# FORT HALSTEAD

*Design & Access Statement*
*September 2019*

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# 1. THE VISION

# A UNIQUE VILLAGE WITH A LIVING AND WORKING COMMUNITY

*Surrounded by Kent's dense woodland, Fort Halstead is currently known only as a place closed off. Take a walk now and you'll find a place that conceals, and reveals its history with every turn.*

*As the site opens up,* it will become a *revelation*—its wooded landscape and hidden history instilling an excitement to *venture out to discover* more. In doing so, this place can serve visitors, residents and employees on different levels. Taking a *holistic approach* to design that builds in environmental, social, cultural and economic needs, Fort Halstead has the potential to *become a truly unique village—creating an active, healthy and innovative way of life among woodland.*

# 1.0 THE VISION

## *Reinvigorating the past...*

The Vision of a new sustainable development at Fort Halstead has been characterised into four key elements:

### ECONOMIC

*An economic hub of continued innovation, opening the doors to new businesses*

Fort Halstead has always been a place for innovation. The new Enterprise campus could take this thinking forward and shape an excellence around a specific topic and attracting pioneers and retaining QinetiQ as a business of internal importance.

### ENVIRONMENTAL

*Restoring the landscape and protecting the surrounding ancient woodland*

The extraordinary activities at Fort Halstead have shaped it's landscape. With its enclosed woodland, dramatic slopes and expansive grasslands, the site offers curiosity, excitement and wonder to these diverse spaces. While the remains of the bunkers give the village a unique character which contrasts with its natural surroundings.

## *Refreshing the present...*

### SOCIAL

*An intriguing and open site for a people of all ages to enjoy*

Fort Halstead is opening its doors to the public and transforming from a private to a social site. With 750 new homes and a business campus it will house a new community connected to the network of local villages, shaping itself as a new village that becomes a place for contemplation and healthy living.

### CULTURAL

*Discovering the history of Fort Halstead*

Opening up the site for the existing local community to discover the history of Fort Halstead. Telling the story of events in a sensitive, engaging and immersive way.

*From secluded to inviting...*

*From concealing to revealing...*

*From industrial to natural...*

*From history to heritage...*



# *Realising the Vision...*

Below lists the proposed interventions which will help in delivering the four elements in creating a sustainable development at Fort Halstead.

## ECONOMIC

- New Innovation and Education Hub – to significantly contribute to the existing employment opportunities in the area. The innovation and education hub will provide a variety of employment space including office, research and development and light industrial uses
- Provide local employment opportunities to reduce the need to travel
- Retention of existing employer QinetiQ on site
- Retention and integration of key existing buildings within the employment area

## SOCIAL

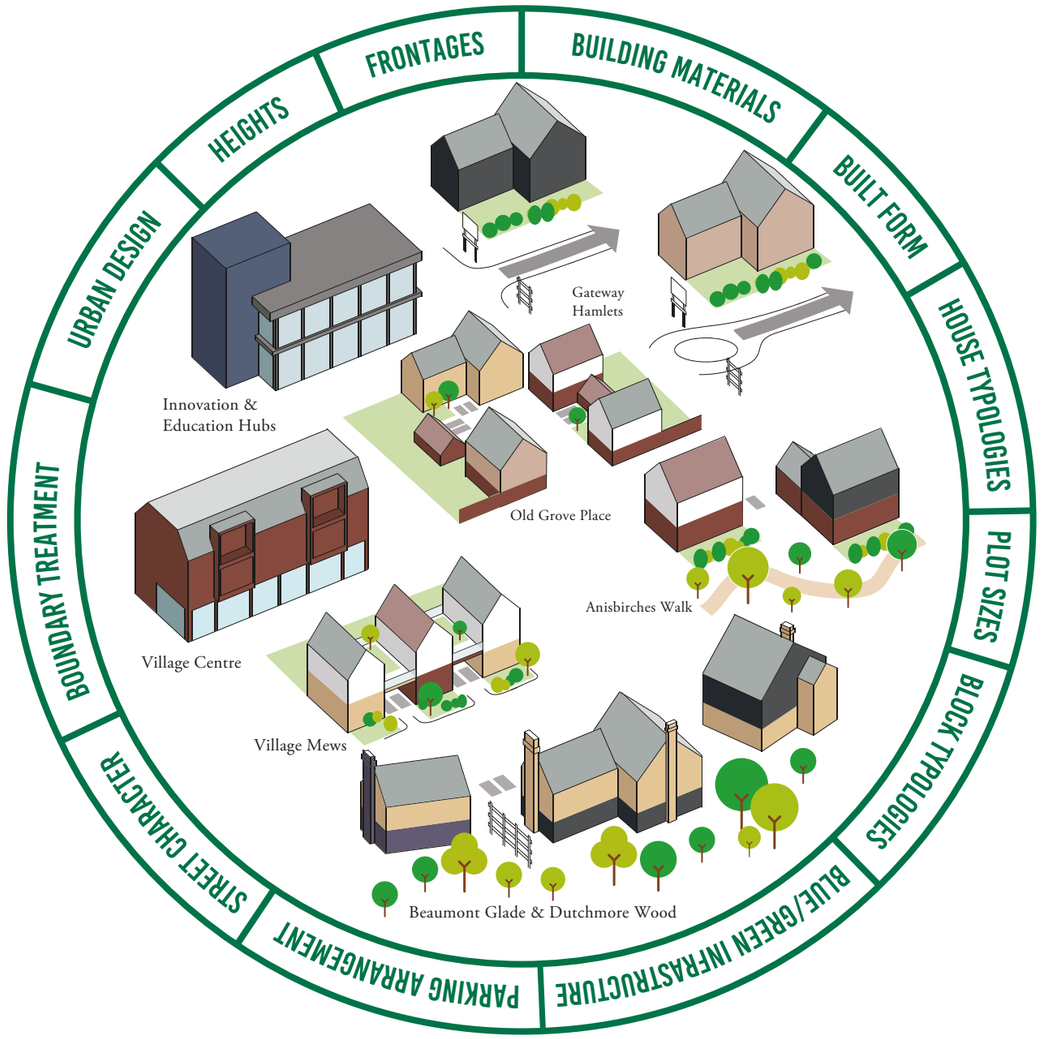
- Providing community and retail facilities in the village centre
- New primary school on site
- Diverse range of house types including size, architectural style and tenure.
- New early years nursery on site
- Permeable road network with a wide range of traffic calming measures to create a people and child-friendly environment

## ENVIRONMENTAL

- Protection, enhancement and maintenance of ancient woodland and retention of key tree groups within the site
- Sustainable drainage
- Network of green and recreational spaces, providing every resident with access to a green link within 100m of their home
- Encouraging sustainable transport i.e. new bus link, reducing the reliance on the private car
- Promotion of healthy lifestyle through creation of safe, attractive and convenient walking and cycling routes
- Locally sourced building materials
- Sustainable energy strategy

## CULTURAL

- Opening of the 19th Century Fort to the public
- Refurbishment of the listed buildings in the Village Centre and Fort
- Retention of the bunker area to form part of the heritage walking trail within the site




Masterplan 'ingredients'

# 2. INTRODUCTION & BACKGROUND

# 2.1 INTRODUCTION

## DESCRIPTION OF DEVELOPMENT

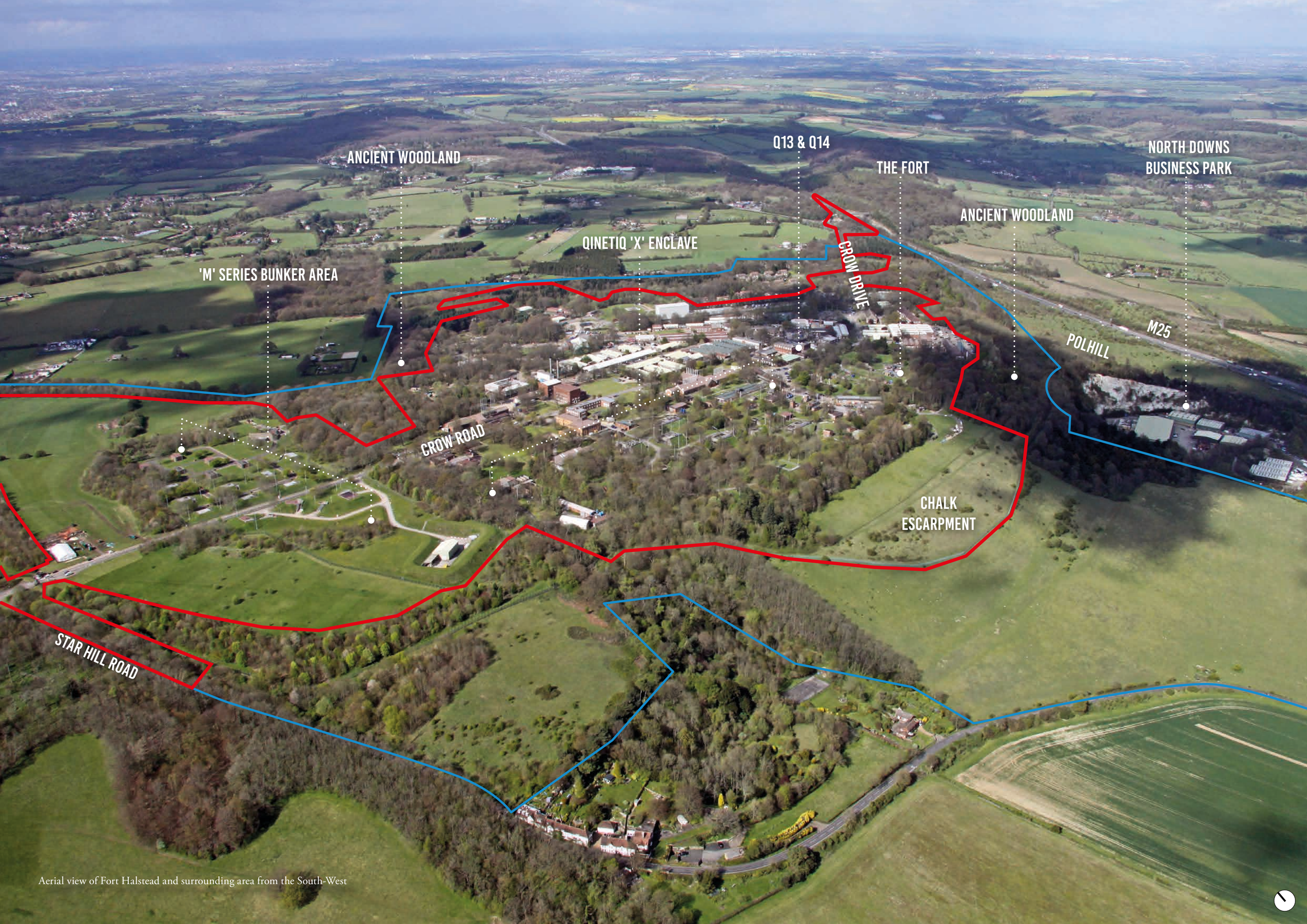
Fort Halstead lies to the north of Sevenoaks, and close to the south-eastern edge of the M25. It is bounded by the A224/Polhill Road to the east, Star Hill and Lime Pit Lane to the west and south, respectively, and a number of farm properties and Great Stockholme Wood to the north.

The site itself is currently occupied by Dstl and QinetiQ as a defence research complex, with a range of industrial buildings scattered throughout the site. The existing larger scale industrial buildings are connected with internal roads, served by large areas of hardstanding used for parking and access with smaller storage buildings and bunkers as well as areas of amenity grassland and mature trees completing the picture of the current development. The surrounding mature woodland is a key characteristic of the site, which envelopes the majority of the current built-up area and provides a high degree of enclosure and privacy.

The application as outlined in this document is for the following:

In detail:
- Demolition of existing buildings;
- Change of use and works to buildings Q13 and Q14 (including landscaping and public realm);
- Primary and secondary accesses.

In outline:
- Development of business space (use classes B1a/b/c) of up to 27,659 sqm GEA;
- Works within the 'X' enclave relating to energetic testing operations, including fencing, access, car parking;
- Development of up to 750 residential dwellings;
- Development of a mixed-use village centre (use classes A1/A3/A4/A5/B1a/D1/D2);
- Development of a one form entry primary school;
- Change of use of Fort Area and bunkers to Historic Interpretation Centre (use class D1) with workshop space;
- Roads, pedestrian and cycle routes, public transport infrastructure, car parking, utilities infrastructure, drainage;
- Landscaping, landforming and ecological mitigation works.




Aerial view of Fort Halstead and surrounding area from the South-West

# 2.2 PLANNING POLICY CONTEXT

## NATIONAL PLANNING POLICY FRAMEWORK

The National Planning Policy Framework (NPPF) 2019 sets out the Government's planning policies for England and how these are expected to be applied. The NPPF sets out in Paragraph 7 the purpose of the planning system is to contribute to the achievement of sustainable development. Paragraph 8 outlines the three overarching interconnected objectives, namely:

- an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
- a social objectives – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of the present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
- an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

Paragraph 59 expands on the need to significantly boost the supply of homes, ensuring there is a sufficient amount and variety of land can come forward where it is needed, that the needs of groups with specific housing requirements are addressed and that land with permission is developed without unnecessary delay.

Paragraph 80 states that significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development.

Paragraph 102 notes that transport issues should be considered from the earliest stages of plan-making and development proposals, so that potential impacts can be addressed, opportunities from proposed transport infrastructure can be realised to accommodate the scale, location and density of development; opportunities to promote walking, cycling and public transport are identified and pursued; the environmental impacts of traffic and transport infrastructure are assessed and mitigated; and that patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places.

*Proactively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs.*

Paragraph 117 highlights the need to promote the effective use of land in meeting the need for hoes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. It highlights the need to make as much use as possible of previously-developed or 'brownfield' land. Paragraph 118 notes that the promotion and support of development of under-utilised land and buildings especially where this would help to meet the needs for housing where land supply is constrained and available sites could be used more effectively.

Paragraph 124 states that the creation of high quality buildings and places is fundamental to at the planning and development process should achieve. Good design is a key aspect of sustainable development, creates better places in which to live and work. Paragraph 127 developments should contribute to the overall quality of an area over the lifetime of the development; be visually attractive as a result of good architecture, layout and landscaping; be sympathetic to local character and history, including built and landscape setting, while not preventing innovation or change such as increased densities; establish a strong sense of place; optimise the potential of the site to accommodate and sustaining appropriate amount and mix of development and support facilities.

Paragraph 133 states the great importance attached to Green Belt. Paragraph 145 notes the exceptions when development is not inappropriate, namely the partial or complete redevelopment of previously developed land, whether redundant or in continuing use, which would not have a greater impact on the openness of the Green Belt than the existing development; or not cause substantial harm to the openness of the Green Belt, where the development would re-use previously developed land and contribute to meeting an identified affordable housing need with in the area of the local planning authority.

Paragraph 170 stresses the need to contribute to and enhance the natural ad local environment, notably valued landscapes, recognising the intrinsic character and beauty of the countryside, minimising impacts and providing net gains for biodiversity; preventing new development contributing to unacceptable impacts on soil, air, water or noise or land stability and help improve the local environmental conditions; and remediate degraded land.

Paragraph 172 notes great weight should be given to conserving and enhancing landscape and scenic beauty in the AONB.

Paragraph 185 requires positive strategy for the conservation and enjoyment of the historic environment, taking into account the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation; new development making a positive contribution to local character and distinctiveness.

# 2.2 PLANNING POLICY CONTEXT

## LOCAL PLAN

The site currently has an allocation for mixed-use employment and residential development, dating to the 2015 Sevenoaks Allocations and Development Management Plan.

Sevenoaks District Council is in the process of producing a new Local Plan 2015–2035, and accordingly, has undertaken a 'call for sites' process, undertaken a robust evidence-based assessment of the district, its objectively assessed needs, constraints and opportunities and developed a spatial strategy accordingly.

The Submission Local Plan must seek to address its ambitious housing target as well as balancing employment and community uses, the need to protect the Green Belt and AONB and respond to infrastructure requirements.

This draft plan includes the site for proposed removal from the Green Belt justified by exceptional circumstances, for the delivery of a mixed-use scheme with employment space and up to 750 homes. The site is critical to assisting SDC in delivering new homes and affordable housing, preserving and creating jobs and protecting and securing designated heritage assets, the landscape and ancient woodland for the long-term enjoyment of the district and its future population.

The timeline for the Local Plan will run concurrently with the planning application process as follows:

- Examination in Public (Autumn 2019)
- Adoption (2020)


## DESIGN GUIDANCE

A wide range of guidance documents are available, giving information and advice on issues relevant to the development of the site. These cover diverse topics and range from the general to the specific. A general familiarity with all relevant guidance has been important, but particular reference has been made to local design guidance.

Local Design Guides

- Kent Design Guide SPD 2007,
- Kent Downs Area of Outstanding Natural Beauty Management Plan 2014–2019

Other Guides

- Urban Design Compendium – English Partnerships and the Housing Corporation, 2013
- Safer Places: The Planning System and Crime Prevention – ODPM, 2004
- Meeting Part M and Designing Lifetime Homes – Joseph Rowntree Foundation, 1999
- The Green Guide to Housing Specification – Building Research Establishment (BRE), 2000
- The Green Guide to Specification – BRE, 2008 (online only)
- Building for Life 12 – Delivering Great Places to Live: 12 Questions You Need to Answer – Commission for Architecture and the Built Environment (CABE), 2012
- By Design – Urban Design in the Planning System: Towards Better Practice – Commission for Architecture and the Built Environment (CABE), 2000
- Manual for Streets – Department for Transport, and Community and Local Government, 2007
- Car Parking: What works where? – English Partnerships, 2006

## 2015 PLANNING PERMISSION

In 2015 outline planning permission was granted for a mixed-use development, which included:

- Up to 450 homes
- Residential developable area: 12.83 Ha
- Average density: 35 dph
- Mixed-use village centre around retained buildings Q1, Q12, Q13 & Q14
- A large central green: 1.70 Ha
- Hotel: 0.57 Ha
- Employment area to the east of the site, retaining A1, A3, A10, A11, A13 and A14: 3.52 Ha
- Maximum height for residential – 2.5 storeys and located only along the main vehicular routes
- Average building height of 2 storeys for the majority of the residential parcels with 2.5 along the main vehicular routes. 3 storeys were proposed for the village centre and employment area.

Illustrative masterplan for the extant planning permission (approved in 2015)

# 2.3 DOCUMENT STRUCTURE

## FORMAT OF THE PLANNING APPLICATION

This planning application, has been prepared and submitted on behalf of the applicant, Merseyside Pension Fund (MPF), for the redevelopment of the existing defence research complex at Fort Halstead ('the Site').

