GREAT GROVEHURST FARM, SITTINGBOURNE

SUPPLEMENTARY TRANSPORT ASSESSMENT
PART 1 OF 4: TEXT & FIGURES

G H DEAN & CO

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PFA Consulting
Stratton Park House
Wanborough Road
Swindon
SN3 4HG

Tel: 01793 828000
Fax: 01793 835500
Email: admin@pfaplc.com
Web: www.pfaplc.com

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1. INTRODUCTION

General

1.1. This Supplementary Transport Assessment has been prepared by PFA Consulting on behalf of G H Dean & Co in support of an outline planning application for the development of up to 110 dwellings and all necessary supporting infrastructure including emergency access, roads, footpath and cycle links, open space, play areas and landscaping, parking, drainage and all utilities and service infrastructure works. All detailed matters are reserved for subsequent approval except (a) mitigation of impacts on Great Crested Newts; (b) vehicular access to Grovehurst Road; and (c) extraction of brickearth.

1.2. The location of the site is shown on **Figure 1.1**. It lies to the north of Sittingbourne, bounded by Swale Way to the north, the railway line to the east, and Grovehurst Road to the west, with residential development adjoining the south of the site. The village of Iwade is located to the north west, on the opposite side of the A249 trunk road, and the village of Kemsley is located to the south east. The site itself is made up of arable land and, formerly, a single house, and old farm buildings, which have until recently accommodated a number of small businesses. All buildings were demolished in late 2017 with all material arising, including foundations and hard standings removed from the site.

Background

1.3. The application site forms part of Land at North West Sittingbourne allocated for mixed use development under Policy MU1 of 'Bearing Fruits 2031': Swale Borough Local Plan, adopted in July 2017. 'Bearing Fruits 2031' states that the land at North West Sittingbourne is suitable for development comprising a new residential community with a minimum of 1,500 dwellings, and supporting community facilities.

1.4. 'Bearing Fruits 2031' goes on to explain that there are several landowners involved in the development of this strategic allocation, and that the Council will expect these landowners to come together to ensure the co-ordination of development and the necessary physical and social infrastructure.

1.5. Accordingly, PFA Consulting and GH Dean have been working with Persimmon Homes Ltd and Redrow Homes Ltd and their consultants on the transport aspects of the North West Sittingbourne allocation. A comprehensive approach to the transport implications has been adopted, and a Transport Assessment covering the full North West Sittingbourne allocation has been prepared by Peter Brett Associates on behalf of Persimmon Homes (the PBA TA). Whilst this site specific Supplementary Transport Assessment should be read in conjunction with the PBA TA, there is sufficient information contained within this report for Great Grovehurst Farm to allow it to be read as a standalone document.

1.6. 'Bearing Fruits 2031' suggest that the land at Great Grovehurst Farm is suitable for up to 120 dwellings. A development of up to 110 dwellings is currently proposed, and the Illustrative Masterplan is reproduced at **Appendix A**.

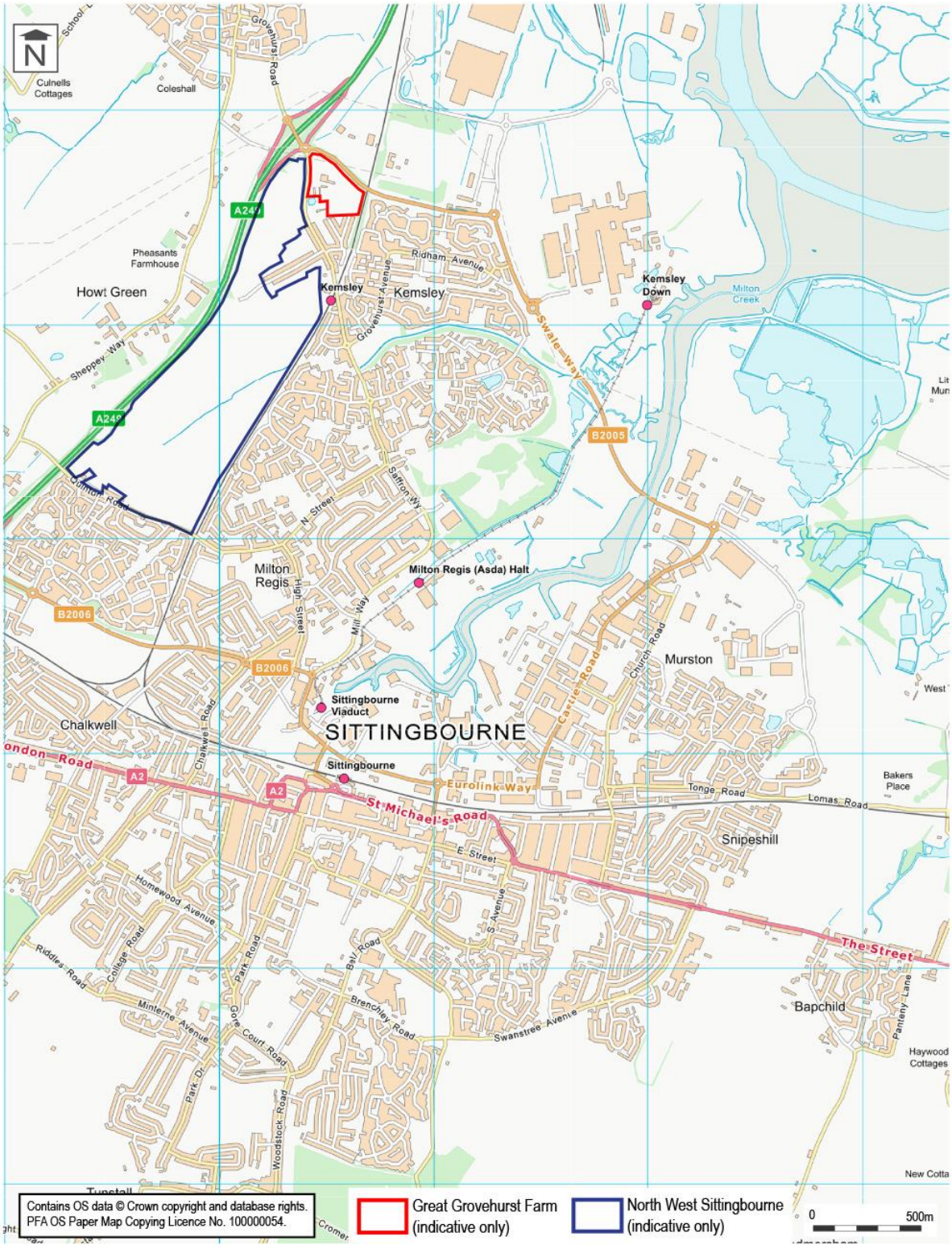


Figure 1.1: Site Location

Consultations

1.7. A Public Exhibition of the proposals was held jointly with Persimmon Homes and Redrow Homes from 29 – 30 September 2016.

1.8. As part of the pre-application discussions, a Scoping Study was submitted to Kent County Council (KCC) on 15 December 2015, and comments were received on 19 February 2016; these, and

subsequent discussions between PFA, KCC, Highways England and their consultants, and transport consultants acting for the other land owners at North West Sittingbourne have been taken into account in the preparation of the Transport Assessments.

Structure of the Supplementary Transport Assessment

1.9. Section 2 of this Supplementary Transport Assessment summarises the policy background to the proposals. Section 3 describes the existing transport network in the vicinity of Great Grovehurst Farm, and Section 4 describes the proposed development. Trip generation and distribution is set out in Section 5, and Section 6 identifies the impact on the local transport network. Section 7 reports on the potential impact during brickearth extraction and the construction of the proposed residential development, Section 8 summarises mitigation measures, and Section 9 sets out the conclusions of the assessment.

2. POLICY CONTEXT

Introduction

2.1. The following provides a brief review of existing and emerging transport planning policy at national and local level considered relevant to the proposed development.

National Policy

National Planning Policy Framework

2.2. National guidance on planning is contained in the National Planning Policy Framework (NPPF) published in March 2012. The NPPF sets out the Government's planning policies for England and how these are expected to be applied. At the heart of the NPPF is a presumption in favour of sustainable development.

2.3. Chapter 4 of the NPPF deals with 'Promoting Sustainable Transport'. It states that:-

> **"Transport policies have an important role to play in facilitating sustainable development but also in contributing to wider sustainable and health objective."** (Paragraph 29).

2.4. It goes on to say that:-

> **"The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel."** (paragraph 29).

2.5. When development is likely to generate significant movement, the NPPF states that plans and decisions should ensure that such developments are located:-

> **"where the need to travel will be minimised and the use of sustainable travel modes can be maximised. However this needs to take account of policies set out elsewhere in this Framework, particularly in rural areas."** (paragraph 34).

2.6. Paragraph 35 expands on opportunities for the use of sustainable transport modes, stating that:-

> **"…developments should be located and designed where practical to**
>
> - **Accommodate the efficient delivery of goods and supplies;**
> - **give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;**
> - **create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians…."**

2.7. The NPPF requires that all developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment (paragraph 32). Plans and decisions should take account of whether:-

> - **"the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;**
> - **Safe and suitable access to the site can be achieved for all people; and**
> - **Improvements can be undertaken within the transport network that cost effectively limits the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe."** (paragraph 32).

