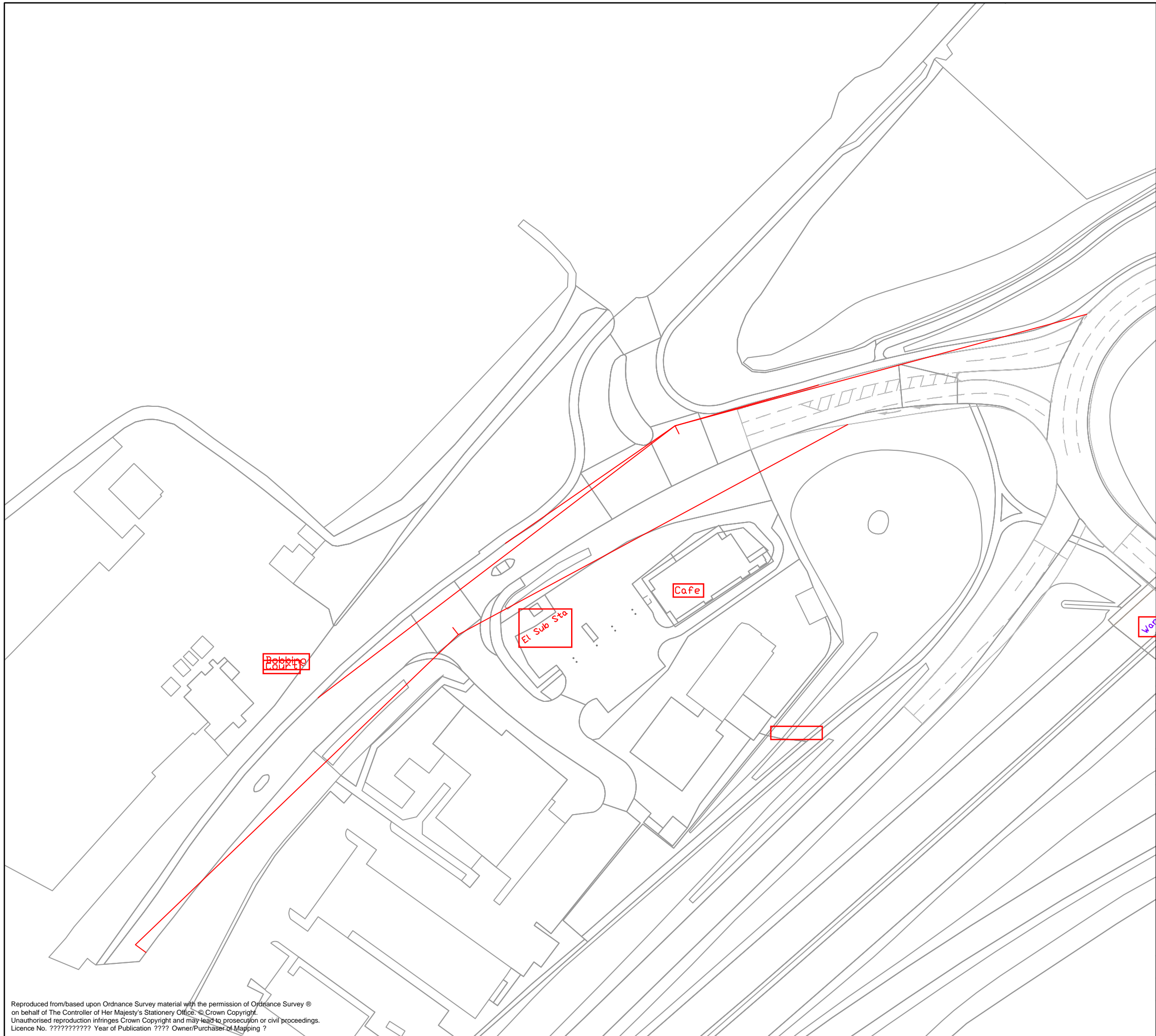
Stream	Total Demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (min)	Unsignalised level of service
B-AC	57	335	0.170	57	0.2	0.216	B
C-AB	17	565	0.030	17	0.0	0.110	A
C-A	847			847			
A-B	18			18			
A-C	682			682			

TECHNICAL NOTE



Drawing 27239-5504-054





Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
 UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status
FOR INFORMATION

SITTINGBOURNE, KENT
VISIBILITY SPLAYS SHEPPEY WAY
2.4M X 120M

Client



Date of 1st Issue	Designed	Drawn
26.10.2018	-	JHJ
A3 Scale	Checked	Approved
1:1000	GH	GH

Drawing Number	Revision
27239_5504_053	-

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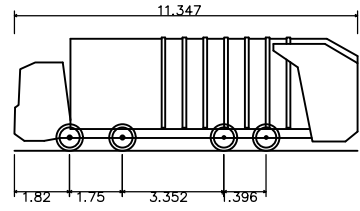
TECHNICAL NOTE

Grovehurst Road roundabout – tracking

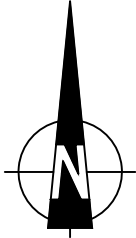


erbed House

VEHICLE PROFILE:



Large Refuse Vehicle (4 axle)
 Overall Length 11.347m
 Overall Width 2.500m
 Overall Body Height 3.751m
 Min Body Ground Clearance 0.304m
 Track Width 2.500m
 Lock to lock time 6.00s
 Wall to Wall Turning Radius 11.330m

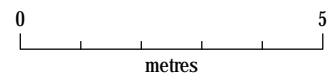


Great Grovehurst Farm

New House

NOTES

1. ORIGINAL ROUNDABOUT DESIGN TAKEN FROM DRAWING D118/12 FROM PFA CONSULTING
2. DO NOT SCALE FROM THIS DRAWING



Mark Revision Date Drawn Chkd Appd

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Drawing Issue Status

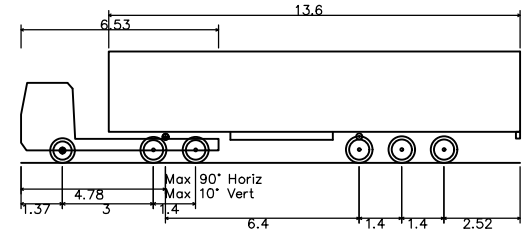
NORTH WEST SITTINGBOURNE

PROPOSED GROVEHURST ROAD SITE ACCESS ROUNDABOUT TRACKING (1 OF 2)

Client			 Offices throughout the UK and Europe www.peterbrett.com © Peter Brett Associates LLP ASHFORD Tel: 01233 651740
PERSIMMON HOMES			
Date of 1st Issue	Designed	Drawn	
29.10.2018	-	JHJ	
A3 Scale	Checked	Approved	
1:500	GH	GH	
Drawing Number	Revision		
27239_5504_055	-		

erbed House

VEHICLE PROFILE:



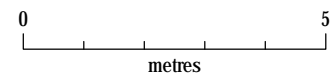
Max Legal Length (UK) Articulated Vehicle (16.5m)
 Overall Length 16.500m
 Overall Width 2.550m
 Overall Body Height 3.681m
 Min Body Ground Clearance 0.411m
 Max Track Width 2.500m
 Lock to lock time 6.00s
 Kerb to Kerb Turning Radius 6.530m

Great Grovehurst Farm

New House

NOTES

1. ORIGINAL ROUNDABOUT DESIGN TAKEN FROM DRAWING D118/12 FROM PFA CONSULTING
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Drawing Issue Status

NORTH WEST SITTINGBOURNE

PROPOSED GROVEHURST ROAD SITE ACCESS ROUNDABOUT TRACKING (2 OF 2)

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PERSIMMON HOMES			
Date of 1st Issue	Designed	Drawn	
29.10.2018	-	JHJ	
A3 Scale	Checked	Approved	
1:500	GH	GH	
Drawing Number		Revision	
27239_5504_055		-	

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TECHNICAL NOTE

Grovehurst Road roundabout – modelling



Junctions 9
ARCADY 9 - Roundabout Module
Version: 9.5.0.6896 © Copyright TRL Limited, 2018
For sales and distribution information, program advice and maintenance, contact TRL: +44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: J17 - Grovehurst Rd Roundabout v01.j9
Path: J:\27239 - GH - NW Sittingbourne\BRIEF 5504 - Transport Assessment (revised)\Modelling\TRANSPORT\ - JUNCTION FOLDERS\J17 - Site Access Roundabout
Report generation date: 08/10/2018 10:27:33

- »2031 with Dev, AM
- »2031 with Dev, PM

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
2031 with Dev								
1 - Great Grovehurst Farm	0.1	5.24	0.07	A	0.0	5.49	0.04	A
2 - Grovehurst Rd (S)	1.1	4.81	0.53	A	1.0	4.68	0.51	A
3 - Site Access	0.1	4.18	0.11	A	0.1	3.77	0.05	A
4 - Grovehurst Rd (N)	1.3	5.06	0.56	A	1.8	6.03	0.64	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	05/10/2018
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	PBA\jhodder-jones
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2031 with Dev	AM	ONE HOUR	08:00	09:30	15
D2	2031 with Dev	PM	ONE HOUR	17:00	18:30	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2031 with Dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	4.91	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Great Grovehurst Farm	
2	Grovehurst Rd (S)	
3	Site Access	
4	Grovehurst Rd (N)	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Great Grovehurst Farm	2.75	6.03	8.7	20.0	40.0	35.0	
2 - Grovehurst Rd (S)	3.68	6.14	26.3	20.0	40.0	32.0	
3 - Site Access	3.65	5.95	12.2	20.0	40.0	36.0	
4 - Grovehurst Rd (N)	3.75	7.03	16.1	20.0	40.0	36.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Great Grovehurst Farm	0.549	1262
2 - Grovehurst Rd (S)	0.635	1677
3 - Site Access	0.597	1508
4 - Grovehurst Rd (N)	0.636	1701

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2031 with Dev	AM	ONE HOUR	08:00	09:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Great Grovehurst Farm		✓	48	100.000
2 - Grovehurst Rd (S)		✓	759	100.000
3 - Site Access		✓	99	100.000
4 - Grovehurst Rd (N)		✓	834	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Great Grovehurst Farm	2 - Grovehurst Rd (S)	3 - Site Access	4 - Grovehurst Rd (N)
From	1 - Great Grovehurst Farm	0	10	0	38
	2 - Grovehurst Rd (S)	3	0	3	753
	3 - Site Access	0	10	0	89
	4 - Grovehurst Rd (N)	12	795	27	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Great Grovehurst Farm	2 - Grovehurst Rd (S)	3 - Site Access	4 - Grovehurst Rd (N)
From	1 - Great Grovehurst Farm	0	0	0	0
	2 - Grovehurst Rd (S)	0	0	0	3
	3 - Site Access	0	0	0	0
	4 - Grovehurst Rd (N)	0	4	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Great Grovehurst Farm	0.07	5.24	0.1	A
2 - Grovehurst Rd (S)	0.53	4.81	1.1	A
3 - Site Access	0.11	4.18	0.1	A
4 - Grovehurst Rd (N)	0.56	5.06	1.3	A

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	36	624	906	0.040	36	0.0	4.137	A
2 - Grovehurst Rd (S)	571	49	1598	0.358	569	0.6	3.492	A
3 - Site Access	75	595	1142	0.065	74	0.1	3.370	A
4 - Grovehurst Rd (N)	628	10	1633	0.385	625	0.6	3.564	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	43	747	836	0.052	43	0.1	4.540	A
2 - Grovehurst Rd (S)	682	58	1592	0.429	682	0.7	3.950	A
3 - Site Access	89	713	1070	0.083	89	0.1	3.668	A
4 - Grovehurst Rd (N)	750	12	1632	0.459	749	0.8	4.073	A

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	53	914	741	0.071	53	0.1	5.234	A
2 - Grovehurst Rd (S)	836	71	1584	0.528	834	1.1	4.793	A
3 - Site Access	109	873	972	0.112	109	0.1	4.171	A
4 - Grovehurst Rd (N)	918	14	1630	0.563	917	1.3	5.033	A

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	53	916	740	0.071	53	0.1	5.241	A
2 - Grovehurst Rd (S)	836	72	1584	0.528	836	1.1	4.810	A
3 - Site Access	109	874	971	0.112	109	0.1	4.175	A
4 - Grovehurst Rd (N)	918	14	1630	0.563	918	1.3	5.056	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	43	750	834	0.052	43	0.1	4.550	A
2 - Grovehurst Rd (S)	682	59	1592	0.429	684	0.8	3.971	A
3 - Site Access	89	715	1069	0.083	89	0.1	3.677	A
4 - Grovehurst Rd (N)	750	12	1632	0.460	751	0.9	4.099	A

09:15 - 09:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	36	627	904	0.040	36	0.0	4.147	A
2 - Grovehurst Rd (S)	571	49	1598	0.358	572	0.6	3.514	A
3 - Site Access	75	599	1140	0.065	75	0.1	3.380	A
4 - Grovehurst Rd (N)	628	10	1633	0.385	629	0.6	3.590	A

2031 with Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	5.40	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2031 with Dev	PM	ONE HOUR	17:00	18:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1 - Great Grovehurst Farm		✓	24	100.000
2 - Grovehurst Rd (S)		✓	733	100.000
3 - Site Access		✓	50	100.000
4 - Grovehurst Rd (N)		✓	981	100.000

Origin-Destination Data

Demand (Veh/hr)

		To			
		1 - Great Grovehurst Farm	2 - Grovehurst Rd (S)	3 - Site Access	4 - Grovehurst Rd (N)
From	1 - Great Grovehurst Farm	0	5	0	19
	2 - Grovehurst Rd (S)	9	0	9	715
	3 - Site Access	0	5	0	45
	4 - Grovehurst Rd (N)	35	865	81	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1 - Great Grovehurst Farm	2 - Grovehurst Rd (S)	3 - Site Access	4 - Grovehurst Rd (N)
From	1 - Great Grovehurst Farm	0	0	0	0
	2 - Grovehurst Rd (S)	0	0	0	2
	3 - Site Access	0	0	0	0
	4 - Grovehurst Rd (N)	0	1	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1 - Great Grovehurst Farm	0.04	5.49	0.0	A
2 - Grovehurst Rd (S)	0.51	4.68	1.0	A
3 - Site Access	0.05	3.77	0.1	A
4 - Grovehurst Rd (N)	0.64	6.03	1.8	A

Main Results for each time segment

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	18	713	867	0.021	18	0.0	4.241	A
2 - Grovehurst Rd (S)	552	75	1598	0.345	550	0.5	3.427	A
3 - Site Access	38	557	1169	0.032	38	0.0	3.181	A
4 - Grovehurst Rd (N)	739	11	1680	0.440	735	0.8	3.799	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	22	854	789	0.027	22	0.0	4.692	A
2 - Grovehurst Rd (S)	659	90	1588	0.415	658	0.7	3.870	A
3 - Site Access	45	667	1102	0.041	45	0.0	3.405	A
4 - Grovehurst Rd (N)	882	13	1679	0.525	881	1.1	4.504	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	26	1044	683	0.039	26	0.0	5.482	A
2 - Grovehurst Rd (S)	807	110	1576	0.512	806	1.0	4.666	A
3 - Site Access	55	817	1011	0.054	55	0.1	3.765	A
4 - Grovehurst Rd (N)	1080	15	1677	0.644	1077	1.8	5.978	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	26	1047	682	0.039	26	0.0	5.494	A
2 - Grovehurst Rd (S)	807	110	1576	0.512	807	1.0	4.682	A
3 - Site Access	55	818	1010	0.055	55	0.1	3.768	A
4 - Grovehurst Rd (N)	1080	15	1677	0.644	1080	1.8	6.030	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	22	858	787	0.027	22	0.0	4.705	A
2 - Grovehurst Rd (S)	659	90	1588	0.415	660	0.7	3.886	A
3 - Site Access	45	669	1101	0.041	45	0.0	3.409	A
4 - Grovehurst Rd (N)	882	13	1679	0.525	885	1.1	4.549	A

18:15 - 18:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1 - Great Grovehurst Farm	18	717	864	0.021	18	0.0	4.255	A
2 - Grovehurst Rd (S)	552	75	1597	0.345	553	0.5	3.447	A
3 - Site Access	38	560	1167	0.032	38	0.0	3.186	A
4 - Grovehurst Rd (N)	739	11	1680	0.440	740	0.8	3.837	A



Stratton Park House, Wanborough Road Swindon, SN3 4HG

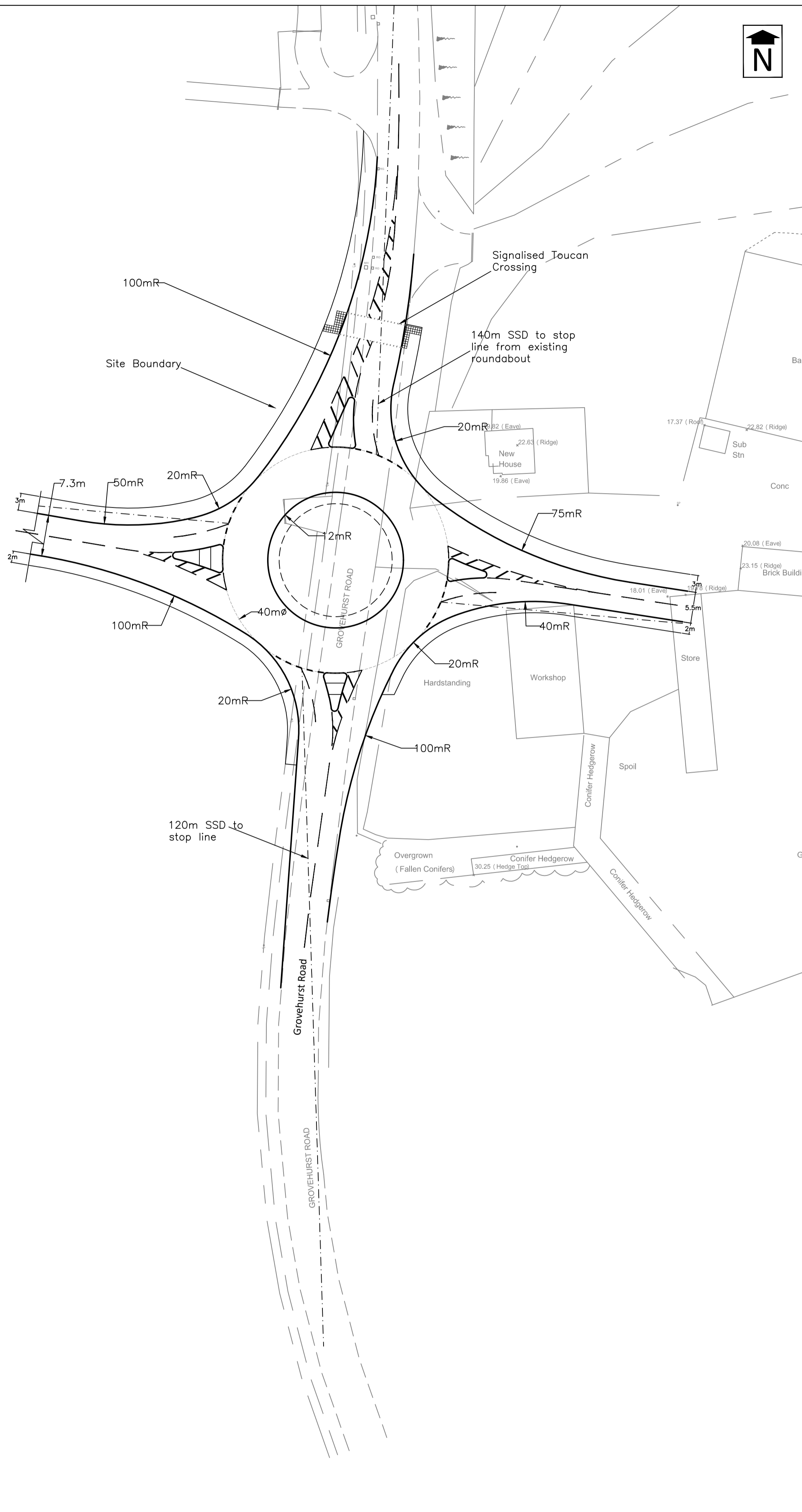
Telephone 01793 828000

Website www.pfapl.com

Preliminary
These drawings are produced for initial discussion and illustrative purposes only, and should not be relied upon for tender or pricing purposes.

NOTES

1. This drawing is based on the Topographical Survey undertaken by M.I.N. Beach Chartered Land Surveyor, dated July 2014.