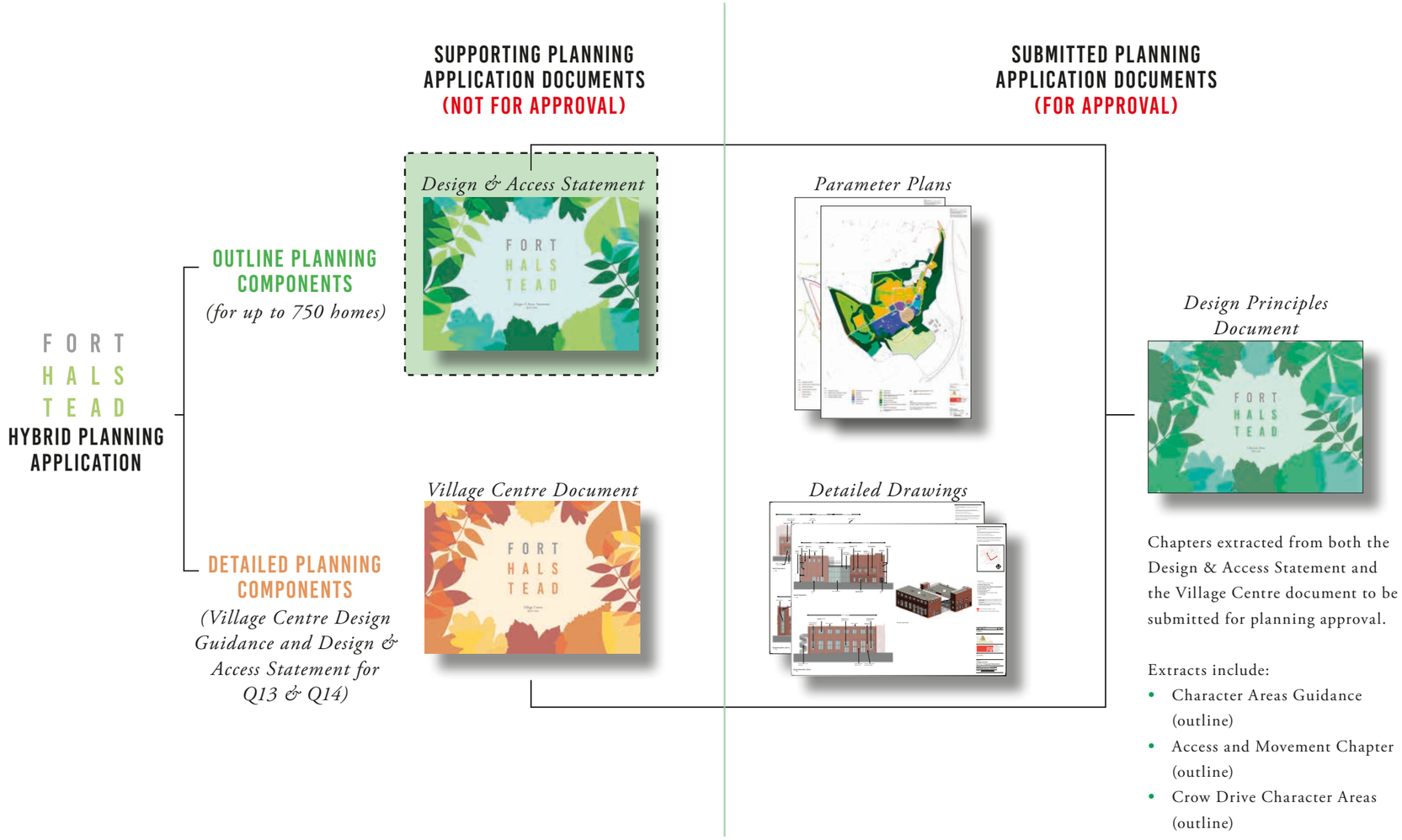
The planning application is a hybrid which comprises some elements submitted in outline and some elements in detail. The aspects of the planning application submitted in outline include a new mixed-use development up to 750 new homes and employment areas. All matters will be reserved, except means of access and the refurbishment of Q13 & Q14 buildings which is submitted for full detailed planning. A Listed Building application is also be submitted for Q14.

Specific design guidance which features in both the Outline and Detailed Design and Access Statements, is extracted and compiled into a separate Design Principles Document which is formally submitted for approval as part of the planning application.

In accordance with the Town and Country Planning (Development Management Procedure) (England) Order 2015, the planning application also seeks approval, at this stage, for:

- Use
  The uses proposed for the development and any distinct development zones identified within the site
- Amount of development
  The amount of development proposed for each use
- Access
  The location of pedestrian, cycle, equine and vehicular access points
- Scale parameters
  The upper limit for all building heights

**FORT HALSTEAD HYBRID PLANNING APPLICATION DOCUMENT STRUCTURE**




Chapters extracted from both the Design & Access Statement and the Village Centre document to be submitted for planning approval.

Extracts include:

- Character Areas Guidance (outline)
- Access and Movement Chapter (outline)
- Crow Drive Character Areas (outline)
- Village Centre Design Guidance (detailed)

# 2.3 DOCUMENT STRUCTURE

## FORMAT OF THIS DESIGN & ACCESS STATEMENT

To assist those involved in assessing the hybrid planning application this Design and Access Statement (DAS) provides an explanation of the design process undertaken by the consultant team and the factors that have shaped the proposals.

The purpose of the DAS is to fulfil the following requirements as set out in the Town and Country Planning (Development Management Procedure) (England) Order 2015:

(a) explain the design principles and concepts that have been applied to the development;

(b) demonstrate the steps taken to appraise the context of the development and how the design of the development takes that context into account;

(c) explain the policy adopted as to access, and how policies relating to access in relevant local development documents have been taken into account;

(d )state what, if any, consultation has been undertaken on issues relating to access to the development and what account has been taken of the outcome of any such consultation; and

(e) explain how any specific issues which might affect access to the development have been addressed.

## THIS DOCUMENT IS STRUCTURED AS FOLLOWS:

### 1.0 The Vision
Setting out the strategic vision of the development, introducing the general objectives wished to achieve with the development

### 2.0 Introduction & Background
Describing the purpose and scope of this document and a broad description of the site, strategic and local planning context.

### 3.0 Site & Local Character Assessment
Detailed analysis of the existing site, from its wider context to specific characteristics; recording aspects that could or should shape the development.

### 4.0 Design Development
How the assessed site constraints and opportunities were development through input from residents and key stakeholders; from the extant permission, through a number of iterations, into the proposed illustrative masterplan.

A more detailed assessment of the stakeholder engagement process is included within the accompanying Statement of Community Involvement (SCI).

### 5.0 Parameter Plans
A set of plans defining parameters for land use and green infrastructure, building heights, access & movement and demolition. Theses plans will guide the development for subsequent Reserved Matters Applications.

### 6.0 Masterplan
A description of the proposed layout of streets, landscape spaces, local facilities and built-form, as well as the response to more technical requirements.

### 7.0 Character Area Guidance
An explanation of the proposed characters of the site; creating a pleasing variety of distinctive neighbourhoods and spaces across the masterplan.

### 8.0 Access & Movement
How the Site will be accessed and serviced by all modes of transport as well as a character guide for Crow Drive. Associated changes to the surrounding highways network has also been included.

### 9.0 Technical Strategies
Setting out the more detailed technical strategies for the Site.

### 10.0 Delivery
An explanation of proposals for implementation and management, including indicative phasing of development over time.

### 11.0 Evaluation
Summarising health and sustainability benefits and improvements achieved through the successful completion of the development.

### 11.0 Conclusion
A summary of the key benefits that the development will bring to Fort Halstead.

# 3. SITE & LOCAL CONTEXT ASSESSMENT

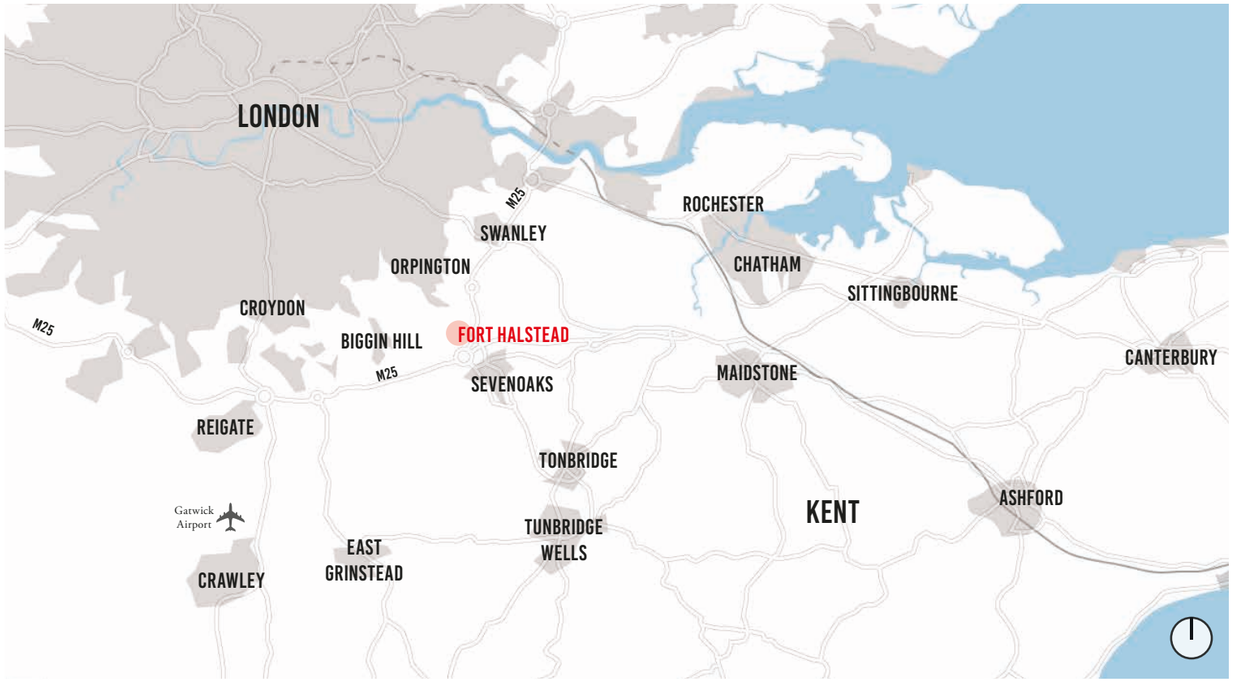
# 3.1 SITE LOCATION

The site sits across five parishes (Halstead, Knockholt, Chevening, Dunton Green and Badgers Mount), which are all located within the administrative boundary of Sevenoaks District Council (SDC), Kent.

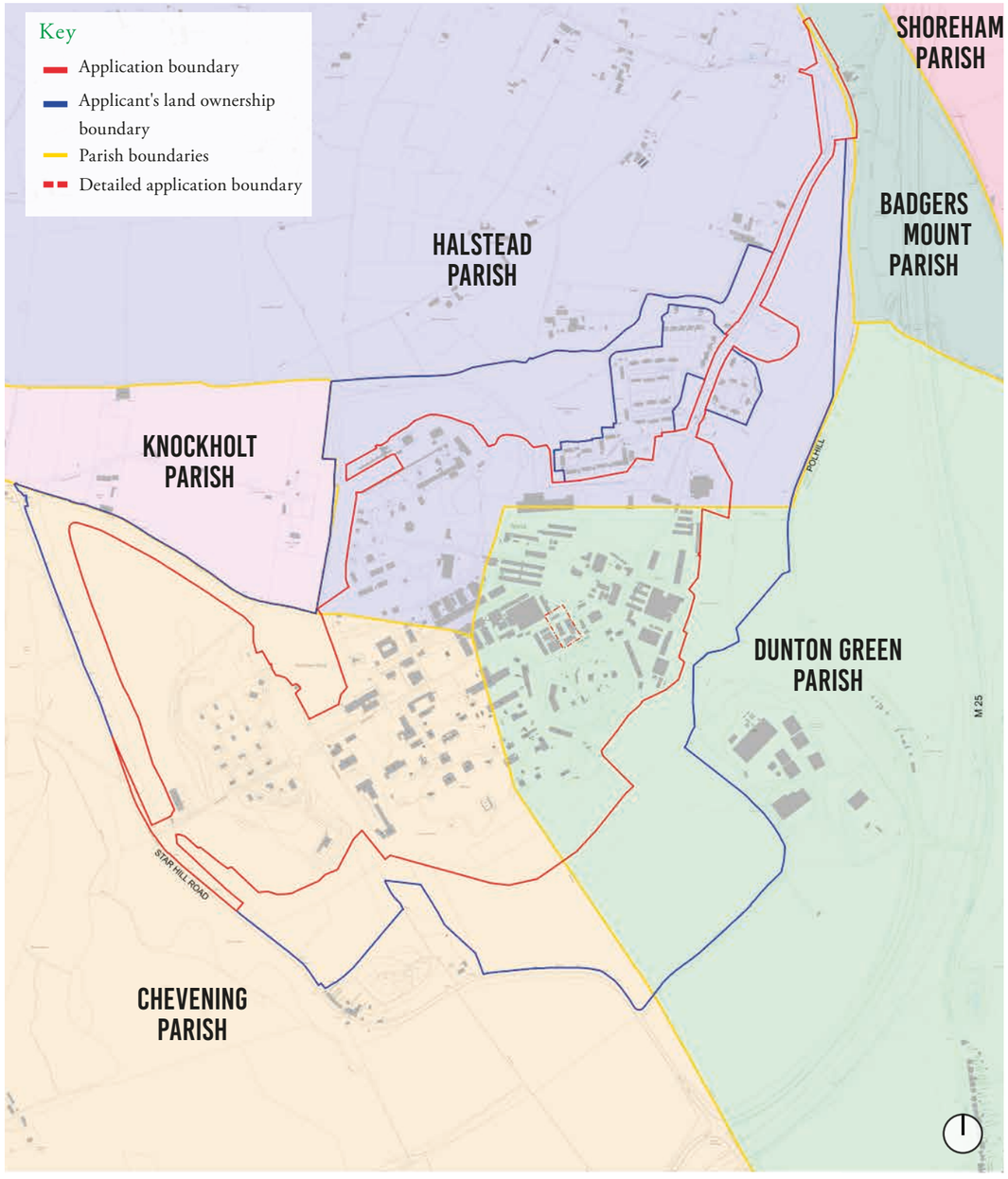
The Site lies within the Green Belt and the Kent Downs Area of Outstanding Natural Beauty (AONB). Originally constructed in the late 19th century as one of a ring of fortresses around London, Fort Halstead now consists of a large amount of hard-standing and numerous office buildings, workshops and laboratories built throughout the twentieth century for the Governments Defence Research Establishment.

A large swathe of open land to the south and west provides long ranging views from the Downs to Canary Wharf; north-west and Sevenoaks; south-east, and to landscape beyond. The developed part of the Site is set within a ring of mature woodland, which screens the existing built development from external views, and provides a secluded environment within a high-quality landscape setting.

The red line sets the boundary within which all new development, included in this planning application, is proposed. The blue line indicates the area of land within control of applicant. Existing buildings within and around the site, existing roads and borough boundaries are provided for context.




Site Location – wider context




Site location and parish boundaries


Aerial view of Fort Halstead from the north-west

# 3.2 THE SITE TODAY

## THE SITE

The current uses at Fort Halstead were developed before the introduction of planning control. The Site was originally developed as a London Defence Position Fort in the 1890s and then later became a Ministry of Defence (MoD) research establishment, and it is still currently occupied by defence-related industries. The two main occupiers of the Site are Defence Science & Technology Laboratory (Dstl) and QinetiQ. There is currently a mix of office, laboratory and storage buildings on the Site.

The Fort Halstead Site was owned by the MoD until 2006, and was subject to a crown immunity from planning controls. In 2006, Sevenoaks District Council granted a Certificate of Lawfulness of Existing Use or Development (CLEUD) for the existing uses and development on the Site, formalising the planning status of these buildings. The uses and development approved by the CLEUD are for business purposes (including storage/distribution), canteen, energetic material testing and a social club and identifies 81,676sqm (GEA) of building footprint.

Merseyside Pension Fund acquired the site from the previous Special Purchase Vehicle who owned the site (Armstrong Kent LLP) in 2016.

In June 2011, the main occupier of the Site, Dstl, announced its intention to relocate from Fort Halstead to Porton Down and Portsdown West. The relocation is expected to be completed in 2021.

Subject to obtaining the planning permission now sought, QinetiQ wish to remain at the site and occupy a number of retained buildings in a consolidated area (also known as the 'X' enclave) to the south.


Key plan showing photograph location points

# 3.2 THE SITE TODAY


View of Crow Drive and existing woodland from Polhill entrance


Existing housing to the north of the site


The helipad site


View from Crow Drive looking west at X2


View from Penney Road looking south-east towards The Fort


View from inside The Fort

# 3.2 THE SITE TODAY


View of the ground level change next to Q14 Penney building


View of the ground level change along Crow Drive


View of bunkers to be retained


View of the Star Hill Road access


View looking south towards Sevenoaks


View of the escarpment from Star Hill Road


View of existing track to the south of The Fort

## SPECIAL CHARACTER OF THE SITE

The Site has some special characteristics:

1. It is a self-contained previously developed brownfield site, within both the Green Belt and the Kent Downs AONB;
2. It has been a major source of employment to the local and wider areas;
3. It has played a significant role in British military history since the 1890s to the present day;
4. It contains the Fort, which is a scheduled monument, the structure of which remains largely intact;
5. It has four listed buildings (three within the scheduled monument and one outside), which are protected for their historical function rather than their architectural aesthetic;
6. It is enclosed by a ring of woodland, most of which is ancient woodland;
7. It contains an ecologically valuable area of calcareous grassland;
8. It is set at the top of a chalk escarpment and at its perimeter benefits from long-ranging peripheral views to the south, west and north;
9. Public access has been restricted;
10. The buildings within the site have little aesthetic value typically being, unassuming functional low-rise offices, workshops, laboratories and bunkers.
11. The buildings on site are interspersed with internal roads and large areas for parking and access. In recent years a number of buildings have been demolished, leaving large areas of hard standing.

View of a bunker within the Fort

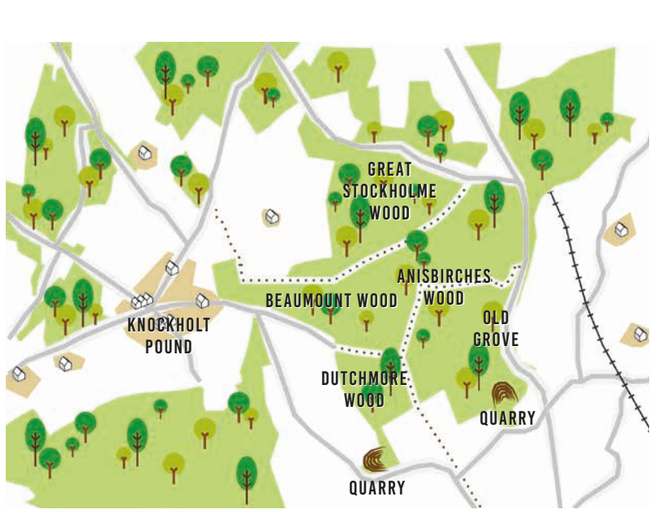
Aerial photograph looking South to the Fort

# 3.3 HISTORICAL TIMELINE

## 1800s

### WOODLAND AND QUARRY

Before Fort Halstead formed a part of the London Defence Positions, Fort Halstead was covered by woodland.