Planning Practice Guidance

2.8. The Government's Planning Practice Guidance to the NPPF was launched as a web-based resource by DCLG on 6 March 2014, and includes guidance on travel plans, transport assessments and statements in decision-taking' (Reference ID: 42 Updated 06 03 2014). The guidance explains that travel plans, transport assessments and statements are all ways of assessing and mitigating the negative transport impacts of development in order to promote sustainable development, and are required for all developments which generate significant amounts of movement. This guidance has been taken into account in the preparation of this Supplementary Transport Assessment.

DfT Circular 02/2013: The Strategic Road Network and the Delivery of Sustainable Development

2.9. Highways England is responsible for implementing the Government's development control policy concerning Trunk Roads on behalf of the Secretary of State for Transport. Policy in relation to the strategic road network is set out in DfT Circular 02/2013 'The Strategic Road Network and the Delivery of Sustainable Development' published in September 2013.

2.10. Paragraph 9 of Circular 02/2013 states:

> **"Development proposals are likely to be acceptable if they can be accommodated within the existing capacity of a section (link or junction) of the strategic road network, or they do not increase demand for use of a section that is already operating over-capacity levels, taking account of any travel plan, traffic management and/or capacity enhancement measures that may be agreed. However, development should only be prevented or refused on transport grounds where the residual cumulative impacts of a development are severe."**

2.11. Paragraphs 21 to 36 discuss development management in more detail, and paragraphs 25 to 27 deal with the assessment of development impact. Paragraph 25 states that demand should be compared against the ability of the existing network to accommodate traffic over a period of up to ten years after the date of registration of the planning application or the end of the relevant local plan, whichever is the greater. Paragraph 26 explains that developers are expected to put forward initiatives that manage down the traffic impact of proposals, to support the promotion of sustainable transport. Paragraph 27 states that where the overall forecast demand at the time of opening of the development can be accommodated, further capacity mitigation will not be sought. Only after travel plan and demand management measures have been fully explored will capacity enhancement measures be considered; these should normally be addressed at the plan making stage (paragraph 33). Where insufficient capacity exists to provide for overall forecast demand at the time of opening, the impact will be mitigated to ensure that at that time the strategic road network is able to accommodate existing and development generated traffic (paragraph 34).

Highways England: The strategic road network – Planning for the future

2.12. The document 'The strategic road network – Planning for the future', published in September 2015, describes the approach that Highways England takes to engaging in the planning system and the issues considered in relation to draft planning documents and planning applications. Paragraph 3 explains that the document is written in the light of the NPPF and of DfT Circular 02/2013.

2.13. Paragraph 29 states that the primary function of the strategic road network (SRN) is to facilitate the safe and efficient movements of goods and people. Paragraph 31 explains that Highways England's approach to planning is shaped by commitments to supporting environmental and

social aims, including reducing car use and supporting sustainable transport options, and supporting biodiversity and climate change mitigation. Paragraph 35 states that Highways England's advice to local planning authorities will be to refuse or place conditions on developments only where the residual cumulative impacts on the capacity of the SRN are still assessed to be severe with mitigation in place, for example if the safe operation of the SRN would be significantly eroded. Paragraph 37 says that transport assessments should be carried out in accordance with government guidance and in agreement with Highways England through pre-application and scoping.

2.14. Planning applications and development management are discussed in paragraphs 84 to 120. Paragraph 101 states:

> **"Assessments should be carried out for:**
>
> - **The development and construction phase; and**
> - **The opening year, assuming full build out and occupation, and**
> - **Either a date ten years after the date of registration of the associated planning application or the end of the Local Plan period (whichever is the greater).**
>
> **The assessment at opening will be used for the determination of impact mitigation needs, whilst the latter is necessary to determine the risk which will transfer to us."**

2.15. Paragraphs 108 to 116 discuss capacity enhancement. This will not be sought where the overall forecast demand can be accommodated by the existing infrastructure in the opening year. Any measures proposed must be sufficient to accommodate or offset the impact of development on the SRN and its surroundings, and a road safety audit and non-motorised user assessment will be required before planning permission is granted. The measures will normally be delivered by means of a funding agreement between the developer and Highways England.

Local Policy

Bearing Fruits 2031: The Swale Borough Local Plan 2017

2.16. The Swale Borough Local Plan was adopted on 26 July 2017. The following policies are of relevance to this Supplementary Transport Assessment.

2.17. Policy ST1: *Delivering Sustainable Development in Swale* sets out 12 points to assist in determining whether development proposals merit the presumption in favour of sustainable development. These include:

> **"1. Build a strong competitive economy by meeting identified needs for inward investment and indigenous growth on allocated and suitable sites…;**
>
> **2. Ensure the vitality of town centres by strengthening the principle centre role of Sittingbourne; …**
>
> **4. Accord with the Local Plan settlement strategy;**
>
> **5. Offer the potential to reduce levels of out-commuting and support the aims of the Swale Local Transport Strategy;**
>
> **9. Promote healthy communities through:**
>
> **a. location of development to achieve safe, mixed uses and shared spaces:…"**

2.18. On transport capacity, paragraph 4.2.14 states:

> **"The local highway authority advise that the local road network is adequate (subject to site specific improvements) to accommodate growth levels indicated by objectively assessed need in the first part of the plan period. There are implications both for the strategic and local road networks beyond 2021/22, which will need to be kept under review. For the strategic road network, improvements to Junction 5 of the M2 are programmed to commence by 2020. For the other A249 junctions within the local network, mitigation schemes have been identified and implementation will be carried out in tandem with the build out of development schemes. For the local road network, whilst the likely traffic impact of growth can be accommodated in the short to medium term, there would be stresses toward the end of the plan period."**

2.19. Chapter 5 sets out the Core Planning Policies, and section 5.2 covers sustainable transport. Paragraph 5.2.25 notes that key schemes to address the accessibility, connectivity and capacity issues in Swale which present challenges for the delivery of growth include the A249 at Grovehurst, Key Street and Bobbing junctions. Paragraph 5.2.49 goes on to list the transport schemes necessary to support growth; these include A247/Grovehurst junction improvements (including pedestrian and cycle links between new development allocations at North West Sittingbourne and Iwade and to employment areas at Ridham). Paragraph 5.2.50 comments that more detail of the means of delivery of these schemes is set out in the infrastructure delivery schedule, and that the Council will continue to work in partnership with KCC, developers and the Highways Agency [now Highways England] to secure funding for key transport infrastructure.

2.20. Policy CP2: *Promoting Sustainable Transport* states that development proposals will, as appropriate:

> **"1. Contribute to transport network improvements, where capacity is exceeded and or safety standards are unacceptably compromised…;**
>
> **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…;**
>
> **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…;**
>
> **5. Improve safety, through measures such as adequate parking, lighting and traffic management schemes;**
>
> **6. Achieve alternate 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;"**

2.21. Section 5.4: Requiring good design explains that the NPPF stresses that good design is a key aspect of sustainable development. Policy CP4: *Requiring good design* states that all development proposals will be of a high quality design and will, as appropriate:

"1. Create safe, accessible, comfortable, varied and attractive places;

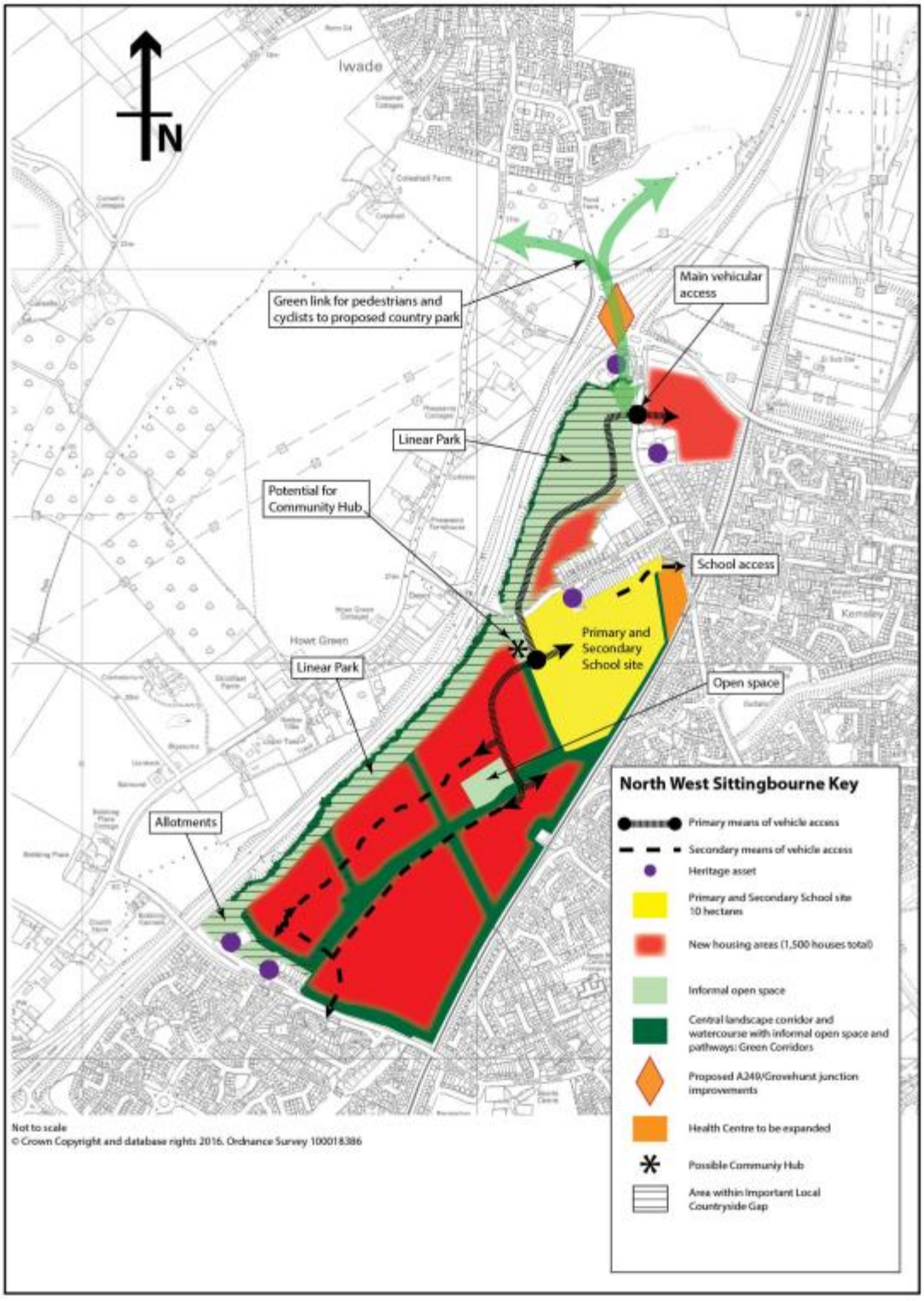
3. Make safe connections physically and visually both to and within developments, particularly through using landscape design and open space to retain and create green corridors for pedestrians, cyclists and biodiversity;"