Rev	Date	Description	Drawn	Check
A	03/12/15	Red line amended.	PJ	GE
B	04/01/19	Title block amended.	CJH	GE
C	04/04/19	Footway widths and toucan crossing location amended and additional dimensions added.	THP	PK

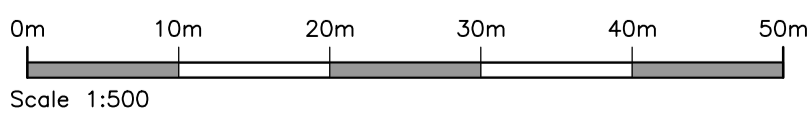
Status
PRELIMINARY

Client
G H Dean & Co Ltd and Persimmon Homes Ltd

Project
N.W Sittingbourne MU1 Allocation

Drawing Title
Grovehurst Road Site Access

Drawing No. **D118/12** Rev C
Date: June 2015 Scale: 1:500 @ A2
E-Mail: geves@pfapl.com



Plant Schedule

Trees	No.	Species Name	Girth	Height	Pot Size	Specification
3 No.	Betula pendula	16-18cm	4.0-4.5m	100-200L	CG: Extra Heavy Standard - Clear Stem min. 200	
7 No.	Carpinus betulus	16-18cm	4.0-4.5m		RB: 3x: Large Feathered	
3 No.	Quercus robur	18-20cm	4.0-4.5m		RB: 3x: Extra Heavy Standard - Clear Stem min. 200	
5 No.	Tilia cordata	18-20cm	4.0-4.5m		RB: 3x: Extra Heavy Standard - Clear Stem min. 200	

Native Species Shrub Mix						
%	No.	Species Name	Height	Pot Size	Specification	
3%	17 No.	Azox carpastria	175-200cm		Feathered: 5 brks: 2x: B	
8%	44 No.	Cornus sanguinea	60-80cm		1+1: Transplant - seed raised: Branched: 3 brks: B	
12%	66 No.	Corylus avellana	60-80cm		1+2: Transplant - seed raised: Branched: 3 brks: B	
30%	164 No.	Crataegus monogyna	60-80cm		1+1: Transplant - seed raised: B	
5%	27 No.	Ilex aquifolium	40-60cm	3L	Bushy: 3 brks: C	
12%	66 No.	Ligustrum vulgare	60-80cm		0/2: Cutting: Branched: 3 brks: B	
4%	22 No.	Rosa canina	40-60cm	2L	Branched: 3 brks: C	
18%	98 No.	Sambucus nigra	60-80cm		1+1: Transplant - seed raised: Branched: 3 brks: B	
8%	44 No.	Viburnum opulus	40-60cm	2L	Branched: 3 brks: C	
Total: 100%						

Bulbs		
No.	Species Name	Specification
3 No.	Mixed Daffodils & Narcissi for Naturalising	See Tee Bubs: 25kg net. Bulb Size 12-14cm

Wildflowers			
No.	%	Species Name	Specification
12 No.	0.5%	Achillea millefolium	Seed: British Native-origin
12 No.	0.5%	Centaurea nigra	Seed: British Native-origin
24 No.	1%	Daucus carota	Seed: British Native-origin
60 No.	2.5%	Callium verum	Seed: British Native-origin
24 No.	1%	Knaulia arvensis	Seed: British Native-origin
48 No.	2%	Leucanthemum vulgare	Seed: British Native-origin
6 No.	0.2%	Lotus corniculatus	Seed: British Native-origin
24 No.	1%	Plantago lanceolata	Seed: British Native-origin
36 No.	1.5%	Primula veris	Seed: British Native-origin
60 No.	2.5%	Prunella vulgaris	Seed: British Native-origin
72 No.	3%	Ranunculus acris	Seed: British Native-origin
48 No.	2%	Ranunculus bulbosus	Seed: British Native-origin
36 No.	1.5%	Rhinanthus minor	Seed: British Native-origin
19 No.	0.8%	Rumex acetosa	Seed: British Native-origin
Total: 20%			

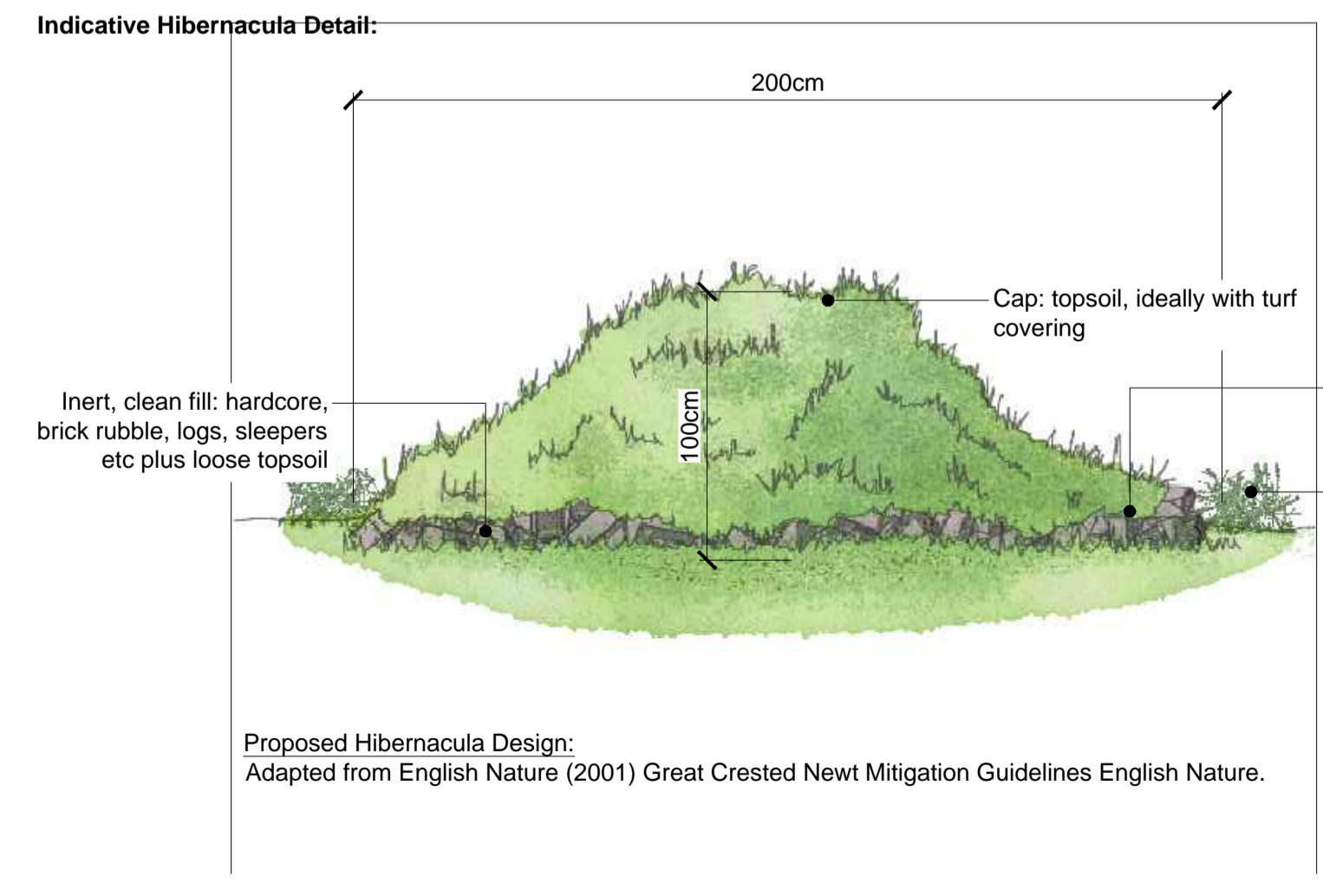
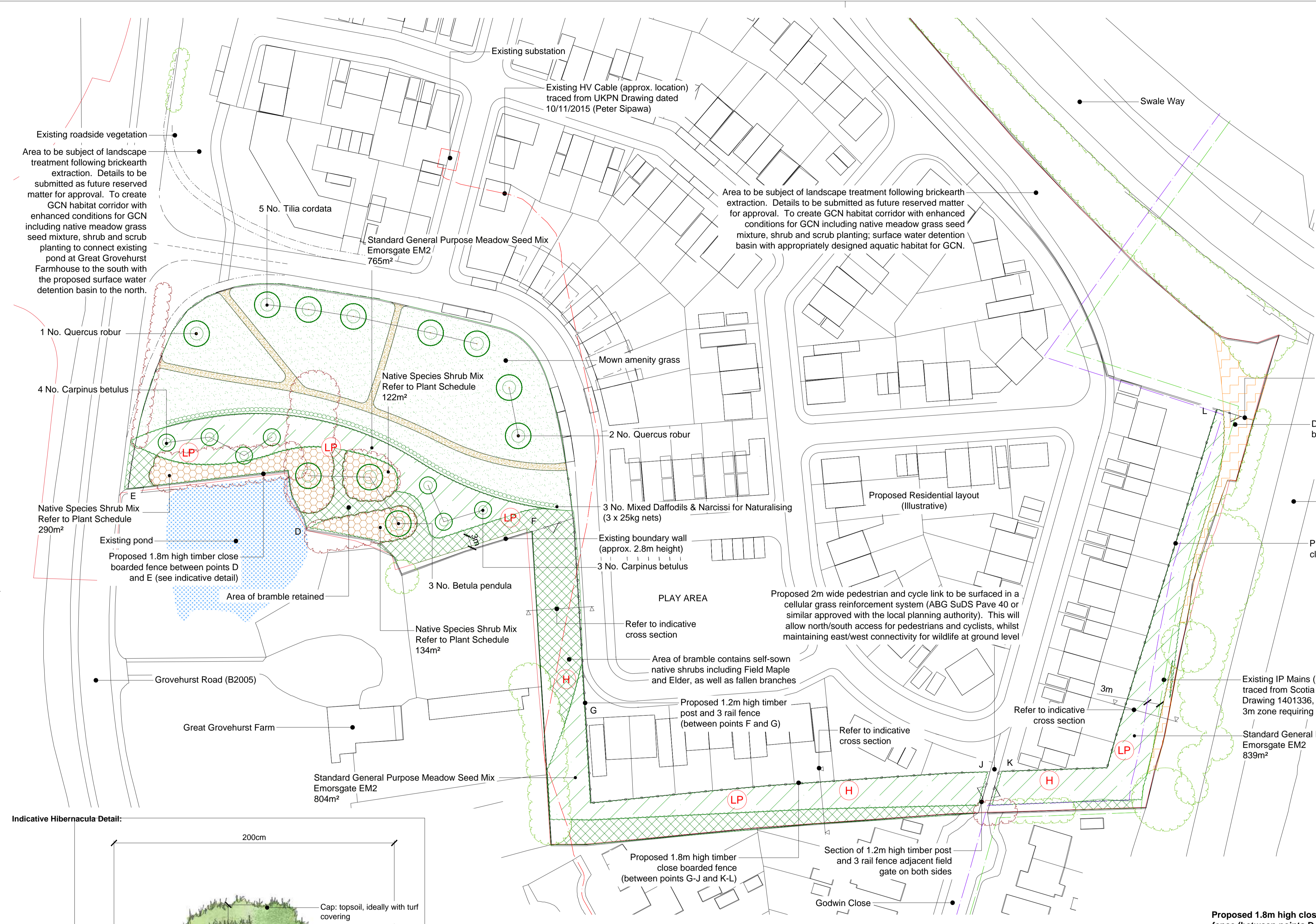
Grasses			
No.	%	Species Name	Specification
192 No.	8%	Agrostis capillaris	Seed: Commercial-origin
963 No.	40%	Cynosurus cristatus	Seed: Commercial-origin
674 No.	28%	Festuca rubra juncea	Seed: Commercial-origin
97 No.	4%	Ptilium berolani	Seed: Commercial-origin
Total: 80%			

LEGEND:

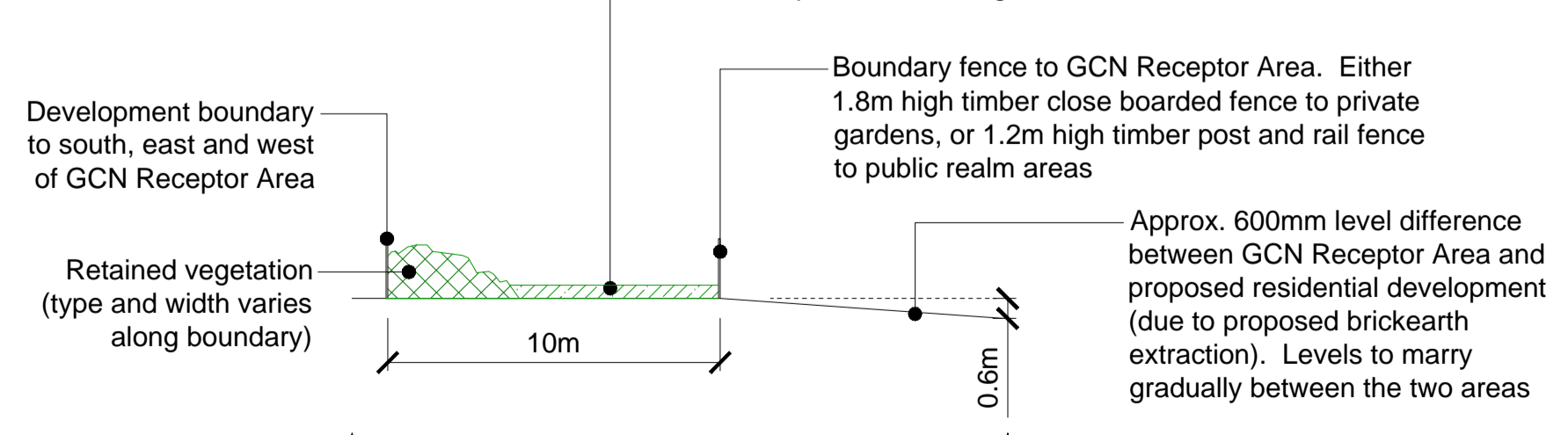
- Existing trees to be retained
- Existing trees to be removed
- Proposed trees
- Mown amenity grass
- Existing pond
- Native meadow/grass seed mixture: Emorsgate EM2
- Proposed native species shrub mix
- Existing dense bramble scrub
- Dense ivy with occasional bramble alongside railway line
- Traditional 2.7m timber 5-bar gate for maintenance access
- Proposed fence (as annotated)
- Bulb planting to amenity area
- Proposed gravel path
- Hibernacula (see construction diagram) to be located within meadow grass areas
- Log / brush piles (from on-site arisings)
- Site boundary

Note. Drawing to be read in conjunction with Lloyd Bore NBS Landscape Specification.

AMENDED



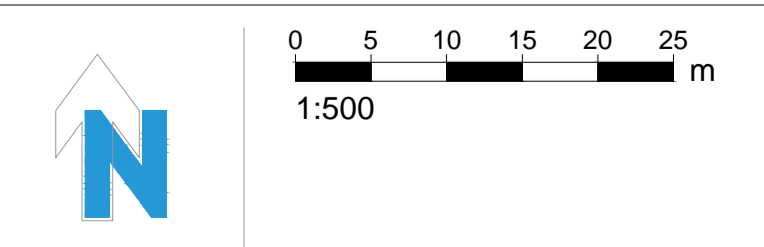
Indicative Cross Section: GCN Receptor Area



Proposed 1.8m high close boarded fence (between points D and E):



1.8m high timber close boarded fence panels with concrete posts
Use of gravel boards to be avoided to allow habitat connectivity for wildlife at ground level



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rev.	date	auth.	note
P01	17.08.2018	PW	Preliminary issue for review / comment.
P02	21.09.2018	PW	Minor amendments to drawing and notes. Cross section and fence detail added.
P03	22.08.2018	PW	Bulbs added to amenity area. Minor amendments to drawing notes.
P04	01.10.2018	CB	Existing pond hatched and notes amended.
P05	28.01.2019	TB	Revised site boundary.

client: **G. H. Dean & Co. Ltd.**
project: **Great Grovehurst Farm Grovehurst Road Sittingbourne, Kent**

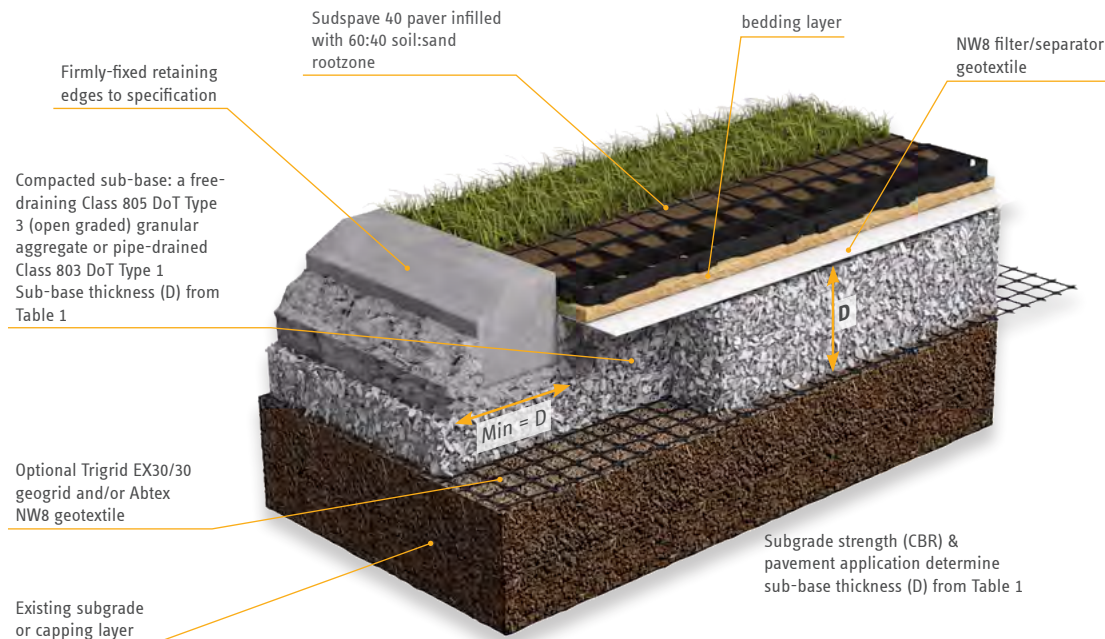
drawing no. **4940-LLB-XX-XX-DR-L-0001** rev **P04**
project status: **PLANNING** suit **S4**
drawing title: **Great Crested Newt Creation Area Landscape Proposals**

rev date: **28.01.2019**
scale: **1:500**
sheet: **A1**
drawn: **TB**
checked: **PW**

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Design, installation and maintenance guidance for grass surfaces

Sudspave® 40 cellular paving is suitable for a wide range of trafficked applications and landscaped areas where a reinforced grass surface is required. Typical applications include: car parks, emergency access, maintenance routes, cycle paths, pedestrian and disabled access.



Technical specification

System	Sudspave® 40
Colour	Black
Paving unit size	500mm x 500mm x 40mm (nominal)
Coverage rate	4 units per m ² panel (nominal) - supplied pre-connected
Cell dimension	49 sequentially irregular cells : 45-68mm x 45-68mm (nominal) per unit
Cell structure	Robust flexural contoured walls
Paving unit footprint	Open structured with load bearing crossbars
Weight	1.4kg/paving unit & 5.6kg/m ² panel (nominal)
Compressive strength (filled)	3000kN/m ² ≅ 300 tonnes/m ² (nominal)
Permissible axle load	210kN/axle
Connection & interlock	Positive self-locking T-shaped lug and clip-slot mechanism
Flexure & expansion	In-built flexural cell design
Parking bay & line markers	White mouldings (204mm x 68mm) slot into 3 cells - 4 No./lm (other colours on request)
Chemical resistance	Excellent
UV stability	High resistance to colour & strength degradation
Infiltration capacity	Limited by the permeability of the specified infill material
Bedding layer material	60:40 sand:soil rootzone blend
Bedding layer thickness	Consolidated 40mm - 50mm thick layer
Cell infill material	60:40 sand:soil rootzone blend
Cell infill thickness	Finished level to be 7mm - 10mm below top of cells
Grass seed	30g/m ² - 50g/m ² hard wearing, low maintenance amenity blend
Fertiliser	A pre-seeding fertiliser at installation stage, followed by routine seasonal dressings
Upper Filter/Separator geotextile	ABG Terrex NW8 geotextile. 1mm thick - 100g/m ² - 8kN/m ²
Sub-base type	DoT Type 3, Type 1x, Type 4/40 or Type 1 (with appropriate drainage)
Sub base thickness (D)	Refer to Table 1 for thickness 'D' in millimetres (mm)
Sub-base reinforcement (optional)	Trigrid Geogrid
Lower filter/separator geotextile (optional)	ABG Terrex NW8 Geotextile. 1mm thick - 100g/m ² - 8kN/m ²
Sub-base attenuation (optional)	Geomembrane containment system and geotextile protection

Sudspave® 40

Design, installation and maintenance guidance for grass surfaces

abg creative geosynthetic engineering

www.abgltd.com

Sudspave® 40 installation process

The following generic guidance must be read in conjunction with the specific project specification within the contract documents

1. Install the specified optional Geogrid/Geotextile/Geomembrane onto the prepared sub-grade formation.
2. Install the specified sub-base layer and optional drainage (Refer to Table 1 & 2 for sub-base and subgrade advice).
3. Install any edge restraints which may be specified.
4. Install the optional 'upper filter/separator' geotextile on top of the sub-base layer.
5. Install the specified sand:soil rootzone bedding layer to the compacted uniform thickness.
6. Ensure an accurate right-angled Sudspave laying pattern by setting-out the site using pins and string-lines. Check the lines regularly for accuracy.
Start installing the pre-assembled Sudspave® panels (4 units/m²) by placing the webbed face downwards onto the bedding layer. Place the panels with the T-shaped lugs facing in the direction of laying on the 2 leading edges, with the clip-slots on the reverse-edges.
7. Progress across the site in rows by slotting panels together in a downward motion, ensuring that the 6 self-lock clips-slots engage fully with the T-shaped lugs on adjacent panels.
Avoid starting more than 2 new rows of panels prior to completing the row which is in progress. Avoid installing in a diagonal pattern too far ahead of completed rows.
Regularly check and adjust the completed leading edge to ensure that it is straight. It is recommended that protective gloves are worn to avoid abrasions during installation.
8. If individual unit separation becomes necessary, the self-lock clips are designed to be disengaged by pulling paving units gently away from each other whilst applying upward or downward pressure.
9. Panels can be cut to fit around obstructions and curves using a hand-saw or disc-saw. The use of cut-pieces which do not have integral lugs and self-lock clips, should be avoided wherever possible. However, where it is necessary to employ small or irregularly shaped cut-pieces to fit around obstacles, these should be securely attached to adjacent panels using industrial strength cable ties.
10. Installation of car parking bay/line marker inserts is best carried out prior to filling the cells with rootzone. The oblong markers will fit in all cells except where they cross adjacent paving unit joints where they will need to be cut into individual cell sized units. Where inserts have been cut-down or in applications where they are prone to vandalism, it may be necessary to secure them in place with glue.
11. Fill the cells with the specified proprietary sand:soil rootzone, so that the finished level will be 7mm – 10mm below the top of the cells after natural settlement. If placing the panels and filling the cells simultaneously, it is important to keep fill-material and vehicles a safe distance away from the leading edge of installation to avoid paver distortion and the potential for misalignment issues. It is strongly recommended that wherever possible, vehicles should not be driven on the filled surface until a stable grass root structure and vigorous healthy grass cover have thoroughly established. Unless it is a specific design requirement, do not over-fill or surcharge the cells. Topping-up of the rootzone within the cells after installation is not recommended.
12. Apply the specified grass seed and fertiliser at the recommended rates. Irrigate the surface regularly or as specified during the seed germination and establishment period.
13. A routine management and maintenance programme to keep the grass healthy and the surface in good condition and free of debris will help to sustain the porosity, quality and longevity of the system. A normal grass-cutting regime is suitable for the system and conventional grass cutting equipment can be used on the Sudspave® surface. A regular and routine seasonal fertiliser programme will help to sustain and maintain healthy, wear tolerant grass cover.