MAP OF 1895

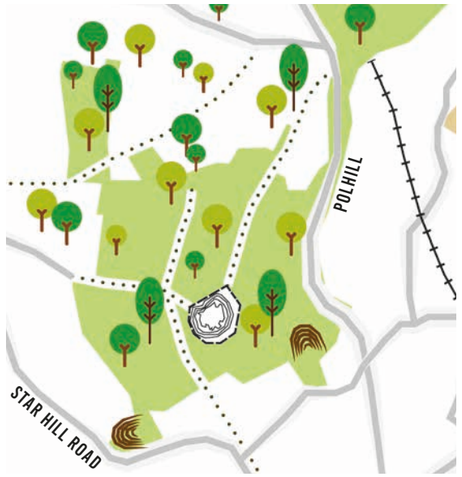
### LATE 19TH CENTURY MOBILISATION CENTRE (THE FORT, AREA F)

In March 1889 the London Defence Scheme was announced and 13 sites for mobilisation centres were chosen along a 70 mile stretch of the North Downs. The Fort was designed in 1894 and probably constructed between 1895–7.

Its construction is representative of Great Britain's fear of invasion following the growing naval strength of France and her soon-to-be ally, Russia. Fort Halstead, the largest and most costly of these mobilisation centres, was never used for its intended purpose. It is one of the best preserved examples of mobilisation centres, along with the Reigate Fort and Henley Fort.

## 1900s

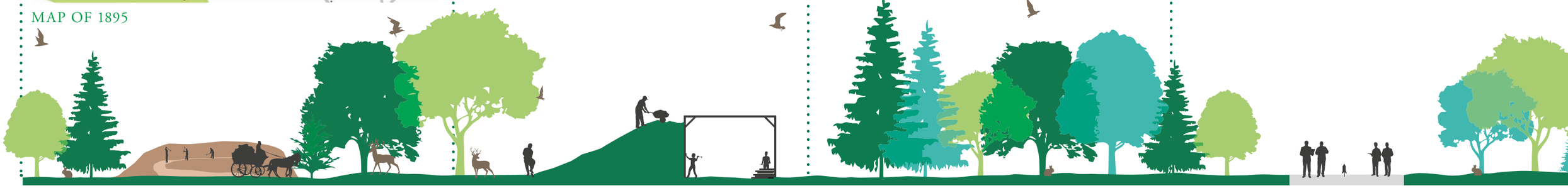
*Its construction is representative of Great Britain's fear of invasion following the growing naval strength of France and her soon-to-be ally, Russia.*




MAP OF 1909

### ROCKET DEVELOPMENT (THE FORT, AREA F)

In terms of national military development during the twentieth century, aviation was of critical importance. British interest in rocketry strengthened and in 1936 the Committee for Imperial Defence gave Alywn Crow of the Armament Research Department (ARD) the task of developing rockets for anti-aircraft defence, long range attack, air combat and assisted take off units (Crow, 1947). This part of the ARD's work initially began at the Royal Arsenal in Woolwich. However, a remoter site was soon sought due to safety concerns. 1937 Fort Halstead was repurchased by the War Office to accommodate the rocketry work of the ARD. Several of the Fort's casemates and magazines were altered and further buildings were built within the Fort. Following the success of this initial work, in 1938 under the directorship of Alwyn Crow, Fort Halstead became the separate Projectile Development Establishment (PDE). One of the earliest buildings constructed for the PDE was an experimental filling shed (F11), erected in 1938 for filling cordite rocket motors. The pioneering work undertaken by Sir Alwyn Crow at the Fort led to the development of explosive and armament technologies, such as unrotated projectiles which were widely used in the D-Day operations.



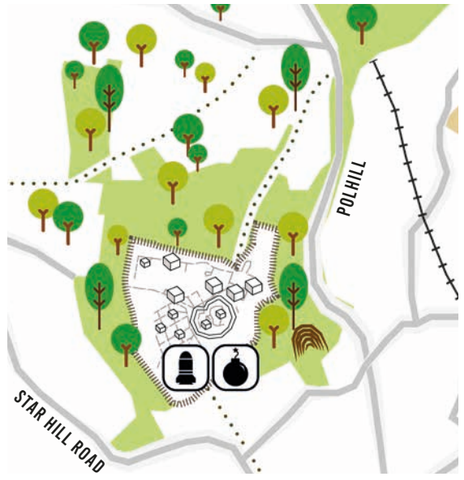
# EARLY 1940s

## THE SECOND WORLD WAR

During World War II, in order to avoid the Blitz, the Armaments Design Department and Research Department moved to Fort Halstead from Woolwich. The site also accommodated the Ministry of Supply which co-ordinated the supply of equipment to the British Armed Forces. Military and civilian staff at the Fort increased from 1000 to 3000 between 1939 and 1942.

The arrival of these departments at Fort Halstead saw large scale development, which would facilitate the Site's use as a top secret research and development facility.

*During the Second World War the Fort saw a succession of significant developments in explosives and armament technology.*




MAP OF 1947

## PIONEERING WORK INTO ARMAMENTS

Leading up to and during World War II the Fort saw a succession of significant developments in explosives and armament technology. Explosives such as the 'Minols' range and Torpex—used in the destruction of both the Tirpitz and Ruhr dams in the famous Dambusters raid—were developed, as were the explosives for the 22,000lb 'earthquake' bombs. Developments in ammunition included the SR365 incendiary 'tracer' rounds, hollow charge and Armour Piercing Discarding Sabot (APDS) anti-tank projectiles. The successful 17 pounder anti-tank gun and the recoilless Weapon of Magnesium, Battalion, Anti-Tank (WOMBAT) anti-tank gun were also developed at the Fort, as were a range of anti-aircraft guns. Research into armoured fighting vehicles was undertaken, resulting in the development of the Mk 1 and 2 Centurion tanks, with the Mk 3 following in the years after the war.

# 3.3 HISTORICAL TIMELINE

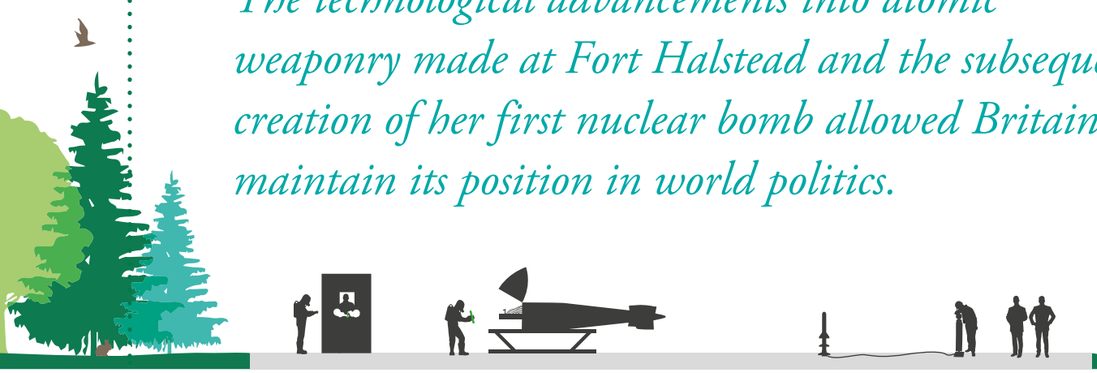
## LATE 1940s

### ATOMIC RESEARCH

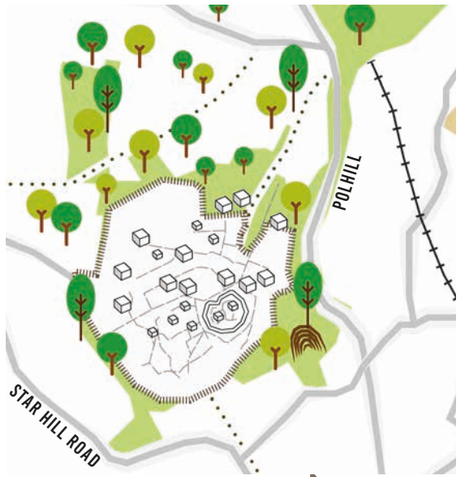
In January 1947, the British cabinet decided to proceed with the development of the atomic bomb under the direction of William Penney, Chief Superintendent Armaments Research (CSAR) at Fort Halstead. Penney was a physicist and had been a leading member of the wartime British Mission to the United States Manhattan Project responsible for creating the first atomic bombs in the world. To mask its true purpose the atomic work was code-named High Explosives Research (HER). The atomic bomb project involved developing the Mark 1 warhead which when assembled in its casing for service was known as 'Blue Danube'. Additional structures for this research were built inside the Fort including the bomb chamber (F16), detonation chamber (F17), a recording laboratory (F18) and casemates (F4 and F8). Existing buildings were also adapted for use as workshops and stores and significant new development occurred to the north-east of the Fort in the Q area. The link between the project and the Fort was top secret and although few records exist, it is understood that Fort Halstead personnel were responsible for developing both high explosive and electronic detonators for the atomic bomb (Historic England list entry 1412292). Penney's team worked within a secure fenced enclave within the Fort and the group of buildings to its immediate north and west.  Q14 is thought to have been used to assemble mock-ups of the UK's first atomic bomb prior to live assembly work at Foulness Island.

As production progressed towards the production of a test weapon new facilities for handling plutonium became necessary. Furthermore, due to the work being spread across a number of test facilities in the UK, which led to confusion of authority and responsibility, it was realised that a single site was required. The Site was considered too small (Automatic Weapons Establishment [AWE]2009), and in September 1949, a WWII airfield near the village of Aldermaston in Berkshire was allocated for the task.

*The technological advancements into atomic weaponry made at Fort Halstead and the subsequent creation of her first nuclear bomb allowed Britain to maintain its position in world politics.*



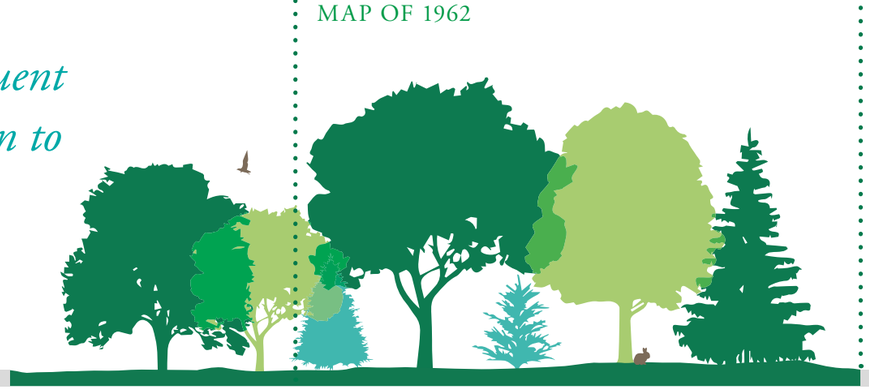
## 1960s

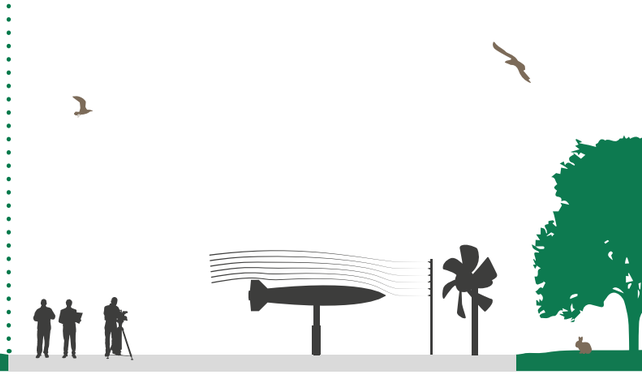



MAP OF 1962

### COLD WAR: CAPTURED GERMAN TECHNOLOGY

Following the departure of the HER programme, conventional research continued apace at Fort Halstead. Buildings S4 and S5 were based on the designs of buildings captured by the British T-Force during Operation Surgeon. S4 contained a large water tank used for testing the underwater behaviour of high velocity missiles and S5 housed wind tunnels for use in aero-ballistic research. The technology captured in the months and years after the conclusion of the Second World War allowed the UK to meet the perceived needs of the Cold War and for its armed forces to keep abreast of the technology and weaponry posed by the Soviet Union.





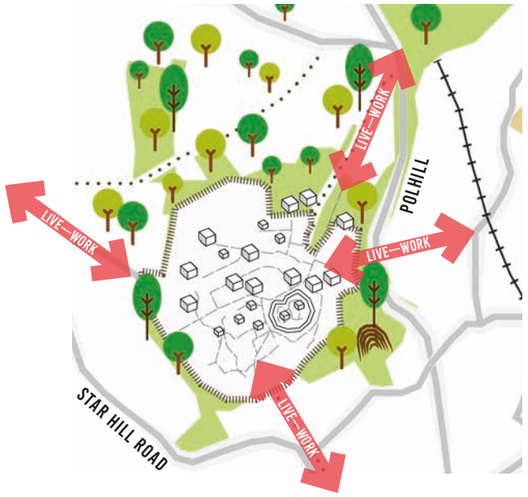
# 3.3 HISTORICAL TIMELINE

## 1970s

### FORT HALSTEAD AND LOCAL VILLAGES

Fort Halstead became a part of the local network of villages as an important employer, with many of its workers living in the local area. The many social clubs at Fort Halstead meant the Site became an integral part of community life.

The homes at Beckman Close, Fort Road and Armstrong Close were constructed in the circa late 1960s through the 1970s to house workers at Fort Halstead. These houses are now privately owned/rented.




*Fort Halstead's relationship with surrounding villages has evolved over the years from a defensive fortification to a focus for employment and social activities*

## 1990s

### RECENT HISTORY: POST COLD WAR & GULF WAR

Following the signing of the Treaty on Conventional Armed Forces in Europe (CFE) in 1990, the Centre for Defence Analysis (Land) (CDA), which had originated as a theoretical research group during WWII, became based at the Site. This was the first establishment in the world to evaluate the resulting balance of military power in detail (Clive 1997). The centre, which also existed to evaluate future equipment, specialised in the predictive modelling of future conflicts.

*Using computer supported war-games to analyse scenarios relating to both military action and civil unrest.*

## 2000s

### RECENT HISTORY: PUBLIC PRIVATE PARTNERSHIP, THE CREATION OF DSTL & QINETIQ

In 1998, a Strategic Defence Review recommended Public Private Partnership (PPP) as the best way to maximise the strategic value and operational cost effectiveness of the UK's defence research capabilities. Defence Evaluation and Research Agency DERA was split into two organisations, the areas retained by the MOD becoming Dstl in 2001, whilst those that were considered appropriate for fully commercial operation were re-structured and re-created as the QinetiQ Group, a wholly Government-owned UK plc. In 2003, QinetiQ became a public private partnership which was then floated on the stock market in 2006. Dstl continue to supply scientific and technical research and advice for the MOD and other Government departments (Dstl website). QinetiQ provides research, technical advice, technology solutions and services to customers, including the MOD, in the defence and security industries and is now Europe's largest science and technology organisation.

# 3.4 HERITAGE & ARCHAEOLOGY

## THE FORT

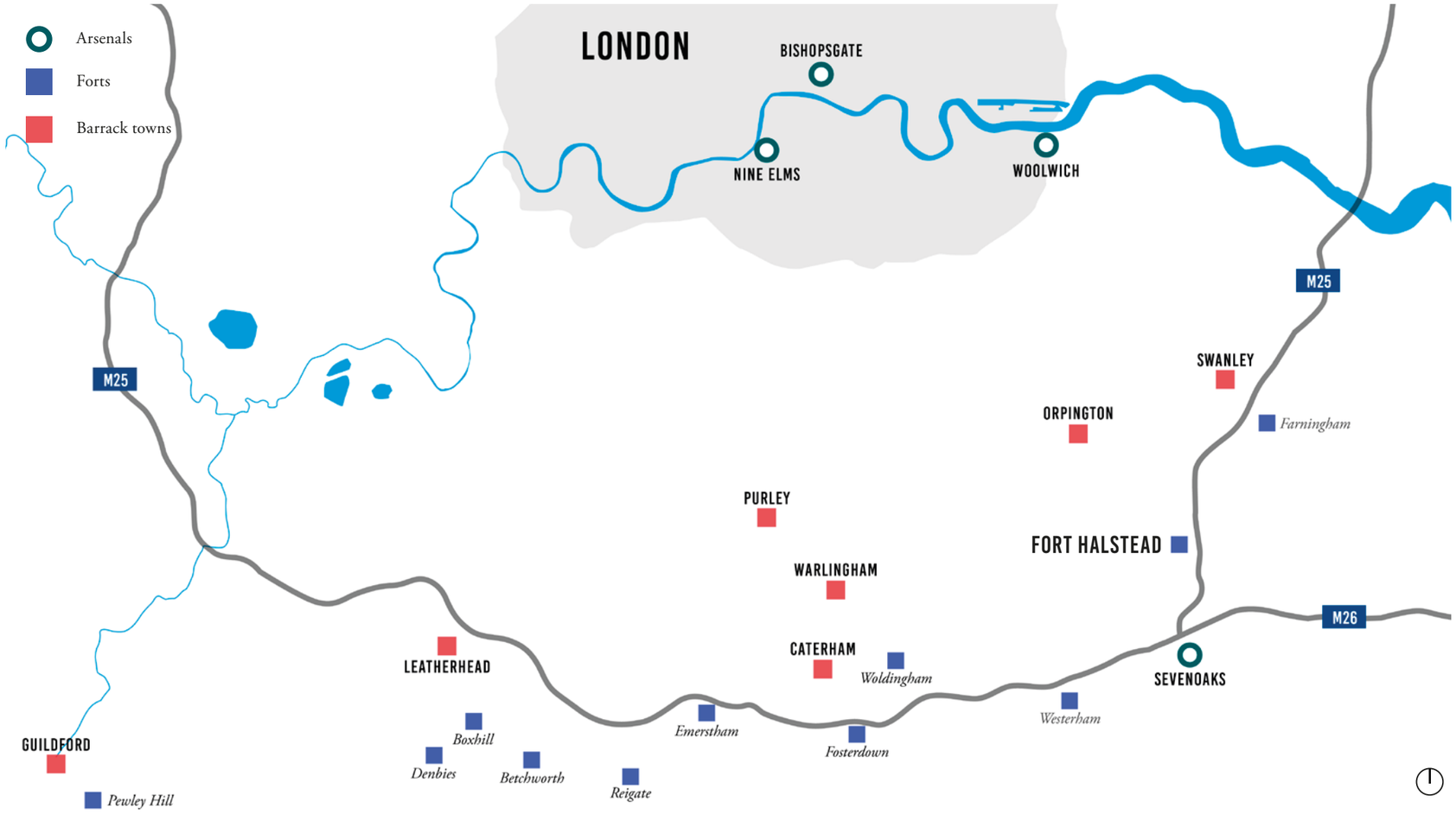
The blue boxes in the graphic to the right represent London Defence Positions. These are late 19th century earthworks that were designed to protect London from foreign invasions landing on the south coast. The origins of these sites can be traced back to 1859, when the Royal Commission on the Defence of the United Kingdom report on Britain's defences believed that London was practically indefensible. A number of proposals were put forward by senior military figures on how best to boost London's defence before Parliament settled on using a system devised by General Sir Edward Hamley—the London Defence Scheme. This comprised the construction of simple earthworks for infantry and moveable armaments, located at points along a 70-mile stretch of the North Downs. The London Defence Scheme was announced in 1889 and comprised earthworks that were to be constructed in times of war and supported by permanent works which provided stores and magazines, which were positioned at 5-mile intervals.