2.22. Land allocations for new development are discussed in Chapter 6 of 'Bearing Fruits 2031'. The land at North West Sittingbourne is one of the mixed-use allocations discussed in Section 6.6. This explains that North West Sittingbourne is the largest of the allocation sites outside Sittingbourne main urban area, some 75.0 ha in total, and 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. The site is suitable for development including a minimum of 1,500 dwellings and supporting community facilities.

2.23. Paragraph 6.6.4 points out that there are several landowners involved in this allocation, and that the Council will expect them to prepare a joint Masterplan / development brief. The development concept is identified on Map 6.6.1 of 'Bearing Fruits 2031', reproduced below.

2.24. Transport requirements are outlined in paragraphs 6.6.7 to 6.6.9. These paragraphs point out the need for a new junction between Grovehurst Road and the A249, but that Highways England and KCC have in principle agreed to an interim improvement scheme to accommodate increases in traffic arising from Local Plan allocations. Development at North West Sittingbourne will be expected to contribute to the funding of the interim scheme, although some development is likely to be acceptable in advance of it. In addition, pedestrian and cycle links across the A249 should be improved utilising Bramblefield Lane, and the proposals should be supported by a Transport Assessment.

2.25. The land at Great Grovehurst Farm, which forms part of the North West Sittingbourne allocation and which is the subject of this Transport Assessment, is considered in paragraphs 6.6.17 to 6.6.30 which state that some 120 dwellings are envisaged for this area, and that access arrangements should be established through a traffic impact assessment.



Map 6.6.1 Development concepts at NW Sittingbourne, reproduced from 'Bearing Fruits 2031': The Swale Borough Local Plan, adopted July 2017.

2.26. The requirements for the land at North West Sittingbourne are summarised in Policy MU1. Amongst other matters, development proposals will:

"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."**

2.27. Development management policies are set out in Chapter 7.

2.28. Policy DM6: *Managing Transport Demand and Impact* states that development proposals generating a significant amount of transport movements will be required to provide a Transport Assessment, including a Travel Plan. In assessing impacts on the highway network, development proposals will need to demonstrate that opportunities for sustainable transport modes have been taken up.

2.29. Policy DM6 goes on to refer to the need for the developer to carry out or make a contribution towards environmentally acceptable improvements highway works should traffic generation lead to an issue with highway capacity or safety. Developments should avoid creating direct access onto strategic or primary distributor roads.

2.30. Finally, Policy DM6 requires that the location, design and layout of development proposals should give priority to the needs of pedestrians and cyclists, including the disabled. This includes creating safe routes connecting to local services and facilities, retaining public rights of way, and allowing for access to public transport. Safe and efficient movement of emergency and utility vehicles should be considered, along with facilities for charging low emission vehicles.

2.31. Policy DM7: *Vehicle parking* states that until a Swale Borough Supplementary Planning Document (SPD) can be adopted, the Council will continue to apply KCC vehicle parking standards to new development proposals. It is understood that SPD relating to parking has not been adopted to date.

Kent County Council Local Transport Plan 4: Delivering Growth without Gridlock (2016-2031)

2.32. KCC's Local Transport Plan 4*: Delivering Growth without Gridlock* was adopted in August 2017. The ambition for Kent is to deliver safe and effective transport, ensuring that all Kent's communities and businesses benefit, the environment is enhanced and economic growth is supported. The ambition is to be realised through five overarching policies targeted at delivering specific outcomes:

- Outcome 1: Economic growth and minimised congestion;
- Outcome 2: Affordable and accessible door-to-door journeys;
- Outcome 3: Safer travel;
- Outcome 4: Enhanced environment;
- Outcome 5: Better health and wellbeing.

2.33. Kent's transport priorities in LTP4 are divided into strategic, countywide, or local (at borough / district level). The strategic priorities are the schemes that are required to deliver Growth without Gridlock. They are infrastructure projects that the County Council may not directly deliver or operate and are likely to affect a number of districts. Some of these are national priorities in terms of their importance to the Kent and UK economy, such as access to ports for example. County wide priorities include road safety, highway maintenance, home to school transport and active / sustainable travel.

2.34. In relation to Swale, *Delivering Growth without Gridlock* notes that the M2 / A2 corridor runs through Swale, and the A249 provides a primary north – south route for Kent. Capacity issues at M2 Junction 5 are a barrier to growth in the Borough, and Highways England is [as at August 2017] evaluating options for improvements. Similarly, *Delivering Growth without Gridlock* states that 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 Kent and Medway Growth and Infrastructure Framework (GIF).

3. EXISTING CONDITIONS

Site Location

3.1. The location of the site is shown on **Figure 1.1**. It lies to the north of Sittingbourne, bounded by Swale Way to the north, the railway line to the east, and Grovehurst Road to the west, with residential development adjoining the south of the site.

3.2. The site is part of a mixed use allocation referred to as Policy MU 1: Land at North West Sittingbourne in 'Bearing Fruits 2031': The Swale Borough Local Plan, adopted in July 2017. The proposals for Great Grovehurst Farm provide for access off the east side of Grovehurst Road, which integrates with the access arrangements for that part of the allocation bordering the west side of Grovehurst Road.

Local Highway Network

3.3. The location of the site in the context of the local road network is shown on **Figure 3.1**.

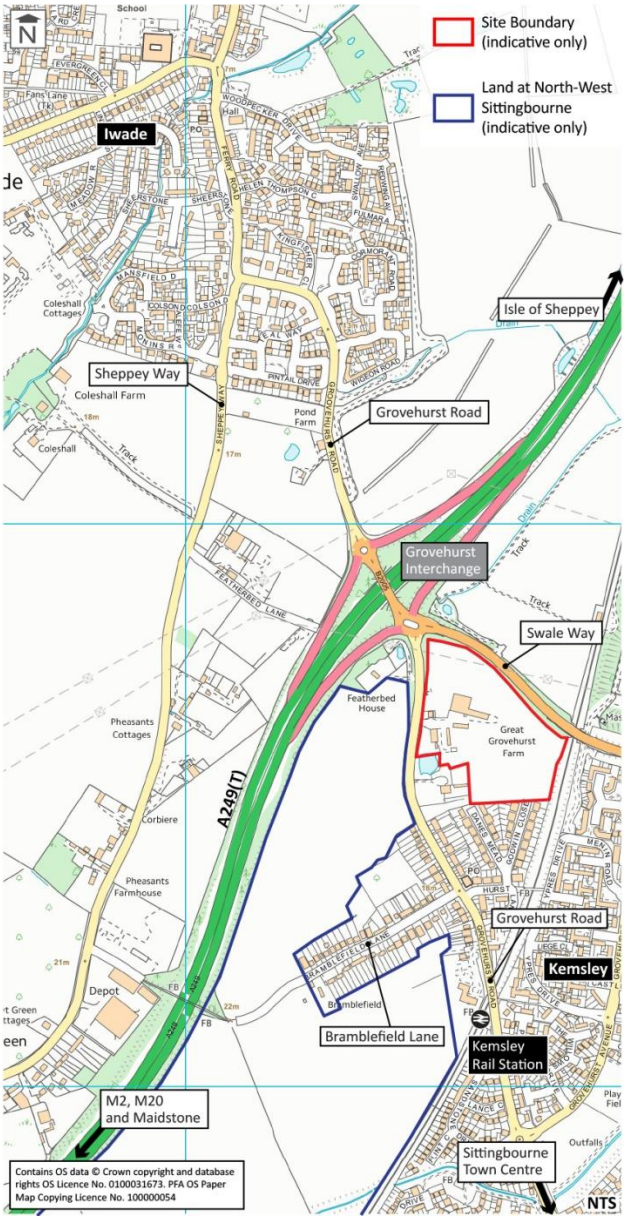


Figure 3.1: Context Plan

Grovehurst Road

3.4. Grovehurst Road links Sittingbourne and Iwade, and also provides access to the A249(T) (both north and south) via a grade separated interchange immediately to the north west of the site.