Notes

- Note 1. If the Abgrid (Geogrid) is omitted, the total sub-base layer thickness ('D' on Table 1) is typically increased by a minimum of 50%
- Note 2. Sub-base attenuation utilising a Geomembrane and optional geotextile protection, is typically necessary to create a water storage facility and/or a groundwater protection function. Encapsulation of the structural layers beneath the surfacing also provides a rainwater re-use facility.
- Note 3. Typical paving edge restraint solutions include: concrete, timber, steel and plastic kerbs/edgings.
- Note 4. A permeable open-graded (reduced-fines) Sustainable Drainage System (SuDS) sub-base layer such as Dot Type 1x, Type 3 or Type 4/40, is preferred. However, where a conventional DoT Type 1 sub-base is to be installed, it is recommended that a drainage system is incorporated to assist in the mitigation of issues associated with saturation. This drainage system would typically comprise of a network of perforated pipes or Geocomposites, with design advice available from ABG Ltd.
- Note 5. Advice on CBR% strengths, ground conditions, construction over weak ground and drainage is available from ABG Ltd. CBR% = California Bearing Ratio: an indicative measurement of subgrade soil strength.
- Note 6. The SuDS permeable sub-base must be overlain by an upper geotextile e.g. ABG Terrex NW8, to provide separation, to resist leaching of the bedding layer into the sub-base layer and as an enhanced water treatment function. This geotextile layer is not normally required where a low permeability sub-base (DoT Type 1) is proposed, but any drains within that sub-base will require geotextile protection.
- Note 7. Rootzone for the bedding layer and cell infill should be a proprietary blend of medium-fine particle-sized sand:soil (60:40 ratio), or an organically modified sand:soil rootzone. The use of conventional loamy soil, clay based soils with low permeability or site-won materials is strictly not recommended. A more sustainable and hard-wearing grassed surface will be achieved if the cells are not overfilled with rootzone and the crowns of the grass plants are established and protected below the tops of the cells. Natural settlement of the rootzone to its final level within the cells is preferred and the use of compaction machinery on the filled surface is not recommended.
- Note 8. The specified grass seed mixture should consist of hard wearing, low-maintenance and drought tolerant species which are capable of rapid recovery after wear. Fertiliser will help to establish and maintain a healthy grass sward which is capable of sustaining traffic. Local and seasonal weather conditions will determine the degree of irrigation required. Inadequate irrigation during the seed germination and grass establishment period, may result in drought conditions and a failure to establish uniform quality grass cover.
- Note 9. The maximum advised gradient for vehicular trafficked applications is generally 12% (1:8) 7°. For Disabled access applications, a maximum of 8% (1:12) 5° is suggested.
- Note 10. When designed in accordance with the recommendations, Sudspave complies with BS8300:2009: "Design of buildings and their approaches to meet the needs of disabled people" – Code of Practice (ISBN 9780 580 57419) & Building Regulations Document 'M' Section 6.

Table 1: Geogrid selection

Application/Load	CBR (%) strength of subgrade soil (Table 2)	(D) DoT sub-base thickness (mm) (see notes)	Abgrid Geogrid
Fire truck and occasional HGV access	≥6	125	20/20
	=4 < 6	175	20/20
	=2 < 4	275	20/20
	=1 < 2	475	20/20
Light vehicle access and overspill car parking	≥6	100	20/20
	=4 < 6	150	20/20
	=2 < 4	225	30/30
	=1 < 2	350	40/40

Table 2: Field guidance for estimating sub-grade shear strengths

Consistency	Tactile	Visual	Mechanical (SPT)	CBR (%)	CU (kN/m ²)
Very soft	Hand sample squeezes through fingers	Man standing will sink >75mm	<2	<1	<25
Soft	Easily moulded by finger pressure	Man walking sinks 50 - 70mm	2 - 4	Around 1	Around 25
Medium	Moulded by moderate finger pressure	Man walking sinks 25mm	4 - 8	1 - 2	25 - 40
Firm	Moulded by strong finger pressure	Utility truck ruts 10 - 25mm	8 - 15	2 - 4	40 - 75
Stiff	Cannot be moulded, can be indented by thumb	Loaded construction vehicle ruts by 25mm	15 - 30	4 - 6	75 - 100

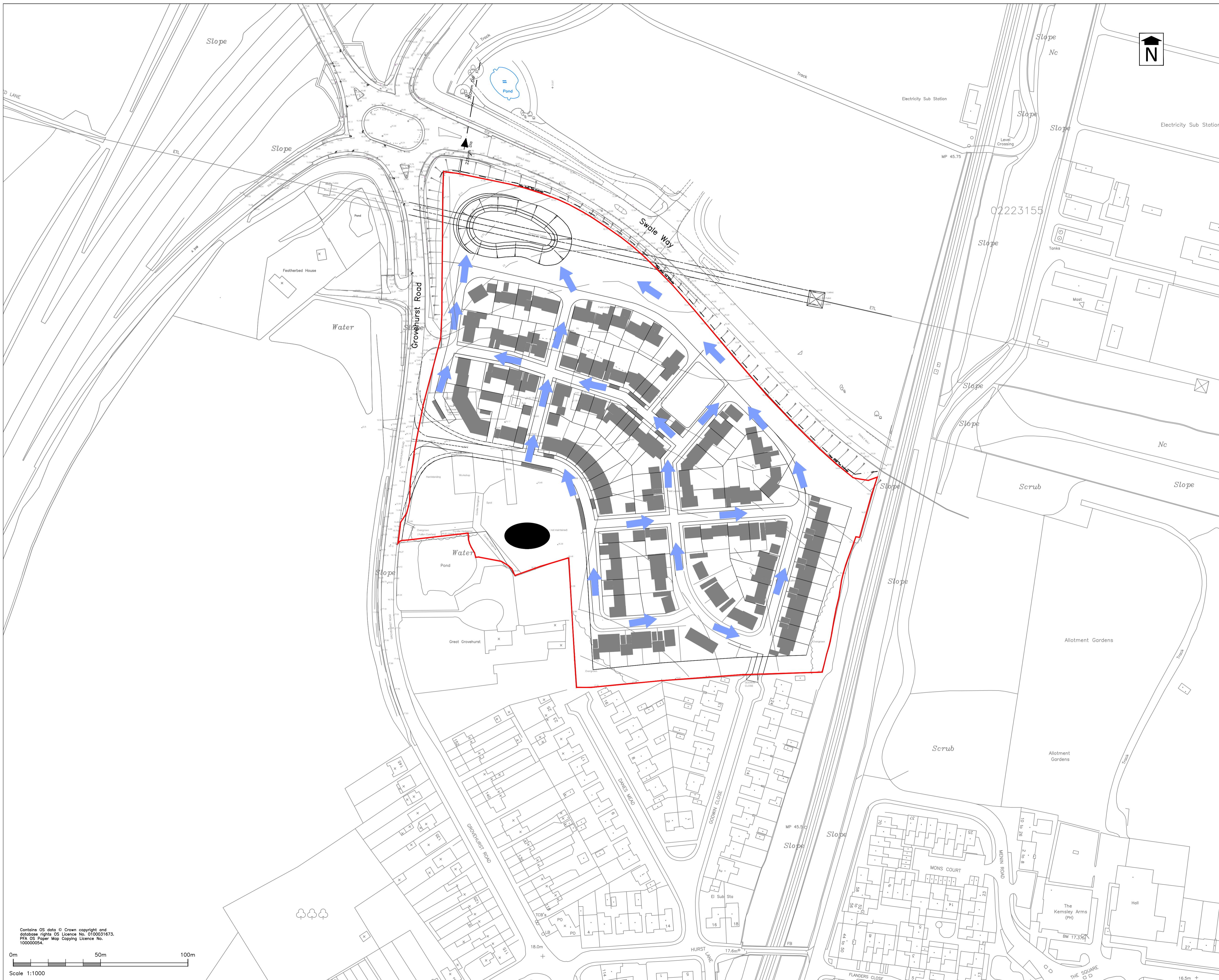
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For Planning
These drawings are produced for the purposes of supporting a planning application and should not be relied upon for tender, pricing, or construction purposes.

NOTES

1. Based upon Topographical Survey – MULTI-LIMN Land Surveyors, July 2014.
2. Based on Mitigation Option Plan revB DRAFT, Tibbalds – Drawing Number 5384/4.2/GCN.
3. Proposed drainage subject to detailed design.

KEY

- Indicative Exceedance Flow Route**
- Flows that exceed the capacity of the drainage system i.e. those above the 1:100 year + 40% climate change design event, or as a result of malfunction / blockage.
 - Site Boundary (Indicative Only)
 - Land Drainage System (Existing)

Rev	Date	Description	Drawn	Check
#	28/02/18	First Issue.	PS	BF

Status **FOR PLANNING**

Client
G H Dean & Co Ltd

Project
**Great Grovehurst Farm
Sittingbourne**

Drawing Title
**Indicative
Exceedance Flow Routes**

Drawing No. **D118/26**

Date: February 2018 Scale: 1:1000 @ A1
E-Mail: pschilbach@pfapl.com

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0m 50m 100m
Scale 1:1000



Land at North West Sittingbourne

Framework Travel Plan

On behalf of **Persimmon Homes**

Project Ref: 27239-5504 | Rev: - | Date: January 2018

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Document Control Sheet

Project Name: Land at North West Sittingbourne

Project Ref: 27239-5504

Report Title: Framework Travel Plan

Date: January 2018

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For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved

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1 Introduction

1.1 Introduction

- 1.1.1 Peter Brett Associates LLP (PBA) has been appointed to support an outline planning application for a mixed use development at North West Sittingbourne. The following document comprises a Framework Travel Plan for the proposed development.
- 1.1.2 The site is approximately 75 hectares in area and is identified within the adopted Local Plan Policy MU1 (the Development) as suitable for residential development, primary and secondary schools, community uses and open space. The site has been identified by Swale as having significant potential to meet the Borough's future growth needs in a sustainable location.

1.2 Site location

- 1.2.1 The approximate site location (the Site) can be seen on the plan below.

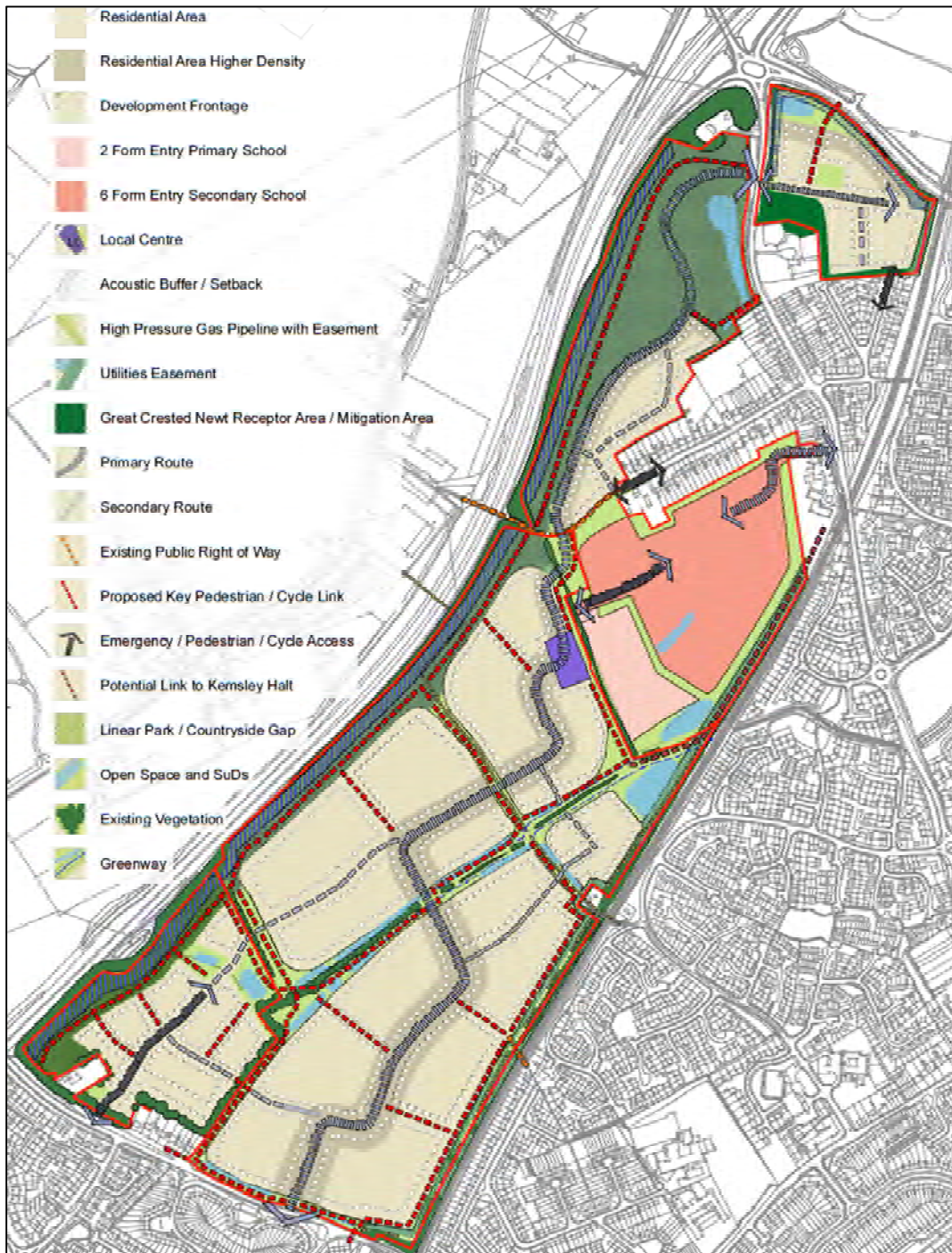


- 1.2.2 The Site lies adjacent to the A249 which runs north / south immediately to the west of the site, and is north of the A2 and M2 corridors. The site is bound by Quinton Road to the south, the A249 to the west and the Sheppey to Sittingbourne rail line to the east. Grovehurst Road passes through the Site to the north and Swale Way forms the north boundary.
- 1.2.3 The Site falls into the ownership of several land owners with the various land parcels within the site identified as :
- Land between Quinton Road and Bramblefield Lane (Persimmon)
 - Land at Quinton Road (Redrow)
 - Land at Pheasant Farm (Persimmon)
 - Land at Great Grovehurst Farm (GH Dean)

- 1.2.4 Swale Borough Council requires the Site to be considered as a whole for masterplanning purposes. Accordingly, a Development Framework document has been developed jointly between the land owners as required by the MU1 Policy. The Development Framework document evolves the Local Plan proposals into a proposed masterplan, based upon detailed and site specific technical evidence and with consideration to viability and deliverability.
- 1.2.5 It is intended that this Framework Travel Plan provides the bases for implementing a Travel Plan across the entirety of the MU1 Allocation Site. Hence, whilst the Site falls within separate ownerships, any individual Travel Plan will need to fit within this Framework document.

1.3 Development proposals

- 1.3.1 The Site comprises four land ownership areas that have been considered cumulatively within the masterplanning exercise. The illustrative Development Framework Plan is shown below for the various land ownership areas.



1.3.2 In summary, the North West Sittingbourne site will cumulatively deliver :

- 1,520 residential units.
- A new local centre with retail provision to meet local requirements.
- A 2 form entry primary school.
- A 6 form entry secondary school.
- New links connecting the site to the neighbouring areas.
- A Linear Park along the western boundary that would act as a multifunctional area (open space, play area, noise buffer, ecological mitigation, countryside gap and enhancement area).
- Greenways of multi-functional public open space to serve the development and also the wider community.
- Links to Kemsley rail halt.
- Provision for bus access to serve the site.

1.4 Vehicular access junctions

1.4.1 Vehicular access to the Site will be made via the following site access points:

- Quinton Road – two priority junctions.
- Grovehurst Road – a staggered priority junction.
- Grovehurst Road (medical centre access) – the existing priority junction.

1.5 Vehicle parking provision

1.5.1 Residential parking provision on site is proposed to be provided in line with Kent County Council Interim Guidance Note 3 (IGN3) - minimum parking standards for 'suburban' areas, which are shown in the table below.

Parking Standards – Suburban Areas		
1 & 2 Bed Flats	1 space per unit	Not Allocated
1 & 2 Bed Houses	1 space per unit	Allocation possible
3 bed houses	1.5 spaces per unit	Allocation of one space possible
4+ bed Houses	2 independently accessible spaces per unit	Allocation of both spaces possible
Garages	Additional to standards above	
Visitor Parking	On-street areas - 0.2 spaces per unit	

1.5.2 With respect to the education uses, the parking provision will be provided in accordance with the Kent and Medway Structure Plan 2006 – SPG4 standards as summarised below.

Parking Standards – SPG4	
Primary School	1 space per staff + 10%
Secondary School	1 space per staff + 10%

- 1.5.3 In addition to the parking provision on site at the schools as described above, consideration will need to be given to suitable drop off facilities. This will be a consideration during the detailed design of the school site and the Reserved Matters application to be submitted by KCC when they bring the school sites forward.
- 1.5.4 Other uses on site will conform with local parking policy requirements when brought forward through Reserved Matters applications.

1.6 Cycle parking provision

- 1.6.1 IGN3 does not provide cycle parking standards and hence these are proposed to be based upon the Kent and Medway Structure Plan 2006 – SPG4 standards, which are summarised in the table below.

Cycle Parking Standards (Minimum)	
Individual Residential Dwellings	1 space per bedroom
Flats & Maisonettes	1 space per unit
Primary School	1 space per 50 pupils
Secondary School	1 space per 7 pupils/students

- 1.6.2 In line with the guidance, cycle parking spaces for individual residential dwellings :
- “should be provided within the curtilage of the residential dwelling. Where a garage is provided it should be of a suitable size to accommodate the required cycle parking provision”*
- 1.6.3 Cycle parking provision for flats and maisonettes :
- “should be provided as a secure communal facility where a suitable alternative is not available”*
- 1.6.4 Other uses on site will conform with local cycle parking policy requirements when brought forward through Reserved Matters applications.

1.7 Travel Plans

- 1.7.1 A Travel Plan is a management tool that sets out a range of initiatives which aim to encourage a modal shift away from the private car by raising awareness of, and promoting the use of, a range of transport modes.
- 1.7.2 Implemented correctly, a Travel Plan can produce significant benefits such as financial benefits, better access to local facilities and the opportunity for a healthier lifestyle, not only to the target audience, but also to the wider community by reducing the number of trips carried out by less-sustainable modes on the local highway network.

1.7.3 This Travel Plan has been written as a Framework Travel Plan. It is proposed that individual developers would comply with the content of this Framework, but may wish to develop individual Travel Plans that fit within this Framework, that are more specific to their operation.

1.8 Timescales and longevity

1.8.1 A Travel Plan Co-ordinator (TPC) is discussed further within this document and will be supported by the developer to full build out or until 2031, whichever is reached sooner. It is anticipated that the developer will maintain the role of the TPC through the Management Company (ManCo) for the Site.

1.8.2 The appointed contact for the TPC role would need to be provided to the Local Planning Authority and Local Highway Authority prior to the first occupation of the Development.

1.8.3 The Framework Travel Plan would be subject to review every year. At the end of the developer supported period a review meeting would be called by the TPC with the ManCo and representatives of the local residents to establish the extent and means by which the role of co-ordinating the Framework Travel Plan will be continued. At this meeting the representatives would consider the following issues:

- The most appropriate person or body to take on the role of Travel Plan co-ordination;
- A mechanism to permit further development of the Framework Travel Plan along with monitoring and review, as an agreed responsibility of the residents and ManCo.
- The potential costs of continuing to employ a Travel Plan Co-ordinator, and how this cost may be funded.

1.9 Report structure

1.9.1 The structure of the Framework Travel Plan is set out as follows:

- Section 2 describes the aims and objectives of the Framework Travel Plan.
- Section 3 describes the policy context.
- Section 4 summarises the accessibility of the Site.
- Section 5 details the trip generation and targets.
- Section 6 considers the role of the Travel Plan Co-ordinator for the Site.
- Section 7 suggests an action plan for the development.
- Section 8 describes the monitoring and review mechanisms for the Travel Plan.
- Section 9 provides a summary.

2 Travel Plan objectives

2.1.1 The objectives of this Framework Travel Plan are consistent with the objectives encapsulated within the National Planning Policy Framework (NPPF) to encourage sustainable travel and as set out below.