In the years following 1889, the ground for the forts, known in this case as mobilisation centres, was surveyed and the land purchased with construction in progress by the mid-1890s. The design of each mobilisation centre varied, though each comprised a piece of ground defined by a rampart, ditch and fence and contained magazines and other accommodation for stores and shelter from bombardment. Their intended use, in addition to holding ammunition and other supplies, was to act as strong points forming an almost continuous line of fortifications joined by trenches that would be rapidly dug on the outbreak of war.

Although the mobilisation centres were constructed in line with new approaches to fortification, which focussed on concealment and shock-absorbing earthworks supported by trenches and shallow redoubts, an approach which had recently yielded success during the Turkish defence of Plevna in Bulgaria during the Russo-Turkish War (1877), the majority do not appear to have been designed for anything more than storage and self-defence. However, the design of those at Fort Halstead and North Weald suggest that they were intended to take an active part in the defence by virtue of their location and their probable ability to mount field artillery and machine guns.

Following initial progress, poor funding after the death of General Hamley in 1893 had slowed the development of the project. Meanwhile, following the Navy Defence Act of 1889, a concerted programme of shipbuilding centred on the dreadnought battleships (the first, HMS Dreadnought, was launched in 1906), had redressed the weakness of the Royal Navy and by the early 1900s the risk of invasion was perceived as negligible.

As a result, at the 85th meeting of the committee on Imperial Defence on 9th March 1906 the London Defence Scheme was officially abandoned. Most of the mobilisation centres were sold off but a few, including Fort Halstead, were retained for ammunition storage.




Protective ring of fortresses around London

# 3.4 HERITAGE & ARCHAEOLOGY

## NATIONAL DEFENCE AND RESEARCH & DEVELOPMENT

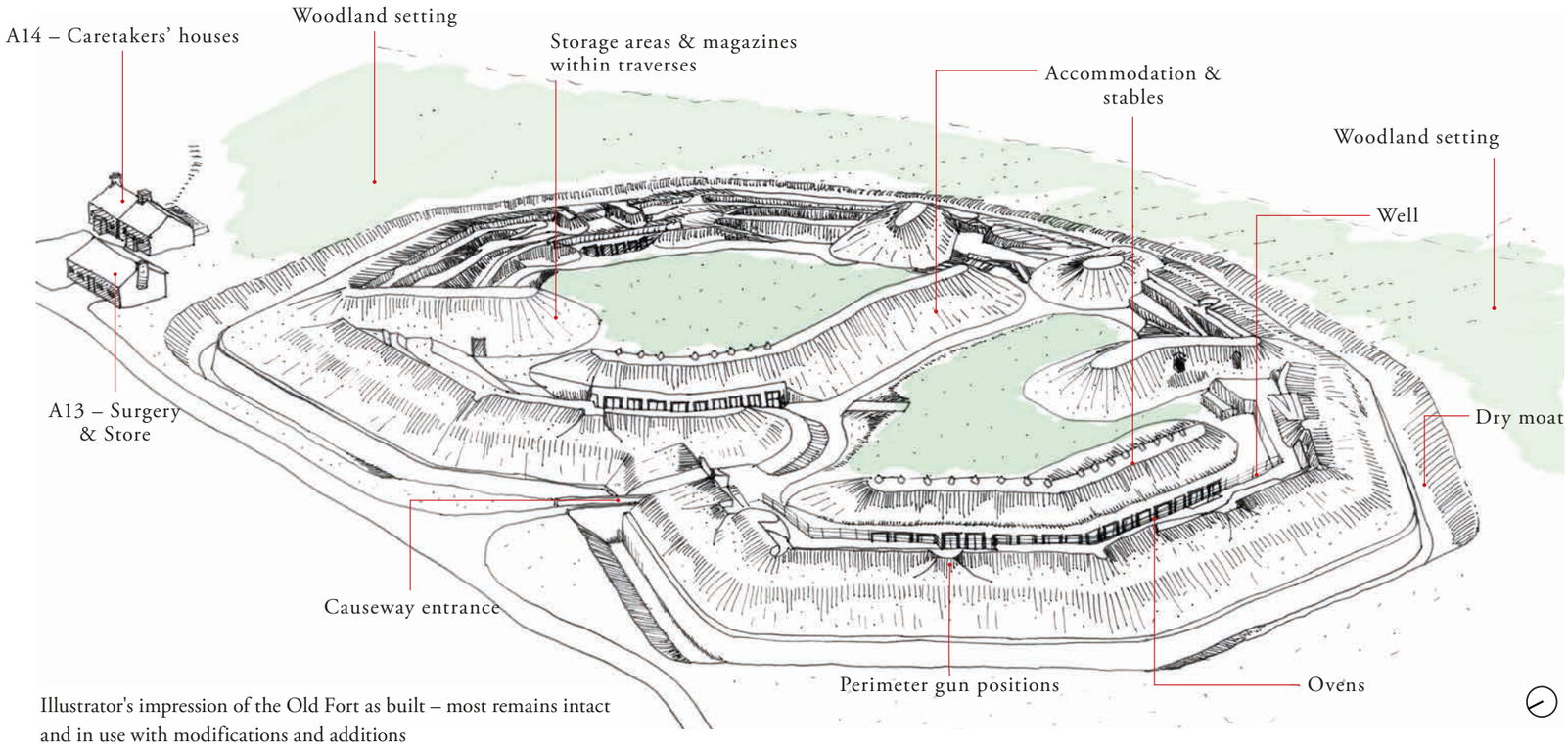
The Site has a long history of research and development. Following the abandonment of the London Defense Positions, the 1930s saw the Fort re-purposed for Projectile Development Establishment, under the direction of Alwyn Crow. Research continued on site following World War II and, in 1947, Fort Halstead became the base for the High Explosives Research team, headed up by Chief Superintendent Armaments Research William Penney. The team went on to develop the trigger for Britain's first atomic bomb.

More recently the Fort Halstead staff have undertaken small munitions projectile and explosive research. Work on forensic science analysis into explosives and counter terrorism have played an important role in maintaining national security:

- During the 1970s and 1980s, staff at Fort Halstead studied the bomb-making capabilities of Northern Ireland's paramilitary organisations.
- Scientists have responded to new threats, including those posed by al-Qaeda.
- Researchers studied how terrorists created their bombs for the attacks on the London transport networks that took place in 2005.

### Current Use

The Fort is actively used by the current occupants for storage and small munitions testing. The Fort is listed as a scheduled monument. Buildings F11, F16 and F17 were listed on 21 March 2013.




Illustrator's impression of the Old Fort as built – most remains intact and in use with modifications and additions

Historical photograph of part of the original earthworks circa 1950s

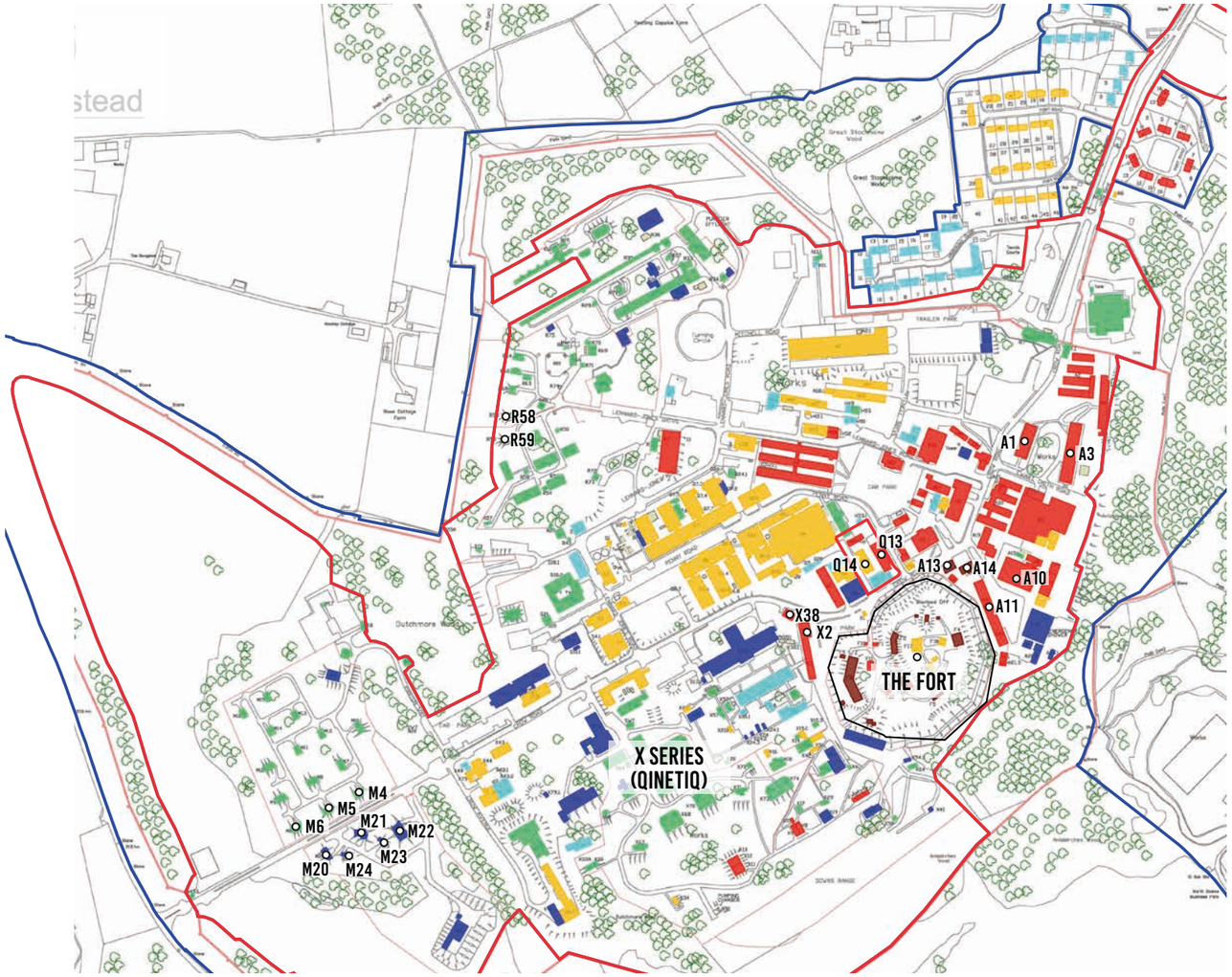
Historical photograph of part of the original earthworks the circa early 1980s

# 3.4 HERITAGE & ARCHAEOLOGY

## BUILDINGS TO BE RETAINED

The table below sets out proposed retained buildings that would be reused within the Fort Halstead village:

| ASSET | HISTORIC FUNCTION | BUILT | DESIGNATION |
|---|---|---|---|
| Q14 (Penney Building) | Laboratory block; Workshop, offices | 1949–1952 | Grade II listed (List Entry Number 1396578) |
| Q13 | Laboratory block (1944); CSAR Chemical lab (1947) | circa 1939 | N/A |
| A1 | Drawing Office, CSAR Main Headquarters | 1936–1944 | N/A |
| A3 | Block A CSAR Office (1947)/Office | 1936–1944 | N/A |
| A10 | Tube Process Building (1944); CSAR Main Laboratories (1947); Met Phys Chem Lab CSAR (Tube Processing building (1949) | 1936–1944 | N/A |
| A11 | Block A CSAR Office (1947)/Office | 1936–1944 | N/A |
| A13 | Tool store; Site Hospital (1947); Winding Workshop; Site Shop; Social Club; Religious services; Photographic department | 1896–1906 | N/A |
| A14 | Semi detached brick cottages for caretaker and labourer; main surgery (1952); Administrative Offices | Between 1895–1897 | N/A |
| X2 | A store in the control of the Chief Engineer of Armament Development (CEAD)(1947); Office | 1936–1944 | N/A |
| X3 | CSAR Office Block (1947); Shifting house (1944 & 1949); Decommissioned offices | 1936–1944 | N/A |
| X38 | CSAR Physics Laboratory (1947); Laboratory | 1936–1944 | N/A |
| M4, M5, M6 | Magazine | 1981–1984 | N/A |
| M20, M21, M22, M23, M24 | Magazine | 1988–1993 | |
| Fort (including all buildings within it ) | Mobilisation Centre, Research and test facility | Originally built 1895–1897 with later additions | Fort Halstead Scheduled Monument including buildings F2, F3, F4, F5, F6, F7, F8, F9 and the Second World War Firewatcher's Post (List Entry Number 1004214)<br>Building F11, Grade II Listed (List Entry Number 1412292)<br>Building F16, Grade II* Listed (List Entry Number 1412293)<br>Building F17, Grade II* Listed (List Entry Number 1412293) |
| R58, R59 | Test building | 1974-1987 | N/A |



# 3.4 HERITAGE & ARCHAEOLOGY

Building Q14/Penney Building (Grade II Listed Building)

Building Q13

Building A14

Building A1

Building A10

M-Series bunker

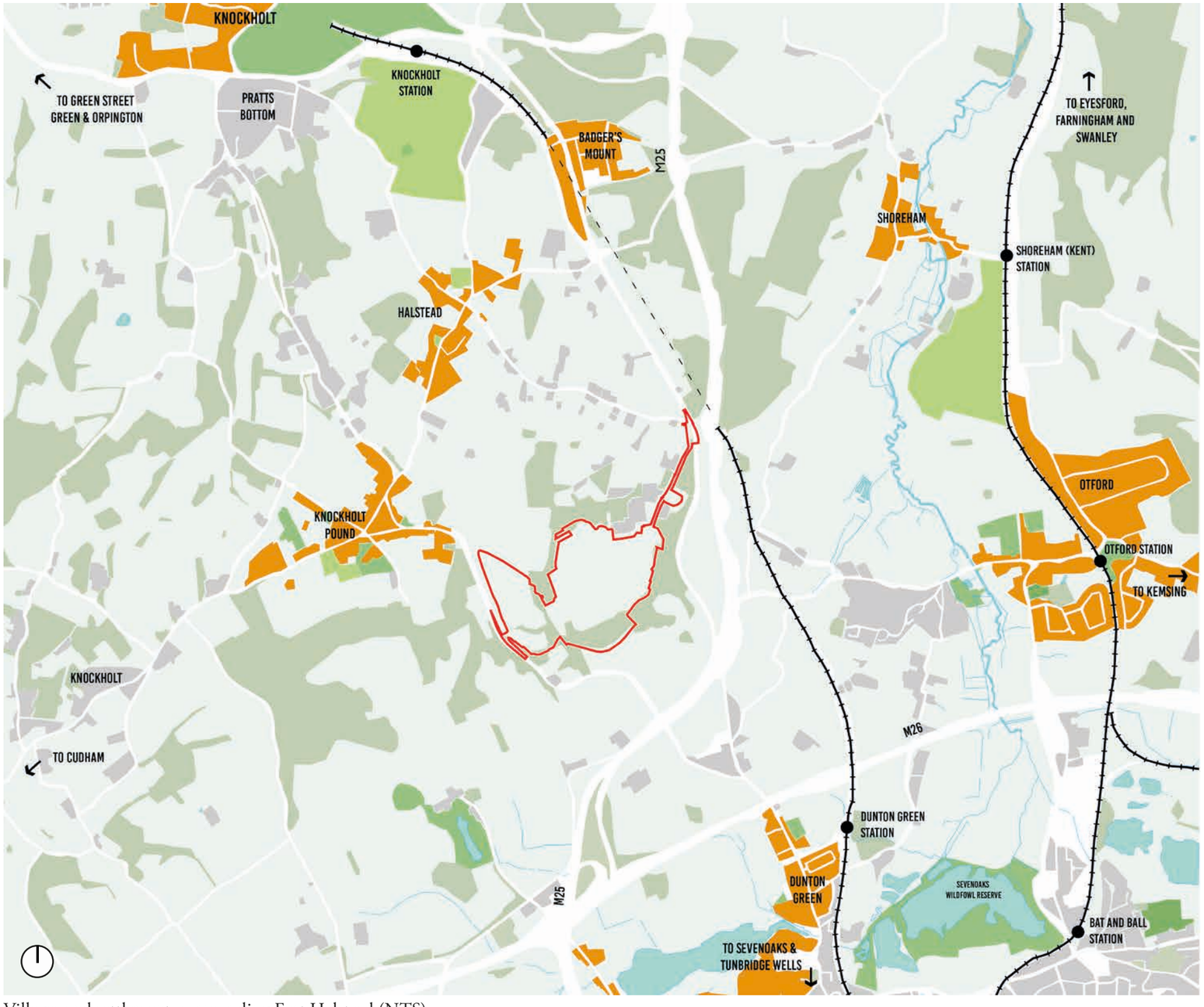
Building A3

Building A11

Aerial photograph looking south towards The Fort (scheduled monument)


OFFICES TO LET
Pond Vi
R77 HLM
Captain
Gerald
ROBINSON

# 3.5 LOCAL CHARACTER ASSESSMENT




Villages and settlements surrounding Fort Halstead (NTS)

## SURROUNDING SETTLEMENTS

Fort Halstead is situated within a network of villages and settlements mutually inter-dependent, sharing both community facilities and places of employment.

This network includes Otford, Knockholt, Halstead, Knockholt Pound, Badgers Mount, Shoreham and Dunton Green. The network is defined by a range of factors, including the M25, topography and proximity. Most of these settlements lie within or on the edge of the Kent Downs AONB, while Halstead and Dunton Green lie outside of this boundary. Eynsford and Wrotham are both settlements nearby which are of comparable size to Fort Halstead.

A study of these villages and settlements' character has been undertaken and inform the character of the future village at Fort Halstead. The following key characteristics of the surrounding villages have been established:

- Villages are roughly 240–560 homes in size;
- Villages are nestled within the existing landscape;
- Bus connections are infrequent;
- All have some facilities and rely on each other for other facilities;
- Each has a distinct character and sense of community;
- Each is rural in character that is reflected by density.

# 3.5 LOCAL CHARACTER ASSESSMENT

## KNOCKHOLT POUND

Knockholt Pound is located to the west of Fort Halstead and sits on the edge of the Kent Downs AONB boundary. It has approximately 260 dwellings, with an average density of 10 dwellings per hectare.

### Settlement Arrangement

Knockholt Pound is grouped around five roads that intersect to form a central triangular section, which has 0.28 ha village green at one end. The village centre is focused around this area and has a few commercial uses but is mainly residential. A recreation ground is located on the village green.

### Streets & Landscape

Knockholt Pound has wide streets with sufficient footpath on both sides, unlike other settlements around the site. The streets are domestic in character with semi-continuous frontage and soft landscape insertions between dwellings. The village centre is spacious with a significant proportion of open space. Retail units, pubs and a church enrich the street character of village centre. Most of residential properties don't have a front boundary or have only short stone walls, which allows for interaction between the houses and the streets. Front gardens, particularly on the Main Road, are well maintained, adding value to the street character. There is no on-street parking on Main Street.