3.5. Immediately adjacent to Great Grovehurst Farm the speed limit on Grovehurst Road is 60mph. However, a speed survey undertaken on Grovehurst Road outside the site as part of an automatic traffic count in November 2015 recorded the following average weekday speeds:

- Northbound 85th percentile speed: 42.3 mph
- Southbound 85th percentile speed: 41.3mph

3.6. South of the site, where Grovehurst Road enters the existing built up area, a 30mph speed limit applies.

3.7. Street lighting is in place along Grovehurst Road, within both the 60mph and 30mph sections.

3.8. There is a footway on both sides of Grovehurst Road within the existing built up area to the south, but the footway stops on the eastern side just south of the application site. On the western side there is a continuous footway up to the Grovehurst Interchange with the A429 (T).

Grovehurst Interchange

3.9. Grovehurst Interchange links Grovehurst Road with the A249(T) at a grade separated junction in the form of dumbbell roundabouts. The western roundabout connects Grovehurst Road north towards Iwade Village with the northbound off and on slips, whilst the eastern roundabout connects Grovehurst Road south towards the centre of Sittingbourne with the B2005 Swale Way and the southbound off and on slips.

Swale Way

3.10. Swale Way functions as a local distributor road from the Grovehurst Interchange around the northern edge of Sittingbourne, and serves extensive employment development to the north and north-east of the town, including Kemsley Fields Business Park, Kemsley Paper Mill in Ridham Avenue and Eurolink Business Park to the east of the river. The Transport Strategy for Sittingbourne envisages this road being extended around the east of the town to link to the A2 at Bapchild with the potential for a further extension southwards to a new junction onto the M2.

3.11. The speed limit on Swale Way east of Grovehurst Interchange is 40mph, and a 3m footway/cycleway runs to the south side of the carriageway (i.e. on the northern boundary of the application site).

A249(T)

3.12. The A249(T) connects the M2 Junction 5 in the south with Sheerness in the north. The A249 continues south of the M2 to the M20 Junction 7, Maidstone and beyond, but is not part of the trunk road network south of the M2.

Existing Traffic Flows

3.13. The promoter of Great Grovehurst Farm has been working with the other landowners involved in the North West Sittingbourne allocation on the traffic impact assessment of the proposals, as required by 'Bearing Fruits 2031': The Swale Borough Local Plan in relation to Policy MU 1: Land at North West Sittingbourne.

3.14. Details of the traffic surveys undertaken in November 2015 in support of the proposals are set out in Chapter 6 of the Transport Assessment prepared by Peter Brett Associates on behalf of Persimmon Homes (the PBA TA). The traffic surveys included:

- Automatic traffic count (ATC) including speed survey on Grovehurst Road for seven days commencing on Wednesday 4 November 2015
- Classified turning count and queue length surveys at Grovehurst Interchange, 07:00 – 10:00 and 16:00 – 19:00 on Tuesday 3 November 2015
- Classified turning count at Grovehurst Road / Medical Centre Access, 07:00 – 10:00 and 16:00 – 19:00 on Tuesday 3 November 2015

3.15. Summaries of the AM and PM peak hour 2015 observed baseline traffic flows in the vicinity of the land at North West Sittingbourne as identified in the PBA TA are reproduced in **Appendix B**; existing peak hour traffic flows on Grovehurst Road adjacent to Great Grovehurst Farm are summarised in **Table 3.1**.

Table 3.1: Peak Hour Traffic Flows on Grovehurst Road south of A249, November 2015

	Northbound	Southbound	Total
AM Peak Hour (08:00-09:00)	510	498	1,008
PM Peak Hour (17:00-18:00)	503	674	1,177

Source: Transport Assessment prepared by Peter Brett Associates on behalf of Persimmon Homes

Road Safety

3.16. A detailed report of personal injury collisions on Grovehurst Road and Swale Way in the vicinity of Great Grovehurst Farm has been obtained from KCC for the five year period ending on 30 September 2017. The plot of collision locations within the study area provided by KCC is reproduced in **Appendix C.** One of the collisions recorded on the plot occurred on the A249T) rather than Grovehurst Road or Swale Way, and this is not included in the analysis below.

3.17. During the five year study period there have been nineteen collisions in the study area; seventeen of the collisions resulted in slight injury and two resulted in serious injury. **Table 3.2** shows the class of casualty: one involved pedestrians, four involved cyclists, and two a motorcycle. More details of the collisions are given below.

Table 3.2: Class of Casualties

Casualty Class	No. of Collisions	Percentage (%)
Pedestrian	1	5%
Cyclist	4	21%
Motorcyclist	2	11%
Car Driver/ Passenger	12	68%
Total	**19**	**100**

Collision Involving Pedestrians

3.18. There was one collision which involved pedestrians. This occurred when a car collided with two pedestrians crossing the A249 southbound on slip at the uncontrolled crossing point. The driver reported poor visibility due to low sunlight and overgrown verges. The collision resulted in slight injury to the two pedestrians.

Collisions Involving Cyclists

3.19. Four collisions involved cyclists, all of which resulted in slight injury. Three collisions occurred at the same junction, where a cyclist travelling on the footway along Grovehurst Road collided with a car driver exiting the Grovehurst surgery some 300m south of Great Grovehurst Farm. Since all incidents involved cyclists travelling on the footway, this could indicate that cyclists feel safer using the footway rather than the carriageway.

3.20. The remaining cycle accident occurred at the Grovehurst Road / Grovehurst Avenue / Sandstone Drive roundabout some 700m to the south when a car driver travelling north along Grovehurst Road failed to yield to a cyclist travelling east to west at the roundabout from Grovehurst Avenue to Sandstone Drive.

Collisions involving Motorcycles

3.21. Two collisions involved motorcyclist. In one, a southbound light goods vehicle collided with the rear of a motorcycle on Grovehurst Road at the northern roundabout at Grovehurst Interchange. The second motorcycle collision appears to be a road rage incident.

Collisions near Site Access

3.22. Two collisions occurred in front of the existing access to Great Grovehurst farm, resulting in slight injury. One collision was a result of the road rage incident between a car and motorcycle mentioned above. The second crash was a rear shunt, where a northbound vehicle collided with another vehicle waiting to turn right into the existing farm complex at Great Grovehurst Farm.

Conclusions

3.23. With the exception of the footway cycle accidents close to Grovehurst surgery discussed above, no pattern of accidents in the immediate locality of the site was identified, suggesting that is no particular road safety issue.

Existing Vehicular Access

3.24. There are currently two vehicular accesses from Grovehurst Road to the Great Grovehurst Farm application site. Existing vehicular traffic to the site is associated with arable farming, and formerly with the small businesses utilising the farm buildings and with a three bedroom house. The small businesses included a car sales area, and a pet food factory and sales area.

3.25. Peak traffic movements associated with the arable farming occur during the harvest period, when there are approximately 1 – 2 farm machinery trips per day, plus some 6 to 8 tractor & trailer trips each way per day.

3.26. The traffic generation from the single house and the small business units, which have now been demolished, has not been quantified.

3.27. There is a further vehicular access from Grovehurst Road to the Grade II listed Great Grovehurst Farmhouse. This is located to the south west of the proposed development and does not form part of the application site.

Pedestrians and Cyclists

3.28. A variety of walking routes in the vicinity of the site provide permeability to surrounding areas. These routes include an unbroken footway on the west side of Grovehurst Road from the site via the two nearest bus stops and Kemsley rail station into the centre of Sittingbourne.

3.29. Godwin Close connects with the southern boundary of the site, and offers pedestrian and cyclist access south to Hurst Road. This in turn allows an alternative access to Grovehurst Road, including

Grovehurst Newsagents / Post Office, bus stops and Kemsley rail station. Eastwards there is a connection from Hurst Road to Kemsley centre and Kemsley Primary School via a foot/cycle bridge over the railway.

3.30. Bramblefield Lane, opposite Hurst Road, provides a foot/cycle connection west over the A249(T) to Sheppey Way. Footpath ZU54 connects from Bramblefield Lane, south into the remainder of the North West Sittingbourne allocation.

3.31. National Cycle Route 1 (NCN1), shown on **Figure 3.2**, crosses Grovehurst Road approximately 250m to the southeast of the site, providing a route towards Sittingbourne Town Centre. Further south, NCN1 along Grovehurst Road is mostly on-road with sections of off-road provision.

3.32. A shared foot/cycleway is available along the length of Swale Way, to the northeast of the site. This provides an off carriageway route to many of the large business parks to the north and north east of Sittingbourne.

3.33. A further path, accessed from the entrance to the Nicholls Logistics Park to the north of Swale Way, runs along the north western boundary of the Nicholls site and then under the Sittingbourne to Sheerness railway line, providing an alternative pedestrian and cycle access to the Morrisons Regional Distribution Centre.