- Reduce the number of car trips to, from and within the Site by promoting a range of sustainable alternatives and encouraging the use of these and hence reducing greenhouse gas emissions due to travel.
- Reduce the need to travel, partly through use of smart technologies.
- Encourage the use of walking and cycling modes through provision of appropriate facilities.
- Maintain vehicle movements to and from the Site within the limits set out in the Transport Assessment and seek to reduce these levels over the period of the Travel Plan.
- Reduce the impact of the development on the local highway network over time by setting challenging, yet realistic targets.
- Monitor and review Framework Travel Plan targets and initiatives on a year by year basis.
- Increase the awareness of residents in respect of travel choices and the individual and community benefits of sustainable travel choices.
- Provide site users with information to make an informed choice of their travel options.
- Influence the travel perceptions and travel behaviour of all site users.

2.1.2 These objectives have been used to inform the derivation of a suite of actions which will contribute to achieving the overall aim of the Framework Travel Plan.

3 Policy context

3.1.1 This section provides a review of the relevant planning policy guidance at the national and local level that is relevant to the nature and location of the development proposals.

3.2 National Planning Policy Framework (NPPF)

3.2.1 The National Planning Policy Framework (NPPF) was adopted in March 2012 and is the current over-arching planning framework for Local Planning Authorities.

3.2.2 The NPPF highlights that sustainable development is made up of three elements that are mutually dependent on each other – economic, social and environmental. It further mentions that

“plans and decisions need to take local circumstances into account, so that they respond to the different opportunities for achieving sustainable development in different areas.”

3.2.3 The document is divided into a series of sections, and these are intended to provide guidance in specific circumstances. Section 4 of the document relates to the promotion of sustainable transport. In paragraph 30, planning authorities are encouraged to support a pattern of development which facilitates the use of sustainable modes of transport.

3.2.4 The NPPF recognises that different policies should be applied in different communities in order to achieve this balance, and that opportunities to maximise sustainable modes of transport will vary between urban and rural areas. The North West Sittingbourne site is well located with existing connections to the town centre by all modes of transport and would be able to further enhance sustainable transport connections through its delivery.

3.2.5 Section 32 lists a number of considerations for planning authorities to apply in their decision making when reviewing Transport reports. These include the need to consider that opportunities for sustainable transport have been taken up, if the access arrangements are safe and suitable and if there are cost effective improvements to the transport network that could be made. Paragraph 32 of the Framework states that:

“Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe”

and that

“Plans and decisions should take account of whether safe and suitable access to the site can be achieved for all people”.

3.2.6 Importantly, NPPF advises that development should only be refused on transport grounds if the residual cumulative impacts are likely to be “severe”. The definition of “severe” in this context is unique to the individual site under consideration. However, it may be helpful to consider that within the context of the Environmental Impact Assessment “severe” impacts are often described as those that would have a national or regional significance. In this respect it is clear that NPPF is seeking to strike a positive balance between potential local traffic impacts and local economic or social benefits.

3.2.7 It is reasonable to suggest that within most urban settings, the existing traffic conditions will be busy, with congestion at peak periods, perhaps at weekends and even at other times as well. However, NPPF is suggesting that planning authorities should not allow this to stifle valuable economic development, in locations that are the best connected to encourage the use of alternative modes of transport.

- 3.2.8 The proposed site falls firmly into this category. Although mitigation of potential traffic impacts can be undertaken, the test is whether any residual impacts could be considered “severe” in the context of NPPF, and it is clear from the assessment that follows that this is not the case.
- 3.2.9 Section 34 of the NPPF requires developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes maximised.
- 3.2.10 The location of the North West Sittingbourne site is consistent with this policy objective as it ensures that residents, visitors associated with the development will have access to a range of transport modes, including access to bus services. Footways are provided alongside the local carriageways along with formal crossing points to ensure access for pedestrians. On site cycle facilities will also be provided.
- 3.2.11 Paragraph 34 of the NPPF requires developments that generate significant movements to be located where the need to travel will be minimised and where maximum use of sustainable transport modes is possible. The North West Sittingbourne site will connect with existing sustainable transport networks and enhance these, thereby providing a choice of travel modes for existing and future residents.
- 3.2.12 Paragraph 35 of the NPPF requires opportunities for sustainable travel to be exploited and should therefore give priority to pedestrians and cyclists and be accessible by public transport facilities. Developments should also ‘create safe and secure layouts which minimise conflicts between traffic, cyclists or pedestrians. The masterplan responds to this through provision of dedicated walking and cycling infrastructure on site that connects to the external network and on site facilities.

3.3 Local Transport Plan for Kent 4 (LTP4)

- 3.3.1 Kent’s fourth Local Transport Plan was adopted during August 2017 and sets out KCCs plans to meet its role of enabling
- “planned, sustainable growth and ensure the necessary infrastructure is in place, which will stimulate regeneration and encourage people and businesses to come to Kent. To be able to travel easily, safely and quickly to our destinations we need a transport network that can cater for current demand, enables economic growth, and supports a growing population.”*
- 3.3.2 The LTP4 document replicates the infrastructure requirements up to 2031 identified within the Growth and Infrastructure Framework (GIF) document. The GIF sets out the transport schemes necessary to address current and future capacity issues.
- 3.3.3 As the Local Transport Authority, KCC have a statutory duty to produce a LTP for the county of Kent. This strategy must identify the transport priorities for the county, as well as emphasising the investment required to support growth. The Kent and Medway GIF provides the evidence base for LTP4.
- 3.3.4 The LTP4 states the following ambition for Kent :
- “To deliver safe and effective transport, ensuring that all Kent’s communities and businesses benefit, the environment is enhanced and economic growth is supported.”*
- 3.3.5 To achieve this ambition the LTP4 document sets out five overarching policies that are targeted at delivering specific outcomes as summarised below.
- *Policy: Deliver resilient transport infrastructure and schemes that reduce congestion and improve journey time reliability to enable economic growth and appropriate development, meeting demand from a growing population.*
- Outcome 1: Economic growth and minimised congestion.*

- *Policy: Promote affordable, accessible and connected transport to enable access for all to jobs, education, health and other services.*

Outcome 2: Affordable and accessible door-to-door journeys.

- *Policy: Provide a safer road, footway and cycleway network to reduce the likelihood of casualties, and encourage other transport providers to improve safety on their networks.*

Outcome 3: Safer travel

- *Policy: Deliver schemes to reduce the environmental footprint of transport, and enhance the historic and natural environment.*

Outcome 4: Enhanced environment

- *Policy: Provide and promote active travel choices for all members of the community to encourage good health and wellbeing, and implement measures to improve local air quality.*

Outcome 5: Better health and wellbeing

3.3.6 Kent's transport priorities in LTP4 are described as being strategic, countywide or local. The strategic priorities are infrastructure projects that KCC may not directly deliver or operate and are likely to affect a number of districts. Some of these are national priorities. Countywide priorities include promotion of road safety, sustainable travel and maintenance and upgrade of transport assets.

3.3.7 The LTP4 document brings together local priorities from individual Local Plans and supporting Transport Strategies that set out the transport infrastructure requirements to support growth in each district / borough. Many of these priorities are also highlighted in the GIF.

3.3.8 With respect to Swale the LTP4 document identifies the following :

- Capacity issues at M2 Junction 5 is acting as a major barrier to growth in the Borough.
- Junction 7 of the M2 is key for development across East Kent, with growth loading traffic on to a junction already operating over capacity.
- A corridor study of the A249 is needed to define what improvements to the principal junctions (Grovehurst, Key Street and Bobbing) will be required to support the new allocations in the Local Plan, with the A249 / Grovehurst Road Junction already identified in the GIF.
- On the Isle of Sheppey, serious congestion on the A2500 is a barrier to growth.
- On the Isle of Sheppey east-west travel is challenging and links to the mainland are largely dependent upon the Sheerness-Sittingbourne branch line.

3.3.9 The proposed development will support the outcomes defined within LTP4 by promoting sustainable travel opportunities, enhancing walking and cycling infrastructure, extending public transport connectivity and off site highway infrastructure upgrades.

3.4 Growth without Gridlock – A transport delivery plan for Kent

3.4.1 Growth without Gridlock, published in December 2010, identifies a package of transport measures that KCC proposed to unlock growth potential within Kent. The plan sets out KCC's priorities for the county and their offer to government to deliver them.

3.4.2 With regard to Swale, the document advises that the key transport challenges are:

- Securing the necessary infrastructure to open up key development areas for housing and employment.
- Delivering capacity improvements on the strategic road network.
- Regeneration of Sittingbourne town centre

3.4.3 The proposals within the document for Swale include major road infrastructure including:

- Sittingbourne Northern Relief Road extension to the A2;
- The A249 at Grovehurst, Key Street and Bobbing junctions.
- M2 Junction 5 capacity improvement;

3.5 Swale Borough Local Plan

3.5.1 The Swale Borough Local Plan was adopted on 26 July 2017 and forms part of the development plan for Swale. The development plan is the system of statutory planning documents against which planning applications are determined.

3.5.2 The Swale Borough Local Plan is the key planning document for Swale, setting out the vision and overall strategy for the area and how it will be achieved for the period to 2031. Applications for planning permission will be determined in accordance with the Local Plan.

3.5.3 The Council has an overarching vision for the Borough to transform its economic, social and environmental prospects, making it one of the best places in Britain in which to live, work, learn and invest. The Local Plan has been prepared to support these priorities.

3.5.4 Paragraph 4.1.1 of the Local Plan states :

“.....When considering development proposals, we will take a positive approach which reflects the national presumption in favour of sustainable development. We will always work pro-actively with developers to find solutions which mean that proposals can be approved as sustainable development and thereby secure improvements to the economic, social and environmental conditions in our area.

Planning applications that accord with the policies in the Local Plan (and, where relevant, policies in neighbourhood plans) will be approved without delay, unless material considerations indicate otherwise.”

3.5.5 The North West Sittingbourne site is an allocated site (considered below) and is being promoted in accordance with the Local Plan Policies.

3.5.6 Paragraph 4.1.24 of the Local Plan relates to the Local Plan transport strategy and states :

“Our Local Plan transport strategy:

- *encourages sustainable travel by the use of alternatives to the private car;*
- *improves transport infrastructure by the removal of pinch points which are barriers to development and growth;*
- *promotes alternative access to services by reducing the need to travel and supporting independence; and*
- *helps improve road safety by reducing the number of people killed or seriously injured.”*

3.5.7 The proposed development will encourage and enhance the use of sustainable transport modes and will provide residential units in close proximity to amenities. Residents will have a choice of travel mode by which to make their journey.

- 3.5.8 Policy ST1 within the Local Plan sets out the means by which all development proposals must deliver sustainable development. With respect to transport Policy ST1 states :

Policy ST 1 - Delivering sustainable development in Swale

To deliver sustainable development in Swale, all development proposals will, as appropriate:

.....

5. Offer the potential to reduce levels of out-commuting and support the aims of the Swale Local Transport Strategy;

.....”

- 3.5.9 Policy ST4 sets out the list of sites allocated for development to allow Swale to meet the Local Plan development targets and identifies the North West Sittingbourne site for residential development.

- 3.5.10 The Local Plan sets out a strategy for Sittingbourne. Paragraph 4.3.49 states :

“To promote sustainable transport we are focusing on improving the quality of bus journeys, in particular the accessibility and facilities for passengers in central Sittingbourne. Within the town centre, major proposals will provide a central focus for bus and rail services in the vicinity of the station, which has been boosted by the award of £2.5m from the South East Local Economic Partnership local growth fund. Central Sittingbourne regeneration will also contribute to improvements to the highway network and traffic management within the town centre. A bus quality partnership will aim to improve public transport conditions and services at the town and in its centre, alongside additional routes to new developments and better walking and cycling routes.”

- 3.5.11 Paragraph 4.3.52 states :

“At the north-west of the town, good connections to rail, bus and roads will enable a new community of 1,500 dwellings to be focused there. This location offers excellent connections to the existing urban area and beyond and is located close to Kemsley rail station and to the A249. It has significant potential to provide new schools, major open space and biodiversity enhancements.”

- 3.5.12 Paragraph 4.3.56 and 4.3.57 state :

“These allocations will give rise to a series of improvements needed to the highway network, notably at junctions with the A249 to the west of the town and particularly at its junctions with Key Street and Grovehurst Road. Crucially, beyond limited planned improvements to Junction 5 of the M2, major improvements are now programmed for completion by 2024.

Although not required to support current local plan growth targets, the final section of the Sittingbourne Northern Relief Road to the A2 is needed to improve traffic and air quality conditions in central and eastern areas of the town. It will also enable the full benefits of changes in traffic management in the town centre to be realised. The proposals are identified as a safeguarded ‘Area of Search’, the alignment for this road being progressed as part of a future Local Plan review.”

- 3.5.13 It is evident from the above paragraphs that the North West Sittingbourne site is a key allocation. It will support and enhance local public transport services and hence contribute to the objectives of the bus quality partnership as well as provide other infrastructure including schools and open space.

3.5.14 Section 5 of the Local Plan sets out the core planning policies whilst section 5.2 considers the promotion of sustainable transport. The Local Plan recognises the key role that transport will play in the delivery of the Local Plan strategy. Paragraph 5.2.1 states :

“.....The transport network needs to strike a balance between providing adequate capacity for current and future residents and business needs, whilst minimising any negative environmental, social and health impacts. This can be achieved through improvements to the capacity of the highway network and through provision of an integrated sustainable transport network.”

3.5.15 With respect to impact of development, the Local Plan states at paragraph 5.2.3 :

“The National Planning Policy Framework (NPPF) continues the core principle of sustainable development, through means such as using technology to reduce the need to travel, using planning policies and decisions to actively manage patterns of growth to make the fullest use of public transport, walking and cycling and focusing significant developments in areas which are or can be made sustainable. Only if the residual cumulative impacts of development are 'severe' when all of these policy measures have been explored and exhausted, is there a reason to prevent development on transport grounds. 'Severe' in terms of the NPPF is not defined.”

3.5.16 Paragraph 5.2.17 states :

“A Quality Bus Partnership has been established and is led by Kent County Council Highways, with regular meetings and input from bus operators in the area and Swale Borough Council. This has the objectives of improving services and expanding use of buses in the Borough and liaison on the progress and proposals of the Local Plan so that bus provision is made from the earliest stages of new development.”

3.5.17 The principle of the Quality Bus Partnership is for KCC, Swale BC, Arriva, Chalkwell and other KCC bus contract operators to share common objectives of creating a public transport network acknowledged as an increasingly attractive alternative to private car use and seeking increased use of local bus services.

3.5.18 In summary, KCC and Swale BC will provide infrastructure, and enhancements to this, for bus services where appropriate and possible, whilst Arriva and Chalkwell will provide the bus services to use this infrastructure.

3.5.19 Policy CP2 sets out the policy with respect to sustainable transport as follows:

“Policy CP 2

Promoting sustainable transport

New development will be located in accordance with Policy ST1 to Policy ST7, Local Plan allocations, approved Neighbourhood Plans and Community Right to Build initiatives, which minimise the need to travel for employment and services and facilitate sustainable transport. Actions by the public, private and voluntary sector will adopt an integrated approach to the provision of transport infrastructure. Development proposals will, as appropriate:

1. Contribute to transport network improvements, where capacity is exceeded and or safety standards are unacceptably compromised, with particular emphasis on those identified in the Infrastructure Delivery Schedule;

2. Make best use of capacity in the network by working together with transport providers to improve the transport network in the most sustainable way, and extending it where necessary, as demonstrated by Transport Assessments and Travel Plans in support of development proposals;

3. Support the provision of major new transport infrastructure in accordance with national and local transport strategies;
4. Maintain and improve the highway network at key points to improve traffic flows and respond to the impact of new development and regeneration, as set out in the Local Transport Strategy;
5. Improve safety, through measures such as adequate parking, lighting and traffic management schemes;
6. Achieve alternative access to all services through promoting access to sustainable forms of transport particularly bus, cycling and rail transport and improving interchange between them from the earliest stages of development;
7. Provide integrated walking and cycling routes to link existing and new communities with local services and facilities, public transport and the Green Grid network; and
8. Facilitate greater use of waterways for commercial traffic, where this would not have an unacceptable adverse environmental impact, through working with the Port of Sheerness and other bodies.”

3.5.20 The proposed development will enhance capacity on the highway network as necessary to mitigate its impact and promote the use of sustainable transport through appropriate Travel Plan measures. This will include enhancements to local walking, cycling and public transport provision.

3.5.21 Section 6 of the Local Plan details the site allocations. Section 6.6 deals with mixed use allocations including the largest of these at North West Sittingbourne. With respect to this site the Local Plan notes that it has :

“been identified as having significant potential to meet the Borough's future growth needs in a sustainable location that minimises impacts on the wider countryside due to its relative self-containment.”

3.5.22 Hence, the Local Plan recognises the sustainable location of the site and identifies it for a minimum of 1,500 dwellings along with open space, primary and secondary schools, local health facilities enhancement and improvement to bus and rail facilities.

3.5.23 Policy MU1 sets out the Local Plan policy relating to North West Sittingbourne as follows :

“Policy MU 1

Land at north-west Sittingbourne

Planning permission will be granted for mixed uses on land at North West Sittingbourne, as shown on the Proposals Map and will comprise a minimum of 1,500 dwellings, community facilities and structural landscaping and open space adjacent the A249. Development proposals will:

1. *Be in accordance with a Masterplan/Development brief prepared by the landowners/developers involved in the delivery of the allocation, in consultation with the Borough Council and which reflects the requirements of this policy;*
2. *Be in accordance with Policy CP4 and in particular, achieve an integrated landscape strategy to provide a minimum of 22 ha natural and semi-natural greenspace and other open space as a continuous buffer along the A249 that will form part of the important local countryside gap between Sittingbourne and Bobbing/Iwade in accordance with Policy DM25 and Policy New A17 for Iwade, as well as contributing toward an appropriate link between the*

two via Bramblefield Lane/old Sheppey Way. This area will link to a network of green spaces and corridors throughout the allocation to achieve open space provision;

3. Ensure that, through both on and off site measures, any significant adverse impacts on European sites through recreational pressure will be mitigated in accordance with Policies CP7 and DM28, including a financial contribution towards the Strategic Access Management and Monitoring Strategy;

4. Provide on-site flood mitigation measures;

5. Integrate heritage assets, having regard to their setting;

6. Be accompanied by a Health Impact Assessment in accordance with Policy CP5;

7. Be supported by a transport assessment and access strategy in the Masterplan development brief to determine the need and timing for improvements to the transport network and phasing of development and address the following:

a. The scale, nature and timing of interim improvements at Grovehurst Road/A249 junction and if necessary at the Bobbing/A249 junction;

b. Identification of vehicular access points from Quinton Road and Grovehurst Road and mitigation of traffic impacts on the local road network and existing neighbourhoods by defining an appropriate quantum of development relative to these access points;

c. The timing of any necessary off site highway improvements relative to the phasing of development;

d. Identification of improvements to the public transport network between the site and Sittingbourne;

e. Encouragement of increased rail use from Kemsley Halt through enhancement of the facilities there and public pedestrian and cycle links;

f. Secure safe and attractive pedestrian and cycle links within the development and to the adjacent network including links to Iwade over the A249;

g. Have regard to the availability of land to the north of Swale Way already safeguarded for the remodelling of the A249/Grovehurst Road junction and should the mitigation design require it, within any other relevant allocation.

8. Achieve a mix of housing in accordance with Policy CP3, including provision for affordable housing in accordance with Policy DM8;

9. Achieve suitable means of sustainable energy production and carbon reduction measures compliant with Policy DM20;

10. Secure new primary and secondary schools on site, with dual public/school use facilities (including a land reservation for its provision), to include land for artificial playing pitches; and

11. Provide appropriate community facilities and other infrastructure within the site to meet the needs of future residents, including those within the Local Plan Implementation and Delivery Schedule, in particular those arising from primary health care, libraries and community, learning and skills services”.

3.5.24 A Development Framework has been produced by the site promoters and this has been shared with the local authority.

- 3.5.25 Section 7 of the Local Plan sets out development management policies and in particular section 7.2 sets out those related to managing transport demand. Paragraph 7.2.1 states :

“This policy is designed to support the National Planning Policy Framework core principles of managing patterns of growth to make the best possible use of public transport, walking and cycling and focusing development in sustainable locations.....”

- 3.5.26 The proposed development is located such that it provides connections to sustainable modes of transport for future residents which can be enhanced as a result of the development. On site design will provide walking and cycling routes and a route suitable for a bus to pass through the site. Policy DM6 sets out the policy relating to the management of transport demand and impact as follows :

“Policy DM 6

Managing transport demand and impact

1. Development proposals generating a significant amount of transport movements will be required to support their proposal with the preparation of a Transport Assessment (including a Travel Plan), which will be based on the Council's most recent strategic modelling work. The Highways Agency may also require a Transport Assessment if development is deemed to impact on the strategic road network.

2. In assessing impacts on the highway network, development proposals will:

a. demonstrate that opportunities for sustainable transport modes have been taken up;

b. where the residual cumulative impact of development on traffic generation would be in excess of the capacity of the highway network and/or lead to a decrease in safety, environmentally acceptable improvements to the network agreed by the Borough Council and the Highway Authority will be expected. Such works will be carried out by the developer or a contribution made towards them in accordance with Policy CP6. If such works cannot be carried out and the residual cumulative impacts of development are severe, then the development will be refused.

c. avoid the formation of a new direct access onto the strategic or primary distributor route network where possible, or unless identified by the Local Plan. Other proposals for new access onto the networks will need to demonstrate that they can be created in a location acceptable to the Borough Council and appropriate Highway Authority. Proposals involving intensification of any existing access onto a strategic, primary or other route will need to demonstrate that it is of a suitable capacity and safety standard or can be improved to achieve such a standard;

d. integrate air quality management and environmental quality into the location and design of, and access to, development and, in so doing, demonstrate that proposals do not worsen air quality to an unacceptable degree especially taking into account the cumulative impact of development schemes within or likely to impact on Air Quality Management Areas; and

e. not result in the loss of usable wharfage or rail facilities.

