EB 06.70

MOTT MACDONALD

# Otterpool Park Garden Town, Kent

## Walking and Cycling Study

August 2018

Folkestone & Hythe District Council

Mott MacDonald
35 Newhall Street
Birmingham B3 3PU
United Kingdom

T +44 (0)121 234 1500
F 44 (0)121 200 3295
mottmac.com

Folkestone & Hythe District Council
Civic Centre
Castle Hill Avenue
Folkestone
Kent
CT20 2QY

# Otterpool Park Garden Town, Kent

## Walking and Cycling Study

August 2018



Folkestone & Hythe District Council

# Issue and Revision Record

| Revision | Date | Originator | Checker | Approver | Description |
|---|---|---|---|---|---|
| - | 27/04/18 | A Newey/ A Shaw/ B Coleman | E Ducker | C Sibthorpe | Draft |
| V2.0 | 30/08/18 | E Ducker | A Radford-Watt | L Hurst | Updated with FHDC Comments |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**Document reference:** 396996 | 1 | A

**Information class: Standard**

# 1 Introduction

Mott MacDonald has been commissioned by Folkestone & Hythe District Council (FHDC) to provide consultancy advice relating to walking and cycling to support the emerging Masterplan for the proposed Otterpool Park Garden Town, near Folkestone in Kent.

## 1.1 Study Background

### 1.1.1 Otterpool Park Garden Town

Otterpool Park is a proposed Garden Town. It is being put forward by Folkestone & Hythe District Council and Cozumel Estates Ltd, the owners of the former racecourse at Westenhanger. It is sited south west of Junction 11 of the M20, between Lympne and the HS1 line. As of January 2018, the extent of the Masterplan area consists of an area of approximately 765 hectares.

A Garden Town is a development of more than 10,000 homes. Garden Villages are smaller settlements of between 1,500 and 10,000 homes. A total of 24 garden settlements are being developed across England. These will be distinct new places with their own community facilities, rather than extensions to existing urban areas. There is no single model of design but these settlements should be built to a high quality, be attractive and well designed, as well as being in line with local housing needs. A key ethos of a garden settlement is that people can walk, cycle, or take local transport to work.

Garden settlements are not a new concept. Originating from Ebenezer Howard's book "Tomorrow: A Peaceful Path to Real Reform" (1898), the concept has been redefined in recent times and establishes three critical features of Garden Cities:

- *Retaining value in the place: the "uplift" in the value of the land can be shared more equitably than currently;*
- *Localising stewardship of community assets: rather than taxing developments, the ownerships of assets are granted to the community itself, which helps foster positive relationships between residents, businesses and stakeholders; and*
- *Unlocking access to patient capital: the scale of garden cities makes them attractive to "patient capital" from long term investors.*

Source: House of Commons Briefing Paper 06867 'Garden Cities, Towns and Villages'

Otterpool Park is located close to Lympne, Sellindge, Stanford, Barrow Hill, Newingreen and Westenhanger. The A20, the M20 motorway and the South Eastern Mainline/HS1 railway create barriers to movement around the site and its neighbouring settlements. There are few Public Rights of Way across the site and a key aspect of the Masterplan is to realise the opportunity for improved connectivity between the settlements and internally within the Masterplan area.

The Masterplan shows a new settlement of up to 12,000 dwellings. From summer 2017 to early 2018, the Masterplan capacity has been tested for a range of dwellings; approximately 8,000, 10,000 and 12,000 homes. The Garden Town will also host a mix of employment uses, commercial local services and community and social infrastructure, creating up to 8,000 new jobs. New roads, utilities and transport infrastructure improvements to Westenhanger Station will be provided. Dependent upon the finalised number of dwellings, around 40 per cent of the

site area will comprise green infrastructure, which will include Sustainable Drainage Systems (SuDS), habitats, amenity space, natural areas, sports pitches and play areas.

Otterpool Park will be delivered over the next 20 to 30 years, through a phased approach. It is expected that a planning application will be submitted in autumn 2018, with first construction commencing on site in 2020.

### 1.1.2 Walking and Cycling at Otterpool Park

The District Council has established a Place Panel comprising a team of experts to help ensure that Otterpool Park delivers its potential as a garden town of the future. This Study is intended to assist the masterplanning process in responding to points raised by the Place Panel and by providing an independent review of constraints and opportunities available to ensure that walking and cycling are embedded within the Masterplan.

The study considers how residents, visitors, employees and others will make their journeys both within Otterpool Park and to surrounding areas. Many factors will determine or influence the outcome of the design process, but the aims of this study are to:

- Provide imaginative and appropriate solutions that have a clear rationale;
- Provide a sensitive response to the local context; and
- Be cognisant of what is feasible in terms of economic and market conditions.

### 1.1.3 Local Cycling and Walking Infrastructure Plan

In September 2017 it was confirmed that Shepway District Council, now Folkestone & Hythe District Council, had been successful in its bid for technical support from the Department for Transport (DfT) to prepare a Local Cycling and Walking Infrastructure Plan (LCWIP) for the District. It has since been confirmed that the District falls within Phase 3 of the LCWIP programme, meaning that work will commence in this area later in 2018, which does not correspond with the timescales for plan preparation and for advancement of the site Masterplan for Otterpool Park Garden Town. Therefore, this study is separate to the LCWIP programme, however the findings from Otterpool Park will help to serve as a pre-cursor to the LCWIP for the entire District that will be separately undertaken by and in conjunction with the wider DfT support team in due course.

## 1.2 Report Format

In line with the brief provided by FHDC in February 2018, this report considers the following areas of work:

- Familiarising with work and data produced to date, compiling background conditions and undertaking a site visit;
- Review of best practice and case studies for maximising and integrating walking and cycling, including the use of e-bikes and cycle hire;
- Review of the emerging masterplan to ensure positive outcomes for cycling and walking;
- Opportunities for cycling and walking connections to surrounding areas;
- Potential targets for cycling walking mode share for future residents of Otterpool Park; and
- Summary of findings.

# 2 Case Studies

This chapter provides a desktop review of best practice examples from both the UK and overseas for new settlements, as well as references to the common characteristics for successful walking and cycling conditions in more established Sustainable Urban Extensions, towns and cities. The review attempts to benchmark against locations with attributes similar to Otterpool Park, for example in terms of its proposed size and its high landscape value which is expected to lead to a demand for recreational walking and cycling uses as well as utility trips.

The review of best practice has examined the following areas of interest:

- UK schemes which have or are in the process of being implemented. Information on target mode share/ transfer to walking and cycling and providing information on lessons learnt has been included where available;
- UK schemes in the planning stage including how these integrate with existing communities and target mode share; and
- UK and worldwide gallery/ case studies of good practice.

## 2.1 Initial Review

Firstly, a desktop study of residential/ mixed use Sustainable Urban Extensions and Garden Community developments currently under construction was carried out to ascertain features being contemplated elsewhere to encourage the uptake of walking and cycling and increase their mode share.

The desktop study identified a number of developments across England with the following range of characteristics, many of which share similarities with Otterpool Park:

- Located within green belt, urban periphery or rural locations meaning that on-site facilities need to be easily accessible to pedestrians and cyclists;
- Generally large developments of over 1,000 dwellings, although developments of between 100 and 10,000 proposed dwellings were researched to understand any differences in the approaches to targets and infrastructure proposals for non-motorised users;
- Have a range of existing walking and cycling levels in the area surrounding the development site in order to understand the impact an established walking and cycling culture might have on mode share for a standalone new development; and
- Character area. Otterpool Park borders an Area of Outstanding National Beauty (AONB). Best practice examples have therefore been researched for areas which have a special landscape value, which needs to be protected or enhanced. In practice new developments can include the sympathetic use of natural barriers such as hedgerows and watercourses and viewing corridors.

Table 1 shows the long list of developments examined.