3.34. The walking and cycling network in the vicinity of Great Grovehurst Farm, excluding footways alongside carriageways, is shown on **Figure 3.2.**

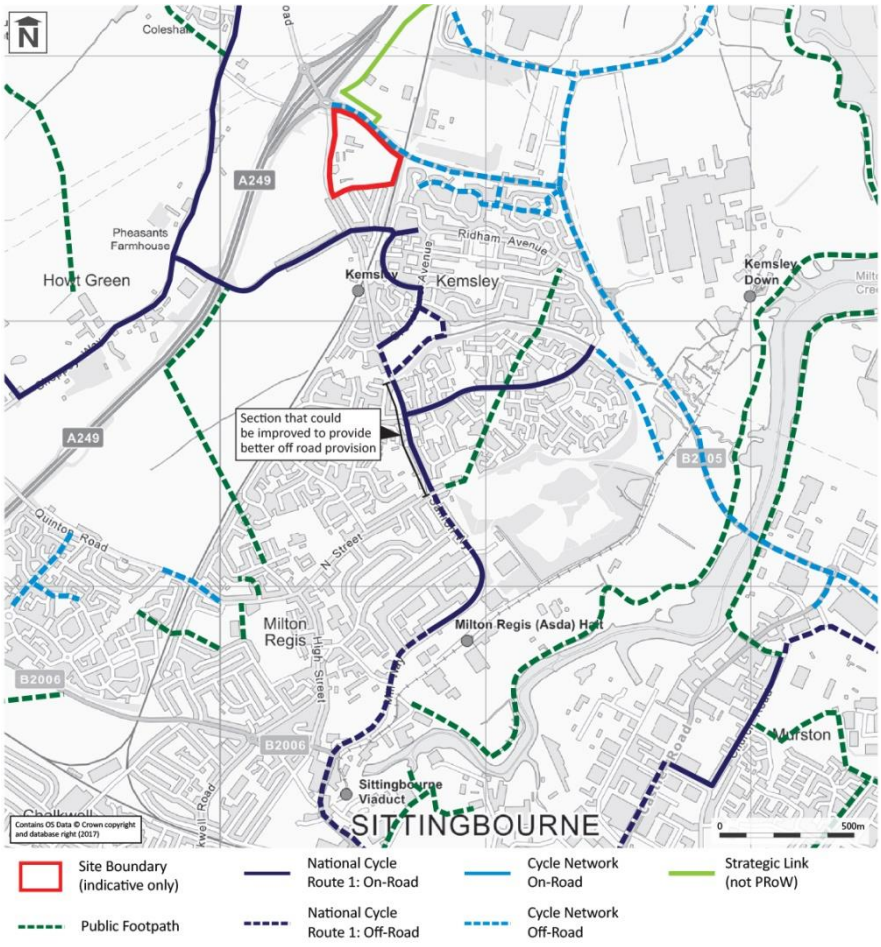


Figure 3.2: Walking and Cycling Network

Access to Local Facilities

3.35. **Figure 3.3** illustrates the general location of the site in relation to the facilities that those living at the proposed development would use on a day-to-day basis. In addition to local facilities in the immediate vicinity of the site, a wider variety of services are available within Sittingbourne town centre to the west as well as Kemsley village centre to the east.

3.36. The Department for Transport 'Manual for Streets', March 2007, states that walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes (up to about 800m) walking distance. The Institution of Highways and Transportation's (IHT) document 'Providing for Journeys on Foot' sets out preferred walking distances to key facilities. It identifies maximum preferred walking distances of 2km for commuting and 1.2km for other purposes.

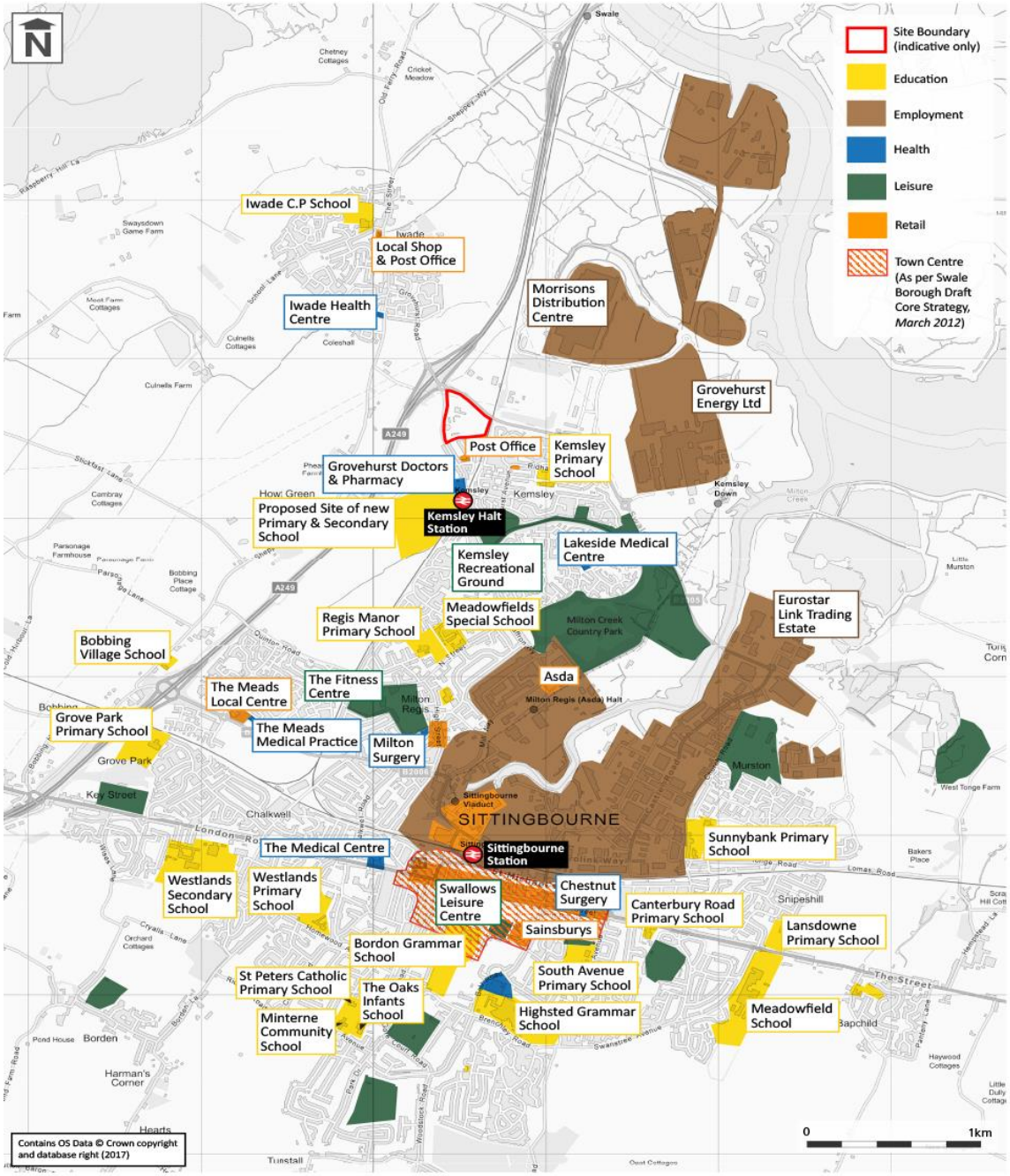


Figure 3.3: Local Facilities

3.37. **Table 3.3** below summaries key facilities in the vicinity of Great Grovehurst Farm, together with the walking and cycling times.

Table 3.3: Local Facilities and Journey Times

Facility	Description	Distance (m)	Walking Time (mins:secs)	Cycling Time (mins:secs)
Healthcare	Kemsley Pharmacy	500	06:00	01:45
	Grovehurst Surgery	500	06:00	01:45
Education	Kemsley Primary School	1100	13:00	03:30
	Westlands Secondary School	4300	51:00	14:30
	Proposed Primary School	550	06:30	01:45
	Proposed Secondary School	550	06:30	01:45
Post Office/ Local Store	Grovehurst Newsagents	350	04:00	01:15
Food Retail	Kemsley Village Store	700	08:45	02:30
	ASDA	1900	22:30	06:30
Retail/Business	Sittingbourne Town Centre/High street	3700	44:00	12:30
Employment	Kemsley Fields Business Park	c. 1800m	21:28	6:00
	Nicholls Logistics Park	350	04:00	01:15
Leisure	Kemsley Recreational Ground	900	10:45	03:00
	Swallows Leisure Centre	4000	47:30	13:30
Transport	Bus Stop	250	03:00	45:00
	Kemsley Rail Station	600	07:00	02:00

Notes:
1) Walking distances are measured from the site centre following footways and public footpaths. Cycling distances are measured from the site centre following the local road network and cycle paths.
2) Walking time based on the average walking speed of 1.4m/s taken from IHT 'Guidelines for providing for journeys on foot', and an average cycling time of 5m/s taken from DMRB, Volume 11, Section 3.
3) Walking and cycling times rounded to the nearest 15 seconds.