### Buildings

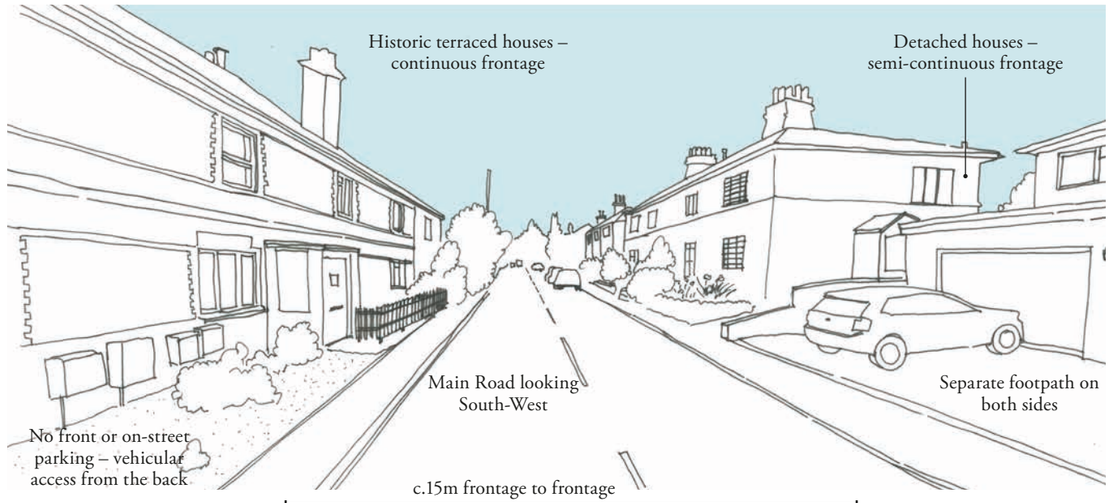
House types located around the village green and central triangular section are mainly detached and semi-detached, and there are some larger detached houses around the edge of the village. The majority of the houses are wide fronted, two-storey dwellings with a mix of private drives and on-street parking.

The majority of houses are built in a Kentish vernacular style, and red brick is the most common material. However, stucco and ragstone can be found in the village centre elevations.

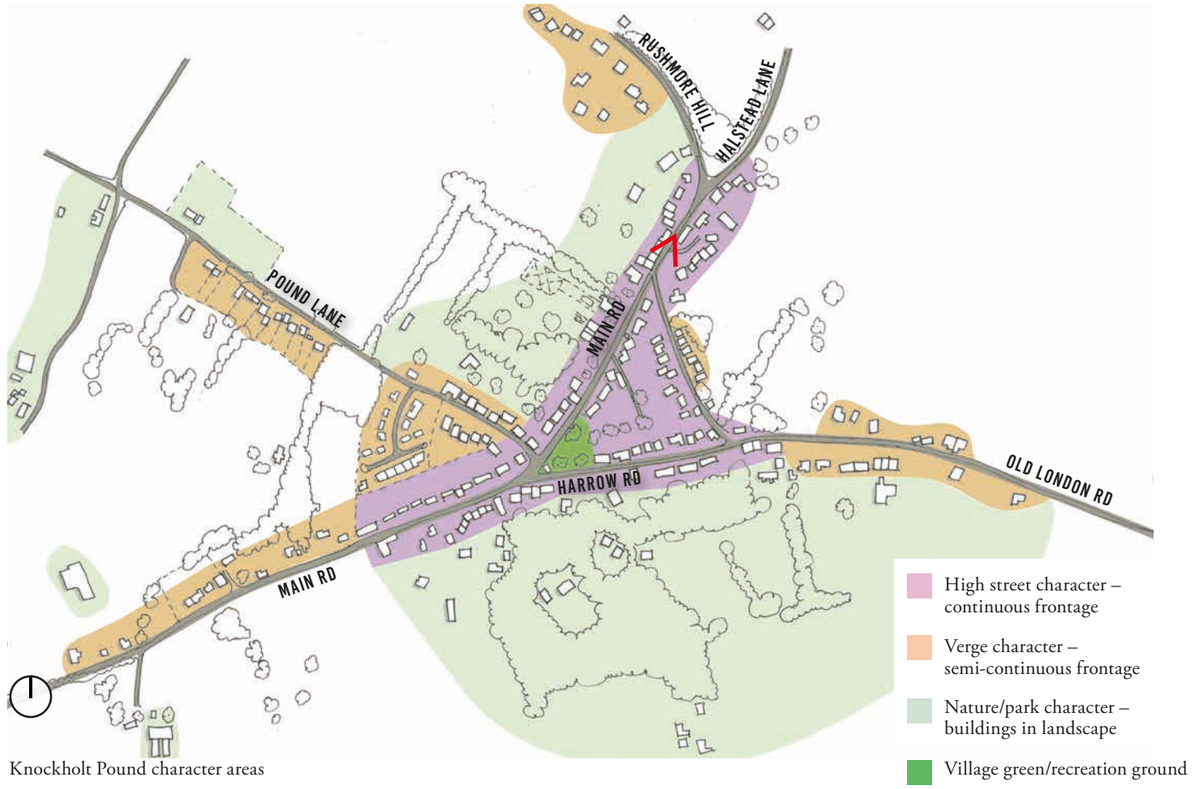
Knockholt Pound

Wide-fronted, semi-detached houses on Main Road

Knockholt Pound village green

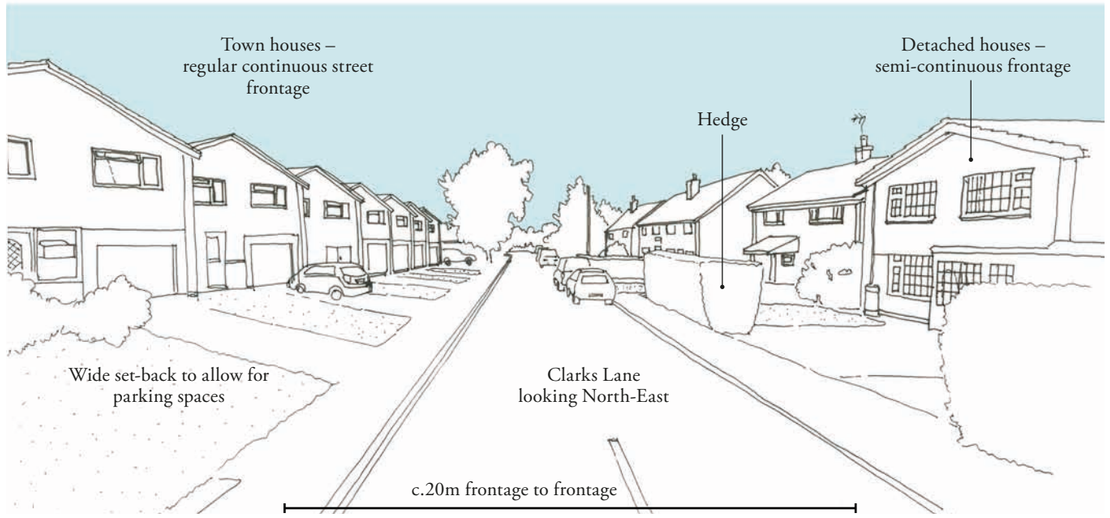



Knockholt Pound's Main Road character sketch

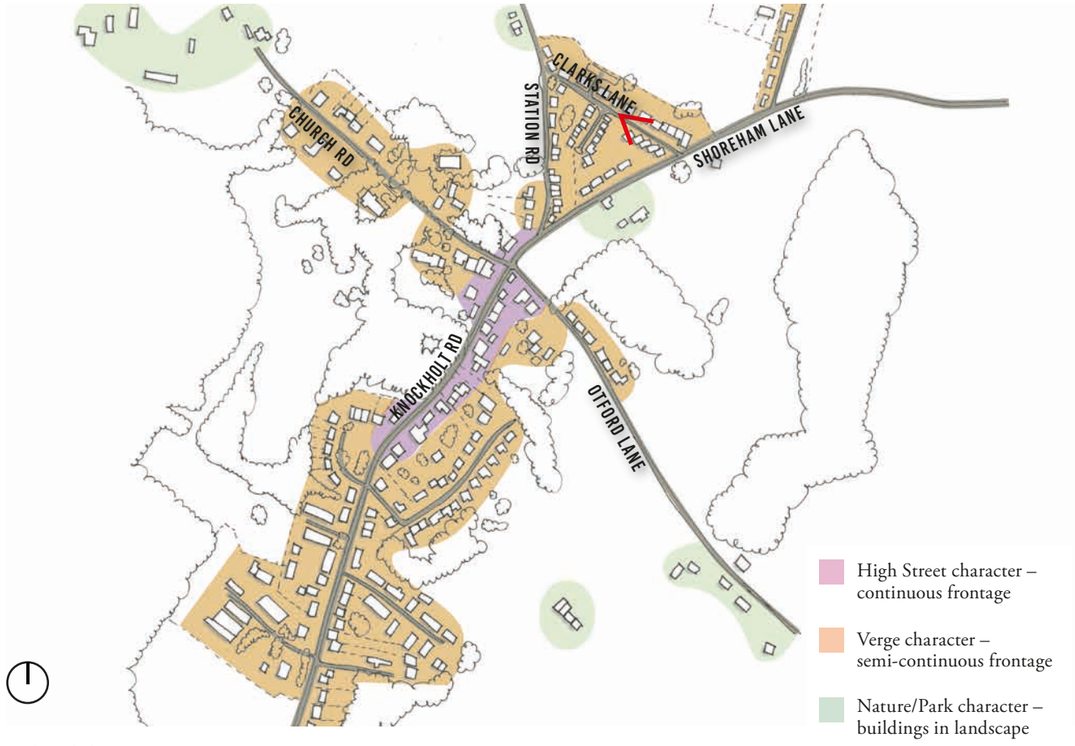



Knockholt Pound character areas

# 3.5 LOCAL CHARACTER ASSESSMENT




Halstead's Clarks Lane character sketch




Halstead character areas

Halstead

Knockholt Road looking North-East


Halstead sign and The Cock Inn pub

## HALSTEAD

Halstead is located to the north of Fort Halstead and is outside of the Kent Downs AONB. It lies on the top of North Down, in the woodland. The village has approximately 350 dwellings, with an average density of 13 dwellings per hectare.

Halstead was developed around a 12th century church and the manor house, which has since been demolished.

### Settlement Arrangement

Halstead village is arranged primarily along Knockholt Road, with some later cul-de-sac developments running perpendicular to this route. The village centre is focused around the junction of Knockholt Road and Otford Lane and has a few commercial uses but is mainly residential. A recreation ground is located towards the periphery of the village centre.

Halstead has a designated conservation area, covering 3.5 Ha and 6 listed buildings.

### Streets & Landscape

Halstead centre consists mainly of 18th and 19th century cottages. Most of the streets are domestic in scale, narrow and enclosed. However, large open spaces and soft landscape between buildings in the village centre create feel of spaciousness. Most of the properties have boundary walls made of flint, or iron railings which reduce the connection between buildings and the street.

### Buildings

Houses are mainly semi-detached but there are some terraces located around the village centre with some large detached houses around the edges. The majority of the houses are two storeys and have a mix of private drives and on-street parking.

Most of the properties are built in a Kent vernacular style, with use of flint and local red bricks. White painted timber windows are another traditional feature of Halstead Conservation Area.

# 3.5 LOCAL CHARACTER ASSESSMENT

## OTFORD

Otford is located to the east of Fort Halstead and sits on the edge of the Kent Downs AONB boundary. Lying on at the southern edge of Darent Valley. It has approximately 560 dwellings and c.3200 population, with an average density of 9 dwellings per hectare.

Otford is one of the oldest settlement in Kent. The Pilgrims Way, running through the village centre, is a strategic pre-historic track. The Roman presence is also proven by archeological evidence, such as remnants of Roman villas and bricks. The River Darent played an important part in Otford's history as navigation route and as a trade link. The village reached a peak of prosperity and growth during Tudor times and many of the houses built then have survived. The pond in the village centre is the only listed pond in England. Otford is located next to the first railway, connecting London, Sevenoaks and Bat & Ball. Following its construction in 1860s, Otford's boundaries started to expand and more housing estates were built, particularly on the eastern fringe of the village.

### Settlement Arrangement

Otford village is dissected by two key routes, Sevenoaks Road (A225), running north-south and Pilgrims Way running east-west. Later developments with a more suburban character are located closer to Otford train station. The village centre is focused around a 0.12 ha green and duck pond. The village centre has a mix of commercial uses and houses. A recreation ground is located towards the periphery of the village centre.

The village centre has a good variety of civic facilities including St Bartholomew's Church Hall designed by Sir Edwin Lutyens; three schools; a railway station; a village hall and a Heritage Centre. In addition to these facilities there are several craft shops and pubs.

Part of Otford lies within a conservation area that covers 16 ha and includes about 40 listed buildings and a scheduled monument—the Archbishop's Palace.

### Streets & Landscape

Topography and views towards open landscape play an important part in Otford's identity. Civic and public buildings all contribute to the diversity of street scene.

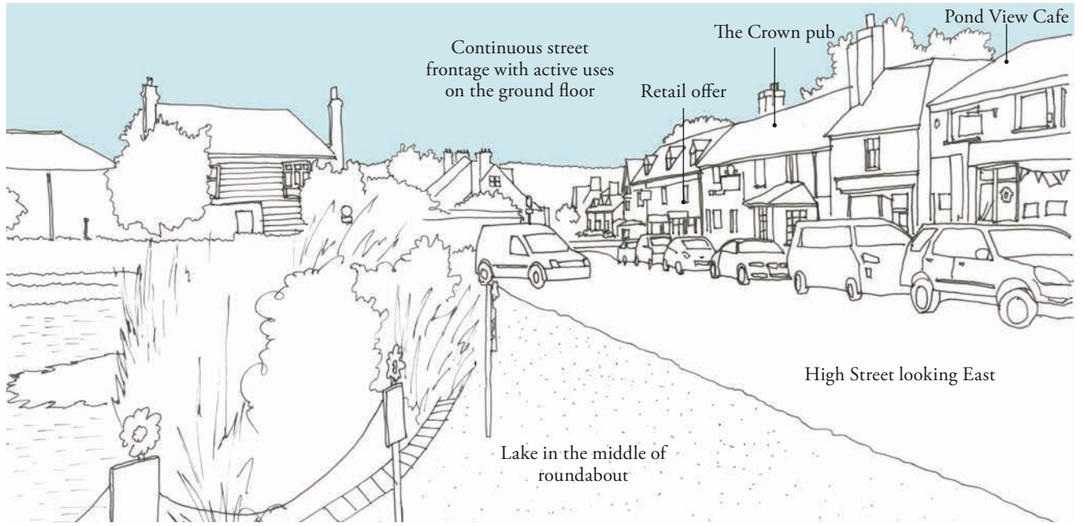
Street are primarily domestic in character, with small retail outlets and public houses interspersed amongst the residential properties. The High Street is formed by buildings located close to the road, with narrow pavements in front.

### Buildings

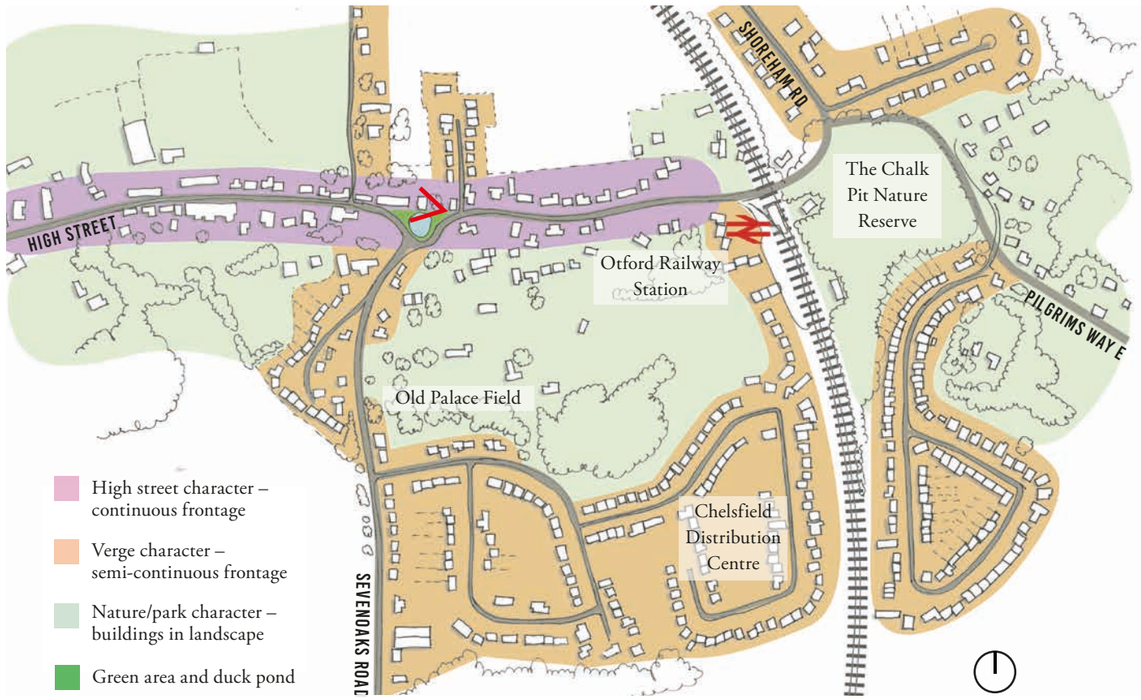
The architectural character of Otford mostly fits into the traditional Kentish vernacular. House types range from terraced and semi-detached, located around the village centre, to semi-detached and detached around the edges. The majority of the houses are two storeys with attic space and have a mix of private drives and on-street parking.

The most common material is red brick, with occasional examples of timber framing and ragstone. Upper floors are often are hanging, particularly on the older buildings.

Otford




Otford High Street character sketch




Otford character areas

# 3.5 LOCAL CHARACTER ASSESSMENT

Approach from the South to Badgers Mount on Orpington-By-Pass

Pond in the middle of Otford High Street roundabout

St Bartholomew's Church


The Woodman pub built in 16th century


Sevenoaks Road looking north

High Street looking west towards the pond

# 3.5 LOCAL CHARACTER ASSESSMENT

## BADGERS MOUNT

Badgers Mount is located just north of Halstead, sitting on the edge of the Kent Downs AONB boundary and largely in the Green Belt area. It has approximately 240 dwellings, with an average density of 10 dwellings per hectare.

### Settlement Arrangement

Badgers Mount is largely linear in structure and lies between the Old London Road and A224 (Orpington-By-Pass), with a more suburban layout to the east around Badgers Road. It has a large commercial use and a village hall to the south, but it mainly consists of residential.

### Streets & Landscape

The village does not have a defined centre. Regular semi-continuous street frontages are arranged on London Road and A224. In contrast, on the eastern fringe of the village most of the houses are detached with larger front gardens which gives a more informal, suburban character to this area. Most of the streets don't have pavements.

### Buildings

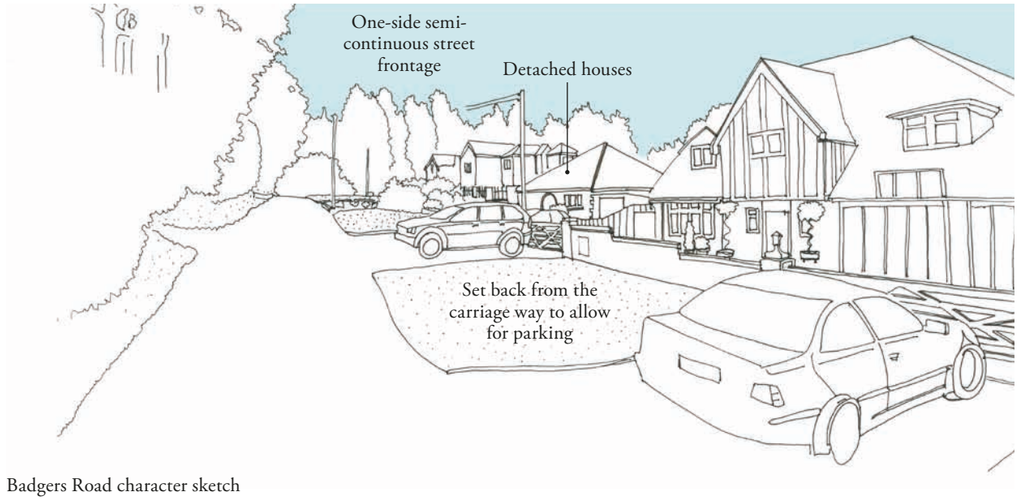
House types are mainly semi-detached and detached with large front and back gardens. The majority of the houses are two storey with private parking and garages.