**Table 1: Long List of Development Locations Identified**

| Location | Number of dwellings | Walking and cycling mode share target (%) | First occupancy | Scheduled year of completion |
|---|---|---|---|---|
| Ebbsfleet (Kent) | 15,000 | Targets relate to reduction in single car trips | 2015 | 2035 |
| Kingsmere, Bicester (Oxfordshire) | 1,585 (Phase 1) up to 6,000 with Phases 2 to 4 | 10% cycling<br>30% walking | 2015 | 2031 |
| Northstowe, (Cambridgeshire) | 10,000 | 5% cycling<br>23% walking | 2017 | 2037 |
| Barking, Riverside (London) | 10,800 | 5% cycling<br>12% walking | 2012 | 2031 |
| Cranbrook (Devon) | 8,000 | Targets relate to reduction in single car trips | 2017 | 2028 |
| Whitehill and Bordon (Hampshire) | 3,350 | 25% walking and cycling | 2017 | 2036 |
| Whynedyke Farm, Fylde (Lancashire) | 1,400 | Targets relate to reduction in single car trips | 2018 | 2031 |
| Barton Park (Oxfordshire) | 885 | 4% cycling<br>10% walking | 2017 | 2033 |
| Wexham Green (Slough) | 104 | Targets relate to reduction in single car trips | 2017 | 2018 |

Note: Walking and cycling targets are for external trips unless otherwise stated

## 2.2 Chosen Case Studies

From the long list of development site comparators, we have examined three developments in more detail:

- Ebbsfleet Garden City, Kent;
- Kingsmere, Oxfordshire;
- Northstowe, Cambridgeshire.

Each of these sites aim to provide a new integrated community with a sense of place, and sustainable transport provision, whilst protecting the ecology of the immediate environment and contributing to the local economy in terms of employment creation.

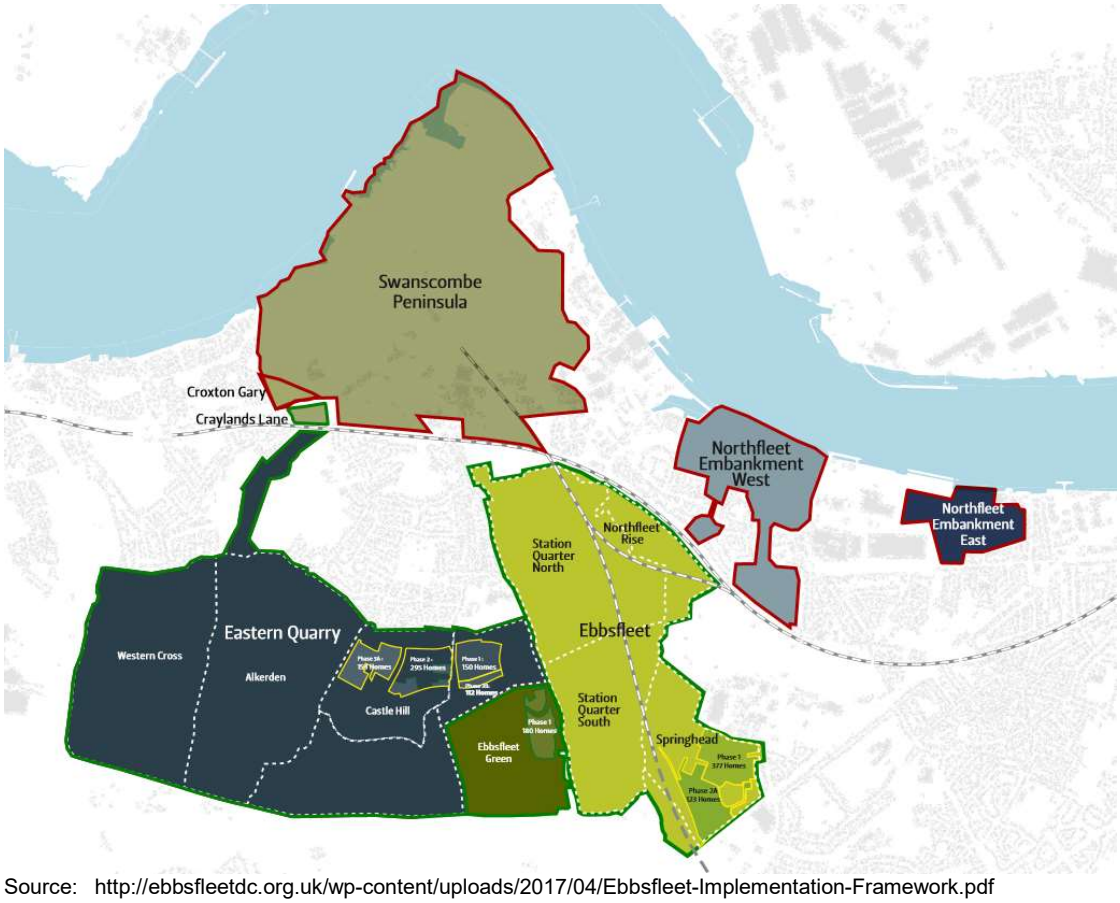
### 2.2.1 Ebbsfleet Garden City

Ebbsfleet Garden City is also a part of the NHS Healthy New Towns initiative. As such, there is a large focus around activity and enabling walking and cycling as modes of transport. Although the development has a completion target year of 2035, over 800 dwellings have been completed to date with a target of over 5,000 units being developed by 2021. Further infrastructure such as a primary school, bridge crossing and green spaces have also been developed.

A key similarity to Otterpool Park is that the highway network and the high-speed railway line leads to severance in Ebbsfleet. There is good strategic connectivity with Ebbsfleet International Station, providing links to London and Europe. Regional connectivity is provided through the

local highway network, with the A2 trunk road (Watling Street) bordering the south of the site, and the motorway network in close proximity. It is also furthered by local train stations nearby (Northfleet, Swanscombe and Greenhithe for Bluewater), the line of which intersects the proposed development area. There are also significant public transport improvements planned, including a further Fastrack connection (an east-west rail route) and a potential Crossrail extension. Ebbsfleet International will transform from a Park and Ride site into an urban transport hub, with improved walking and cycling connectivity.

**Figure 1: Ebbsfleet Garden City Development**




Source: http://ebbsfleetdc.org.uk/wp-content/uploads/2017/04/Ebbsfleet-Implementation-Framework.pdf

**Table 2: Ebbsfleet Garden City: Key Facts**

| | |
|---|---|
| Number of new dwellings | 15,000 |
| Number of new jobs | 30,000 |
| Completion year target | 2035 |
| Proximity to train stations (Ebbsfleet International) | 21 minutes' walk |
| Topography | Generally flat except Eastern Quarry, including a major water body in the south-western part of the site. Several areas of urban development (including Swanscombe and Northfleet). Sawyers Lake in South East of site. |

Source: https://www.england.nhs.uk/ourwork/innovation/healthy-new-towns/ebbsfleet/

The Implementation Framework[1] promotes the following approach when working with developers and partners to deliver an integrated walking and cycling network:

- Re-open and upgrade historic underpasses and tunnels where feasible;
- Investigate new vertical connections (e.g. lifts, ramps and stairs) to negotiate dramatic changes in level and establish a landmark suite of iconic interventions within the Ebbsfleet landscape;
- Redevelop bridges and underpasses to negotiate infrastructural barriers;
- Improve existing pedestrian and cycle links within existing local communities;
- Establish cycling and walking networks that provide direct routes to local centres and facilities;
- Support infrastructures for cycling, such as cycle-share facilities and cycle hubs at major transport interchanges;
- Improve general way-finding and the legibility of pedestrian and cycle networks across Ebbsfleet through physical upgrading of routes, and the promotion and marketing of them.

Initiatives have been implemented to encourage the uptake of walking and cycling. In 2017, Ebbsfleet Development Corporation (EDC) implemented an initiative to encourage the new residents of Ebbsfleet to be physically active in the community. Over 100 Fitbits have been distributed to residents in Ebbsfleet to encourage the use of walking and cycling. The Fitbits are equipped with GPS tracking devices to help EDC understand residents' movements within the Garden City. In turn, this will help shape investment priorities over the sites development phases as well as designing pedestrian and cycle routes and city parks.