3. The location, design and layout of development proposals will demonstrate that:

a. priority is given to the needs of pedestrians and cyclists, including the disabled, through the provision of safe routes which minimise cyclist/pedestrian and traffic conflict within the site and which connect to local services and facilities;

b. existing public rights of way are retained, or exceptionally diverted, and new routes created in appropriate locations;

c. access to public transport is integrated into site design and layout where appropriate;

d. the safe and efficient delivery of goods and supplies and access for emergency and utility vehicles can be accommodated; and

e. it includes facilities for charging plug-in and other ultra low emission vehicles on major developments.”

3.5.27 The development responds to these requirements. This transport assessment document sets out the effects of the development on the local highway network and the mitigation measures proposed to address this. In addition, the masterplan will provide a walking and cycling network on site to facilitate priority being given to these modes in navigating the site and linking with the external network. Existing PROWs will be retained and enhanced on site. Buses will serve the site directly with the provision of a service along the spine road.

3.5.28 With respect to parking policy the Local Plan advises that the Borough Council currently applies guidance and standards developed by Kent County Council for residential and non-residential uses. The Council will continue to apply the extant Kent County Council guidance and standards to development proposals until local standards are developed.

3.6 Swale Transport Strategy – Draft

3.6.1 The draft transportation strategy for Swale considers the issues regarding transport in Swale and potential solutions to these in the context of national and local policies. The transportation action plan is structured into four main sections, those being :

- Encouraging sustainable travel
- Improvements to transport infrastructure
- Alternative access to services
- Road Safety

3.6.2 It is intended that the strategy will provide a detailed policy framework for the district which will support and complement the Local Plan. It will identify the transportation solutions that are considered to be necessary to support or unlock future development.

3.6.3 The key transport issues in Swale are set out by the document as being :

- Congestion at M2 Junction 5 acts as a barrier to further development in Swale.
- Capacity improvements required at A249 Key Street and Grovehurst interchanges.
- Rural areas of the borough are remote from main centres and less well served by public transport.
- Public transport tends to be inaccessible to the mobility impaired.
- Traffic congestion with school/ employment commuting into Sittingbourne, causing rural rat-runs in the south of town and air quality issues.
- Transport interchange between cycle routes, bus services, and train services is poor, therefore encouraging the use of cars to rail stations, which add to problems with parking and congestion.
- Not enough uptake of sustainable transport.
- No current parking strategy.
- Constrained viability of new developments to provide significant infrastructure contributions.

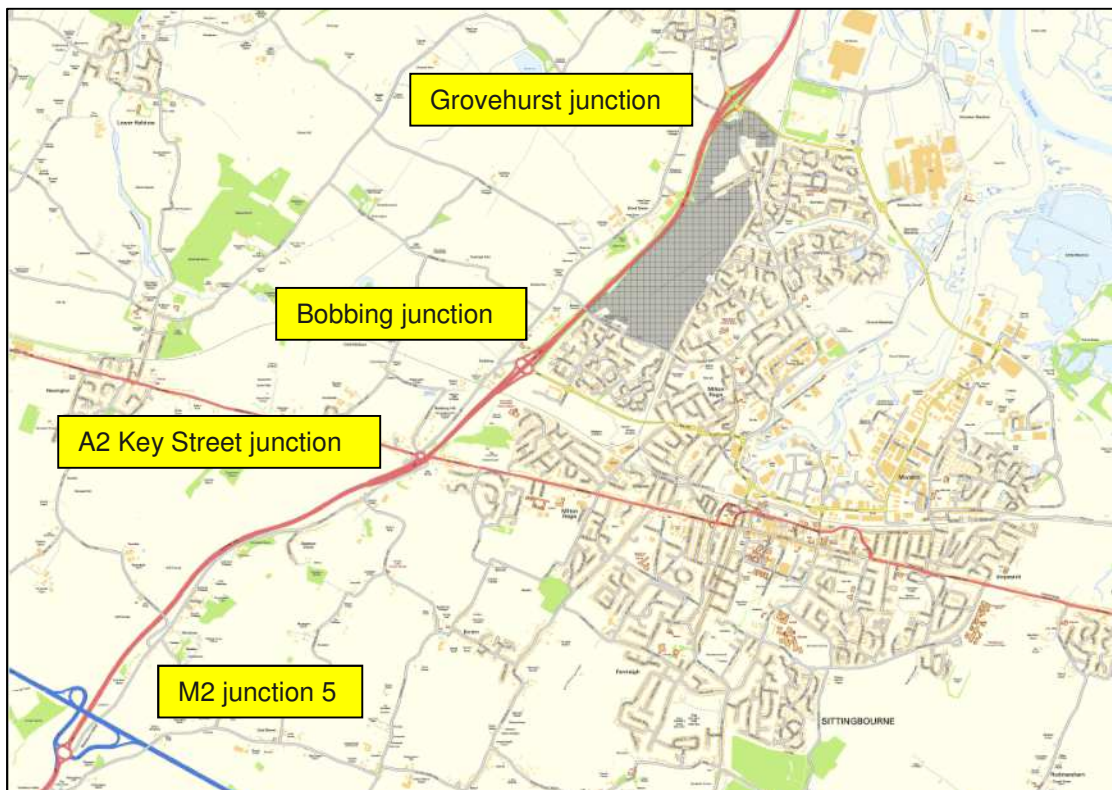
- 3.6.4 The draft Transport Strategy summarises the transportation modelling of the planned development in Swale looking at a 'Do Minimum' scenario which assumes only background growth, and two 'Do Something' scenarios, one assuming the construction of 540 dwellings per annum, and one assuming the construction of 740 dwellings per annum.
- 3.6.5 The document explains that across the borough there is scope to improve the levels of walking and cycling, and in particular travel by bus. All new developments will be required to provide for sustainable transport by:
- ensuring that all housing and employment developments are served by bus routes, with fully accessible stops within 400m of any part of the site;
 - ensuring there is space for secure cycle provision;
 - ensuring that local amenities are within walking distance;
 - prioritising walking and cycling routes, making them direct and secure through design.
- 3.6.6 With respect to sustainable transport the document sets out a number of actions, including those listed below:
- Implement the Swale Cycling Strategy.
 - Secure and sheltered cycle parking covered by CCTV to be provided at all train stations.
 - Use the Quality Bus Partnerships to ensure that the needs of the whole Borough are being met and that the expertise of the bus operators is fully utilised.
 - Ensure that new developments provide kickstart funding to make a bus service viable from the outset.
- 3.6.7 With respect to transport infrastructure the document recognises that
- "it is not realistic to aim to remove all congestion at all times"*
- 3.6.8 and that
- "major road building solutions are not likely to be affordable solely using developer contributions or community infrastructure levy, but notwithstanding this, developers will be required to contribute proportionately to improvements to the highway directly and indirectly affected by their proposals."*
- 3.6.9 The strategy advises that capacity improvements and safety improvements at key junctions will be required, particularly where queuing traffic would impact on the strategic road network (M2 or A249). The document sets out a number of actions including :
- Improve capacity at M2 junction 5.
 - Improve capacity at the A249 Grovehurst junction.
- 3.6.10 The Transport Strategy sets a number of targets to maintain traffic volumes, increase proportion of mode share by sustainable modes, improve public transport reliability and safety. The proposed development will support and provide opportunities for sustainable travel and will offset effect of development traffic as appropriate at junctions off site.

4 Site accessibility

4.1.1 The following section considers the existing transport network and proposed enhancement to this to serve the site for all transport modes.

4.2 Strategic highway network

4.2.1 Access to the site from the strategic highway network is via the A249 trunk road dual carriageway. This route is maintained by HE and borders the site on its western side. The A249 is a strategic route that links Maidstone with Sheerness on the Isle of Sheppey and also serves as a link between the M2 and M20 motorway corridors.



4.2.2 The A249 is accessed from the site via the B2005 Grovehurst Road to the north west and Bobbing junction to the south west.

4.2.3 The Grovehurst Road junction is a grade separated dumbbell junction, comprising two roundabouts connected by a single bridge over the A249. The B2005 Grovehurst Road junction layout allows all movements to be made between Grovehurst Road and the A249.

4.2.4 The Bobbing junction is a four arm grade separate junction that comprises a gyratory below the A249 main line. Slip roads serve merging and diverging traffic to and from the A249 main line. Access from the site to Bobbing junction is gained via Quinton Road and Sheppey Way, or Sonora Way and the B2006 Staplehurst Road.

4.2.5 Heading further south the A249 passes through the A2 Key Street junction and thereafter intersect the M2 at Junction 5 (some 8km south of the Grovehurst Road junction).

4.2.6 The Transport Assessment for the Site describes the enhancements proposed for the strategic highway network as mitigation for the Development. These comprise the following :

- An upgrade to the Grovehurst junction. This will be in line with the Local Plan and provide a capacity enhancement to offset the Development generated traffic and will also allow for Local Plan growth. The upgrade scheme will comprise a southbound filter lane from the A249 diverge and enhancements to both roundabouts.
- An upgrade to the Bobbing junction. This will introduce signal control to both A249 off slips and enhancements to the entry and exit widths on the local roads.

4.2.7 In addition to the above there are proposed enhancements to the M2 Junction 5 by Highways England and to the A2 Key Street junction by other local developments.

4.3 Local highway network

4.3.1 The site will be directly accessed from the B2005 Grovehurst Road to the north and Quinton Road to the south. The B2005 Grovehurst Road partially borders the site to the north east, whilst Quinton Road borders the site to the south.

4.3.2 The B2005 Grovehurst Road is predominantly residential in nature along much of its length. At its north extent, the B2005 Grovehurst Road connects with the A249 Grovehurst Road junction. Heading south from this location the B2005 Grovehurst Road is a wide single carriageway and is subject to the national speed limit (60mph) and benefits from a street lighting regime. This continues pass the proposed site access.

4.3.3 Approximately 150m south of the proposed site access, the speed limit reduces to 30mph as the road enters the built up area and is flanked by residential properties on both sides. Footways are also provided on both sides of the road.

4.3.4 Heading further south the B2005 Grovehurst Road passes through the staggered crossroads of Bramblefield Lane and Hurst Lane. At this location is a convenience store and post office. Sections of cycleway are provided on the south west and south east corners of the junction whilst pedestrian crossing refuges are located north and south of this junction.

4.3.5 Continuing south a parking layby is provided on the east side of the road on the approach to the medical centre access. The B2005 Grovehurst Road continues south as a wide route passing Kemsley rail halt. The direct residential frontage disappears south of the station although a footway continues on the west side of the road to the roundabout with Grovehurst Avenue.

4.3.6 To the south, Quinton Road borders the site and performs the role of a local distributor road, with no direct access for private dwellings. It is subject to a 30mph speed limit and features street lighting along its length.

4.3.7 A footway is provided alongside the south side of Quinton Road from The Meads Avenue heading west across the A249 and Sheppey Way. A 7.5T weight restriction (except for access) applies to Quinton Road and the national speed limit (60mph) applies to the west and over the A249.

4.3.8 To the east of the proposed site access, Quinton Road crosses over the railway line via a single lane bridge. Traffic movements are controlled by shuttle working signal control.

4.3.9 Bramblefield Lane penetrates the general site area on the site's eastern side. This road is an existing residential cul-de-sac and also forms part of National Cycle Route 1. The route of NCR1 has been stopped up to motor vehicle traffic where it crosses the A249 between Bramblefield Lane and Sheppey Way.

4.3.10 To the north, Swale Way is a 40mph single carriageway route connecting with the B2005 Grovehurst Road junction. A footway / cycleway is provided along its southern side and it features street lighting along its length.

- 4.3.11 To the west of the A249 the Grovehurst Road provides access to Iwade. This settlement has been the subject of significant development over recent years and continues to be identified for growth within the Local Plan.
- 4.3.12 Sheppey Way is a single carriageway route that connects the Isle of Sheppey to the north with the A2 to the south. It passes through Iwade and Bobbing and connects with Bobbing junction and the Key Street junction. Hence, Sheppey Way provides a connection between Quinton Road and Bobbing junction.
- 4.3.13 A number of capacity enhancements are proposed at local junctions by the Development as mitigation for its effects. These are described in the Transport Assessment and comprise:
- B2006 Staplehurst Road / Staple Close / Crown Road / B2006 St Paul's Street / Chalkwell Road roundabout. Increase entry widths and flare lengths.
 - B2006 St Paul's Street / King Street / B2005 Mill Way / B2006 Mill Way. Conversion to signal control.
 - B2006 / Sonora Way / Vellum Drive. Increased flare lengths and entry widths.
 - B2006 St Paul's Street / High Street / Millen Road . Increased road width on High Street.
 - B2006 Mill Way / The Wall / B2006 Eurolink Way / Milton Road. Adjustments to signal timings.
 - B2006 Eurolink Way / Crown Quay Lane. Increase flare length and entry width.
 - A2 St Michael's Road / B2006 Crown Quay Lane. Adjustments to signal timings.

4.4 Walking and Cycling

- 4.4.1 There is a network of walking and cycling links serving the site and local surrounds. These are described below.
- 4.4.2 A footway runs along the western side of the entire length of Grovehurst Road, from the A249 Grovehurst Road junction in the north to the Saffron Way / North Street junction in the south. This route crosses the railway line adjacent to Kemsley rail halt on a footbridge, connecting with footways running along either side of Saffron Way and North Street and hence providing a pedestrian link into Sittingbourne town centre.
- 4.4.3 In addition, there is also a footway running along the eastern side of one section of Grovehurst Road. This extends from the northern most property on this road to just south of the junction with Hurst Lane.
- 4.4.4 There is a Public Right of Way passing through the site. Route ZU6 starts at the junction of Middletune Avenue and Newbridge Avenue, to the south east of the site, and continues north west, crossing the railway line between Sittingbourne and Kemsley rail halt via an at-grade crossing before continuing into the site.
- 4.4.5 As it crosses the middle section of the site, route ZU6 turns into route ZR110, continuing in a north easterly direction alongside the A249 dual-carriageway before terminating at Bramblefield Lane.
- 4.4.6 On Bramblefield Lane the route is on street for cyclists although this is a lightly trafficked cul de sac amenable to cycle journeys. Within the site the route continues as a hard surfaced walk / cycle route heading west towards the A249. The route crosses the A249 via a cycle / footbridge and continues on street to Iwade to the north and Howt Green to the south.

- 4.4.7 The nearest existing cycle route to the site is National Route 1 (NR1) which includes a mix of on and off road sections through Sittingbourne. It is to the north of the site and follows Bramblefield Lane to the east through to the existing residential area on the eastern side of the railway line via a footbridge and then heads south to Sittingbourne town centre and the train station. The route to the west crosses the A249 and continues north to Sheerness and west to Gillingham and beyond. To the east of the site it continues along Ypres Drive and Grovehurst Avenue before running along Grovehurst Road, Saffron Way, Mill Way and Eurolink Way.
- 4.4.8 To the west of the site the route splits and continues south west towards Rainham (via Sheppey Way and Stickfast Lane), and north through Iwade towards the Isle of Sheppey.
- 4.4.9 The route is on-carriageway for the majority of this section, although there is a short off-road section along Saffron Way between the North Street and Langley Road junctions, facilitated by a shared footway / cycleway along both sides of the road at this location.
- 4.4.10 A shared pedestrian/cycle route is provided along Sonora Way, to the south of the site, providing off-carriageway access through the residential area to the B2006. This route will assist in providing a pedestrian and cycle route between The Meads and the proposed site, particularly for school children.
- 4.4.11 No footways are provided on Quinton Road in the vicinity of the proposed site access location. The masterplan frontage on Quinton Road would include a pedestrian footway which would provide a link to the existing footway to the east of the site. This route would enable access to Milton Regis High Street which has a number of local facilities.
- 4.4.12 Further afield typically footways adjacent to the local highway network surrounding the site and these enable access to Sittingbourne town centre where amenities and potential employment opportunities exist. In addition, there are a number of local businesses located on Eurolink Way close to Sittingbourne town centre and Eurolink Business Park. These areas can be accessed by walking and cycling.
- 4.4.13 There are two at-grade railway crossings located on the eastern boundary of the site. The first, known as 'Foxgrove, ELR – SEJ2, 44m 70ch' is located off Volante Drive and is a User Worked Level Crossing with no public access. The second railway crossing, located further south between Volante Drive and Middletune Avenue, is known as 'Vicarage' (ELR: SEJ2, Mileage: 44m 58ch, Status: Footpath with wicket gates). The crossing is located along Public Right of Way ZU6.
- 4.4.14 A number of enhancements are proposed by the Development to the walking and cycling network as summarised below.
- A footway / cycleway will be provided on the east / south side of the spine road as it approaches Grovehurst Road. This will connect with the existing footway on the west side of Grovehurst Road.
 - Upgrade of the existing footway to a shared cycleway / footway is proposed on the west side of Grovehurst Road heading north (from the site access) to the roundabout. At this location cyclists will be able to cross Grovehurst Road and connect with the existing cycleway on the south side of Swale Way.
 - A walking and cycling route will be available through the land at Great Grovehurst Farm to connect with the existing footway / cycleway on the south side of Swale Way. This would provide onward access to the employment areas along this corridor.
 - The walking and cycling connections to Swale way would connect with the existing route on the west side of the Nicholls Transport depot which runs from the Nicholls access, northbound and under the rail line. This creates a connection to the Ridham / Kemsley

Strategic Employment Area. The underpass beneath the railway has been resurfaced, lined and lit under the terms of a recent s106 Agreement.

- A walking and cycling route will be available through the land at Great Grovehurst Farm to connect with Godwin Close on the south boundary. This provides a route to Kemsley village.
- The existing Public Right of Way (PROW) connecting the west end of Bramblefield Lane with Sheppey Way to the west will be retained. This incorporates National Cycle Route 1 and would hence provide a walking and cycling access to the site.
- A walking / cycling route on Sheppey Way (from Bramblefield Lane towards Iwade) will be contributed towards by the Development. This is in accordance with policy and will connect with the provision being made on Sheppey Way by existing development at Iwade.
- The entrance to the medical centre will be retained and amended to allow vehicular access to the secondary school. This will also provide a pedestrian footway leading to the secondary school site.
- The existing PROW crossing the site from east to west provides access to the site from Middletune Avenue and Newbridge Avenue via an at grade crossing of the rail line. This PROW currently passes alongside the A249 before connecting with the PROW from Bramblefield Lane and crossing the A249 corridor. A route broadly in line with the existing alignment will be retained and hence existing journeys will remain possible.
- The spine road access will incorporate shared walking and cycling facilities on its east side and a footway on the west side as it approaches Quinton Road to the south. On reaching Quinton Road an appropriate length of footway would be provided within the site frontage to allow pedestrians to cross and use the existing footway on the south side of Quinton Road.
- A pedestrian link will be provided at the south west corner of the Persimmon site to connect with the existing convenience store on Quinton Road.
- Internal pedestrian links will be provided between the Persimmon site and the Redrow site.
- A pedestrian access will be provided to Quinton Road through the Redrow site. This would connect with the existing footway on the south side of Quinton Road.
- The Public Right of Way crossing the Sheerness Line (which serves Kemsley rail halt) will also be retained within the development layout.
- Footpath ZU11 and the eastern part of ZR108 provide pedestrian / cycle access to The Meads Local Centre where there is a range of shops including a convenience store, public house, community centre and medical centre.
- On site the masterplan will make provision for walking and cycling. For example, the spine road passing through the site will incorporate a walking and cycling corridor along its length. A network of paths and footways on site will allow for ease of movement around the site, including the convenience store, community facilities school and routes to Kemsley rail halt.

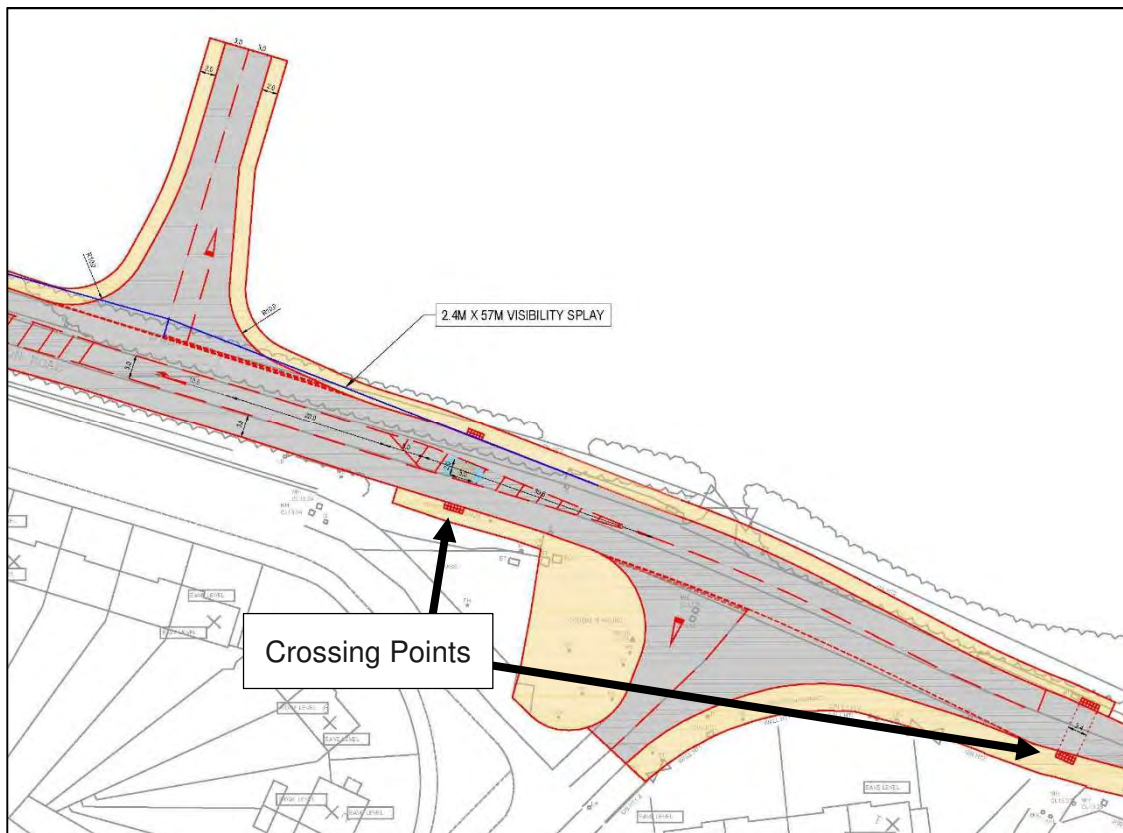
4.4.15 In addition to the access points and links within the site it will be important to provide connectivity and enhancement (where appropriate) to the walking and cycling facilities off site. The following facilities will be provided to provide such connectivity and enhancement.