Education

3.38. Currently the nearest primary school to the site is Kemsley Primary School, located 1100m to the east, which is a 13 minute walk or 3 minute cycle. The nearest secondary school is Westlands School in Chalkwell, approximately 4300m to the south. However the development allocation at North West Sittingbourne under Policy MU1 of 'Bearing Fruits 2031' includes a site for a primary and a secondary school, as identified on the map from 'Bearing Fruits 2031'reproduced in Section 2 of this document. These schools will be approximately 550m from the Great Grovehurst Farm site access, easily accessible on foot and by cycle. A safe walking and cycling route will be provided from Great Grovehurst Farm to the schools.

Employment

3.39. The nearest area of major employment is the Kemsley Fields Business Park, located on the opposite side of Swale Way. Other employment includes Nicholls Logistics Park north of Swale Way, Kemsley Paper Mill in Ridham Avenue, and Eurolink Business Park, all accessed via Swale Way, as well as employment within Swale town centre.

Health

3.40. The nearest GP is Grovehurst Surgery, located off of Grovehurst Road, near to Kemsley rail station, approximately 500m to the south east of the site. Kemsley Pharmacy is located on the site of the GP surgery.

Leisure

3.41. There are a good range of leisure facilities within and around the centre of Sittingbourne, approximately 4000m away. However there are also leisure facilities closer to the site, including Kemsley Recreational Ground located around 900m from Great Grovehurst Farm. This park also provides access to the larger Milton Creek Country Park.

Food Retail

3.42. The nearest major food retailer is ASDA, located on the B2005 north of Sittingbourne town centre, approximately 1900m from the site access. Bus services travel past ASDA on a regularly basis, as shown on **Figure 3.3**.

3.43. Local shops include Grovehurst Newsagents on the corner of Hurst Avenue, and Kemsley Village Stores in the centre of Kemsley, to the east of the railway.

3.44. The proposals for the whole North West Sittingbourne allocation include a local centre with retail provision to meet local requirements immediately west of the proposed school site (west of Grovehurst Road), as set out in the PBA TA. This local centre will be approximately 600m from Great Grovehurst Farm, accessible via the route to the schools.

Public Transport

Bus Services

3.45. Sittingbourne is served by a number of regional and local bus services. Existing bus routes in the vicinity of Great Grovehurst Farm are identified on **Figure 3.4**, and more frequent services are summarised in **Table 3.4**. It is noted that, as there is currently no development on Grovehurst Road adjacent to the site at present, the existing demand for bus services here is limited. The potential for additional buses to serve the North West Sittingbourne allocation is discussed in the PBA TA.

3.46. The most frequent of the current services in the area is No 347 operated by Arriva between Kemsley Village Centre, some 700m from Great Grovehurst Farm across the railway line, and Sittingbourne. This offers a 12 – 20 minute frequency service each way on weekdays until early evening, and a 20 minute frequency service on Saturday. The journey is scheduled to take around 20 minutes. There is no service on Sunday.

3.47. A number of infrequent services run along Grovehurst Road between Sheerness, Iwade and Sittingbourne and beyond. Service 324 operated by Chalkwell offers one service each way per day on Wednesday and Friday from Sheerness to Canterbury, stopping at Grovehurst Post Office at 09:24 on the way out, and 14:00 on the way back. On Tuesdays and Thursdays Chalkwell Service 339 similarly offers one service each way per day between Sheerness and Rainham / Hempstead Valley shopping centre. This stops at Grovehurst Post Office at 09:57 on the way out and 14:00 on the way back. In addition a number of school buses use Grovehurst Road, providing transport to Sittingbourne Community College, Westlands School and Borden Grammar School.

3.48. A more frequent service between Sheerness, Sittingbourne and Maidstone, Arriva No. 334, is available from Iwade. The closest stop is at Iwade Health Centre, approximately 1km from Great Grovehurst Farm, although one early service calls at Grovehurst Post Office at 05:51 on the way in to Sittingbourne. For most of the day the service is approximately hourly, with the last bus leaving Sheerness at 17:25 and Maidstone at 19:20.

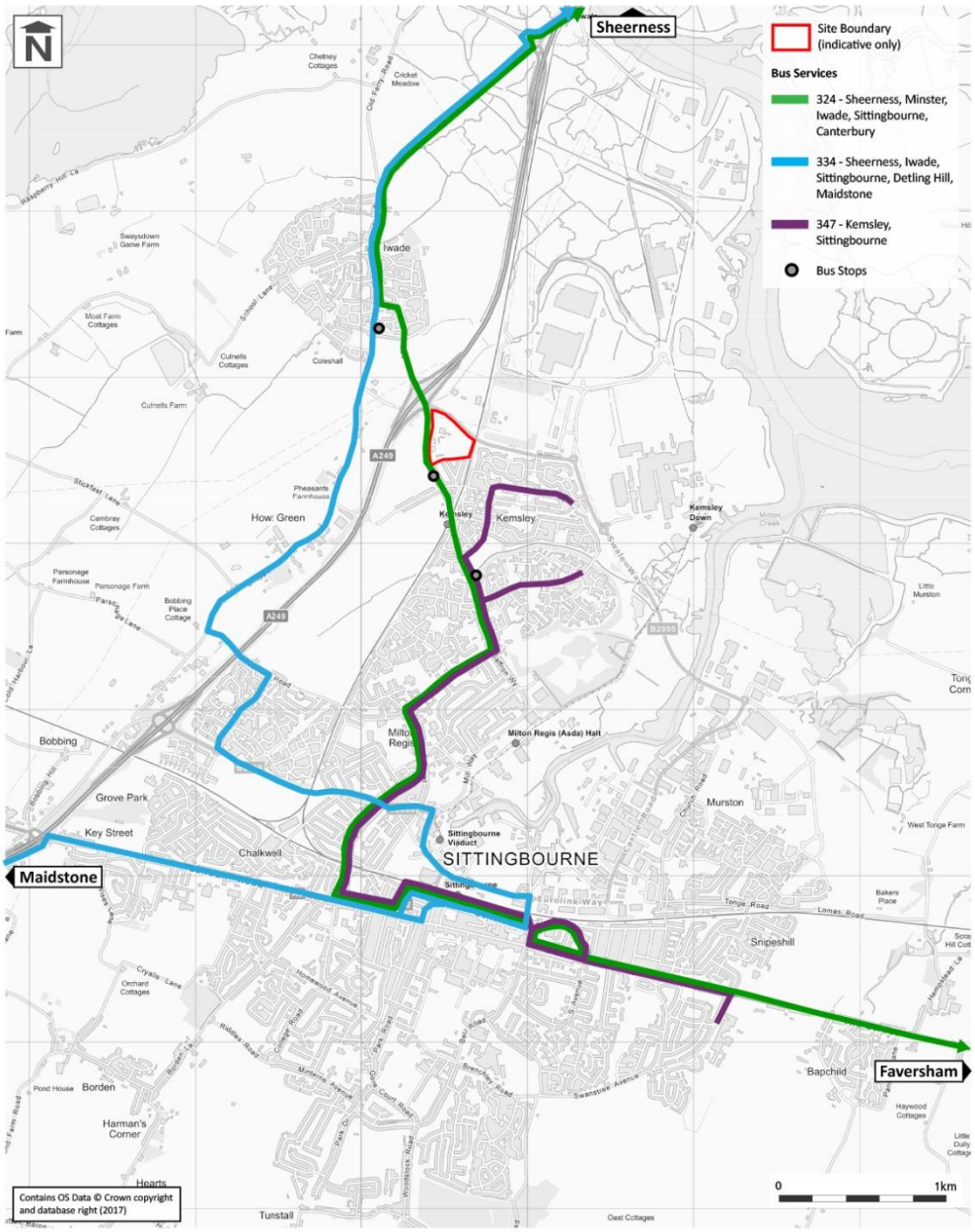


Figure 3.4: Existing Bus Routes

Table 3.4: Frequent Existing Bus Services

Bus Stop	Service	Weekday Frequency	First Bus	Last Bus	Saturday Frequency
Menin Road, Kemsley	347 Kemsley – Sittingbourne	c12 - 20 mins	07:05	19:02	c20 mins
Forum Centre, Sittingbourne	347 Sittingbourne - Kemsley	c12 – 20 mins	07:25	19:22	c20 mins
Health Centre, Iwade	334 Sheerness - Iwade – Sittingbourne - Maidstone	c60 mins	06:34	18:02	c60 mins
Maidstone Chequers Bus Station	334 Maidstone - Sittingbourne – Iwade – Sheerness	c60 mins	08:50	19:20	c60 mins

Source: Traveline South East and Anglia, accessed 14 March 2018

ArrivaClick- Minibuses on Demand

3.49. An on-demand shared mini-bus service operates in Sittingbourne. It enables up to 12 people who are travelling on a similar journey to share a minibus. ArrivaClick is operated via an app and runs on-demand minibus services between 06:00 and 22:00 Monday to Saturday. It offers a flexible service which is designed to complement bus services and reduce single use car trips. ArrivaClick will enable residents of the proposed development to travel to destinations within Sittingbourne and Kent Science Park without relying on a private car.

Commuter Coach Services

3.50. Sittingbourne is well served by commuter coaches which provide links to London during the weekday AM and PM peak periods. Coach Service 751, operated by The Kings Ferry, stops on Grovehurst Road just to the south of Newman Drive, approximately 1.2km from Great Grovehurst Farm and provides six morning peak services arriving in London by 0930 daily, with five return services during the evening peak period.

3.51. Connections to long distance bus and rail services are also available from central Sittingbourne, accessible via Bus 347 which stops close to Sittingbourne rail station.