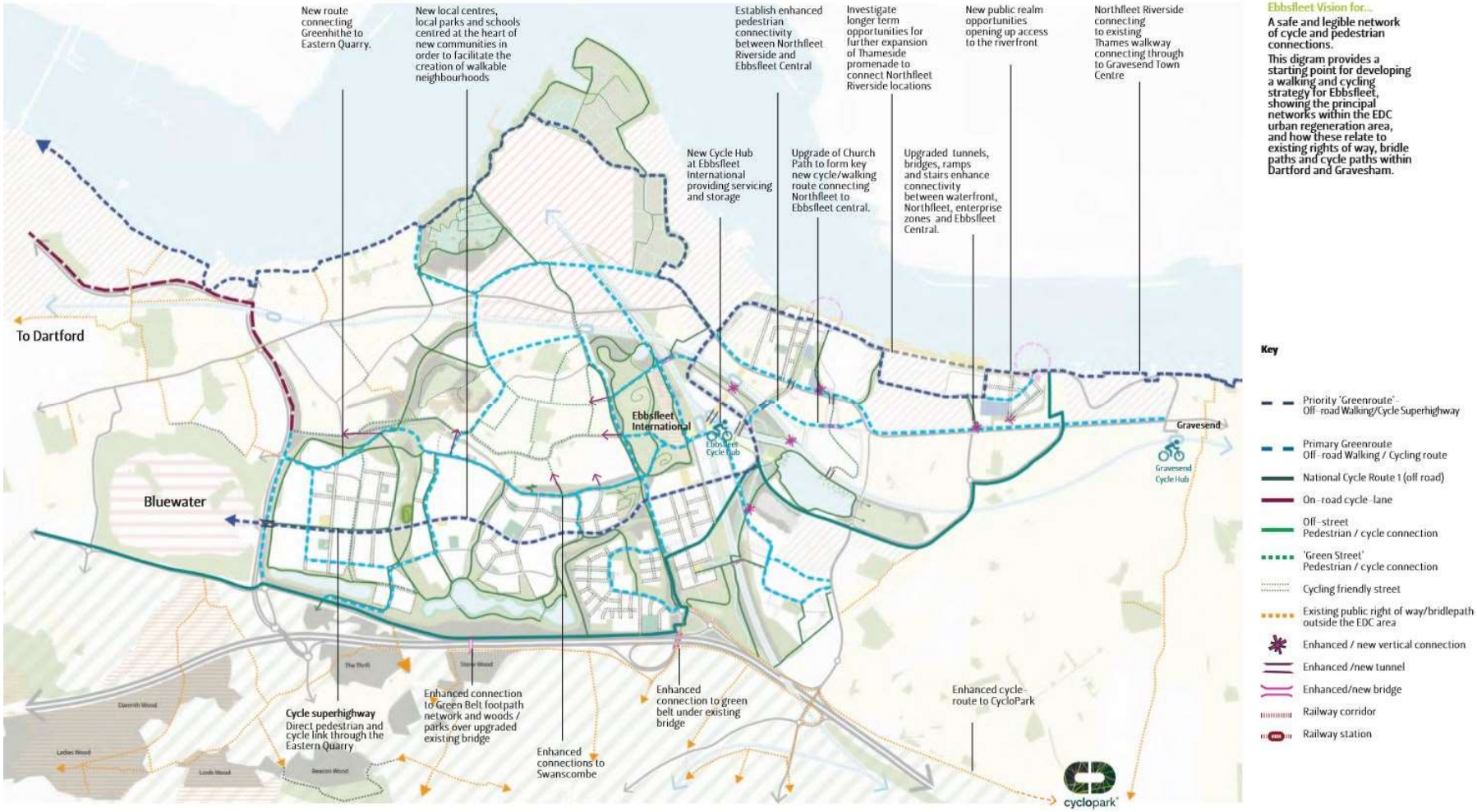
EDC also worked with the challenge app developers 'BetterPoints'. BetterPoints offers an app programme where individuals can record how much activity they are doing to win points. These points are then converted into a monetary value which can be used to buy shopping vouchers or donated to a charity. EDC ran a specific active travel challenge for residents of Ebbsfleet to encourage the use of active travel.

The launch of Get Active in Ebbsfleet in 2016 encouraged residents to attend an event where numerous health checks and opportunities to join fitness programmes, such as walking or yoga groups were promoted. Levels of fitness of volunteers were assessed with the hope that the Fitbits and challenges will encourage exercise and help inform developers of future infrastructure in the Garden City. The programme was founded through the NHS Healthy New Towns initiative, aiming to reduce the long-term pressure on the NHS by improving overall quality of life by 10%[2].

[1] http://ebbsfleetdc.org.uk/wp-content/uploads/2017/04/Ebbsfleet-Implementation-Framework.pdf

[2] https://www.england.nhs.uk/ourwork/innovation/healthy-new-towns/ebbsfleet/

## Figure 2: Ebbsfleet Walking and Cycling Network Proposals




Source: http://ebbsfleetdc.org.uk/wp-content/uploads/2017/04/Ebbsfleet-Implementation-Framework.pdf

**NHS Healthy New Towns**

The NHS is working with 10 developments across the UK to encourage healthy lifestyles of residents through design and facilities.

An aim of the NHS Healthy New Towns is to show how land can be used, not only to build developments but also to benefit local communities and wider systems. The character of the place where we live has a large impact on health and wellbeing. To achieve a Healthy New Town, the 'Healthy by Design' document published by the NHS states:

*"We think that it is possible to create new towns and neighbourhoods where people can walk and cycle easily, where everyone lives within reach of good green space, as part of a strong, connected community. The commissioning, planning, design, management and maintenance of new housing developments will therefore play a key part in realising the aims of the Five Year Forward View."*

Two of the NHS Healthy New Towns have been selected as part of this Study for consideration in further detail as case studies. These are Ebbsfleet Garden City and Cranbrook due to the size of the developments being consistent with Otterpool Park and their similarities in topography and demographics.

Source: Healthy by Design: The Healthy New Towns Network Prospectus, NHS England

### 2.2.2 Kingsmere, Bicester, Oxfordshire

Kingsmere, near Bicester, was granted planning permission in 2008. Given its proximity to Bicester, many local facilities can be reached easily on foot or by cycling. Regional connectivity is provided by two train stations; Bicester Village (approximately ten minutes on foot) and Bicester North (approximately 20-25 minutes on foot) from the north east of the site. The site is bordered by the arterial A41 Oxford Road (which leads to the M40), Middleton Stoney Road and the B4030 Vendee Drive. The highway network surrounding the site provides a degree of severance for pedestrians and cyclists, albeit not to the same level that the M20 and railway line does at Otterpool Park.

**Photo 1: Walking and Cycling Provision at Kingsmere**

Source: http://kingsmere-bicester.com/kingsmere-gallery/

Cycling accessibility is good at Kingsmere. Route 51 of the National Cycle Network runs through Bicester and along the eastern edge of the development. Bicester is a flat area, with reasonably high existing levels of cycling (the 2011 Census shows that 3.5% of people in Cherwell cycle and 12% walk to work. In the urban areas of the District 11.5% cycle and 38.8% walk to work).

Cherwell District Council own a fleet of bikes, which are both maintained and available for hire. The bike loan scheme is designed to encourage greater use of cycles and offers a free cycle loan, as part of the 'Cycle for Bicester' programme. This offers cycles for sporadic one-off use or via subscription for use on a more frequent basis.

New pedestrian and cycling crossings have been provided at key junctions and desire lines across the existing highway network surrounding the development site. Oxfordshire County Council are examining options to provide a new off carriageway pedestrian/ cycle route adjacent to the north side of Middleton Stoney Road, which will further enhance connectivity from Kingsmere towards Bicester.

Sustainable transport also benefits from an eco-town development in North West Bicester, Further improvements are planned for travel choices by Oxfordshire County Council as part of this development. Table 3 provides a summary of the development proposals.