- At the south boundary a footway will be provided on the north side of Quinton Road within the site frontage. This may be set back from the carriageway or alongside it. This facility

will connect the two access points on Quinton Road and extend east as far as the existing shuttle working signals on Vicarage Lane.

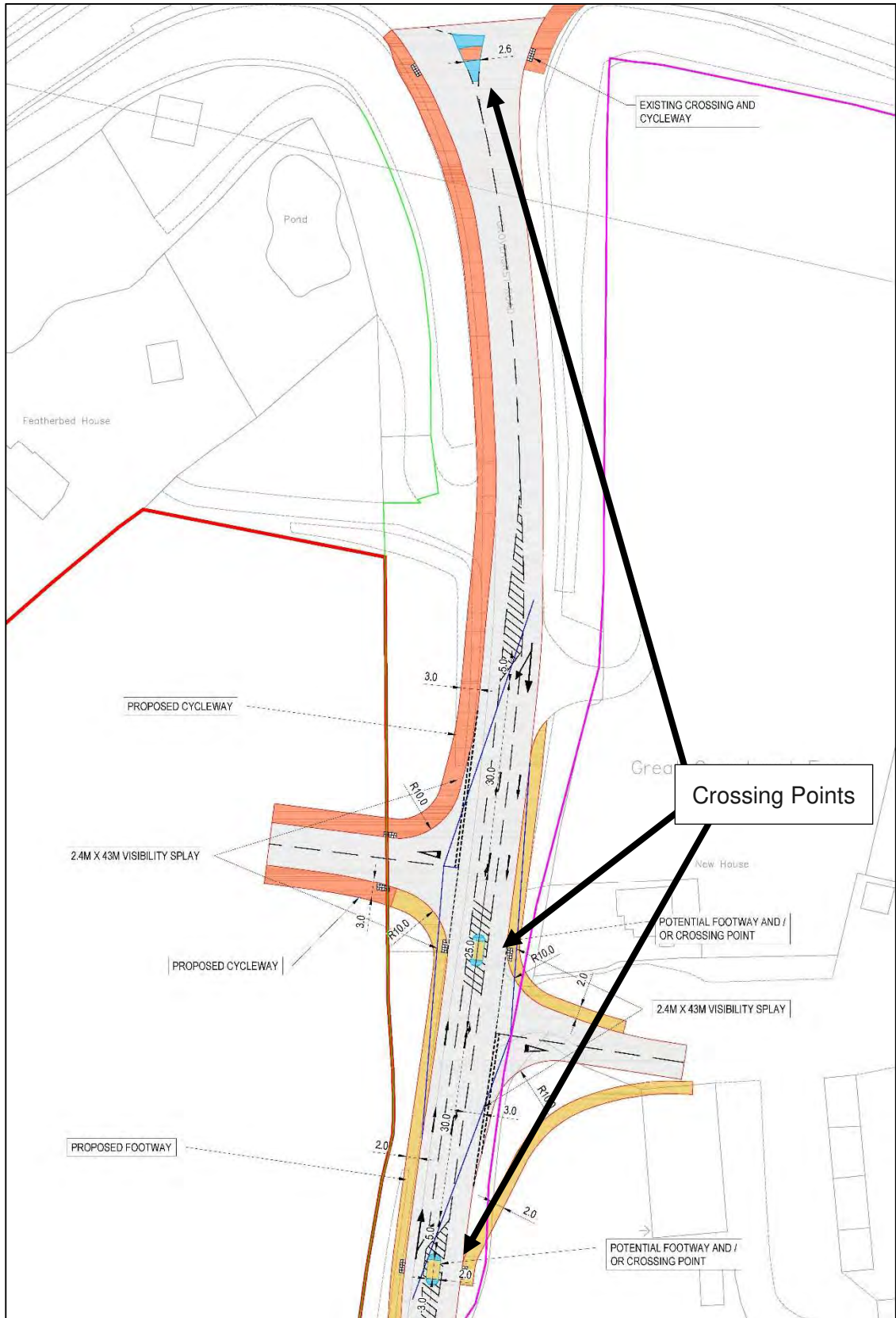
- A crossing point will be created on Quinton Road at the spine road access using a pedestrian refuge and dropped kerbs and tactile paving. This will provide access to the existing footway on the south side of Quinton Road and hence a route between the site and Knightsfield Road and The Meads.
- A signal controlled crossing point can be provided to the east where the existing signal controlled shuttle working across the rail line exists. This could be provided as a toucan crossing and would provide a route to the existing footway / cycleway on the south side of Quinton Road / Vicarage Road.

4.4.16 The crossing facilities described above are illustrated below.



- To the north, the vehicular access from Grovehurst Road will incorporate a pedestrian crossing facility in the form of a dropped kerb, tactile paving and refuge within the hatched central reserve. This will provide connectivity between the main site and the land at Great Grovehurst Farm. It will also provide another crossing to the footway on the west side of Grovehurst Road for residents on the land at Great Grovehurst Farm

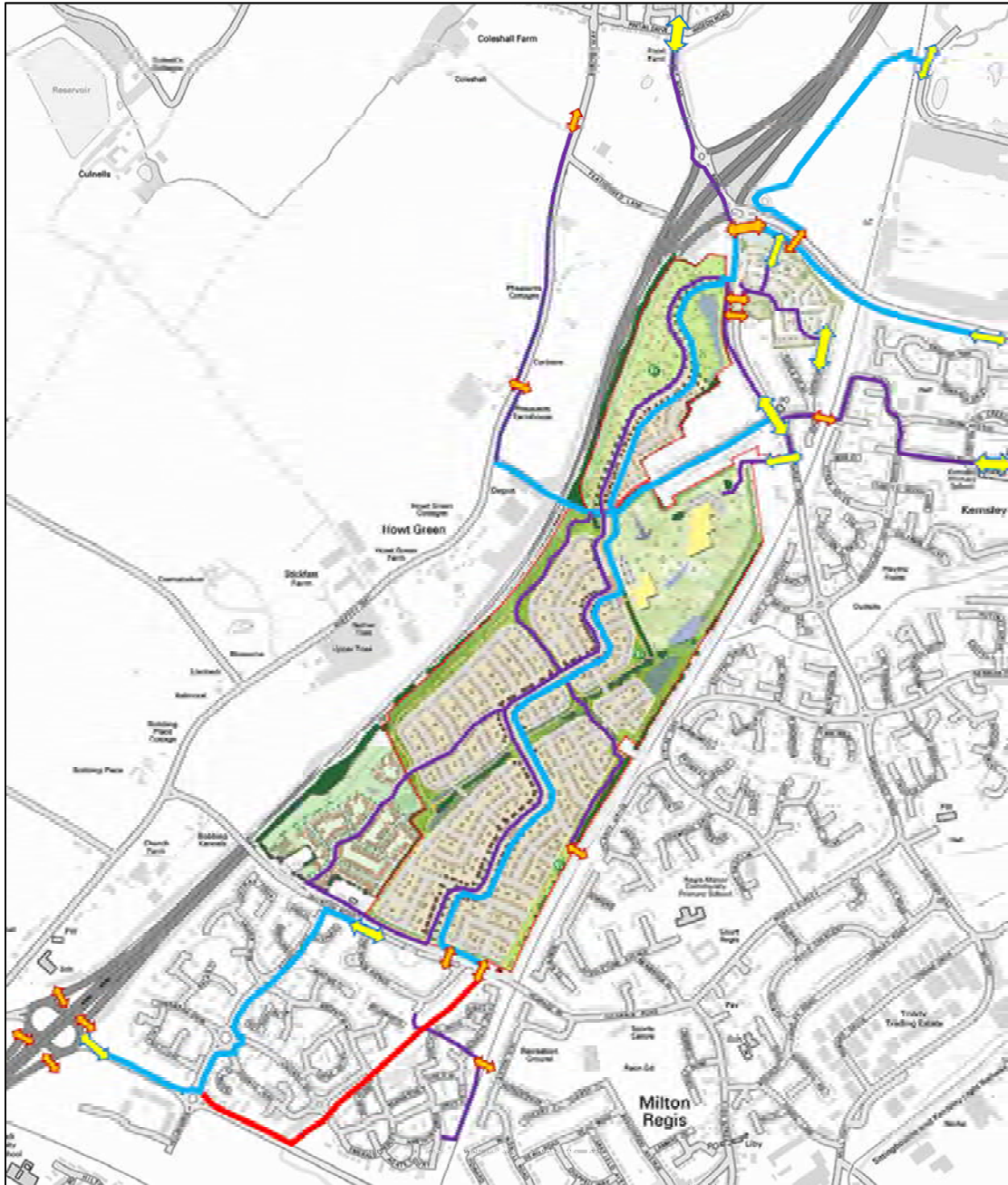
4.4.17 The crossing facilities described above are illustrated below.



4.4.18 The development will implement an upgrade of the Bobbing junction to mitigate highway capacity effects. This will include signal control of the off slips. It would be possible to include pedestrian crossing facilities within the signal control upgrade to assist pedestrian movements between the site and The Meads and Bobbing village.

4.4.19 The provision of the walking and cycling network through the site would present an opportunity for a more direct route to Kemsley rail halt for residents of The Meadows.

4.4.20 The figure below illustrates the walking and cycling connectivity of the site on the basis of existing network and proposed enhancements.



4.5 Rail

4.5.1 The nearest rail station to the site is Kemsley rail halt, located alongside the B2005 Grovehurst Road approximately 100m south of the access with the medical centre.

4.5.2 There are two public entrances to the station (one on either side of the railway line), accessed via footways that lead from the western side of Grovehurst Road. These provide step-free access to both platforms.

- 4.5.3 There is no vehicular access to the station or vehicle or cycle parking and the station is unmanned. A gated pedestrian access is also accessible from the adjoining medical centre.
- 4.5.4 Services at Kemsley rail halt typically operate twice per hour between Sittingbourne and Sheerness, with interchange provided at Sittingbourne for onward connections to Canterbury, Ramsgate, the Medway Towns and London.
- 4.5.5 There are two services operating direct from Kemsley rail halt to London Victoria (not stopping at Sittingbourne) on weekday mornings, departing at 0633 and 0713, and two weekday evening services arriving from Victoria at 1827 and 1945.
- 4.5.6 The ability to board a train directly to London would provide a significant benefit to residents of the proposed development. In addition, the walking and cycling route through the site would facilitate a more direct connection to Kemsley rail halt for existing residents at The Meads.
- 4.5.7 A summary of services from Kemsley rail halt is shown in the table below.

Destination	AM Peak	PM Peak	Mon-Fri	Saturday
	(0800-0900)	(1700-1800)	Daytime	
	(Departures)	(Arrivals)	(Departures)	(Departures)
Sittingbourne	1	2	2	2
Sheerness-on-sea	1	2	2	2

- 4.5.8 Sittingbourne station is located approximately 2km (around a 25-minute walk) south-east of the site. This station features a car park with space for 253 vehicles, and whilst there are no disabled parking spaces available, parking is free for disabled customers displaying a valid International Blue Badge. The station also features 106 sheltered cycle storage spaces, together with a staffed ticket office, self-service ticket machines, payphones, toilets, baby changing facilities, waiting rooms and a buffet serving cold drinks and light refreshments.
- 4.5.9 The station can be reached by train from Kemsley rail halt via the half-hourly shuttle between Sittingbourne and Sheerness.
- 4.5.10 Trains from Sittingbourne station serve London Victoria and St Pancras International, via Gillingham, Chatham and Rochester, and also Canterbury, Dover and Ramsgate. In addition, there is also the half-hourly shuttle service to Kemsley rail halt and Sheerness together with a few early morning weekday commuter services to London Cannon Street and Blackfriars in the City (and vice versa in the evenings).
- 4.5.11 A summary of services from Sittingbourne station to various destinations is shown in the table below. Services shown are departures from Sittingbourne to each destination for the weekday AM peak, weekday daytime and also Saturdays, and arrivals at Sittingbourne from each destination for the weekday PM peak. All services to Canterbury, Dover and Ramsgate originate from London.

Destination	AM Peak	PM Peak	Mon-Fri	Saturday
	(0800-0900)	(1700-1800)	Daytime	
	(Departures)	(Arrivals)	(Departures)	(Departures)
Gillingham	5	5	5	5
London St Pancras	2	2	3	3
London Victoria	3	2	3	3
London Cannon Street	4	4	4	4
London Blackfriars	4	4	5	5
Canterbury East	2	2	2	2
Dover Priory	3	1	3	3
Ramsgate	2	2	2	2
Kemsley / Sheerness	2	2	2	2

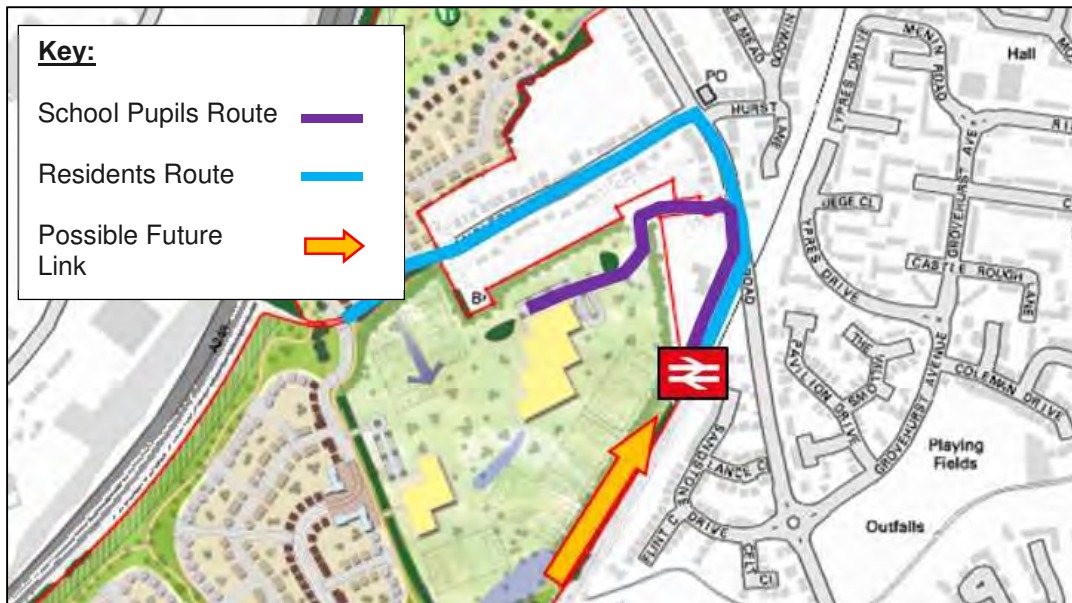
4.5.12 Positive discussions have been held with Network Rail with respect to linking the site directly with Kemsley rail halt for pedestrians and cyclists. In principle, this would seem acceptable.

4.5.13 Providing such a direct pedestrian connection through the site and to the Network Rail boundary would need to pass through the site identified for the schools within the Local Plan and the masterplan. The school sites will be given to KCC to masterplan and build out to meet their requirements. Therefore, the provision of a direct pedestrian access between Kemsley rail halt and the wider site would be in the control of KCC and hence its delivery would need to be included within a Reserved Matters Application for the school site. Nevertheless, the masterplan submitted with the application indicates how this may be achieved.

4.5.14 Without a link through the school site, access from the site to Kemsley rail halt can still be provided in two ways as summarised below:

- Secondary school pupils using the train would logically use the medical centre access to / from Grovehurst Road and thereafter the existing accesses to the platforms indicated in purple below.
- Residents from the wider site would use the on site walking routes to access Bramblefield Lane and thereafter Grovehurst Road indicated in blue below.

4.5.15 These two routes are illustrated below.



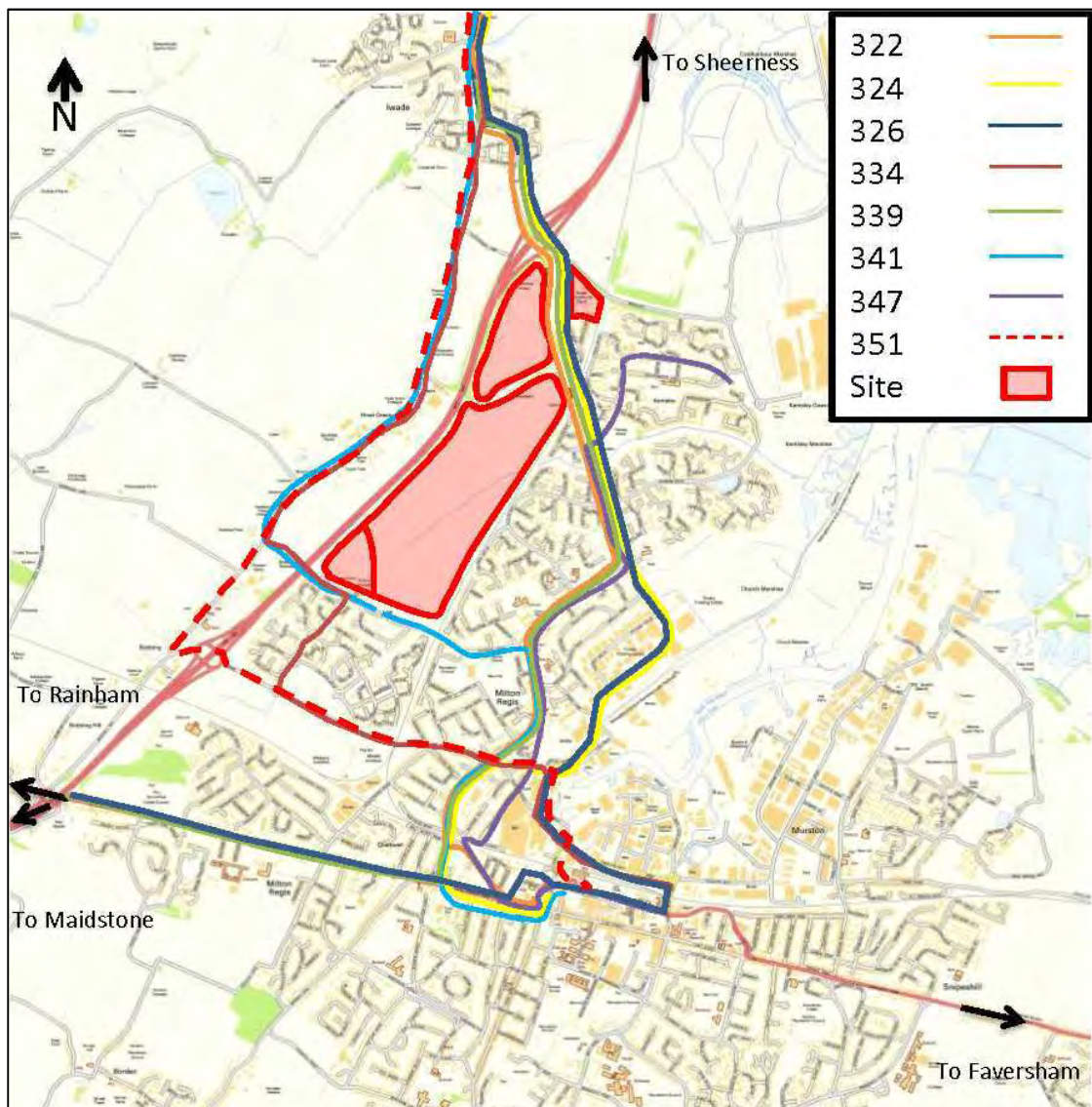
4.5.16 It is proposed that the development would provide a contribution to improve facilities at Kemsley rail halt and hence increase the attractiveness of this for residents and school pupils.

4.5.17 Whilst the details of a contribution would be subject to the S106 negotiation and agreement, previous conversations with Network Rail and Southeastern have suggested that the following items could inform the considerations on upgrade contributions:

- CCTV coverage of the station area.
- Improved lighting for the station area.
- Fencing upgrade at platform entrances.
- Covered cycle parking.
- Upgrade of waiting shelters.
- Improvement to customer information system.
- Improved signage.

4.6 Bus

4.6.1 Local bus routes within the vicinity of the site can be seen on the plan below.



- 4.6.2 The nearest bus stops to the site are on the B2005 Grovehurst Road, adjacent to the entrance to Grovehurst Surgery, approximately 50m from the medical centre vehicular and pedestrian access on the B2005 Grovehurst Road and around 500m (around a 5-6 minute walk) from the main vehicular access to the site.
- 4.6.3 The northbound bus stop sits in a dedicated lay-by and consists of a flagpole with timetable information. The southbound bus stop meanwhile does not feature any physical infrastructure. There is no footway on the eastern side of Grovehurst Road at the southbound bus stop although buses do stop here if summoned.
- 4.6.4 Additional bus stops on the B2005 Grovehurst Road are located approximately 90m north of the junction with Hurst Lane, approximately 160m (around a 2 minute walk) from the main vehicular site access. The northbound bus stop consists of a 'Bus Stop' sign attached to a lighting column.
- 4.6.5 The bus stops on Grovehurst Road provide access to the following services:
- 339, operated by Chalkwell. This runs once per day on weekdays only, from Sheerness to the Hempstead Valley Shopping Centre in Gillingham, via Minster, Queenborough,

Iwade and Sittingbourne. The service departs from Grovehurst Road for Hempstead Valley at 0958 and arrives back at 1405 (where it continues on to Sheerness).