Detached houses on Badgers Road

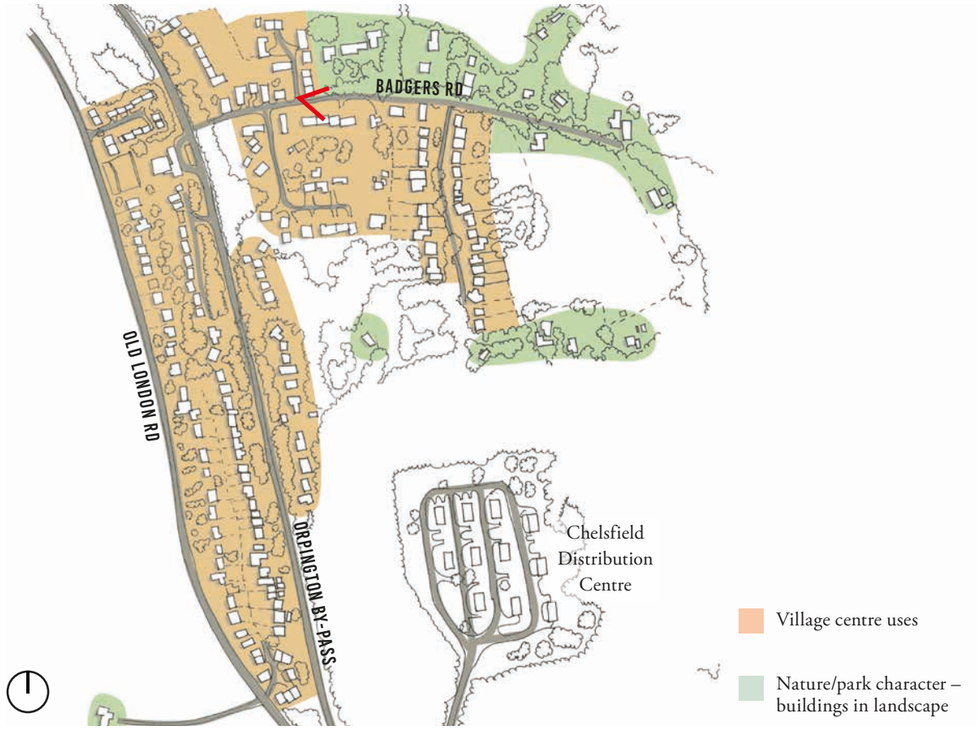
Orpington-By-Pass with wide pavement and green buffer

Badgers Mount


Approach from the south to Badgers Mount on Orpington-By-Pass

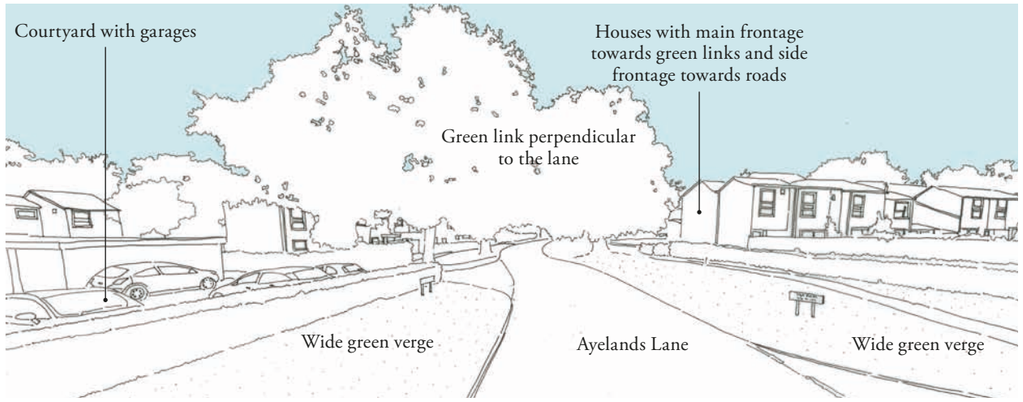



Badgers Road character sketch

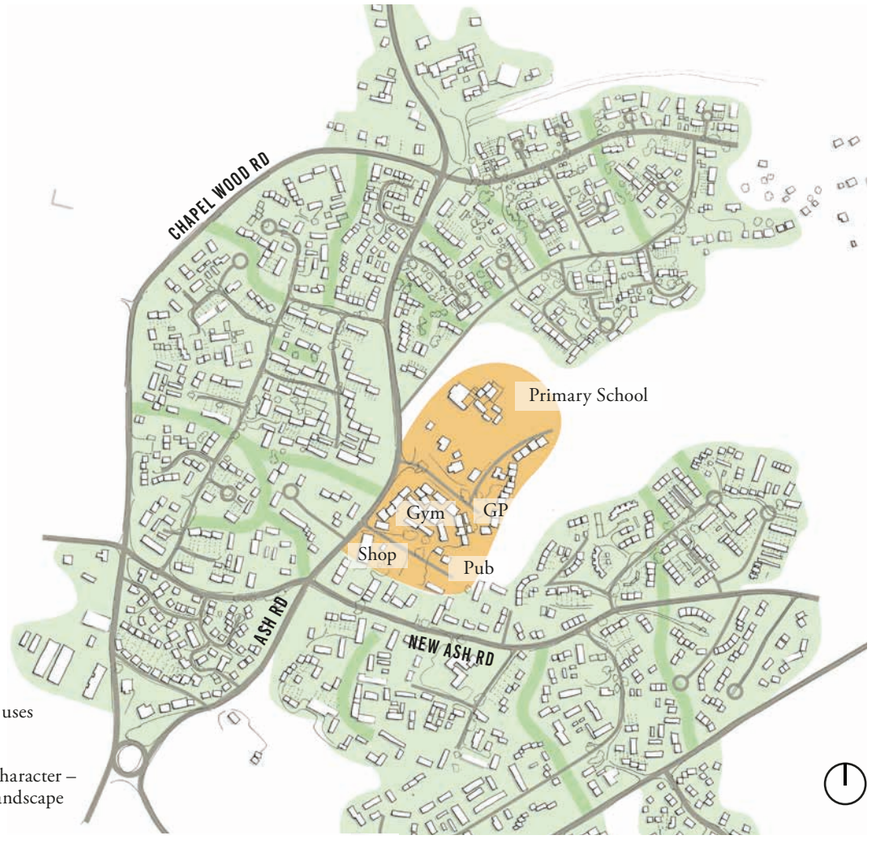



Badgers Mount character areas

# 3.5 LOCAL CHARACTER ASSESSMENT




New Ash Green character sketch




New Ash Green character areas

New Ash Green

House access from the back

Houses fronting green links

## NEW ASH GREEN

New Ash Green is a village built in the 1970s on a greenfield site in Sevenoaks.

### Settlement Arrangement

- The settlement is arranged in 24 neighbourhoods, separated by 'green fingers', but linked by footpaths.
- Its main design concept was to separate cars and pedestrians and integrate nature into the development.
- The village centre is a single connected building bringing together all social and retail uses.

### Streets & Landscape

The main house frontages have been designed to face green corridors, while side elevations face the main roads. Vehicular access is located to the back of the properties via cul-de-sacs or courtyards with rows of garages on the sides. Roads have no continuous frontages and no footpaths, but wide green verges on both sides. The pedestrian routes within the development follow the green corridors and are separated from vehicular movements. There is a limited number of through roads, with most properties accessed by courtyards, or cul-de-sacs with roundabouts at the end.

### Buildings

Most of the buildings are 2–3 storeys with flat elevations and generous glazing. Balconies are not typical feature for New Ash Green. Roof types vary from flat to traditional gable and shed roofs. Garages are standalone, frequently forming the back gardens' boundaries. Pale brick is the primary material, with the insertion of red or dark brown weatherboarding. Window frames are white.

# 3.5 LOCAL CHARACTER ASSESSMENT

## SHOREHAM

Shoreham is located to the north-east of Fort Halstead, six miles north of Sevenoaks. It is located in the valley of River Darent and within the Kent Downs AONB boundary. It has approximately 285 dwellings, with an average density of 30 dwellings per hectare.

The exact date of settlement foundation is unknown, however it was first mentioned in the 17th century as a place for court cricket. Shoreham was one of the most bombed location during the World War II, due to the British Army occupying several of its manor houses.

The parish church is considered to be the oldest building in the village, part of it dates back to 11th century. Some of the houses on the High Street date back to 15th century, while most of the village centre was built in the Georgian era, which defines the distinguished character of street frontages.

### Settlement Arrangement

Shoreham village has a linear structure and is arranged along the High Street/Filston Lane and Church Street/Station Road, with some cul-de-sac development from these roads. Its fringes are defined by the railway station to the east and the recreation ground towards the west. All civic and public uses are located on the High Street and includes an aircraft museum, a vineyard, four pubs and tea rooms. Cul-de-sac areas are largely fronted by semi-detached houses.

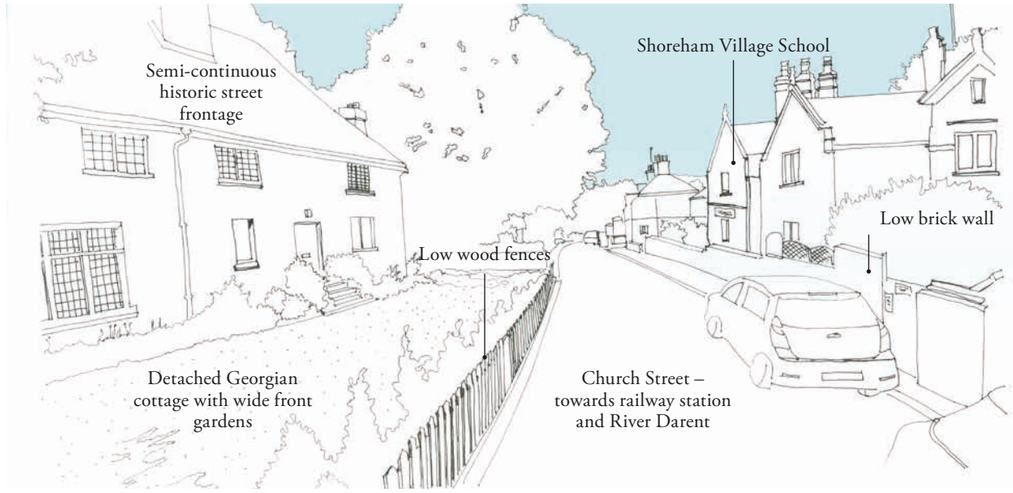
### Streets & Landscape

High Street and Church Street have a strong historic character, narrow carriageways and a footpath only on one side. With elements of some Georgian terrace housing, both streets have fragmented street frontages with variable width set-backs and front gardens. Most of the street frontage is formed by 2 storey historic buildings with generous back gardens with front doors onto the main street. Most of the High Street houses don't have garages, therefore there are a significant number of cars parked on the street.

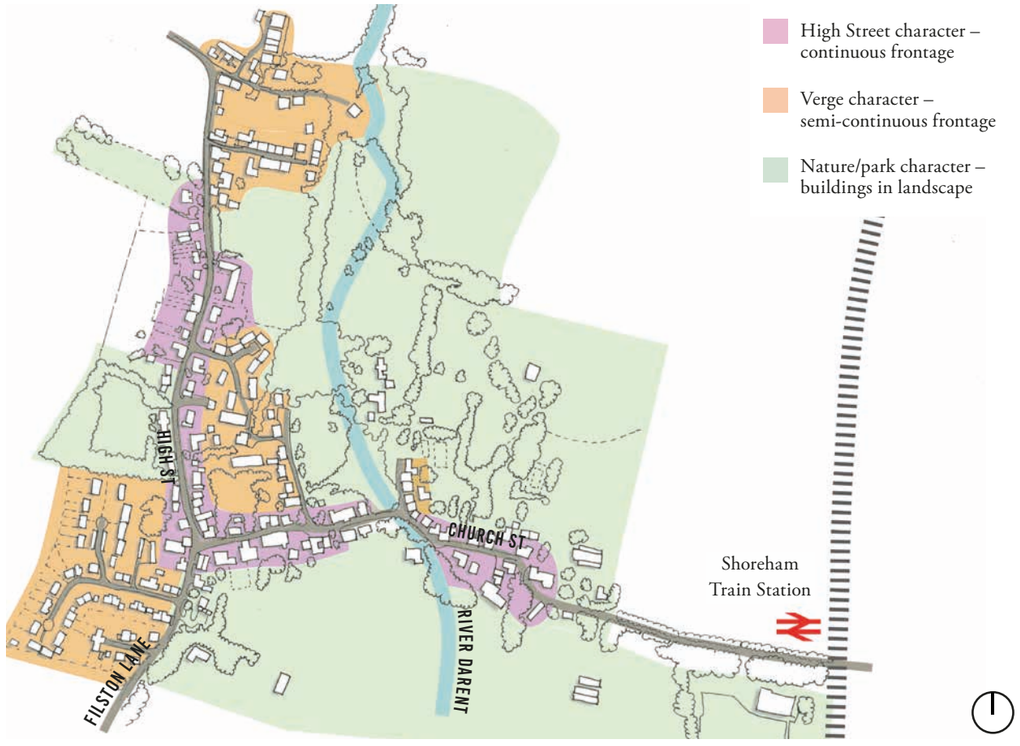
### Buildings

House types range from terraced and semi-detached located around the village centre to semi-detached and detached around the edges. The majority of the houses are two storey and there is a mixture of on-street parking and private parking.

Shoreham




Church Street character sketch




Shoreham character areas

# 3.5 LOCAL CHARACTER ASSESSMENT


Ye Olde George Inn – 15th century pub on Church Street

Bridge over River Darent

High Street 15th century detached house, Grade II listed

Palmers Orchard, 20th century semi-detached houses

Georgian terraced houses on High Street


Shoreham village shop, High Street

# 3.5 LOCAL CHARACTER ASSESSMENT

## CHIPSTEAD

Chipstead village is located in the Darent valley, to the south of River Darent. It is adjacent to Chipstead Lake, which together with the river defines the character of village's northern fringe. The lake is formed from an excavated sandpit, flooded by the river.

The village lies to the north-west of Sevenoaks and has good transport connections via M25, A24 and Old London Road, although these major transport arteries do not bisect the village. Chipstead is connected to Otford and Shoreham by the Darent Valley Path.

Chipstead was a settlement from Saxon times and a market point ('chepsted') on the pack horse path to London. The village was a key crossing point over the River Darent before construction of Longford Bridge in 1561.

### Settlement Arrangement

The settlement grew from the original manor house at Moat Farm, built in the 13th Century.

The topography is a key component in determining the character of the village centre. The ground slopes down from east to west which defines the arrangement of main roads and position of buildings. Double curves of the main street add to the subtle variation between open space and dwellings. A walk down the High Street reveals views to the countryside beyond Chipstead which are glimpsed through the breaks between buildings. Chipstead village centre is a designated conservation area. It includes a large group of listed buildings in Chipstead Square, High Street and the southern end of Chevening Road.

### Streets & Landscape

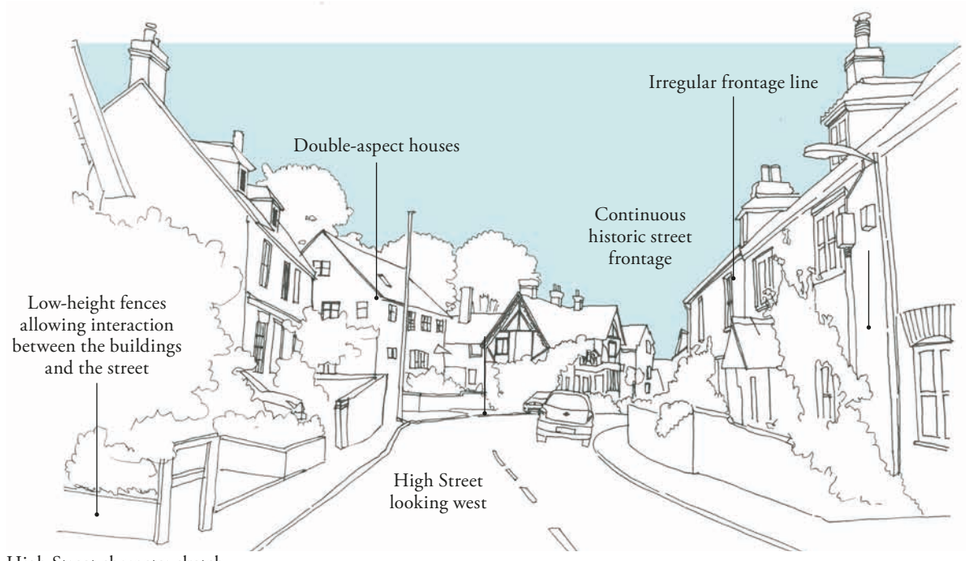
The streets are domestic in character and formed by a wide range of house sizes, including small terraced cottages and a number of large houses. Building heights across the village centre are generally 2 storeys and do not vary significantly. However, there is a contrast of scale mainly defined by houses sitting on the steadily rising terrain along the main streets. The private boundaries are mostly formed by low stone walls or hedges. Due to the low plot divisions, there is a strong relationship between the buildings and the street.