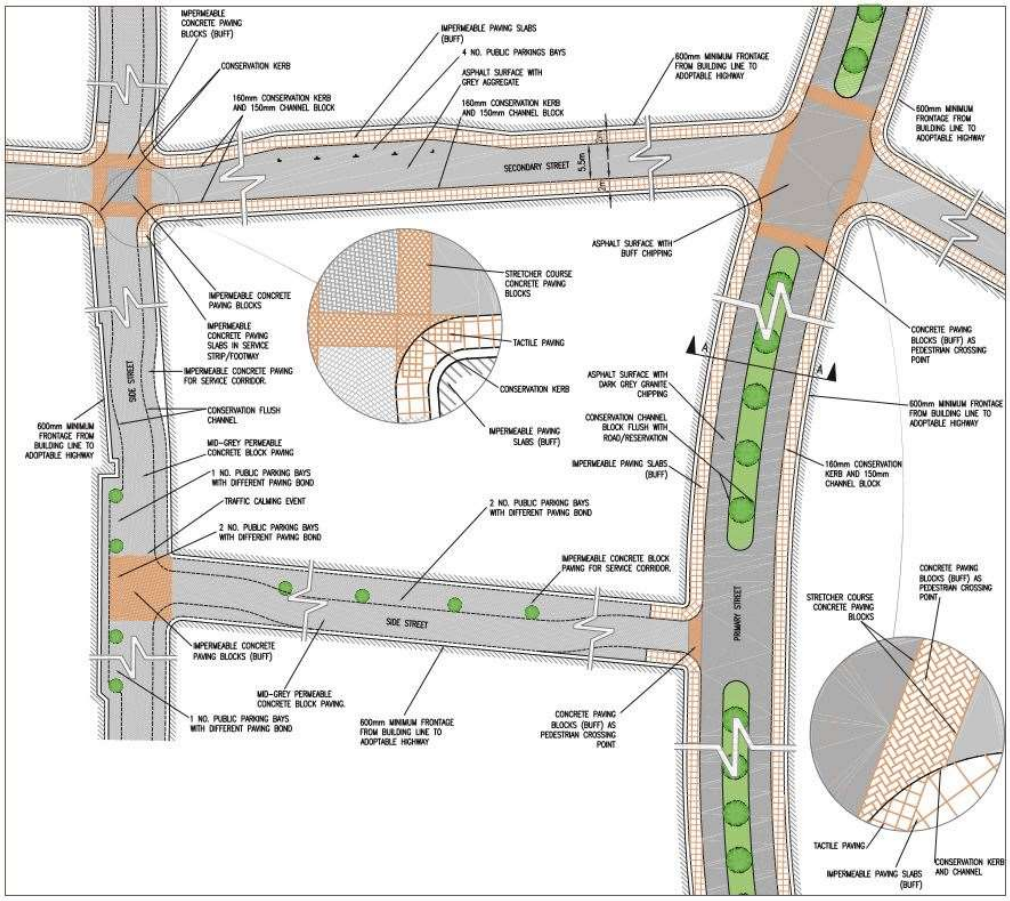
**Table 3: Kingsmere: Key Facts**

| | |
|---|---|
| Number of new dwellings | 1,585 (Phase 1) |
| Number of new jobs (FTE) | 1,275 |
| Completion year target | 2031 |
| Proximity to train stations | 26 minutes' walk to Bicester Village |
| Topography | Relatively flat terrain |

Sources: http://kingsmere-bicester.com/planning/
http://kingsmere-bicester.com/wp-content/uploads/2016/04/planning_statement_part1.pdf
South West Bicester Planning Statement (November 2016), p.35

Figure 3 provides an extract from the Kingsmere Design Code, indicating treatment for pedestrians and cyclists within the residential area of the development.

**Figure 3: Kingsmere Design Code - Avenue Streets**




Source: http://kingsmere-bicester.com/wp-content/uploads/2016/04/design_code.pdf

### 2.2.3 Northstowe, Cambridge

The proposed Northstowe New Town development is situated approximately 10 kilometres north-west of the centre of Cambridge. The site comprises agricultural land and a former golf course. In October 2017 the Homes and Communities Agency consulted on a revised draft Design Code for Northstowe Phase 2. Like the proposals for Otterpool Park, Northstowe is incorporating SuDS to manage surface water. This system will also play a part in Northstowe's leisure walking and cycling network by providing parallel routes and trails.

The Design Code proposes the following provision for pedestrians and cyclists:

- Busway – 2m wide footways adjacent to both sides, two way 4.5m cycle track adjacent to one side;
- Primary streets – 2m wide footways adjacent to both sides, one way 2.3m cycle track adjacent to both sides of the carriageway;
- Secondary streets – 2m wide footways adjacent to both sides and either one way 2.3m cycle track adjacent to both sides of the carriageway or on-carriageway cycling;
- Tertiary residential streets – 2m wide footways adjacent to both sides and on-carriageway cycling.

## Figure 4: Northstowe Design Code - Example Greenway

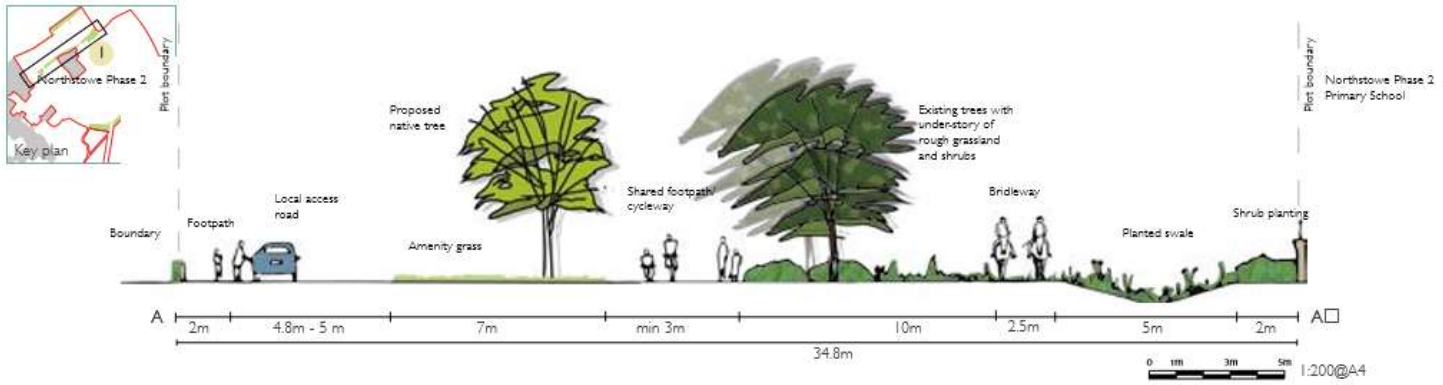



Figure 4.5: Informal Greenway 1 Section A-A.

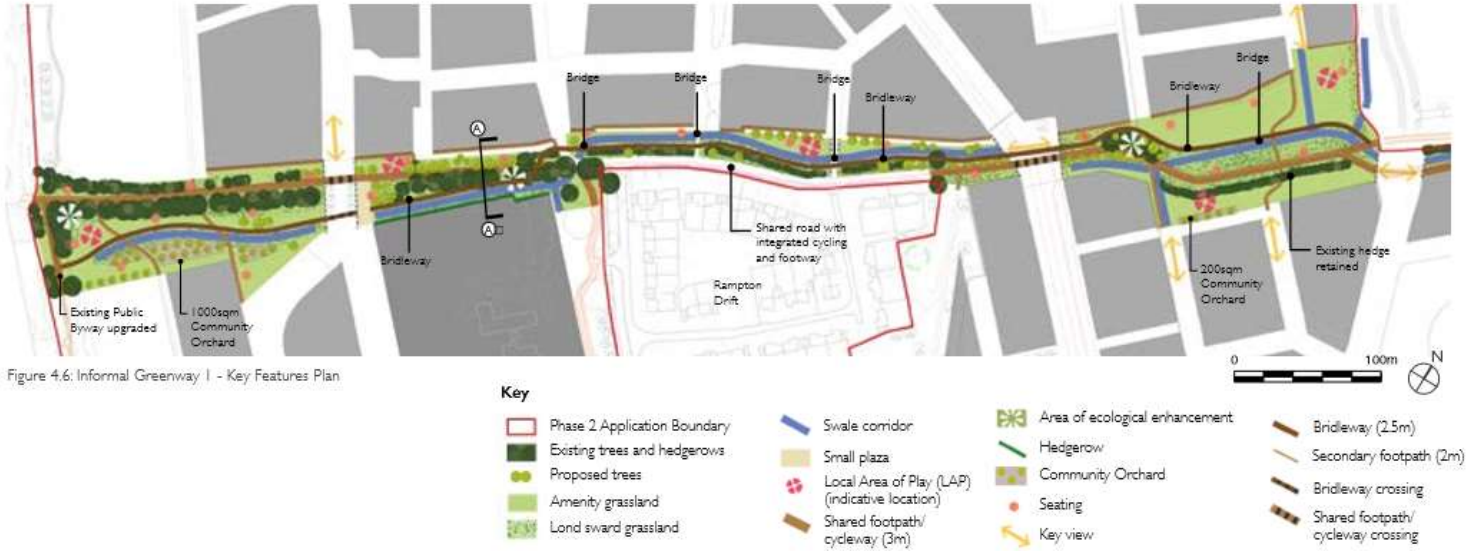



Figure 4.6: Informal Greenway 1 - Key Features Plan

Source: Northstowe Phase 2 Design Code http://www.northstowe.com/content/northstowe-phase-2-design-code-october-2017part-1-3