- 322 Chalkwell service. This departs at 1215 for the prisons on the Isle of Sheppey, and arrives back at 1656 (where it continues on to Sittingbourne). It is a weekday only service.
- 324 Chalkwell service, running between Sheerness, Faversham and Canterbury. This departs at 0958 for Canterbury and arrives back at 1424, where it continues on to Sheerness. It runs on Mondays, Wednesdays and Fridays only.
- 326 Chalkwell service, running between Sheerness, Sittingbourne and Chatham. This departs from Sheerness at 0951 for Chatham and arrives back at 1252 where it continues on to Sheerness. It runs on Mondays to Friday only.

4.6.6 Additional bus stops are located further south on the B2005 Grovehurst Road, beyond the junction with Grovehurst Avenue and approximately 800m (around a 10-minute walk) from the main vehicular site access. These are served by the 347, operated by Arriva Kent & Surrey, and run between the Kemsley residential estate (to the east of the site) and Sittingbourne town centre. This is a frequent service that runs four times per hour Monday to Friday and three times per hour on Saturdays.

4.6.7 Bus stops are located on Quinton Road, approximately 100m from the east site access onto this road and 140m from the west site access. They both consist of a flagpole with a 'Bus Stop' sign attached, and are served by the 341. This is operated by Arriva Kent & Surrey, and runs once per day on weekdays only. It departs at 0807 for Sittingbourne town centre and returns at 1535, where it continues on to Iwade.

4.6.8 Bus stops are also located on Sonora Way, approximately 400m (around a five-minute walk) from the proposed site entrance. These bus stops are served by the 334 and 351, operated by Arriva Kent & Surrey. The 334 runs once per hour Monday to Saturday between Maidstone, Detling, Sittingbourne, Iwade, Queenborough and Sheerness and the 351 runs once in the AM and once from Iwade to Snipeshill Sittingbourne Community College. Both bus stops feature a 'Bus Stop' sign, timetable information and yellow 'Bus Stop' road markings.

4.6.9 A summary of the bus services operating regularly (i.e. at least once per hour for the duration of the day) in the vicinity of the site is shown in the table below. The 347 serves bus stops on Grovehurst Road whilst the 334 serves stops on Sonora Way.

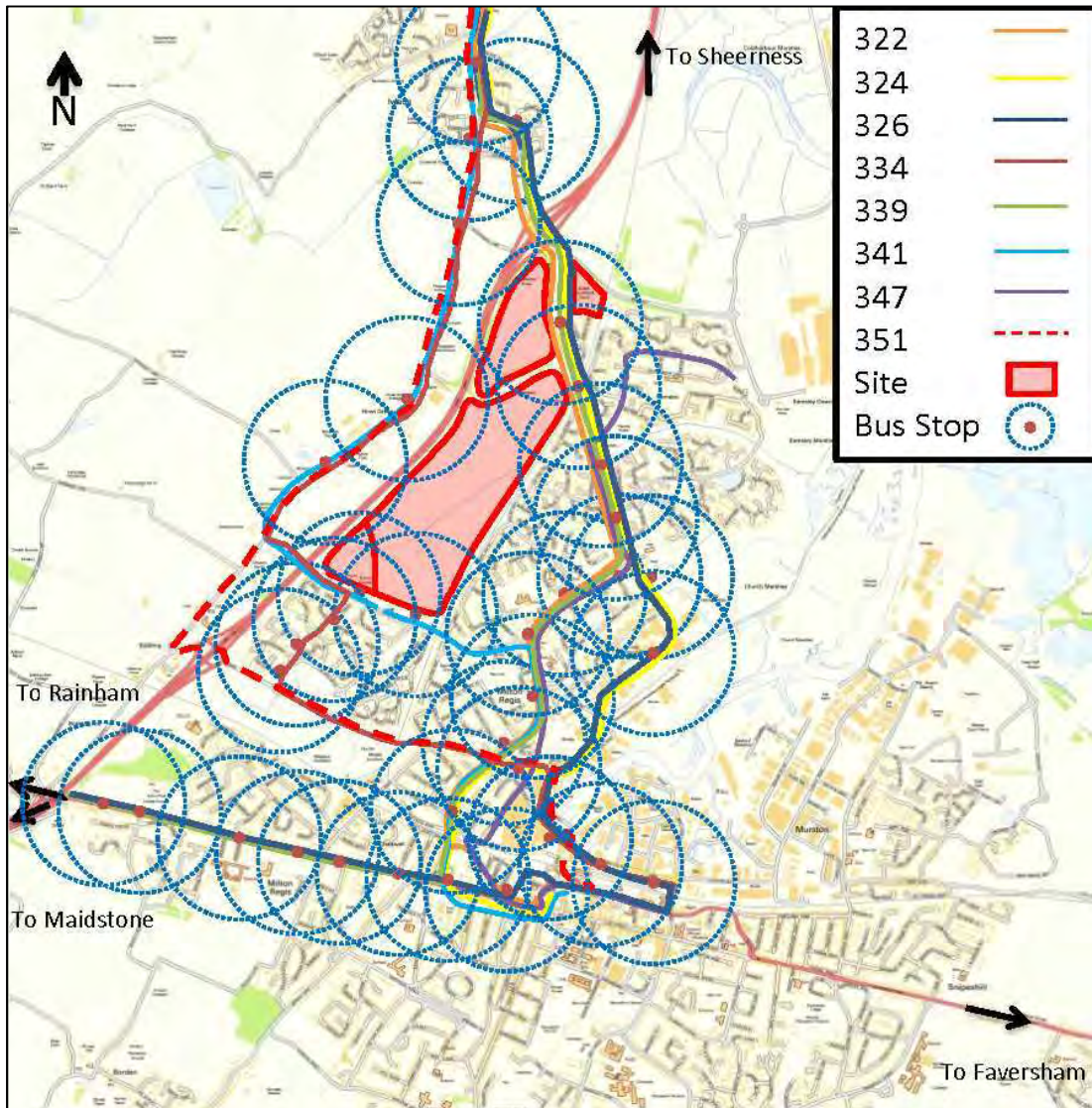
Route		AM Peak	PM Peak	Mon-Fri Daytime	Saturday
		(0800-0900)	(1700-1800)		
		(Departures)	(Arrivals)	(Departures)	(Departures)
347	Kemsley – Milton Regis – Sittingbourne Town Centre	4	4	4	3
334	Sheerness – Iwade – Sittingbourne – Maidstone	1	1	1	1

Summary of bus services operating in the vicinity of the site (high frequency services only)

4.6.10 Previous discussions between PBA and both Arriva and Chalkwell confirmed that there are no capacity issues on existing services and both operators were amenable to providing a route through the site once an appropriate number of units are occupied and a through route is achievable.

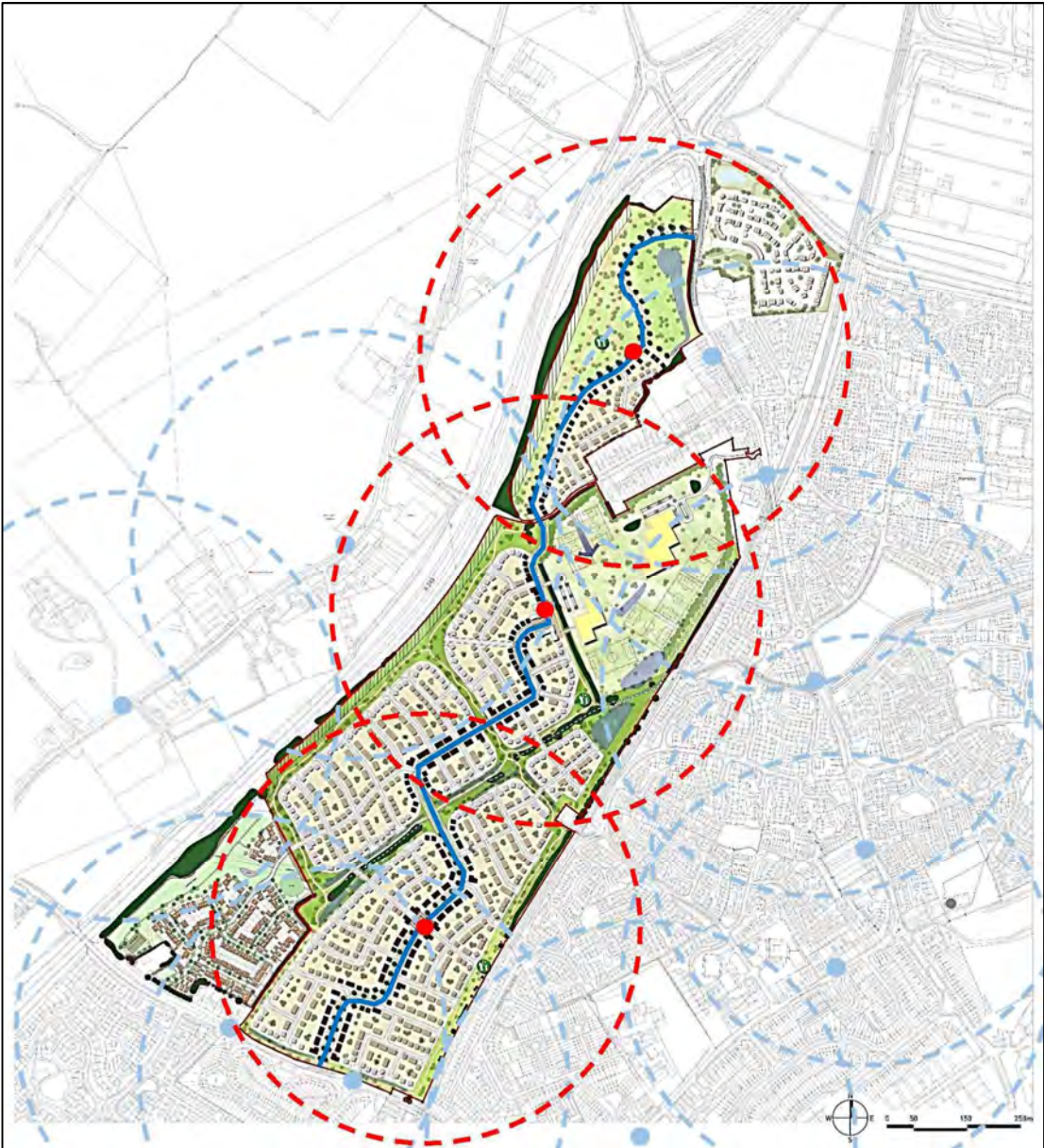
4.6.11 Connecting the site by bus to the town centre, rail station and other local amenities will be important. Bus services already pass along Quinton Road to the south and Grovehurst Road to the east. Further bus services are available along Sheppey Way to the west. These existing

routes, along with existing bus stops and frequencies are illustrated below along with the 400m (5 minute) catchment areas.



- 4.6.12 Whilst the existing bus infrastructure illustrated above provides accessibility to the bus network it is proposed that the development will support and enhance this through the provision and initiatives described below.
- 4.6.13 Without any further infrastructure provision, the development would provide additional support to the existing bus services through additional patronage generated by the residents on site. It is noted from the figure above that a significant proportion of the development sits within a 400m (5 minute walk) radius of existing bus stops. This confirms that the site is already well connected to the existing bus infrastructure.
- 4.6.14 Nevertheless, in order to increase the attractiveness and convenience of the bus mode, and hence the propensity of residents to use the bus, it would be appropriate for the development to enhance the local bus services.
- 4.6.15 With respect to infrastructure the masterplan makes provision within the site for bus services to penetrate the site. This is through an appropriately sized spine road (6.75m) to allow two way bus working and three on site bus stop locations at suitable spacings and close to key activity locations. Footways will be provided on site to allow ease of access to bus shelters.

- 4.6.16 Aside from the infrastructure it is proposed to enhance bus services serving the site adopting one or more of the approaches listed below:
- Diversion of existing services through the development.
 - Increased frequency of existing services to allow a proportion of these to pass through the site.
 - A stand alone and dedicated service to and from the site linking with key destinations such as the town centre and rail station.
- 4.6.17 Further discussions would need to be held with the local bus operators to agree the details of a suitable bus provision and / or contribution.
- 4.6.18 Nevertheless, it is anticipated that a sufficient annual income would be generated by residents on site to support an enhanced bus service, directly serving the site. It is reasonable to assume that two Sprinter minibuses could be funded by the revenue generated by the site.
- 4.6.19 Based upon two buses being funded, a service frequency of around 20 minutes could be achieved between the site and the rail station in Sittingbourne town centre for example. This would assume a 40 minute circular journey time for each bus. In reality, a dedicated bus service may not need to operate a 20 minute frequency in the middle of the day and at weekends. This would reduce the cost, and hence strengthen the viability of the service.
- 4.6.20 The manner in which the revenue generated could be used would need to be the subject of detailed discussions with the local bus operators (Arriva and Chalkwell). However, at this stage it is reasonable to expect that a service of three buses per hour (20 minute frequency) could be achieved between the site and Sittingbourne town centre, either with new Sprinter buses provided and / or an enhancement of existing services and their diversion into the site.
- 4.6.21 Based upon the above, the figure below illustrates the proposed bus strategy for the development.



4.7 Summary

4.7.1 The above paragraphs demonstrate that the site will integrate with the existing transport network for all modes and be permeable for through journeys by sustainable modes. The development will enhance the transport network as appropriate, not only to meet the needs of residents on site, but also to provide a benefit to existing residents surrounding the site.

5 Trip generation and targets

- 5.1.1 It is recognised that in order for the Framework Travel Plan to be effective it must have measurable outcomes which can be monitored and reviewed on a regular basis.
- 5.1.2 The targets set out within this section are challenging, yet realistic targets that seek to reduce the number of vehicular trips and promote the more sustainable modes of travel.
- 5.1.3 Annual targets have been provided covering a five year period. The targets have been based on the SMART principles, as described below;
- Specific - A specific overall reduction in car based trips has been defined which will be achieved through the development of realistic Travel Plan measures.
 - Measurable - The number of private vehicle based trips will be monitored against the targets on a regular basis. Further initiatives and measures will be investigated and pursued should the development fail to meet these targets.
 - Achievable - Travel Plan measures will be implemented and their effectiveness monitored in order to ensure they are achievable.
 - Realistic – Realistic targets have been based upon a reduction of the proportion of car based trips.
 - Time-bound - The targets will be reviewed annually in order to clarify whether they are being achieved.
- 5.1.4 The maximum total two-way traffic generation for the development on the Site has been set in accordance with the levels identified in the Transport Assessment that accompanies the planning application for the development.

5.2 Target trip generation rates – Year 1

- 5.2.1 Vehicular trip generation rates for the Development have been extracted from the Transport Assessment and are summarised below. These represent the Year 1 targets.

	AM weekday (0800-0900)			PM weekday (1700-1800)		
	In	Out	Two Way	In	Out	Two Way
Residential (per unit)	0.157	0.387	0.544	0.382	0.222	0.604

5.3 Target trip generation rates – Developer supported final year

- 5.3.1 It is proposed that the Development will seek to reduce traffic generation from the Site by 10% over the developer supported period of the Travel Plan when compared to the Transport Assessment. This will represent the trip rate targets at 2031 or at full build out (whichever is sooner).
- 5.3.2 Vehicular trip generation rates for the proposed development at Final Year will hence be as summarised below.

	AM weekday (0800-0900)			PM weekday (1700-1800)		
	In	Out	Two Way	In	Out	Two Way
Residential (per unit)	0.141	0.348	0.490	0.344	0.200	0.544

- 5.3.3 Hence, trip rate targets for the intervening periods can be calculated through interpolation between year 1 and 2031, or interpolation based upon number of completions (compared to full build out).
- 5.3.4 Targets could be set for other transport modes such as walking, cycling and public transport for example. However, an increase in these travel modes could be implied by recording a reduction in car travel (assuming number of trips remains similar).
- 5.3.5 In addition, it would not be appropriate to apply measures to increase walking and cycling and public transport use if targets are not being met, but car travel targets are being met. Measures are set out within this Travel Plan to encourage use of walking, cycling and public transport modes in any event.

6 Travel Plan Coordinator

- 6.1.1 It is recognised that in order to ensure the Framework Travel Plan is effective, it requires the implementation of a Travel Plan Coordinator (TPC) with the necessary expertise to develop, implement and monitor the Framework Travel Plan.
- 6.1.2 It is anticipated that the appointment of a TPC will be undertaken by the developer(s) of the Site. The developer will therefore appoint a TPC to manage the Framework Travel Plan and to actively pursue initiatives and ensure the plan is regularly monitored and reviewed during the lifetime of the plan.
- 6.1.3 The TPC post will be appointed prior to the first occupation on site and will be supported by the developer for the developer supported period.
- 6.1.4 The role of the TPC could belong to an employee of the developer, or an external consultant, and will form an important element of that person's role. Although it is not envisaged that the position would be a full-time post, nevertheless the TPC must be available to all site users to answer queries and offer support on the basis of a reasonable response time.
- 6.1.5 The TPC should be empowered to a degree in order to be able to enforce decisions, but should also have regular access to senior member of the developer in order to ensure decisions can be made at the appropriate level.
- 6.1.6 The TPC will act as a focal point for liaison on Framework Travel Plan issues between the developer, site users, local transport operators as appropriate and the Local Planning Authority. The TPC will have an over-arching responsibility to:
- To be the initial point of contact for site users / residents, stakeholders and the Local Authority, with regard to travel issues.
 - Liaise with relevant public transport providers in order to seek discounts and keep up to date with offers and changes to services.
 - Seek to ensure bus stops are conveniently located and where possible sheltered by working with the Local Authority and through regular monitoring and maintenance
 - Facilitating the implementation of Framework Travel Plan initiatives.
 - Be the first point of contact for residents and other site users wishing to find out more about Framework Travel Plan initiatives.
 - Operate or hold responsibility for initiatives. For instance, ensuring that public transport information is kept updated.
 - Organise new initiatives. For example, promote national initiatives such as 'Walk to Work Week'.
 - Motivate others to adopt sustainable travel habits.
 - Be available to provide advice on sustainable travel planning on a personal level in order to promote the Framework Travel Plan and to aid those who need help or information on sustainable travel.
 - Keep abreast of policy and technology that could promote or facilitate the Framework Travel Plan.

- Attend periodic forums the Local Authority might organise to discuss best practice and make decisions about the Framework Travel Plan.
 - Undertake or oversee the monitoring and review of the Framework Travel Plan including the provision of the Annual Travel Reports and implementation of sanctions, should these be required.
- 6.1.7 It is not envisaged that the TPC may fulfil directly all of the responsibilities of the role. For example, they may choose to engage specialist consultancy advice as part of the monitoring and review process (to undertake traffic survey data collection for example).
- 6.1.8 The developer will inform the Local Planning Authority once a TPC has been employed and will provide them with the relevant contact information.

7 Action Plan

7.1.1 This Travel Plan is a Framework for individual Travel Plans to be developed more fully following the grant of planning permission. This chapter sets out a package of measures that may be included and implemented by the developer to influence the travel behaviour of residents of the Site.

7.2 Travel Awareness Campaigns

7.2.1 It is important to ensure that relevant travel information is available to those considering sustainable travel to enable them to make an informed decision as to their mode of transport. This could be through raising awareness of national and local travel awareness campaigns such as:

- National Green Travel Days (e.g. Walk to Work Week);
- Local walking and cycling events and initiatives; and
- Health or environmental related initiatives that link to travel.

Potential Action 1: The TPC will regularly advertise national and local Travel Awareness Campaigns to residents.

7.3 Green Travel Notice Boards

7.3.1 Sustainable Travel Information should be easily accessible to residents and should be updated regularly in order to present factual information and new ideas.

7.3.2 Green Travel Notice Boards (GTNB) displaying relevant travel information can be a particularly persuasive tool for tipping the balance in favour of more sustainable travel, providing it is kept up to date and is in a prominent location.

7.3.3 Other mediums through which information could be shared are posters / leaflets, on social networking sites, and / or through community newsletters. Information on sustainable travel should also be given to prospective occupiers as part of the marketing process in order to encourage sustainable travel from the outset. Examples of material that could be provided at the GTNB are as follows:

- Travel awareness days e.g. Walk to Work Week and National Liftshare Week;
- Local walking and cycling routes;
- Information on locations of and distances to key local facilities such as the train station, banks, post office and local shops in a bid to increase walking and cycling for shorter journeys and to reduce the amount of time spent on the local highway network;
- Local bus stops and public transport routes;
- Timetables and costs for local public transport services;
- Promotion of (and links to) a car share website; and
- Information on the health benefits of walking and cycling.

Potential Action 2: The TPC will introduce a GTNB to the Site which will contain relevant and up to date information and will be located within a prominent location. It will be provided at the first occupation of the Site to ensure it is available immediately.

7.4 Travel Information Pack

7.4.1 Research has shown that the best time to influence peoples travel behaviour is from the outset, before unsustainable travel patterns have had a chance to develop. Therefore, it is important that new residents are well informed of the travel choices available to them.

7.4.2 A Travel Information Pack (TIP) is a package of sustainable travel information that informs residents of all the travel options available to them in order for them to make an informed choice over their travel patterns. TIPs aim to encourage people to try out, or at least consider the different modes of transport available to them. A TIP should contain the following information:

- Information about the Travel Plan itself and the reasons for its development;
- Local walking and cycling routes;
- Maps highlighting local facilities and the distance and travelling time by mode to each facility;
- Public transport maps and timetables;
- Information on and links to a Car Share website;
- Health benefits related to sustainable travel;
- Links to home shopping supermarket websites; and
- Details for Personal Travel Planning (PTP) sessions.
- Details of car share websites and how car sharing works.