Rail Services

3.52. The nearest rail station to the application site is Kemsley Station on the Sheerness Line, approximately 600m to the south, and identified on **Figure 3.1**. This is within reasonable walking and cycling distance. A summary of rail services from Kemsley Station is provided in **Table 3.5**.

Table 3.5: Summary of Rail Services from Kemsley Station

Service	AM Peak Frequency	PM Peak Frequency	Weekday Frequency	Saturday Frequency	Sunday Frequency
London Victoria	2 services	2 Services	Out: 06:53 and 07:13 from Kemsley Return: 17:03 and 18:22 from Victoria	n/a	
Towards Sheerness	6 services	7 services	c30 mins	30 mins	60 mins
Towards Sittingbourne	7 services	6 services	c30 mins	30 mins	60 mins

Peaks are between 07:00-10:00 and 16:00-19:00
Source: Trainline (www.thetrainline.com), accessed 17 April 2018

3.53. The rail service to / from Kemsley Station generally operates as a shuttle route between Sheerness-on-Sea and Sittingbourne and would be an option for new residents to use to commute on a daily basis.

3.54. There is also a twice daily weekday service direct from Kemsley Station to London Victoria in the AM peak, with two return services during the PM peak, and a journey time of 80 – 90 minutes. This service would be an attractive asset for London commuters.

3.55. Further rail connections are available at Sittingbourne station; Sittingbourne station, on the Chatham Main Line, is also linked with the application site by bus. The station is located 3.4 km of the application site and thus would also accessible by cycle. A summary of rail services from Sittingbourne Station is provided in **Table 3.6**.

Table 3.6: Rail Services from Sittingbourne Station

Service	AM Peak Frequency	PM Peak Frequency	Weekday Frequency	Saturday Frequency	Sunday Frequency
Towards Ramsgate	5 services	7 services	30 mins	30 mins	30 mins
Towards Canterbury/Dover	7 services	6 services	30 mins	15-40 mins	15-40 mins
Towards London St Pancras	8 services	7 services	30 mins	30 mins	60 mins
Towards London Victoria	7 services	6 services	30 mins	30 mins	30 mins

Peaks are between 07:00-10:00 and 16:00-19:00
Source: Trainline (www.thetrainline.com), accessed 15 March 2018

3.56. Approximate journey times from Sittingbourne station to key destinations include:

- London Victoria – 70 mins
- London St Pancras – 60 mins
- Faversham – 10 mins
- Ramsgate – 50 mins
- Dover – 60 mins

4. PROPOSED DEVELOPMENT

Development Scheme

4.1. The proposed development comprises an outline planning application for up to 110 dwellings and all necessary supporting infrastructure including emergency access, roads, footpath and cycle links, open space, play areas and landscaping, parking, drainage and all utilities and service infrastructure works. All detailed matters are reserved for subsequent approval except (a) mitigation of impacts on Great Crested Newts; (b) vehicular access to Grovehurst Road; and (c) extraction of brickearth.

4.2. The illustrative Masterplan is reproduced at **Appendix A**. More information about the development is contained in the Design and Access Statement submitted with the planning application.

Vehicular Access

4.3. Vehicular access is proposed from a staggered ghost island priority junction onto Grovehurst Road. The proposed form for the site access junction is shown on PFA Consulting Drawing D118/27 Rev C reproduced in **Appendix D.** The general arrangements for vehicular access are also shown on the Illustrative Masterplan reproduced in **Appendix A.**

4.4. The second existing agricultural access from Great Grovehurst Farm onto Grovehurst Road will be closed.

4.5. Access to Godwin Close to the south will be provided for pedestrians, cyclists and emergency vehicles only. This access will not be used for brickearth extraction or for construction traffic.

4.6. The site access junction will form a left – right stagger with a similar junction providing access to the northern end of the main area of the North West Sittingbourne allocation to the west of Grovehurst Road, connecting to a north - south spine road through this part of the development. More details of the proposed vehicular accesses to the remainder of the North West Sittingbourne site are contained within the PBA TA.

Pedestrian and Cycle Access

4.7. The proposed arrangements for pedestrian and cycle access are indicated on the Illustrative Masterplan in **Appendix A** and on Drawing D118/27 Rev C in **Appendix D**.

4.8. A 3m wide foot / cycle way will be provided on both sides of Grovehurst Road north of the site access, as far as Swale Way.

4.9. A footway is proposed along Grovehurst Road to the south of the access for a distance of some 30m. An uncontrolled crossing, incorporating a pedestrian refuge, will be provided to link to the existing footway on the west side of Grovehurst Road. This will also provide pedestrian access to the North West Sittingbourne wider area, as indicated on the Illustrative Master Plan in **Appendix A**.

4.10. A second uncontrolled crossing of Grovehurst Road is understood to be proposed to the north of the Great Grovehurst Farm access in association with the North West Sittingbourne development on the west side of Grovehurst Road.

4.11. Pedestrian links will be provided within the Great Grovehurst Farm site, as identified on the plan **in Appendix A**, to connect the North West Sittingbourne wider area with employment areas to

the north and east, including the Nicholls Logistics Park, the Morrisons Regional Distribution Centre, Kemsley Fields Business Park and employment on Ridham Avenue east of Swale Way.

4.12. A pedestrian and cycle link will be provided to Godwin Close to the south, to allow access to Kemsley Village Centre, including the Village Stores, primary school and bus service 347.

Refuse, Delivery and Emergency Vehicle Access

4.13. The development access roads will be designed to accommodate the movement of refuse, delivery and emergency vehicles.

Cycle and Car Parking

4.14. Parking for cycles at residential dwellings will be in line with Kent County Council standards, as set out in the Kent and Medway Structure Plan Supplementary Planning Guidance 4: Kent Vehicle Parking Standards, July 2006, and summarised in **Table 4.1** below:

Table 4.1: Summary of Kent County Council Cycle Parking Standards

Type of Parking	Minimum Provision		
	Individual Residential Dwelling	Flats & Maisonettes	Sheltered Accommodation
Minimum cycle parking	1 space per bedroom	1 space per unit	1 space per 5 units

4.15. Parking for cars at residential dwellings will be in line with Kent County Council standards for suburban areas, as set out in the Kent Design Guide Review, Interim Guidance Note 3, summarised in **Table 4.2** below:

Table 4.2: Summary of Kent County Council Car Parking Standards

Type of Parking	Minimum Provision			
	1&2 bed flat	1&2 bed house	3 bed house	4+ bed house
Minimum car parking - suburban	1 per unit Not allocated	1 space per unit Allocation possible	1.5 spaces per unit Allocation of 1 space per unit possible	2 independently accessible spaces per unit Allocation of both spaces possible
Minimum car parking - suburban edge	1 per unit	1.5 spaces per unit	2 spaces per unit	2 spaces per unit

Travel Plan

4.16. The scale of development proposed at Great Grovehurst Farm, at up to 110 dwellings, is not considered sufficient to merit a Travel Plan.

4.17. Measures to encourage walking and cycling form an intrinsic part of the development, as discussed above. The site is well located with regard to walking and cycle routes to local facilities and employment, and is within walking distance of a frequent bus service between Kemsley and Sittingbourne. Pedestrian and cycle facilities will be provided in the immediate vicinity of the site and the site access to ensure connectivity to the existing facilities and to those proposed as part of the remainder of the North West Sittingbourne allocation.

5. TRIP GENERATION AND DISTRIBUTION

Existing Land Use

5.1. For the purposes of this assessment, the existing traffic generation of the site is assumed to be nil.

Proposed Development

5.2. Traffic generation from the full North West Sittingbourne allocation has been estimated based upon the TRICS database, and the methodology has been set out in detail in Chapter 8 of the PBA TA. The residential vehicle trip generation rates have been agreed with KCC as local highway authority and are as follows:

Table 5.1: Residential Vehicle Trip Rates

Period	Vehicle Trips per Dwelling		
	In	Out	Total
AM Peak Hour (08:00-09:00)	0.124	0.403	0.527
PM Peak Hour (17:00-18:00)	0.367	0.205	0.572

Source: PBA TA

5.3. Estimated peak hour vehicle trip generation by the development at Great Grovehurst Farm for the purposes of this assessment is summarised in **Table 5.2**. This has assumed a development of up to 120 units, as set out in 'Bearing Fruits 2031'; the current proposal for Great Grovehurst Farm includes up to 110 dwellings, so that the assessment represents a worst case.

Table 5.2: Residential Peak Hour Vehicle Trip Generation: Great Grovehurst Farm

Period	Vehicle Trips – Great Grovehurst Farm		
	In	Out	Two-way
AM Peak Hour (08:00-09:00)	15	48	63
PM Peak Hour (17:00-18:00)	44	25	69

Source: PBA TA

5.4. **Table 5.2** shows that the two-way vehicular trip generation from Great Grovehurst Farm is predicted to be in the region of 63 vehicle movements in the AM peak and 69 movements in the PM peak.

5.5. For comparison, predicted total peak hour vehicle trip generation by the North West Sittingbourne allocation, including the primary and secondary schools, once it is fully built out in 2031 is set out in **Table 5.3**.