**Table 4: Northstowe New Town: Key Facts**

| | |
|---|---|
| Number of new dwellings | 10,000 |
| Potential number of residents | 24,400 |
| Number of new jobs | 'capacity to deliver in the region of 11,000 jobs to the local community and the Greater Cambridge Area' |
| Completion year target | 2037 |
| Proximity to train stations (on foot) | Cambridge North (outside of walking distance) |
| Topography | Relatively flat terrain |

Source: http://www.northstowe.com/vision

Northstowe Phase 1 is bordered by Rampton Road to the south, and the B1050 Station Road to the north-west. The latter connects the north of Cambridgeshire to the A14, an arterial route for connections to the M1 and the M6. Cambridge North railway station is situated 11km south east of Northstowe. The station, which opened in March 2018, acts as a transport interchange and provides direct services to Cambridge mainline railway station.

The Northstowe Travel Plan aims to achieve a 25% minimum take up rate of bike and bus vouchers by first household occupiers within 1 year of full build out and 10% reduction in the mode share of car trips by the end of year 5 from first occupation. Baseline cycle mode share is 3%, within a target to increase these to 5%. Walking mode share is currently 23% and the target is to retain this level.

Northstowe's surrounding area is served by several Public Rights of Way (PROWs). New pedestrian connectivity will be provided to key destinations, including a Cambridge Guided Busway stop. Complementary bicycle training will also be provided for adults and children as part of the Travel Plan.

Table 5 provides a summary of walking and cycling proposals for Northstowe.

**Table 5: Walking and Cycling Characteristics and Proposals**

| Location | Cycling Characteristics and Proposals |
|---|---|
| Longstanton (to the south of the site) | Light traffic flows, traffic calming, cycle route part of the National Cycle Network |
| Cambridge Guided Busway (CGB) | Blacktop surfaced traffic-free cycling route, part of route parallel to a nature reserve before reaching St Ives Park & Ride. Busway stops provide 'covered, well-lit and CCTV monitored cycle parking' |
| Regional Route 24 (Longstanton to Cambridge via Oakington and Girton) | Shared use footpath (Oakington and Girton). Then traffic-calmed 30mph carriageway from Girton to Cambridge |
| Northstowe Site (Phase 1 – including proposed) | Primary roads on-site have dedicated on-carriageway lanes for cycles; within open space, leisure cycling routes three metres wide; and a shared cycleway/footpath, forming part of the Dedicated Busway corridor, and to provide connection to the proposed town centre of Northstowe |

Source: Northstowe Travel Plan (2016, p.16-18)

## 2.3 Programmes to encourage the uptake of walking and cycling

### 2.3.1 Introduction

Aside from new developments there is evidence from government funded initiatives on the benefits of investing in walking and cycling infrastructure for existing built up areas with targeted 'softer' measures to lock in these benefits and influence modal split.

In line with the DfT document 'Good Practice Guidelines: Delivering Travel Plans through the Planning Process'[3], residential Travel Plan targets tend to set out the maximum allowable modal share of car use rather than identifying specific targets for each mode. The rationale for this is that there is no reason to promote one sustainable mode, such as bus travel at the expense of other sustainable modes such as walking and cycling. Therefore, a limitation with reviewing development proposals to establish walking and cycling mode share targets is that this information is not always available. For this reason, recent national walking and cycling programmes have also been examined to understand typical mode shares through targeted interventions. Whilst the programmes described in this section were for existing areas, rather than new developments, they provide background information on the types of investment which have enabled walking and cycling to thrive.

### 2.3.2 Local Sustainable Transport Fund (LSTF)

The Local Sustainable Transport Fund (LSTF) was devised to support local projects around the country. One of the main objectives for the fund was to reduce carbon emissions through triggering an increase in modes including cycling and walking.

There have been several cycling and walking successes over the course of the programme. For Barnsley, Doncaster, Rotherham and Sheffield Combined Authority (BDRS, now Sheffield City Region Combined Authority), '70% of the 1,300 people who registered to lease cycles had previously commuted by car'[4]. The BDRS project was geared towards supporting businesses through boosting transport connectivity and minimising their impact on traffic congestion. Whilst the cycling objectives for the BDRS project were indirect, many of the schemes were implemented. These included new cycle parking facilities (858 spaces) and new or improved routes, leasing, and maintenance (567 patrons) and training (1,260 patrons). From these changes since the start of the LSTF project for BDRS, it was found that there was an increase in cycle use in two of the four urban areas, and that 'cycle hire schemes show good levels of use and mileage ridden'[5].

### 2.3.3 Sustainable Travel Towns

In 2003 Darlington, Peterborough and Worcester were chosen to become Sustainable Travel Towns. Between them they were awarded a total of £10 million in revenue funding to be spent over the five years of the programme from 2004/5 – 2008/9. Complementary infrastructure improvements were funded through the authorities' Local Transport Plans. These comprised seven radial routes linking into and through the town centre Analysis of the programme[6] showed that key walking and cycling measures included:

[3] http://webarchive.nationalarchives.gov.uk/20101122070648/http://www.dft.gov.uk/pgr/sustainable/travelplans/tpp/goodpracticeguidelines-main.pdf

[4] 'Meta-analysis of Outcomes of Investment in the 12 Local Sustainable Transport Fund Large Projects: Interim Report' (2016), p.200

[5] 'Meta-analysis of Outcomes of Investment in the 12 Local Sustainable Transport Fund Large Projects: Interim Report' (2016), p.100

[6] Sloman L, Cairns S, Newson C, Anable J, Pridmore A & Goodwin P (2010) The Effects of Smarter Choice Programmes in the Sustainable Travel Towns: Research Report https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/4410/chap3.pdf

- Seven radial cycle routes linking into and through Darlington town centre;
- Improvement and promotion of sustainable transport options to Peterborough railway station to cater for high levels of commuting to London from new residential developments; and
- High Street pedestrian and cycling infrastructure improvements in Worcester.

The estimated outturn costs of the programme were £10 per person per year. It was estimated that *"the implied benefit cost ratio of the achieved outcome in the three towns, allowing only for congestion effects, was the order of 4.5"*[7]. The programme summary report concluded the following:

- A strong brand helps a smarter choice programme's success, alongside a proactive press strategy and political support;
- Darlington, which also became a Cycling Demonstration Town, allocated a comparatively high level of staff resources to cycling and walking, and invested substantially more per capita in cycling infrastructure, subsequently enjoying the largest growth in cycling compared to the other town Sustainable Travel Towns;
- *"Interventions targeted at specific modes are most effective when accompanied by improvements in quality… and is likely to require a combination of capital investment and revenue support. From a road safety perspective too, the experience of the towns underlines the importance of supporting efforts to promote walking and cycling with a strong programme of improvements in the quality and safety of the walking and cycling environment."* [8]

### 2.3.4 Cycling Demonstration Towns

Cycling Demonstration Towns (CDTs) was a DfT funded programme for six areas in England, which began in 2005. CDTs used funding on a range of capital and revenue activities to support cycling. The Outcomes of the Cycling Demonstration Towns programme: monitoring project report (April 2017)[9] notes that there was an average growth in cycling trips of 29% across all towns within this programme in 2011 relative to a 2005 baseline. At the individual town level, growth ranged from +6% (Aylesbury) to +59% (Darlington). A 19% increase was recorded in Brighton and Hove, which had a far higher baseline level of cycling compared to the other five towns.

The capital spend was in the region of three to four times revenue spend in the majority of the towns, varying from double the expenditure on capital as on revenue in Brighton and Hove to Exeter where 11 times more was spent on capital than on revenue.