### Buildings

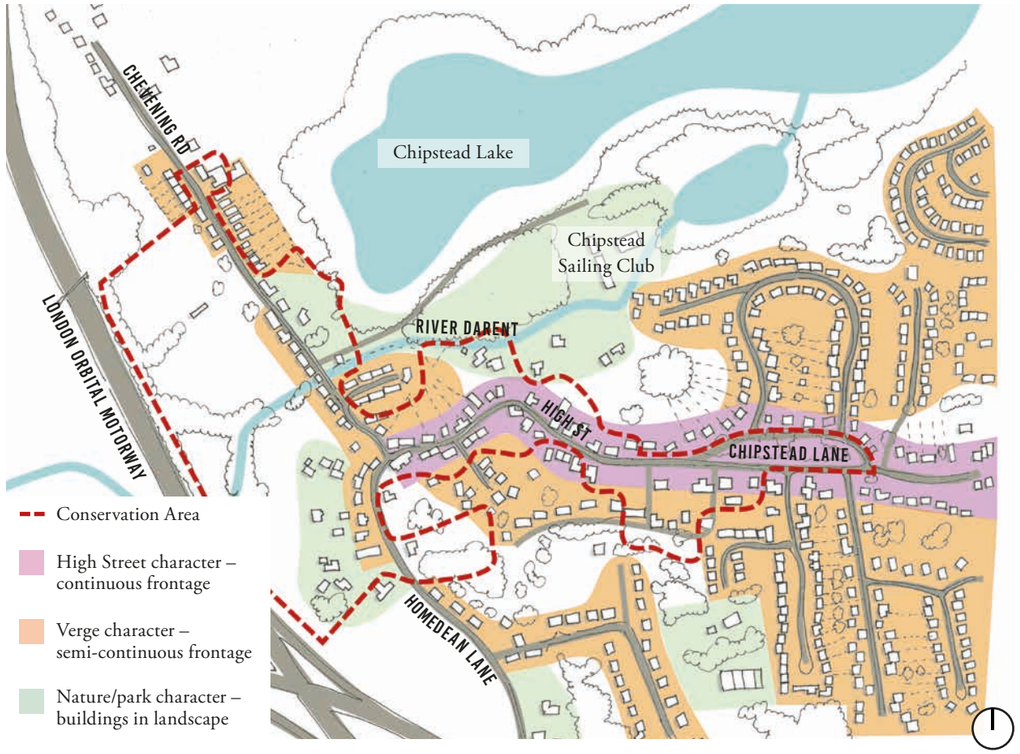
The vernacular style of Chipstead architecture is formed by a blend of typical Kentish detailing and materials. Several older dwellings have timber framing at first floor level, which is also replicated in later infill buildings. Moreover, vertical clay tile pattern on first floors and gable ends feature regularly and is typical. Decorative methods for buildings of different ages within the Kent region suggest that there was a local source for these clay tiles. Reddish brown brick is the most common local building material applied with lime mortar, however, there is the occasional stucco façade.

Chipstead demonstrates a variety of building patterns and materials which together with its soft landscape defines the character of the village centre.

Chipstead




High Street character sketch




Chipstead character areas

# 3.5 LOCAL CHARACTER ASSESSMENT

High Street looking west.

High Street looking west. Ragstone houses enclosing the view

Top of the High Street, Bank House, the George and Dragon and The Rock House

Chipstead Conservation Area

Semi-detached houses on Homedean Road in Chevening neighbourhood

High Street looking towards the listed 18th century Home Farmhouse

# 3.5 LOCAL CHARACTER ASSESSMENT

## WESTERHAM

Westerham lies on a small hill in the North Down valley. The town is surrounded by AONB and Green Belt. The River Darent flows to the south of the town centre. Westerham's setting includes wooded parkland to the south and farmland to the north.

According to the official records, Westerham was established in the 12th century as a small market town. However, the Roman road connecting London to the south, runs close to Westerham and archeological investigations suggest much earlier activities. The town significantly expanded after the introduction of the railway and the Industrial Revolution. Place and building names such as Mill Lane and Brewery Cottages reveals the town's industrial past. Landscape features, such as the restored mill ponds in the town centre, add to the richness of local character. Currently, Westerham is a popular shopping and tourism destination.

### Settlement Arrangement

Westerham lies on the A25, which runs east-west through the town, and London Road which connects the town to Bromley. The nearest railway stations are Sevenoaks, Edenbridge and Oxted, all about 4 to 5 miles away.

The modern town centre was formed around small industries and large properties of wealthy families, settling in close proximity to London. In spite of the fact that the last cattle market was held in Westerham in 1960s, the ancient market square continues to be a successful place for a large variety of active uses, retail, food & beverage and small businesses.

Westerham town centre has a designated conservation area, covering c.36 ha with around 100 listed buildings. It includes the Green, St. Mary's Church, part of the southern parkland, and some well-known ancient properties and estates.

### Streets & Landscape

The topography of Westerham is a key feature of the town's identity. Views to the open countryside contribute significantly to the town centre's character.

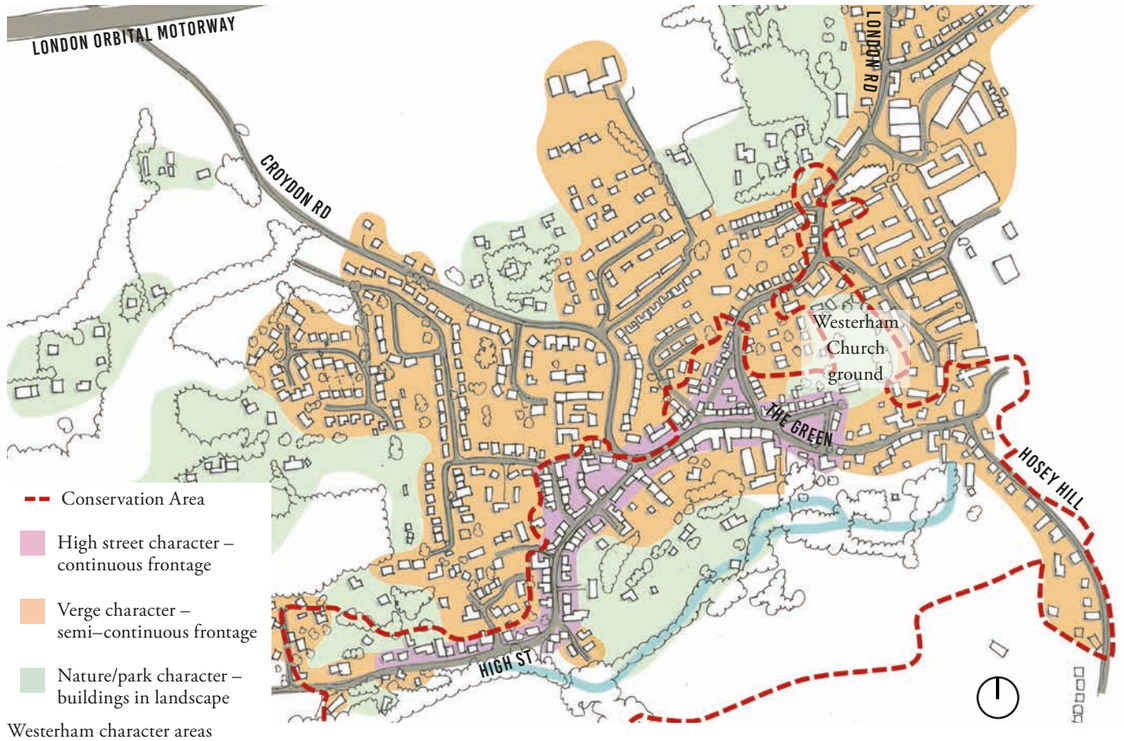
The key spaces in Westerham—the Green and the Market Square—are enclosed by two-three storey historic buildings and the church creating a strong sense of place. They form the ancient town core of Westerham and define its character. The other key town centre streets lie in an east-west direction and have a linear settlement pattern made up of residential, retail and small industry buildings. These uses are connected by smaller passageways and alleys, commonly formed by worker cottages which contribute to the character. Most 20th century development is located to the north-west of town centre.

### Buildings

Most of the architectural features in Westerham town centre are traditional Kentish features. The built character of the town centre is defined by a variety of grand houses, small cottages and larger dwellings of different ages. Reddish or brown brick, clay tile hanging, clay roofing tiles and ragstone boundary walls are widely used. Typical buildings features include, chimney stacks - often tall and decorative - and dormer windows inserted into roof slopes. Moreover, decorative arches above the windows and the doors are common in the Westerham Conservation Area. Westerham has many surviving timber framed buildings, adding to the richness of the local architectural character.

Westerham


Westerham Green character sketch




Westerham character areas

# 3.5 LOCAL CHARACTER ASSESSMENT


The George and Dragon – 16th century coaching house on High Street

High Street – approach to the village centre.


Westerham Green


Pedestrian path connecting London Road to the neighbourhood


Pedestrian crossing on Croydon Road

Westerham Green

# 3.5 LOCAL CHARACTER ASSESSMENT

## NEW DEVELOPMENTS

There are several new developments adjacent to surrounding settlements. This analysis concentrates on two major residential village extensions—Halstead Place in Halstead, and Ryewood in Dunton Green.

### Halstead Place

This development is located on the fringe of Halstead village and the construction was completed in 2009. The development provided 20 private and 13 affordable homes. The property size varies from 3 to 6 bedrooms and all houses are 2 to 3 storeys high. The buildings were arranged in traditional Kent 'farmstead' courtyards, with balconies overlooking green spaces. All building materials are traditional in appearance with locally sourced brick, flint and timber. The masterplan included a Grade II listed building which was refurbished to residential use. The development was announced the Best New Homes Development in Kent in the 2010 UK Property Awards.

Different parking arrangements at Halstead Place

Apartment block

Carport

Access road

# 3.5 LOCAL CHARACTER ASSESSMENT

## Ryewood

The Ryewood development is located 0.3 miles from Dunton Green train station, in close proximity to Dunton Green high street. The site is adjacent to Sevenoaks Wildlife Reserve. The construction works were completed in March 2018 and the development provides 700 homes, including apartment blocks and 2 to 4 bedroom houses. The masterplan includes a large amount of open space, landscape features and play areas. The height varies from 2 to 4 storeys. Parking is provided on-street and in undercrofts of apartment blocks and private houses.

Various roof height and building offset create an interesting street frontage

4-storey apartment block with front garden and on-street parking

Main street with apartment blocks and terraced houses

3-storey apartment block with shared parking courtyard

## SUMMARY

Comprehensive analysis of the more recent developments led to a number of key findings:

- The developments are very different in density and scale, with a more countryside organic character at Halstead Place and a more urban identity at Ryewood.
- The main building material is locally sourced brick.
- Halstead Place responds better to the historic character of the area.
- Although both masterplans note that landscape plays an important role in the development it is evident that Halstead Place has a more generous provision of open space. Streets at Ryewood offer little soft landscaping.
- Due to the higher density, Ryewood has a more continuous and regular street frontage whilst Halstead Place has a more organic structure.
- The parking arrangement significantly influences street character in both developments. Halstead Place provides more covered parking or garages, whereas in Ryewood most of the cars are parked on-street in front of the properties, leaving little space for front gardens or public green spaces.

# 3.5 LOCAL CHARACTER ASSESSMENT

## LOCAL CHARACTER SUMMARY

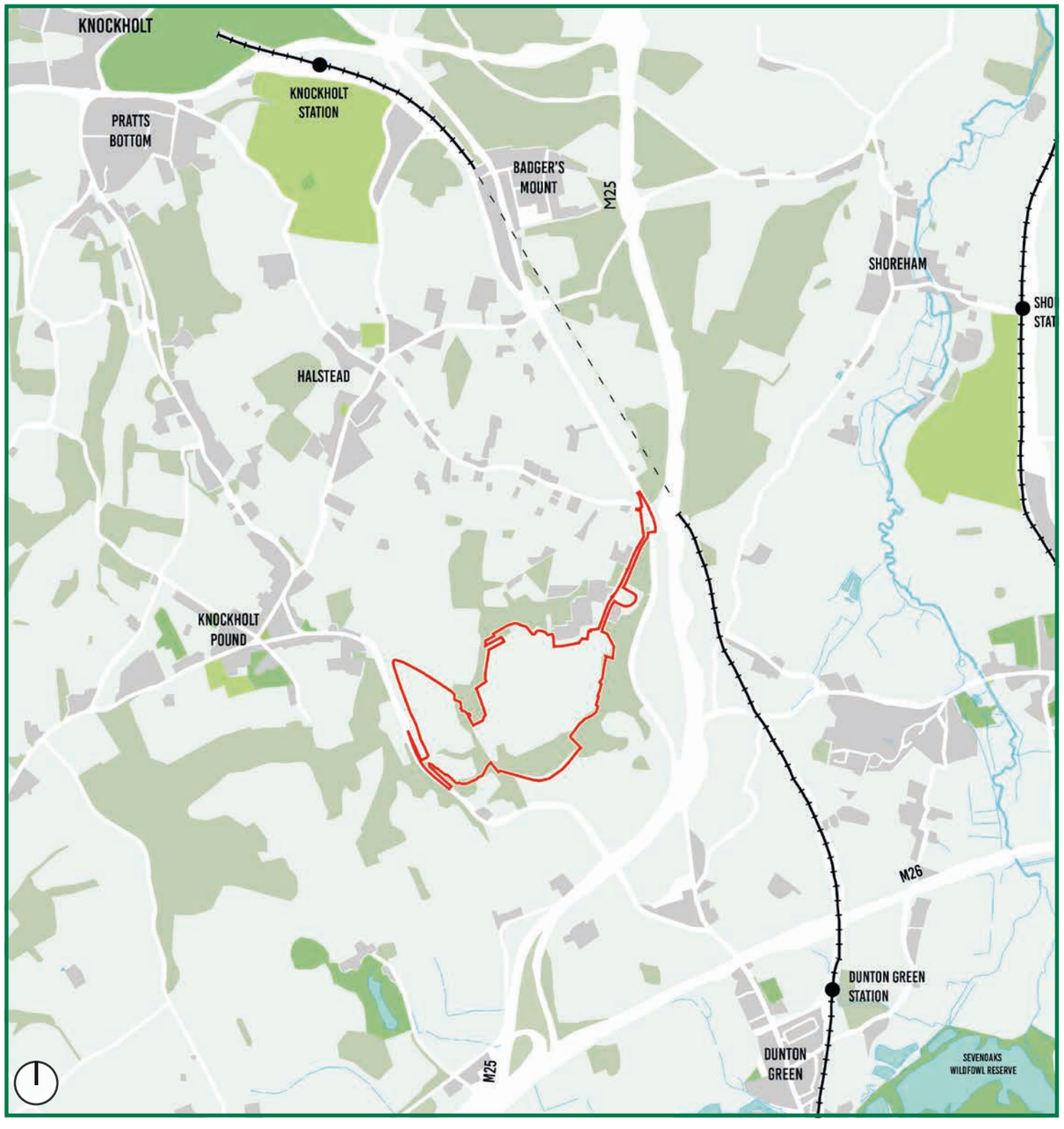
Comprehensive analysis of the surroundings settlements of Halstead, Otford, Westerham, Knockholt Pound, Shoreham, Chipstead, Badgers Mount and Otford led to a number of key conclusions, as captured in the adjacent summary.

While Kentish vernacular style can be seen as a unifying character in all of the settlements examined, each one has its own identity and different focal points such as an ancient church, a duck pond or remnants of a key building.

### Common Features:

- Linear structure to the majority of village centres developed along ancient routes.
- Topography as a key component of settlement form and identity.
- Rich building heritage as evidenced by a number of conservation areas in the examined village centres.
- Well maintained front gardens and soft landscape features that enhance the high street character.
- Consistent palette of locally sourced building materials—red brick, clay tiles, timber and white stucco.
- White painted wooden window frames and tall, decorative chimney stacks are common details.
- River Darent and other water features are key components of the identity of each village.
- Low stone walls or green hedges are a predominant boundary treatment and allow for interaction between buildings and the street.
- The density and continuity of street elevations fragment significantly away from settlement centres.

These key features have been used to inform the design proposals at Fort Halstead and are explained later in this document.



# 3.5 LOCAL CHARACTER ASSESSMENT

## ARCHITECTURE

Large number of heritage buildings in historic centres

Kentish vernacular style is evident even in more recent developments

Consistency in townscape across most of the villages

## BOUNDARY TREATMENT

Low stone walls or no boundary treatment are common within historic cores

Green hedging between private and public spaces

## MATERIALS

Timber frame historic elevations

Local sourced reddish brown brick

Hanging clay tiles

## URBAN FORM

Dense local centres especially in villages with historic cores

Linear arrangement of local centres along main streets

Water arteries and topography play key roles in settlement development

## LANDSCAPE

Most of the villages have a water feature in the centre

Well maintained landscape and public realm

Village greens are located only in two settlements. Some of the villages also have open church grounds

## DENSITY & LOCAL CENTRE

Dense local centres especially in villages with historic cores

Diversity in dwelling scale: from grand manor houses to little cottages

Continuous frontage character along High streets with variety of retail, civic and residential buildings

# 3.6 ACCESS & CONNECTIONS

## CURRENT TRANSPORT PATTERNS

The current site uses already generates a substantial demand on the existing transport network. It is understood that there are currently circa 710 jobs on-site, although this number is quite variable and has been as high as 1,200 jobs in the recent past (2008). Historically, it is believed that staff numbers reached approx. 4,000 workers during the 1970s, although at that time employees were brought by bus to the Site from a variety of locations.

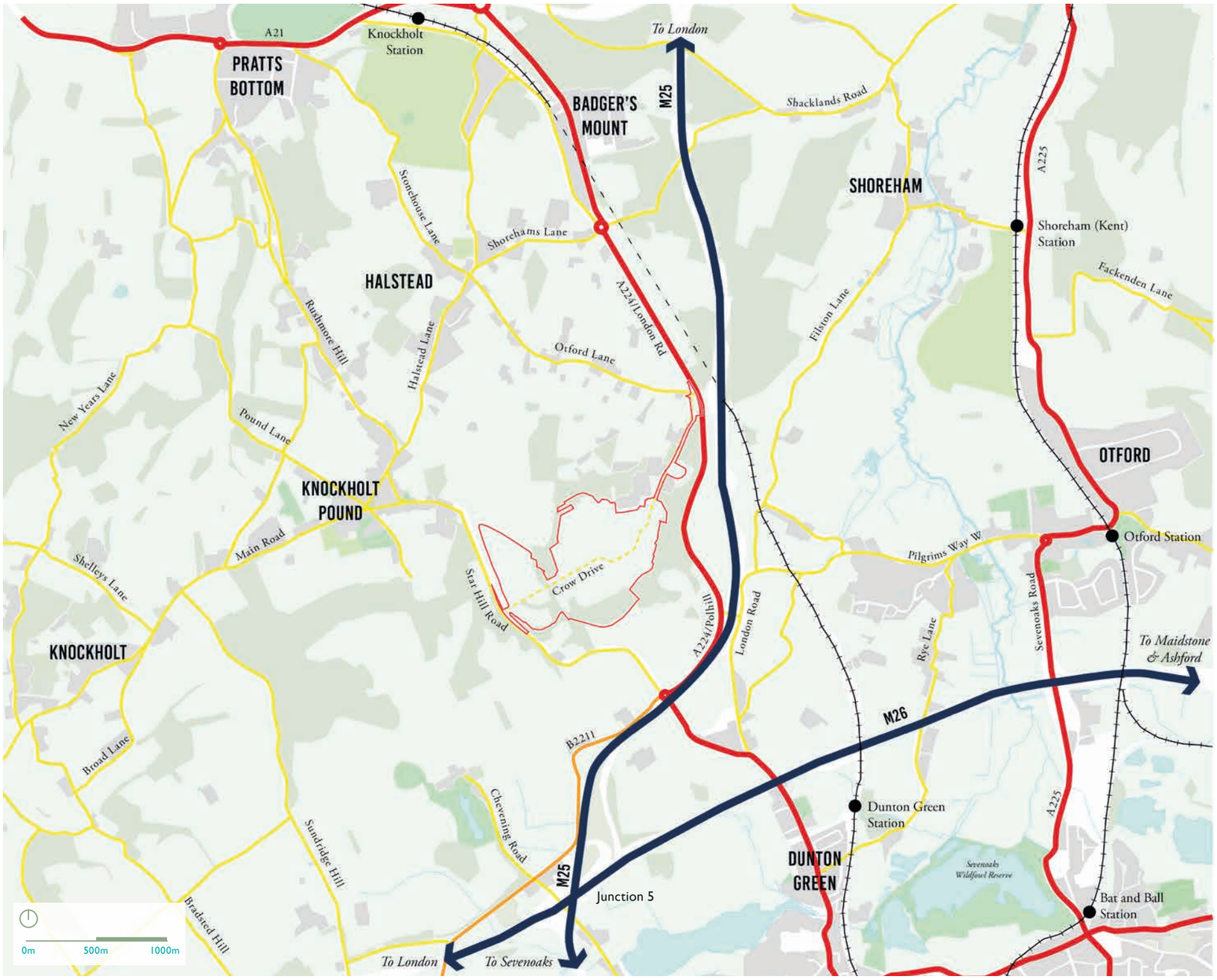
Most people travelling to and from the Site do so by car, either as drivers or passengers. The introduction of the Dstl peak-period shuttle bus to Orpington and Knockholt stations attracted reasonable support from employees of both Dstl and QinetiQ, but private car use continues to dominate.