Table 5.3: Residential Peak Hour Vehicle Trip Generation: North West Sittingbourne, 2031

Period	Vehicle Trips – North West Sittingbourne		
	In	Out	Two-way
AM Peak Hour (08:00-09:00)	343	707	1,050
PM Peak Hour (17:00-18:00)	574	339	912

Source: PBA TA

5.6. Traffic from Great Grovehurst Farm amounts to 6.0% of the total North West Sittingbourne allocation traffic generation in the AM peak hour, and 7.6% of the total in the PM peak hour.

Trip Distribution

5.7. As explained in the Chapter 8 of the PBA TA, the distribution of traffic generated by the residential element of the development has been calculated using 2011 Census data (Mid Super Output Area, or MSOA). The distribution data was used in conjunction with driving route information from an extract of digital road network in GIS to derive the proportion of the generated trips that pass through each junction.

5.8. The PBA TA diagrams showing distributed traffic from Great Grovehurst Farm are reproduced in **Appendix E**. The assessment assumes that the development at Great Grovehurst Farm is completed by 2023.

5.9. Diagrams showing traffic from the whole North West Sittingbourne allocation in 2023 and 2031 are also reproduced in **Appendix E.**

Assessment Years

5.10. As explained in Chapter 7 of the PBA TA, the assessment has generally been undertaken for 2031, the local plan horizon, and for an interim year of 2023, when a route is expected to be completed through the main site connecting Grovehurst Road with Quinton Road to the south.

5.11. Background traffic has been factored to the forecast years using TEMPRO growth factors adjusted to allow for committed development. The methodology is explained in the PBA TA, and the growth factors are summarised in **Table 5.4**.

Table 5.4: Adjusted AM and PM Peak Growth Factors

	2015 - 2023		2015 - 2031	
	AM Peak	PM Peak	AM Peak	PM Peak
Rural Trunk Road	1.0938	1.0936	1.1876	1.1872
Urban Principal Road	1.0688	1.0686	1.1376	1.1378

Committed Development

5.12. The PBA TA goes on to explain that, in addition to the TEMPRO growth factors, a number of sites have been explicitly considered at the request of KCC. The sites considered are listed in Chapter 7 of the PBA. The sites for which data obtained from the respective Transport Assessment was added in explicitly are:

- SW11/0159 Morrisons Mill Way – 150 residential units
- SW14/501588 Stones Farm, Bapchild – 600 houses
- SW14/505440 Spirit of Sittingbourne Regeneration Site
- SW13/0215 Eurolink V
- SW02/1180 Land at East Hall Farm
- SW08/1127 Land adjacent to Coleshall Farm, Iwade
- Iwade Expansion allocated in 'Bearing Fruits 2031' Policy A 17.

5.13. The PBA TA 2023 and 2031 baseline flows including committed development are reproduced in **Appendix F**.

Forecast Traffic

5.14. The PBA TA 2023 and 2031 forecast flows including committed and proposed development are reproduced in **Appendix G**.

6. IMPACT ON THE TRANSPORT NETWORK

Introduction

6.1. This section assesses the impact of traffic generated by the proposed development on the local transport network, and should be read in conjunction with the Transport Assessment for North West Sittingbourne prepared by Peter Brett Associates on behalf of Persimmon Homes (the PBA TA).

6.2. As far as the development at Great Grovehurst Farm is concerned, the key junctions are:

1. Site access / Grovehurst Road Junction
2. Grovehurst Interchange (Grovehurst Road / Swale Way / A249(T) dumbbell roundabout junction)

Geometric Parameters

6.3. Geometric parameters for the junction assessments have been taken from OS mapping, aerial photos and from drawings of the site access junction (Drawing D118/27 Rev C at **Appendix D**) and the Grovehurst Interchange Interim Improvement scheme (Drawing D118/25 Rev A included at **Appendix H).**

Site Access Junction

6.4. The operational performance of the site access junction was assessed using the Junctions 9 PICADY module. The assessment was undertaken for the 2023 and 2031 scenarios, with development only.

6.5. The full outputs, which include the input data and results, are included at **Appendix I**. The results for 2031 with the full North West Sittingbourne development are summarised in **Table 6.1**, identifying the maximum ratio of flow/capacity (RFC) and the maximum queue in vehicles for all approach arms and movements.

Table 6.1: Site Access Junction

Approach Arm	AM Peak		PM Peak	
	Max.RFC	Max.Q	Max.RFC	Max.Q
All Arms	0.28	0.4	0.39	0.2

6.6. It can therefore be concluded that the site access junction has adequate capacity.

Grovehurst Interchange

6.7. The operational performance of Grovehurst Interchange was initially assessed with Junctions 9 ARCADY module for the 2015 base year, the 2023 and 2031 baseline, and in 2023 and 2031 with development. The methodology and results are reported in detail in chapter 10 of the PBA TA.

6.8. Subsequently a Paramics microsimulation model has been developed to better model the operation of the junction as existing and with the interim improvements referred to above, and which are identified on the plan at **Appendix H**.

6.9. The Paramics microsimulation model report, which is attached as **Appendix J** of this Supplementary Transport Assessment, predicts that by 2023, without any improvements to the junction and without development, the queue on the northbound off-slip from the A249 will approach 100 vehicles (around 600m in length) in the morning peak hour period, and about 125

vehicles (approximately 750m in length) in the PM peak period. On the southbound off-slip the queues are again predicted to be above 100 vehicles in the AM peak, but are predicted to be minimal in the PM peak. At times, the queuing will extend back from the existing roundabouts at the top of the A249 off-slip roads and result in vehicles queuing on the A249 main line, which is clearly a hazardous situation.

6.10. The modelling report at **Appendix J** then goes on to predict the queues at 2023 with the proposed interim improvements as identified on the plan at **Appendix H**.

6.11. The queues on the northbound off-slip with the interim improvements are predicted to be no more than about 40 vehicles in the AM peak, and about 45 vehicles in the PM peak. This will give rise to a maximum queue length of less than 300m and, as the northbound slip road is slightly in excess of 300m in length will not result in queuing on the mainline.

6.12. On the southbound off-slip the queues in both peak periods with the interim improvements are predicted to be minimal.

6.13. Thus, the interim improvements provide a significant safety improvement at the A249 by ensuring that predicted queuing back onto the A249 mainline does not occur.

7. BRICKEARTH EXTRACTION & CONSTRUCTION TRAFFIC

Brickearth Extraction

7.1. Before construction of any residential development can be undertaken, brickearth is to be extracted from the application site. This is proposed to be a condition of any planning permission.

7.2. Traffic associated with the brickearth extraction will be limited to about 2 staff vehicle movements at the beginning and end of each day and no more than about 6 HGV movements (3 in and 3 out) per hour. This level of traffic will be no greater than the present agricultural activities of the site generated at harvest time, and significantly less than the level of development traffic assessed in Sections 5 and 6 of this report.

7.3. The brickworks is approximately 3km from Great Grovehurst Farm, within the Eurolink Industrial Estate. The brickworks is accessed via Swale Way, without the need for traffic to pass through any residential areas.

7.4. Godwin Close will not be used for access for brickearth extraction.

Construction Traffic

7.5. The construction of this area of the North West Sittingbourne allocation will take place over 3 or 4 years. It is anticipated that a Construction Environmental Management Plan (CEMP) will be required as a condition of any planning permission. This CEMP will include details of measures to control and manage construction vehicles (particularly heavy goods vehicles) throughout the construction period.

7.6. Given the location in relation to Swale Way and the A249, it will not be necessary for construction traffic to pass through neighbouring residential areas to reach the site.

7.7. Godwin Close will not be used for construction access.

8. MITIGATION MEASURES

8.1. The primary mitigation measure proposed for this area of the North West Sittingbourne allocation comprises a contribution towards an interim improvement scheme for the A249 Grovehurst Road junction in line with Section 6.6.9 of the Local Plan.

8.2. Other mitigation measures will include pedestrian and cycle facilities in the immediate vicinity of the site and the site access to ensure connectivity to existing facilities and to those proposed as part of the remainder of the North West Sittingbourne allocation.

9. CONCLUSIONS

9.1. The proposed development at Great Grovehurst Farm, Sittingbourne accords with 'Bearing Fruits 2031', the Swale Borough Local Plan adopted in July 2017, and forms part of the wider Policy MU1 North West Sittingbourne Allocation.

9.2. This Supplementary Transport Assessment has been prepared by PFA Consulting on behalf of G H Dean & Co, and should be read in conjunction with the Transport Assessment covering the full North West Sittingbourne allocation prepared by Peter Brett Associates on behalf of Persimmon Homes.

9.3. This Supplementary Transport Assessment therefore, whilst it is primarily for the purposes of supporting a planning application for up to 110 dwellings on the Great Grovehurst Farm site, has regard to the entirety of the North West Sittingbourne allocation. The traffic modelling which supports this assessment considers the overall impact of not only the North West Sittingbourne allocation, but also other committed developments which have the potential to impact on the road network affected by North West Sittingbourne allocation traffic. It is concluded that with the mitigation identified, the proposed development can be satisfactorily accommodated on the local transport network without severe harm arising. It therefore complies with national planning policy which aims to promote sustainable development with safe and suitable access for all.

9.4. On this basis, subject to the imposition of appropriate planning conditions and a contribution towards any A249/Grovehurst Road junction interim improvements, there are no highways or transport-related reasons why planning permission should not be granted.