### 2.3.5 Cycling City and Towns

The Cycling City and Towns programme was a DfT funded programme of investment in cycling in 12 towns and cities from 2008 – 2011. The aim of the programme was to explore the relationship between investment in cycling as part of a whole-town strategy, and the number of cyclists and frequency of cycling trips.

The Outcomes of the Cycling City and Towns programme: monitoring project report (April 2017)[10] notes that there was an average growth in cycling trips of 24% across all twelve towns

[7] http://webarchive.nationalarchives.gov.uk/20111005180138/http://www.dft.gov.uk/publications/the-effects-of-smarter-choice-programmes-in-the-sustainable-travel-towns-summary-report

[8] http://webarchive.nationalarchives.gov.uk/20111005180138/http://www.dft.gov.uk/publications/the-effects-of-smarter-choice-programmes-in-the-sustainable-travel-towns-summary-report

[9] https://www.sustrans.org.uk/sites/default/files/file_content_type/cycling_demonstration_towns_overall_findings.pdf

[10] https://www.sustrans.org.uk/sites/default/files/file_content_type/cycling_city_and_towns_overall_findings_april17.pdf

within this programme in 2012 relative to a 2007 baseline. At the individual town level, growth ranged from +6% (York) to +62% (Stoke-on-Trent).

Except for Blackpool (low, stayed low) and Bristol (high, increased significantly), towns with lower baseline cycle trips saw a greater percentage change over time than those towns beginning the programme with a generally higher level of cycling. Towns with higher baseline counts of cycle trips did, however, achieve greater absolute increases in counts per counter per year.

As part of the programme, the average expenditure per head on infrastructure and supporting revenue measures was £14 across the twelve towns, ranging for £12 per person to £23 per person.

## 2.4 Best Practice Gallery

There is often limited post implementation monitoring ('after' data) of walking and cycling within new developments outside of the Travel Plan process. The results of measures implemented are not yet available for the emerging sites described earlier in this Chapter. Therefore, this section provides a gallery of best practice measures used in existing streetscapes to aid pedestrians and cyclists, as well as enhancing the quality of public realm. We have selected examples which have used innovative solutions to promote walking and cycling and embed active travel networks through:

- Pedestrian and cycle priority;
- Traffic Management and reduction;
- Masterplanning;
- Public Events and public relations.

### 2.4.1 'Copenhagen Crossings' (Clapham Old Town, London)

Copenhagen Crossings have become a key design feature in public realm and pedestrian design proposals in the UK and reinforce pedestrian priority and continuity through streetscapes. These relatively minor design interventions can have a major psychological impact on the use of the spaces and interaction between vehicles and pedestrians. We would recommend that continuous crossings are considered at all minor junctions within the Otterpool Study Area.

**Photo 2: Clapham Old Town**


Source: https://www.enjoywalthamforest.co.uk/blended-cophenhagen-crossings/

### 2.4.2 Luchtsingel Bridge (Rotterdam Centraal, NL)

The Luchtsingel Bridge is particularly relevant to Otterpool as it managed to traverse the city's main railway line and therefore overcome the major barrier to movement between Rotterdam Centraal and the north of the city. The design of the bridge is deliberately bright and striking to raise its prominence and encourage pedestrians and cyclists to use the facility rather than the existing convoluted at-grade facilities.

**Photo 3: Luchtsingel Bridge**

Source: Ossip van Duivenbode and Fred Ernst http://www.platform-ad.com/the-golden-bridge-the-luchtsingel-by-zus/

### 2.4.3 Old Town Cycling (Ferrara, Italy)

A 9 km of curtain walls embrace the historic centre of Ferrara and can only be followed by bicycle or on foot, either on the embankment or below in the moat. The old town, that is one of the largest in Europe, cannot be entered by vehicles, and the city's extensive network of cycle paths consists of enchanting greenways that radiate from the city centre to the banks of the river Po. Ferrara has 85 kilometres of cycle paths and 25% of people travel by bike.

**Photo 4: Ferrara City Centre, Italy**


Source: Antonio Rambles Travels, 2015 https://antoniorambles.com/tag/ferrara-italy-city-of-bicycles/

### 2.4.4 Rapid Cycle Network (Seville, Spain)

Seville transformed its active travel network with the rapid delivery of completely segregated cycle lanes with a full 80km (50 miles) implemented in a single phase. The average number of bikes used daily in the city rose from just over 6,000 to more than 70,000. The last audit in 2017 found 6% of all trips were made by bike, rising to 9% for non-commuter journeys.

Such has been Seville's success – the number of bike trips multiplied 11-fold in a few years. Municipal officials are attempting to replicate this success by extending this implementation model to other cities in the region.

**Photo 5: Seville Segregated Cycle Lanes, Spain**

Source: The Guardian Online, 2015 https://www.theguardian.com/cities/2015/jan/28/seville-cycling-capital-southern-europe-bike-lanes

### 2.4.5 Auto-Luw Neighbourhoods (Java - Eiland, Amsterdam)

Java - Eiland is a neighbourhood in Amsterdam which is located on a peninsula, and surrounded on three sides by water. The neighbourhood been developed to be bike, pedestrian, transit and boat friendly. Cars are still able to use this space, but they are only able to travel on a small proportion of the network with underground parking garages provided. Other modes are able to have full access to the parks, bridges and docks all around the island without having to come into contact with cars. Car-free bridges and cycle routes run through the centre of the neighbourhood creating high liveability areas.

The Dutch call this type of development “Auto Luw,” which translates to “car light” or “car sparse.” These developments are now the official policy of the city of Amsterdam. Adopting the concept of ‘Auto Luw’ in Otterpool Park would ensure a user hierarchy where pedestrians and cyclists were considered first and would ensure that they are a core focus of the development.

**Photo 6: Java – Eiland**

Source: Quist Wintermans Architekten BV, 2000 http://www.qwa.nl/projecten/infrastructuur/kunstbrug_java.html

### 2.4.6 Singapore’s first Walking and Cycling Town (Ang Mo Kio, Singapore)

Ang Mo Kio, one of the most established housing estates in Singapore has become the country’s first “walking and cycling” town. The walking and cycling networks have been embedded in the masterplan since Phase One of the project therefore ensuring that the networks are delivered in all future phases.

The first phase of the Ang Mo Kio Cycling network, included a 4km cycling path that loops around Ang Mo Kio Ave 1, 3 and 8 and was officially opened on 9th July 2016. Cyclists are able to travel safely and seamlessly through the neighbourhood to Ang Mo Kio MRT station, Ang Mo Kio Swimming Complex and the AMK Hub.

When fully completed in 2020, the cycling network in Ang Mo Kio will span 20km and will be the longest in any residential town. The cycling network will include a 2.6km-long walking and cycling corridor that runs along the MRT viaduct between Yio Chu Kang MRT station and Bishan-Ang Mo Kio Park.

**Photo 7: Ang Mo Kio, Singapore**


Source: Land Transport Authority, 2017 https://www.lta.gov.sg/content/ltaweb/en/walk-cycle-ride/integrating-cycling-with-public-transport/ang-mo-kio-model-walking-and-cycling-town.html

### 2.4.7 Barcelona 'Superblocks' (Barcelona, Spain)

Barcelona has divided its old town into 400m 'superblocks' in which all through-traffic will be removed and only allowed on the perimeter routes. This approach will ensure that pedestrians, cyclists and the public realm will have priority within the Superblock borders. The Superblock concept is now being emulated globally and could form a key metric for measuring the walkability and cyclability of the Otterpool Park development.

**Photo 8: Barcelona Superblocks**

Source: http://urbanizehub.com/winning-streets-back-barcelonas-new-superblocks/

### 2.4.8 Brighton and Hove Cycle City (Brighton and Hove, UK)

Brighton and Hove has successfully developed one of the most comprehensive and innovative cycle networks in the UK over the last 10 years. A key factor behind the city's success has been its eclectic portfolio of cycle schemes ranging from light-touch contraflow cycle networks to fully segregated LSTF funded cycle routes. The city has successfully delivered multiple design innovations including the UK's first floating bus stop designs and the first truly 'Copenhagen Style' cycle route.

**Photo 9: Brighton and Hove**

Source: Mott MacDonald

### 2.4.9 'Ciclovia' (Bogotá, Colombia)

From 7 am to 2 pm every Sunday (and holidays), 76 miles of streets are closed to vehicular traffic for the 'Ciclovía', a program the local government has run since 1974. Some 1.7 million people, or about a quarter of the city's population, turn out for it on average every week. Surveys have found that nearly half of people use the blocked-off streets for at least three hours.