Traffic surveys undertaken in 2008, when there were around 1,200 employees on site, identified the number of car trips generated as well as their distribution between the two points of access into the Site. The site generated about 430 car trips during the busiest hour, the morning peak, between 08:00 and 09:00, with approximately 87% of these trips using the main site access.

Of the small number of trips using the secondary access, almost all of them used it as a convenient route to/from Sevenoaks. Virtually no trips turned into the secondary site access from the north (Knockholt Pound/Rushmore Hill). Traffic currently generated by the Site is slightly lower, reflecting the reduction in employees at site as Dstl relocates its activities, around 340 car trips during the same busiest hour, but the pattern remains the same.

Key

- Site
- Built areas of surrounding settlements
- Farmland
- Woodland
- Public open space
- Playing fields/leisure
- Motorways
- A roads
- B roads
- Other Roads
- Crow Road (private)
- Railway
- Railway station



Connections – Existing Roads

# 3.6 ACCESS & CONNECTIONS

Pilgrims Way

Local lanes

## HIGHWAY CONNECTIONS

The Site has two established points of highway access. The main access is from the A224 London Road/Polhill via Otford Lane but there is also a secondary access from Star Hill Road, used primarily during the peak periods. Due to the nature of the current and historic uses on site, access to the Site remains strictly controlled, and there is no unrestricted movement between these two access points. A visitor car park is provided outside of the security barrier, and is accessed from the A224. This means that employees of both Dstl and QinetiQ are able to use either access point to enter/leave the Site but that the small residential community and visitors to the Site are restricted to use the main access onto Otford Lane/A224.

The highway network has the following characteristics:

- The A224 is a single carriageway road. To the north it provides access to the M25 (junction 4), to Orpington via Badgers Mount, and to Bromley via Old London Road and the A21. To the south it provides the main access route into Sevenoaks.
- Within the vicinity of the Site the A224 is subject to a 50 mph speed limit. The road has lighting infrastructure and facilities but, at the time of writing, it is currently unlit because the lights were switched off for a research experiment. The A224 has limited footway provision: to the north of the Site there is a footway on the east side of the carriageway, and to the south there are no footways.
- The Star Hill Road access provides a convenient means of access to the local villages of Knockholt and Knockholt Pound. It also provides an alternative route towards Dunton Green and Sevenoaks. It is a relatively narrow rural lane with no footway or lighting, but is an existing bus route.

The highway network surrounding Fort Halstead is relatively free of congestion, even at peak times. Traffic surveys have been under taken in 2005, 2007, 2008, 2010 and 2014, and these indicate that the local road network, including the A224 and A21 are operating well within their link capacities. Baseline junction assessments have also been undertaken which suggest that there are no major highway capacity issues at any of the junctions within the immediate vicinity of the Site. Only the junction of A224/A21/M25 link road is nearing capacity at peak times. Furthermore, our observations suggest that junction 4 of the M25 is also operating well within capacity during the morning and evening peak periods.

The main traffic hotspots in the area have been highlighted by the Sevenoaks District Transport Strategy and are:

- A224/A25 Riverhead roundabouts;
- A21/A25 Bat and Ball traffic lights; and
- M25 Junction 5

These junctions are all relatively distant from the Fort Halstead site. The Sevenoaks District Transport Strategy also notes that congestion at the two A25 junctions is restricted to the peak hour with no spreading of congestion to other time periods. It also notes that traffic congestion at these junctions is, at least in part, related to the lack of east facing slip roads providing access between the A21 and the M26.

# 3.6 ACCESS & CONNECTIONS

## BUS CONNECTIONS

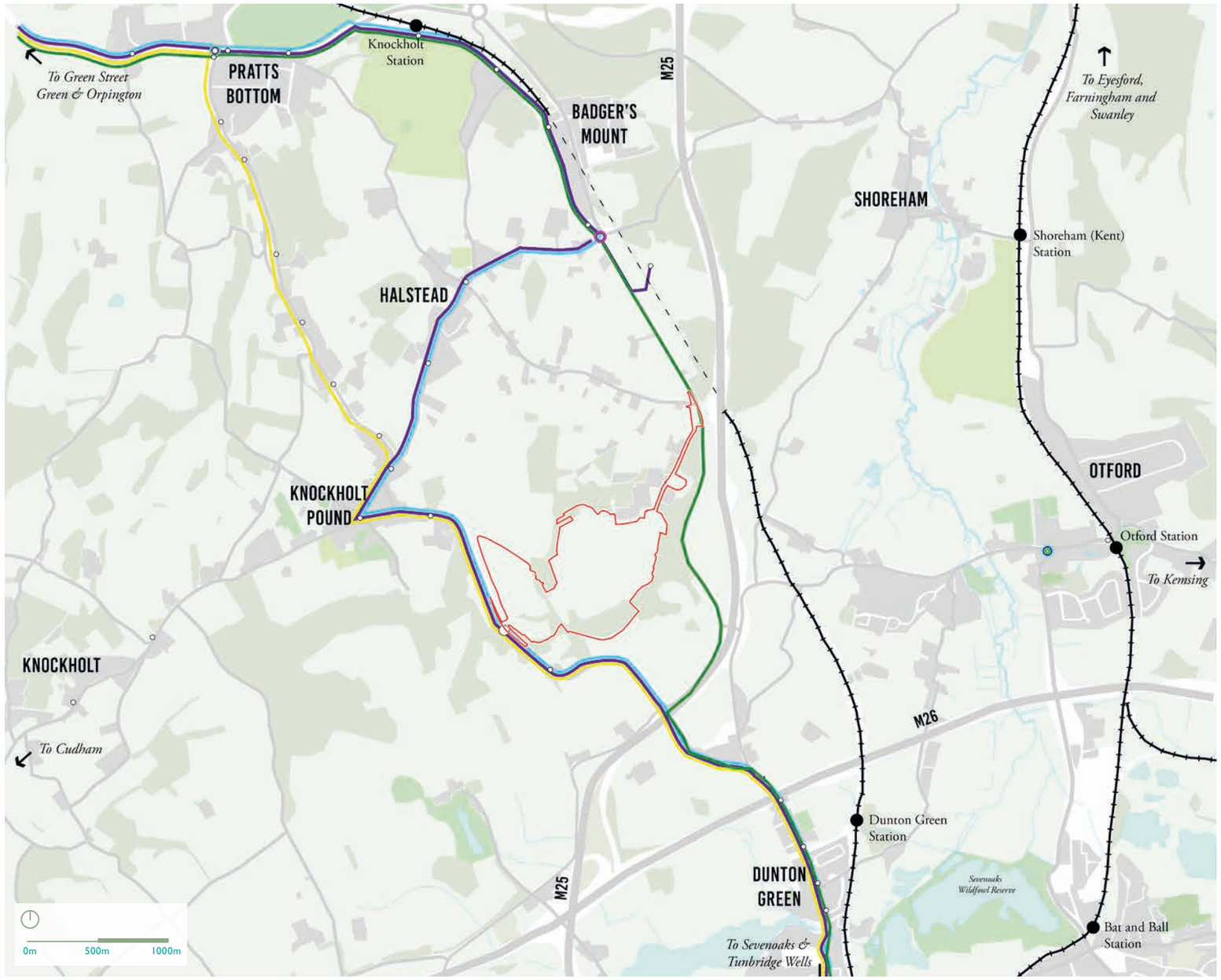
DSTL currently runs a private peak period shuttle bus between the Site and Knockholt and Orpington railway stations. There are three buses during the morning peak and three during the evening peak, with the service being operated by Go Coach.

There are bus stops near both southern and northern entrances on Star Hill Road and Polhill. It is served mainly served by route 431 on Star Hill Road and 6 other bus routes running on school days.

| BUS | OPERATION DAY | FREQUENCY |
|---|---|---|
| | ROUTE | |
| 431 | Monday–Friday | Every two hours |
| | Orpington – Halstead – Knockholt Pound – Sevenoaks | |
| 431A | School days only | Twice a day |
| | Ramsden Estate – Knole Academy – Trinity School | |
| 431B | School days only | Twice a day |
| | St Pauls Cray – Knole Academy – Trinity School | |
| 431C | School days only | Twice a day |
| | Chelsfield – Knole Academy – Trinity School | |
| 431D | School days only | Twice a day |
| | Knockholt – Knole Academy – Trinity School – Sevenoaks | |
| T3 | School days only | Twice a day |
| | Knockholt – Badgers Mount – Sevenoaks – Tonbridge | |
| TW6 | School days only | Twice a day |
| | Badgers Mount – Knockholt – Riverhead – Chipstead – Tunbridge Wells Schools | |

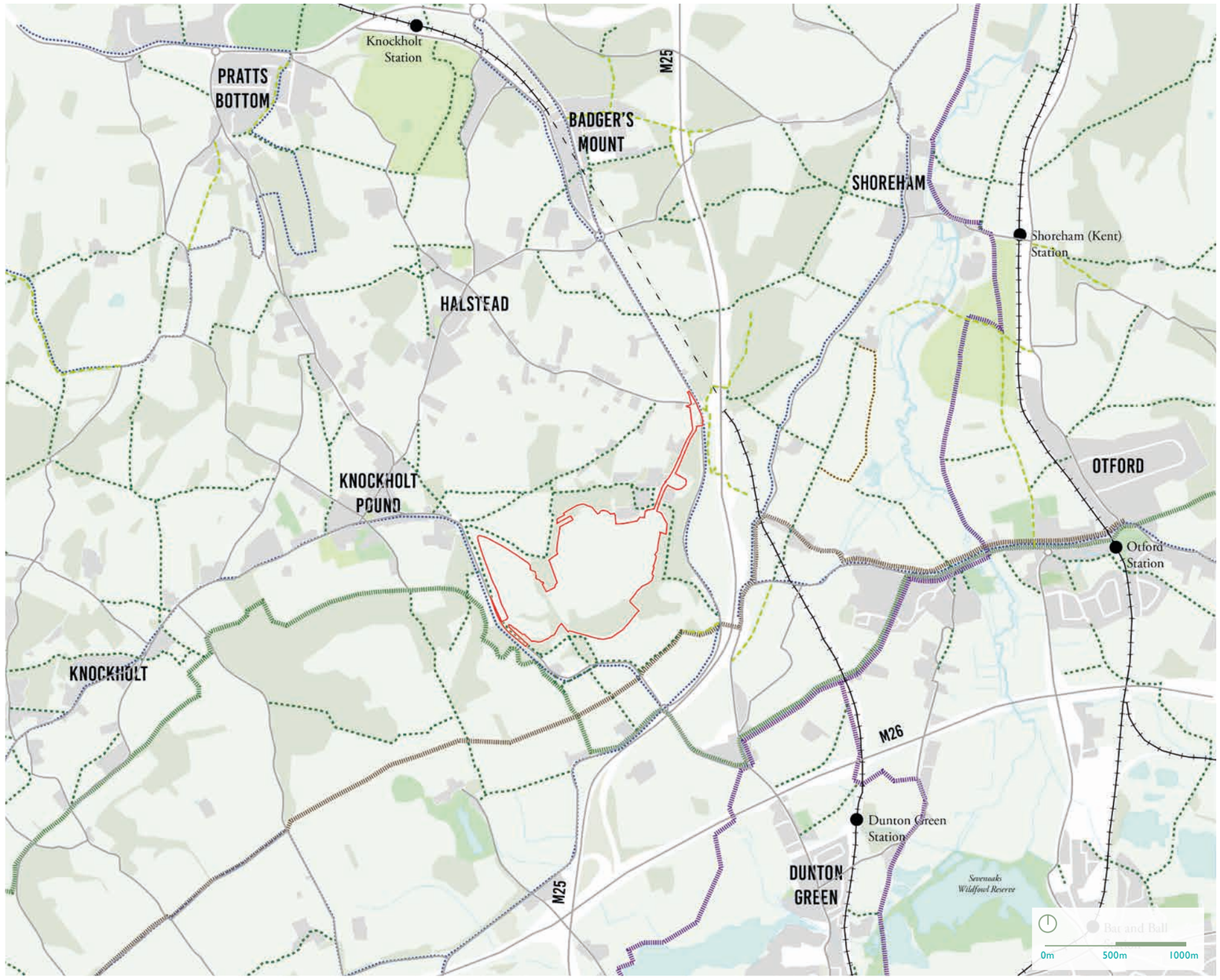
Key

- Site
- Roads
- Bus route 413 and T3
- Bus route 413A and 413D
- Bus route 413B and 413C
- Bus route TW6
- Bus stop
- Railway
- Railway station




Connections – Existing Bus Routes

# 3.6 ACCESS & CONNECTIONS




Connections – Existing Cycle and Footpaths

## WALKING AND CYCLING CONNECTIONS

Although existing pedestrian and cycle links to the existing Fort Halstead site entrances are relatively poor, there are a number of footpath links and rights of way, including a direct link to the North Downs Way, surrounding the Site which provide a good connection to the countryside. This network of leisure routes are generally unsurfaced and unlit and are therefore not suitable as commuter/school access routes.

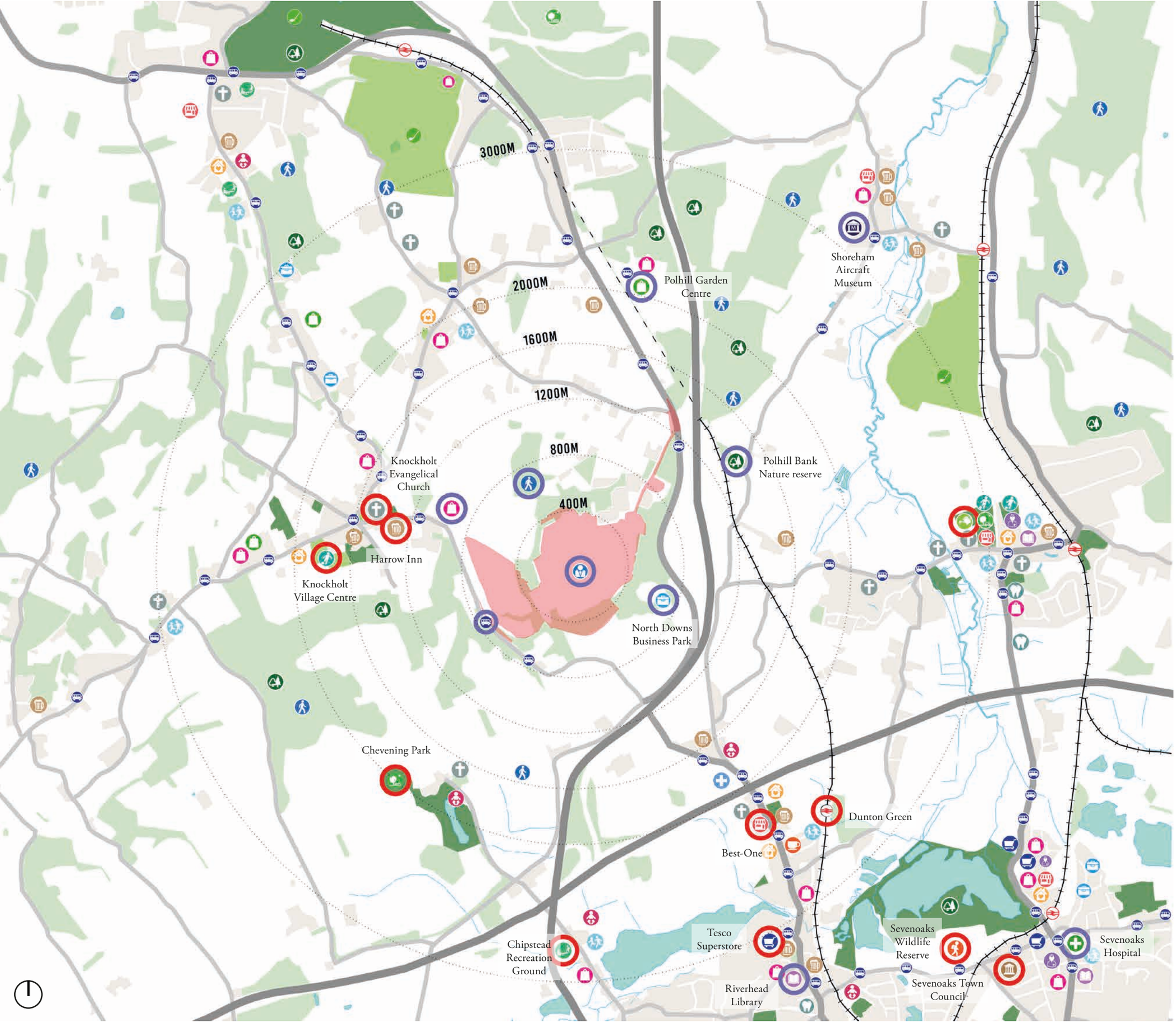
Existing pedestrian routes by type:

- Access to Knockholt Pound is via Star Hill Road. This is a relatively narrow country lane with no dedicated footways or lighting. There is also an existing public right of way that links the Site to the junction of Star Hill Lane/Birchwood Lane, much closer to the centre of Knockholt Pound. This is also unsurfaced and with no lighting;
- Access to Halstead is via Otford Lane which is also a narrow, unlit country lane;
- The A224 London Road to the north of Otford Lane has a footway on its east side and this provides a safe pedestrian access to existing facilities that are located along that road. These include two restaurants and a new furniture shop close to the junction with Otford Lane. Further to the north, the footway also provides access to the large Polhill Garden Centre.

There are also relatively limited cycle facilities. Since the Site is located on top of a chalk escarpment, there is a steep hill to negotiate in order to access the Site from Sevenoaks. However, the cycle route to Knockholt station is relatively flat, and there are advisory cycle lanes on Old London Road, one of the few existing cycle facilities within the district.

Key

- Site
- Built areas of surrounding settlements
- Woodland
- Roads
- Pilgrims Way
- North Downs Way
- Darent Valley Path
- Public right of way
- Bridleways
- Cycle routes
- Railway
- Railway station




- Allotments
- Playground or kickabout area
- Bus stop
- Local park/green space
- Local centre
- Village or community hall
- Town Hall
- Pub
- Train station
- Access to green network
- Nursery
- Primary school
- Surgery/pharmacy
- Playing fields
- Secondary school
- Supermarket
- Industrial estate
- Major natural green space
- Golf
- Major employment area
- Vet
- Hospital
- War Memorial
- Church
- Library
- Retail
- Garden Centre
- Dentist
- Cafe
- Nearest facility of strong accessibility
- Nearest facility of weak accessibility