Potential Action 3: The TPC will develop a TIP which will be distributed at each Personalised Travel Planning Session.

7.5 Walking and Cycling

7.5.1 Walking and cycling are the most sustainable and beneficial modes of transport in terms of health and cost, yet the benefits of these modes can often be overlooked when faced with the time benefits of the private car.

7.5.2 Data for the National Travel Survey (ref table NTS0101) concluded that of all the trips made in 2016, 23% were less than one mile in length. Based on this statistic and the Site's good proximity to local services, it is clear that there is room to achieve a reasonable modal shift towards walking and cycling by the residents.

7.5.3 Maps highlighting the distances (and time taken) to walk or cycle to local facilities can be a good way to make people aware that they are more accessible than perhaps perceived to be.

By making people aware of the short distances, there is more chance of people opting to walk or cycle rather than automatically travelling by private car. This information should be made available from the outset before residents start the habit of traveling to these facilities by car.

- 7.5.4 Data for 2016 taken from DfT's National Travel Survey (ref table NTS0308) suggests that 23% of car journeys are less than two miles long and 56% of car journeys are less than five miles long, a distance which is equal to a 30 minute bike ride, and which is thought to be an acceptable cycling distance.
- 7.5.5 A community Bicycle User Group (BUG) will be established at the Site to allow residents to meet with other cyclists, to discuss cycle issues, plan events (such as local bike rides, Dr Bike sessions) and to try to improve facilities for cyclists (where required) through monthly meetings with the Travel Plan Co-ordinator. Overall, the BUG should encourage other people to use this mode.

Potential Action 4: The developer will ensure connectivity for walking and cycling trips to and from the site and appropriate walking and cycling routes within the Site. These will include waymarkings with accompanying information (such as distance and calorie use information).

Potential Action 5: The TPC will promote the benefits of walking and cycling in terms of health and cost. This may be through leaflet drops or the GTNB.

Potential Action 6: The TPC will provide residents with walking and cycling maps for the local area to encourage the use of these modes as part of the TIP. The maps will highlight the distance (and time taken) to walk and cycle to local services and transport hubs. This will be included in the TIP and posted on the GTNB.

Potential Action 7: The TPC will establish and promote a cycle forum in which group rides can be organised for residents and information and tips can be shared. It may be useful to contact local forums and cycle hire facilities to discuss promotions. In addition, free apps could be promoted which allow cyclists to upload their times for particular routes using GPS on mobile phones.

Potential Action 8: Provide each residential unit and non residential premises with cycle parking spaces to standard. Cycle parking will also be provided, as appropriate, at the open spaces, play areas and community facilities.

Potential Action 9: The TPC will establish, promote and run a community BUG.

7.6 Public Transport

- 7.6.1 Whilst the existing bus service adjacent to the Site already provides a good level of service there is potential to improve the infrastructure. It is proposed that the section 106 agreement would include funding to support a bus service to the town centre. It is envisaged that this will comprise either an extension or diversion of the existing services or a stand alone service. This will benefit end users of the Site and potentially existing residents within Sittingbourne alike.
- 7.6.2 It is important that residents are made aware of the Public Transport services available to them and are regularly informed of any changes or updates to each service. The latter is particularly important because if people are not informed of changes it could result in negative attitudes towards public transport services. The use of bus will be encouraged by
- Providing information on :
 - service frequency;
 - service operating times; and

- details of where to catch the services and interchange if needed.
- Upgrades to bus infrastructure as identified within the s106.

7.6.3 The TPC should be familiar with the existing services to assist residents in their use. The TPC should regularly check public transport services and inform residents if any changes have been made. Details should be made available at the Travel Information Point and through a travel alert service whereby the TPC emails any significant travel news to residents who sign up to this service.

Potential Action 10: The developer will support a bus connection to the town centre from the Development. The details of this will be set out within the s106 agreement.

Potential Action 11: The TPC will provide residents with up to date and relevant public transport information such as bus routes and timetables and bus stop locations.

Potential Action 12: The TPC will liaise with relevant public transport providers in order to seek discounts and keep up to date with offers and changes to services.

Potential Action 13: Promote the use of public transport at the Travel Information Point and in the Travel Information Packs.

Potential Action 14: The TPC will seek to ensure bus stops are conveniently located on site and include shelters by working with the Local Authority and through regular monitoring and maintenance.

7.7 Car Share

- 7.7.1 Car sharing can often be an appealing option to those who do not have access to their own vehicle, to those that are willing to share their vehicle with others or where public transport facilities are limited or not available.
- 7.7.2 Car sharing is the process by which two or more people share a car to any destination such as to work, a shopping trip or to an event etc. Many people already informally car share with relatives or friends. However, a formal car share system can maximise the benefits of car sharing and can significantly reduce the number of vehicles on the local highway network.
- 7.7.3 The benefits of car sharing to individuals can be significant and include cost savings and reduced commuter stress levels (by both not having to drive during rush hour traffic and the reduced levels of congestion overall). Car sharing can be particularly beneficial to those who require a car but cannot afford to keep up with the cost that running one entails.
- 7.7.4 For example, if everyone who drives on their own to work every day were to catch a lift with someone just once a week, the commuting car journeys would reduce by 20%.
- 7.7.5 It is therefore important to ensure that the option is available to those who may consider this as an alternative to the private car.

Potential Action 15: The TIP will promote a suitable existing car share website at the Travel Information Point and via the Travel Information Packs (e.g KentJourneyShare).

Potential Action 16: – the TIP will provide information on how car sharing works, who can take part, a list of how obstacles (such as the need to drop children off at school or safety concerns) can be overcome and advertise the benefits that can be gained through car sharing.

7.8 Car Club

- 7.8.1 Car clubs are becoming increasingly popular around the UK. They provide the benefit and convenience that a private car can provide but without the hassle of having to pay the associated costs or of finding a parking space.
- 7.8.2 Car club schemes allow for cars to be booked for as little as 30 minutes at a time. Cars can be reserved on-line or by phone and vehicles can be collected and returned at any time using a smart card and PIN number. Hire charges are based on the duration of hire and mileage and bills are usually issued on a monthly basis.
- 7.8.3 Zipcar, for example, states on its website that :
- "One Zipcar represents 10 privately owned vehicles taken off the road in the London area over the past 12 months."*
- 7.8.4 Therefore, whilst people are still using vehicles to travel, they are more likely to use other modes such as walking or cycling for shorter journeys (for example a trip to a local shop), which wouldn't really warrant using the car club. In addition, reducing the amount of private vehicles within an area would reduce on street parking.

Potential Action 17: – The TPC will investigate the costs and practicalities of implementing a car club at the Development.

7.9 Private Car

- 7.9.1 It is important to accept that the private car remains a significant mode of travel. At the same time there is a need to recognise the problems associated with this mode and therefore, initiatives should be used to mitigate against the impact the private car will have on the local highway network.
- 7.9.2 If residents are not informed of the personal and social negative impacts that result from private car use, then they are more likely to opt to use the private car instead of trying out other more sustainable modes. It is therefore proposed that each new resident is made aware of these issues so that those who can travel by another mode can make the decision based on informed facts.

Potential Action 18: Provide parking on-site consistent with the local authority parking standards guidance.

Potential Action 19: The TPC will inform residents of the negative impacts of car based travel (in terms of health, cost and the environment) and will promote alongside this the benefits of sustainable travel.

Potential Action 20: The TPC will strive to persuade drivers to make an occasional change to other more sustainable modes by promoting the benefits of walking, cycling and public transport.

Potential Action 21: The TPC will promote green initiative schemes such as "walk to work" days

7.10 Reducing the Need to Travel

Flexible and home working

- 7.10.1 Working from home (when appropriate) or working flexible hours can provide significant benefits to all parties involved. A number of these benefits can be seen in the table below.

Employers	Employees
Reduction in commuter-related stress in staff which can lead to sickness	Helpful for parents who have young children and may need to stay at home with them
Increased staff productivity levels	Reduction in travel costs
Improves retention of employees	Reduction in time spent travelling
Widens the pool of applicants which can be recruited	Reduced stress associated with commuting
Saves office space	Can reduce local congestion

- 7.10.2 The local community can also benefit from an increase in home working or flexi working as it could reduce local congestion at the peak times, reduce the total number of cars on the road and reduce localised pollution resulting from a congested road network.

- 7.10.3 Therefore, encouraging residents who may be able to work from home-to do so, can act as a significant step in reducing the number of vehicles on the highway network, particularly at peak times. It is anticipated that there would also be an opportunity for residents to work from the community facilities on site.

Potential Action 22: The TPC will promote home working by providing residents with information highlighting the benefits of home working to all. This will be facilitated by the IT connection proposed to each house.

Home Shopping

- 7.10.4 Home shopping is becoming increasingly popular due to the time saved in travelling, the convenience of shopping out of standard working hours, being able to compare prices of multiple retailers and the possible reduction in stress levels compared to shopping in a busy supermarket.
- 7.10.5 Encouraging the use of home shopping can reduce the number of vehicles on the highway network, particularly during the peak times. There is also the possibility of individuals collecting their packages from a localised collection point for those people that are not in at the time of delivery, rather than travelling to the local post office.

Potential Action 23: The TPC will promote the use of home shopping, highlight local collection points for online retailers

Potential Action 24: The TPC will work with the developer to establish a community delivery / collection point for online shopping.

7.11 Electric car charging points

- 7.11.1 There is a continuing emergence of electric car technology and an increasing momentum with respect to electric car sales. This will be responded to by the development with the provision of electric car charging points.

Potential Action 25: Provide electric car charging points within the development at an appropriate standard to be agreed with local authority officers.

8 Monitor and Review

- 8.1.1 This Framework Travel Plan will be monitored in order to assess the effectiveness of the measures in achieving the targets.
- 8.1.2 The first monitoring period (or 'baseline') should take place within three months after reaching 200 occupations on the Site, with monitoring taking place annually for the following five years.
- 8.1.3 Kent County Council recommend that monitoring surveys are undertaken using the iTRACE survey methodology with the results being reported to the Local Planning Authority. This method ensures comparable, standardised and robust survey results. The surveys would be made up of
- a. online or paper questionnaires recording such things as 'main mode of travel', 'reason for choice of travel mode', 'place of work', and 'attitudinal information about measures which are likely to encourage a switch to sustainable alternatives', and
 - b. on-site vehicle counts at the Site's access points. The costs of undertaking these surveys would be met by the developer.
- 8.1.4 Once the surveys have been completed, the results will be input into the iTRACE database. The TPC would then assess the results against the Framework Travel Plan targets and establish whether they have been achieved or not. The Framework Travel Plan would then be updated accordingly.
- 8.1.5 The TPC will submit an annual monitoring report to the Council in order to inform them of the Framework Travel Plan's progress and whether or not the targets are being met.
- 8.1.6 The review process is likely to be part of the annual monitoring report, prepared by the TPC evaluating whether the targets have been achieved or not and if not, the reasons why.

8.2 Intervention

- 8.2.1 In the event that vehicular based targets have not been met, the TPC will liaise with Swale Borough Council (SBC), who may in turn liaise with KCC, in order to understand whether any circumstances out of the developers control, may have affected the results. SBC can then advise either:
- That the targets should remain unchanged;
 - The targets should be altered in some way;
 - On that occasion, the surveys do not constitute a breach of traffic targets.
- 8.2.2 If SBC confirms that there were no circumstances outside of the developer's control that may have led to excessive traffic being identified by the surveys, the TPC will intervene by increasing the awareness of the Travel Plan measures through publicity emails to residents and notice board material.

9 Summary and conclusion

- 9.1.1 PBA have been appointed to prepare a Framework Travel Plan in support of an outline planning application for a residential led development at North West Sittingbourne.
- 9.1.2 The aim of this Framework Travel Plan is to reduce the number of car trips to, from and within the Site by providing a range of sustainable alternatives, encouraging the use of these modes and reducing the need to travel.
- 9.1.3 A review of the existing and proposed site accessibility has been undertaken and concluded that there is already a good provision of walking / cycling routes and public transport services within the area. These will be further enhanced by supporting a bus connection to the town centre.
- 9.1.4 Challenging mode share targets have been presented which aim to reduce car based travel by 10% over a developer supported period following first occupation of the Site.
- 9.1.5 An action plan has been presented which aims to reduce car based travel to and from the Site.

From: Gary Heard
Sent: 25 March 2019 11:34
To: Ashley, Tom
Cc: Graham Eves
Subject: FW: 27239 - NW Sittingbourne meeting minutes

Tom

I have sent the email below to Colin Finch – it shows the modelling for the east roundabout (following the west roundabout modelling I sent on Friday). We will await his response.

Gary Heard
Senior Associate

<http://www.peterbrett.com/locations/ashford/>

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PBA has joined the Stantec family, find out more at peterbrett.com.

From: Gary Heard
Sent: 25 March 2019 11:33
To: colin.finch
Subject: RE: 27239 - NW Sittingbourne meeting minutes

Hi Colin

As per my email below – we have now modelled the east roundabout mitigation in Junctions 9 as follows :

- We have used the TAR Junctions9 model, which includes the west and east roundabout in the same Junctions 9 model.
- We have adjusted the geometry for the east roundabout to reflect the mitigation scheme on the attached PDF drawing. This includes the filter lane on the SB off slip.
- We have run the model for the 2023 and 2031 with development scenarios – plus mitigation. The results are attached.
- Ignore the west roundabout results in the attached – you have the mitigation scheme and Linsig modelling for the west roundabout on the email I sent on Friday. That Linsig model showed that the queue on the bridge did not extend back to the east roundabout.

The results attached for the east roundabout show that the queue on the bridge does not extend back to the west roundabout.

- The results attached show that the mitigation measures proposed provide a significant betterment when compared to the baseline scenario set out in the TAR (see 10.4 in the TAR).

I trust this makes sense and look forward to your comments on this, and the west roundabout below. Give me a call if you need to discuss.

Gary Heard
Senior Associate

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From: Gary Heard
Sent: 22 March 2019 14:12
To: colin.finch
Subject: RE: 27239 - NW Sittingbourne meeting minutes

Hi Colin

As per the email thread below - during our recent meeting we tabled an alternative interim scheme for the north roundabout of the Grovehurst junction. I attach a PDF drawing showing this. It reflects the situation that the dominant flows are the right turn from the NB off slip and the right turn to the NB on slip.

We have modelled this junction in Linsig and I attach a copy of the output and also the model file for your review (at the link below). At our meeting you queried how the merge from two lanes to one (onto the bridge) could be represented in the model. We have thought about this and have adopted the following approach :

<http://SimpleSend.it/d/4382106a39714e5d887deb95dbf62947438eb885509449>

- We have staged the signals such that the NB off slip stage (right turn on to the bridge) and the Grovehurst Road (from Iwade to the bridge) stage do not follow each other. They are separated by the right turn onto the NB on slip stage.
- This staging allows the merging traffic platoon to sort itself out on the bridge (whilst the right turn on to the NB on slip runs) before another platoon hits it.
- We have therefore run a 4 stage cycle.
- However, we have run a relatively short cycle time for 4 stages of 75s.
- This is not necessarily an optimised cycle time. We have kept stage times short such that a platoon merging onto the bridge is short enough that it has time to clear (whilst the right turn on to the NB on slip is running) before another platoon hits the back of it.

You will note that the results show a significant betterment in queue lengths when compared to the 2031 baseline modelling in the TAR - which I have shown in the table extract below (see section 10.4 of the TAR).

We are currently modelling the east roundabout in ARCADY and will send this for your review in due course.

I trust this makes sense and look forward to your comments on this layout and modelling approach. Give me a call if you need to discuss.

2031 West roundabout	AM			PM		
	RFC	Delay (mins)	Max Q	RFC	Delay (mins)	Max Q
NB off slip	1.22	7.85	111	1.29	10.86	159
Grovehurst Rd	1.79	39.68	343	1.44	18.80	99
Bridge link	0.31	0.06	0	0.52	0.08	1

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From: colin.finch

Sent: 20 March 2019 16:11

To: Gary Heard

Subject: RE: 27239 - NW Sittingbourne meeting minutes

Importance: High

Hi Gary,

Just as a follow up, do you have an electronic copy that you are ready to share on the newly proposed interim Grovehurst solution. I could do with getting this costed and circulated internally to avoid being chased later down the line!

Kind regards

Colin

Colin Finch MIPROW | Principal Transport & Development Planner (Canterbury & Swale) | Highways & Transportation | Kent County Council | Ashford Highway Depot, 4 Javelin Way, Henwood Industrial Estate, Ashford, TN24 8AD | Tel: 03000 413370

From: Gary Heard

Sent: 01 March 2019 12:40

To: Finch, Colin - GT HTW

Cc: Ashley, Tom

Subject: 27239 - NW Sittingbourne meeting minutes

Colin

Many thanks for your time this morning – confirmation of the points we discussed below. Feel free to add or comment.

Crown Road roundabout and Mill Way roundabout

- GH outlined a methodology of using the 2015 survey data as a baseline and deriving a mitigation scheme against this as a baseline. This was proposed on the basis that there is little prospect of the growth in the TA (c. 25%) from materialising in reality at these junctions because the roundabouts could not reasonably accommodate this growth.
- CF will not accept the 2015 survey data as a baseline but recognises the unlikelihood of the TA Temprow growth happening.

- CF would prefer that a mitigation scheme focussed on walk / cycle routes into town be considered as a way of mitigating junctions on this route, including these two roundabouts.
- GH will review the existing walk / cycle network and see whether there are gaps or areas where developer funding would provide an improvement and encouragement use of these modes. This would be in lieu of highway works at the two roundabout junctions.
- GH explained that if there was not a suitable walk / cycle scheme that could be offered then we will need to further consider a highway mitigation scheme, but based upon a baseline of 2015 + Local Plan sites as included explicitly in the TA - but not include Tempo growth.
- CF agreed that this baseline would be a more acceptable baseline than just 2015 observed. The Crown Quay Lane site managed to design a left filter on the Mill Way roundabout for example – although this was not needed in the end.

HIF Bid

- CF confirmed that the HIF bid will be submitted during March with the outcome expected Summer / Autumn (this went to committee on 22 February). The HIF bid is for the whole scheme cost (for both Key Street Junction and Grovehurst Junction circa. £30M).
- Should the bid be successful then the HIF money that isn't required, because developer contributions are collected, can be rolled over to release other housing sites. The scheme would have to be delivered by 2023 by KCC.
- Should the HIF bid be successful this would allow KCC to collect contributions toward the Grovehurst Junction on a tariff/roof tax basis across NW Sittingbourne and Iwade – inactively they have calculated the rate of contribution at £2,600 per dwelling.

A249 Grovehurst junction

- GH explained that the Grovehurst Paramics model addresses the slip road queues but still shows queues on the local roads, most notably into Iwade. Whilst this principle was accepted previously by CF's predecessor during the Local Plan process, CF will want the local roads to be addressed.
- CF confirmed he cannot accept the interim scheme as currently tabled on the basis of the Paramics modelling presented. The local roads are shown to be too congested to be acceptable to KCC.
- GH tabled an alternative scheme for the Grovehurst northern roundabout junction. The alternative interim scheme is a signal controlled junction and has been modelled within Linsig. The key movements are right turn from the off slip to the bridge, and the right turn from the bridge to the on slip. These have been provided with two lanes at the stop line. The Linsig model shows this scheme provides a significant improvement to the TA baseline at this junction. The east roundabout will stay more or less as it has been previously shown with a filter lane and flaring etc and this will be demonstrated by a modelling exercise.
- CF will get an opinion from the KCC ITS team and a RSA will need to be done but looks promising.
- CF advised that KCC will get a cost calculation completed for the Grovehurst interim scheme and this will form the basis of the contribution they will request to the Grovehurst end scheme (HIF scheme).
- PBA will pull together a technical note to demonstrate the alternative scheme (both roundabouts) and the modelling. GH left a hardcopy of the alternative scheme for CF's internal discussions with colleagues.

Network Rail

- GH asked CF with respect to the weight that the NR comments will have at determination. They have asked for a £750k controlled pedestrian crossing.
- CF explained that the NR comments will certainly be a material consideration as they raise health and safety issues.
- GH asked about diverting the PROW to Quinton Road.
- CF explained that a diversion would need to demonstrate an equally convenient and direct route as the existing route to meet the tests. A diversion to Quinton Road would not meet these tests.
- CF advised that we provide the locking level crossing and this could be tied into the potential pedestrian/cycle town centre link improvement scheme (required to mitigate impacts at Mill Way & Crown Road).

Bus services

- GH met Arriva last year and their preference was to divert the 334 through the site and support an increased frequency. How do we agree a contribution level.
- CF suggested pump priming the cost of running a bus for a period of 5 years (c.£100k-£150k per annum) would be a reasonable basis.
- GH suggested that this is the level of contribution the developer had in mind. There will need to be an agreement as to when it is

implemented. There is no point implementing without a sensible number of residents present to help patronise it.

- CF Agreed – preferable to an on site turnaround would be a link road at an early enough time to support a service through the site.
- GH will provide a brief note to set out a suggested bus strategy based upon diversion of the 334 when a link road is available, a link road trigger point, and 5 years pump priming contribution to fund a bus to the current service to increase frequency.

Station contribution

- CF confirmed £50 per unit would be requested to support upgrade measures at Kemsley halt station. This is consistent with the Redrow site.

Triggers

- GH highlighted that, in addition to resolution of the above points, we need to have a discussion about triggers of infrastructure delivery. CF agreed – to be arranged in due course.

Gary Heard

Senior Associate

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