Bogata also has the world's first large-scale Bus Rapid Transport system (BRT) and a 400km network of cycle lanes, backed up with pro-cycling policies including car-free days. It is not just cycle lanes that the group are joining up; 46% of journeys in the city are made on foot.

**Photo 10: Bogota Ciclovia**

Source: The Guardian Online, 2013 https://www.theguardian.com/sustainable-business/blog/bogota-empowering-citizens-to-cycle

### 2.4.10 Milton Keynes and Stevenage

The study has also considered two well-intentioned but ultimately unsuccessful examples of infrastructure for walking and cycling.

Milton Keynes Redways is a 273km network of shared use paths for cyclists and pedestrians, which commenced development in the 1970s as part of the construction of the Milton Keynes new town. Redways run adjacent to the grid roads, local roads and through parks. By the 1980s the Redways were thought to be the largest dedicated local cycle network within the UK. However, cycling in Milton Keynes, at 3% of all trips, is only marginally greater than the national average.

Although the network is segregated from motorised traffic there are problems with the infrastructure. For example, indirect routes are provided via subways at major junctions which take users away from key desire lines. At junctions with more minor roads excessive radii are provided meaning that vehicle entry speeds are higher and pedestrians and cyclists have further to cross. Many routes are adjacent to high speed roads where the ease of travel by motorised vehicle is apparent; however this does not provide conditions suitable for making cycling an everyday mainstream activity. Personal security concerns regarding the use of subways may also result in lower usage. Another concern, not specific to Milton Keynes, with a pedestrian/ cycle network located directly away from the highway is providing a proactive maintenance regime. For example, paths may not be gritted in winter and overhanging vegetation can reduce the available carriageway width if overgrown, with the onus sometimes on users and resident groups to report such issues to the relevant authorities.

Stevenage New Town was designed from the outset with a cycling network, now totalling 45km in length, which is segregated from the adjacent carriageways. As with Milton Keynes, pedestrians and cyclists cross major junctions via subways. Wherever feasible the design of junctions is such that carriageways rise two metres whereas cycle routes drop down one metre

to reduce the impact of junctions on non-motorised users. This disadvantages cyclists and pedestrians in that the route becomes more undulating and hence less attractive.

**Photo 11: Redway, Milton Keynes**

Source: https://www.cyclestreets.net/location/48001/cyclestreets48001.jpg

**Photo 12: Cycle Route, Stevenage**

Source: https://www.cyclestreets.net/location/95235/cyclestreets95235.jpg. Credit: timbo

### 2.4.11 Common Conditions in Exemplar Walking and Cycling Settlements

1. There is strong, clear political and technical pro-cycling leadership which is supported through all parts of the lead organisation.

2. Cycling is considered an entirely legitimate, desirable, everyday, 'grown up' mode of transport, worthy of investment, even if current cycling levels are comparatively low.

3. Increasing cycle mode share is part of an integrated approach to decreasing car mode share. There is no intended overall abstraction from walking and public transport; and improving cycle safety and convenience is not intended to diminish pedestrian safety and convenience.

4. Loss of traffic capacity or parking to create better cycling facilities, whilst often a considerable challenge, is not a veto on such action.

5. There is dedicated, fit-for-purpose space for cycling, generally free of intrusion by heavy and fast motor vehicle traffic. In cities where the aim is to grow cycling rapidly, simple, cheap and effective measures to secure space have been used as first steps, with more permanent solutions following in due course.

6. There is clarity about the overall cycling network (including planned future development), with connectedness, continuity, directness and legibility all being key attributes.

Source: International Cycling Infrastructure Best Practice Study, Urban Movement & Phil Jones Associates for Transport for London (2014)

Points 5 and 6 are areas which could be influenced within the Masterplan and supporting transport strategy for Otterpool Park in particular.

Similarly, Cycling England in its top ten tips, based on the experience of the Cycling Demonstration Towns programme, noted that successful cycling projects incorporate the following:

1. Senior political and executive commitment to cycling programmes is critical for success;

2. Investment must be substantial and maintained over a long period;

3. A skilled and motivated delivery team is critical;

4. Engagement and support of colleagues in other teams across the local authority is vital;

5. Local stakeholder engagement and support is also vital;

6. Cycling development needs both infrastructure and encouragement measures;

7. Programmes need to be adapted to the local context, priorities and opportunities;

8. Programmes need to focus on clearly defined target groups;

9. Programmes need to cater for different types of cycle user; and

10. Programmes need to promote both new and improved cycle routes.

Source: CIHT – Planning for Cycling, 2015 (quoting former Cycling England website, 2010)

Points 6 to 10 are areas that could be influenced and addressed within the Masterplan and supporting transport strategy for Otterpool Park.

These two sets of principles also apply to the development of successful pedestrian environments.

## 2.5 Supplementary Cycling Provision and Technologies

### 2.5.1 Cycling Provision for Otterpool Park

There are several measures which could implemented in addition to new and upgraded routes at Otterpool Park to encourage residents and employees to cycle more often. These include:

- Cycle hire scheme;
- Bike loans scheme;
- Electric cycle hire; and
- Cycle parking/ a bike hub.

Initial points of reference identified for the introduction of any such measures are:

- The principal destination for future residents is expected to be Westenhanger rail station. As such, cycle infrastructure provision should be focussed on the station;
- Hythe and Folkestone are the most notable external trip destinations for leisure and employment opportunities. For these trips, E-bikes are likely to be attractive proposition for inexperienced or new users because of the topography, and the need to traverse the escarpment to reach these coastal settlements;
- Any bike loans/ trials for residents and employees should target groups where bike ownership could be a genuine barrier to cycling;
- Substantial cycle hire schemes are only viable within large cities. Therefore, any scheme for Otterpool Park should be small-scale, focusing on the key destination of Westenhanger rail station. With the inclusion of electric bikes within the scheme, connectivity to and from Hythe could also be considered;
- Any cycle hire scheme should consider commercial partnership with third parties such as Southeastern trains, existing operators in nearby areas which we understand from FHDC may be receptive to expanding operations to Otterpool Park or with social enterprises to source recycled bikes. This will reduce the risk and financial liability to the site promoters/ developers/ management company;
- A feasibility study should be carried out to define the parameters of any cycle hire scheme. A trial period/ evaluation stage should be included within any specification for procurement.

### 2.5.2 Cycle Hire

A 2014 study[11] reviewed best practice from 16 cities for cycling infrastructure. Almost all cycling friendly had public cycle hire schemes. From a behavioural change standpoint, the study reported that:

> *"typical users of public cycle hire bikes (in the study cities and also in London) tend to look quite different from the hi-viz-clad UK commuter stereotype. This has the indirect benefit of communicating a more inclusive message about urban cycling'."*

Source: International Cycling Infrastructure Best Practice Study, Urban Movement & Phil Jones Associates for Transport for London (2014)

CIHT, Planning for Cycling[12] cites the following key lessons learned in public bicycle hire schemes:

[11] http://www.urbanmovement.co.uk/thoughts/tfl-international-cycling-infrastructure-best-practice-study

[12] CIHT – Planning for Cycling, October 2014 (http://www.ciht.org.uk/en/document-summary/index.cfm/docid/A462E2ED-886F-491E-BDCAD6B7B4DB7E6E)

- It is important to choose the right scale of scheme: In the UK, several small schemes have faltered because of low take-up. Being sufficiently ambitious with the scale for the scheme is important, together with strong political support to make the scheme a success;
- The financial aspects need careful consideration. Even 'successful' schemes have led to significant costs on the public purse and getting sufficient value from the sponsorship or advertising deal is a critical issue. There is also the 'opportunity cost' of investing in public bicycle schemes and whether it represents the best use of cycling development funds;
- The timing is important, especially whether a town or city is ready for a scheme. In both Paris and London, cycling levels had increased rapidly in the years before the introduction of the schemes, and both cities had invested substantially in cycling infrastructure in preceding years;
- Public bicycle schemes need to be accompanied by greater investment in cycling, both in infrastructure and wider promotional measures.

**Photo 13: Brompton Bike Hire Docks**


Source: Mott MacDonald

### 2.5.3 Bike Sharing as part of Mobility as a Service

Scotland's first Mobility as a Service (MaaS) pilot programme took place in Dundee and North Fife between October 2017 and March 2018. Users can plan, pay for and travel on trains, taxis and buses, all from a single web app, NaviGoGo. The pilot project was tested by 100 young people and was linked to the user's Young Scot rewards system, which helps to incentivise young people to choose more sustainable modes of transport. MaaS enables users to examine options and to pay for travel through a single source, rather than from a variety of different providers, which have separate timetables, booking systems and payment methods. As part of the pilot 10 branded bikes were provided at three locations.

### 2.5.4 Electric Bikes

As identified in the previous section, Electrically Assisted Pedal Cycles (or 'e-bikes') could provide a useful means of travel for future residents and other users of Otterpool Park.

Several locations throughout the country now have small scale e-bike hire schemes in place. In September 2015, 11 schemes received the Department for Transport funding towards Electrically Assisted Pedal Cycle (EAPC) schemes. These included schemes at commuter cycle-hubs at railway stations and park & rides, a hilly campus university encouraging students to cycle to lectures and a tourist hire scheme. Projects which are relevant to Otterpool Park are:

- Plymouth – expansion of 20 e-bikes to reduce car dependency at Park & Ride sites and offer a 'try before you buy' offer for local residents. There is challenging topography, like that in evidence at Otterpool;
- Exeter – 22 EAPCs at Exeter Central train station, Exeter University and Sowton Park and Ride, with the Civic Centre and County Hall;
- Hebden Bridge Alternative Technology Centre – expansion of 15 e-bikes located in a community challenged by its topography;
- Bristol – 24 e-bikes located at four hubs including Temple Meads station;
- Rotherham – 70 e-bikes at an existing popular mobile travel hub to attract commuters who previously did not cycle.

**Photo 14: Electric Cycle Hire, Exeter**


Source: Gizmodo

Wider cycle hire schemes with a significant number of electric bikes are currently planned for Derby (200 e-bikes) and Edinburgh (600 cycles, of which 100 will be e-bikes).

As part of Brighton's LSTF project[13], surveys were undertaken at two large workplaces in Brighton about travel habits and interest in electrically-assisted bikes. Subsequently, 80 commuters were loaned bikes for 6 to 8 week periods. Interest in e-bikes was also assessed through public events, a community-based trial, and through review of the international literature. A smart monitoring system was installed on the trial fleet of 35 e-bikes to collect usage data in real time. There was a 20% reduction in car miles by users during the trial.

In a trial in Norway[14] there was an in increase from 28% to 48% mode share through e-bike use, and more uptake amongst women. Those using e-bikes increased the number of trips per day from 0.9 to 1.4 and distance travelled from 4.8km to 10.3km.

A 2015 paper by ITDP[15] forecasts that globally e-bike use will add circa 2% of mode share on top of normal cycling under business as usual conditions. In a high shift to cycling scenario, the study anticipates the UK as having a mode share target of 9% with cycling but with circa 15% with the addition of e-bikes – so an additional 6% points (or an additional 67% mode shift on top of standard cycles).

### 2.5.5 Cycle Hubs

A key strength of Otterpool Park is its proximity to Westenhanger rail station, however there is no existing cycle parking provision. In order to provide for trips to and from the station for the future increased demand from Otterpool Park residents, high quality cycle parking should be provided. This is an important consideration given the limited land available for commuter car parking and that some parts of the site may not be within easy walking distance of the station.

In 2016, Robert Goodwill, Minister of State for Transport, highlighted that 'the number of people cycling to catch trains has increased by 40 per cent since 2010, so secure cycle spaces at rail stations are critical'[16]. Cambridge rail station provides exemplar cycle parking provision. This is the UK's largest cycle hub, which was opened in June 2016. The hub project was installed by Abellio Greater Anglia. The facility is open seven days a week, is free of charge, and is monitored by CCTV. The 2,850 secure spaces more than triples the previous capacity for cycles, with a view to boosting cycle propensity from an already high baseline.

The cycle hub at Cambridge Station is fortified by a cycle shop. Its website offers cycle hire pricing for electric bikes as well as normal bikes and provides multiple hire periods.

[13] http://www.smart-ebikes.com/smart-ebikes/

[14] https://www.sciencedirect.com/science/article/pii/S1361920915000140

[15] http://www.uci.ch/mm/Document/News/NewsGeneral/17/33/93/ExecutiveSummary-A-Global-High-Shift-Cycling-Scenario-_-Nov-12-2015_Neutral.pdf

[16] https://www.rutlandcycling.com/content/official-opening-of-cambridge-station-s-cyclepoint-largest-station-cycle-hub-in-uk.aspx

**Photo 15: Cambridge Station CyclePoint**

Source: Mott MacDonald

An example of a model cycle hub serving an outlying residential location is found at Cambridge North Station, which opened in 2017. The facility has a large cycle parking facility (1,000 spaces), with shelter and CCTV monitoring. The hub connects with local cycle routes, improving accessibility. The station is situated within ten minutes cycle of the Northstowe development[17].

[17] http://www.northstowe.com/content/transport

**Photo 16: Cambridge North Cycle Hub**

Source: Lock It Safe

## 2.6 Summary/ Conclusions

Based upon our review of cases studies attributes which can lead to an environment for walking and cycling to thrive in a new community include:

- Quality of the public realm;
- Ease of movement;
- Legibility;
- Character; and
- Adaptability particularly to changing economic, social and technological considerations.

Features which have either been shown to encourage non-motorised travel or are being implemented as part of developments like Otterpool Park are:

- Segregated cycling provision adjacent to primary and secondary routes, with conditions suitable for on-carriageway cycling on tertiary streets. Footways of at least 2.0m in width for pedestrians;
- Direct, safe crossing points for pedestrians and cyclists at junctions, noting these groups may have differing needs. Pedestrian and cycle priority at crossings should be safe guarded through features such as raised tables and Copenhagen crossings.

- Streets should have low speeds, enforced by suitable geometry such as narrow carriageway widths and small junction radii;
- Supplementary provision for cycling such as cycle parking at transport interchanges and where commercially viable, a cycle hire or loan scheme; and
- Revenue/ promotional activities to promote a walking and cycling culture from the outset of new development.

There is a lack of literature available to provide evidence on the differences between utility and recreational cycling within new residential/ mixed use developments. Notwithstanding, recreational walking and cycling appears to be a key opportunity for Otterpool Park, given the amount of green space provided within the Masterplan and the landscape value of the surrounding area. This is covered more fully in Section 4.

# 3 Masterplan Review

On 15/03/18 Mott MacDonald attended a pre-application meeting for Otterpool Park with Folkestone & Hythe District Council, Arcadis and Farrells. This introduced the development proposals, the site's context and emerging considerations relating to transportation and movement.

## 3.1 Documents Supplied

Following the meeting with Folkestone & Hythe District Council supplied Mott MacDonald with the following documents for review:

- Otterpool Park Framework Masterplan Report (15/03/18);
- Otterpool Park Place Panel presentation slides (12/02/18);
- Place Panel meeting minutes (12/02/18);
- Place Panel meeting agenda (12/02/18);
- Place Panel meeting minutes (25/01/18).

### 3.1.1 Place Panel

Place Panels are teams of experts appointed by a local authority to provide specialist advice and support to make sure that planning applications for large developments conform to best practice in terms of place shaping. In December 2017, Shepway District Council appointed a panel of 17 independent experts to act as a 'critical friend' for the Otterpool Park Garden Town proposals. The panel comprises leading professionals in urban design and masterplanning, town planning, landscape design, social infrastructure, sustainability and innovation, transport, housing and heritage. The latest available Place Panel meeting minutes (February 2018) showed that the following comments were relevant to walking, cycling and connectivity:

- The planning authority identifies the following areas where Place Panel contributions would be helpful:
  - Proposed realignment of the High Street;
  - Alignment of the roads;
  - Integration and connections between the town centre and local centres;
  - Location of the secondary school, either north or south of the A20.
- The panel supports the principle of the north/ south alignment of the high street and recommends further consideration of what will make the high street successful.
- The more comprehensive integration of cycling and walking is welcomed but a more detailed diagram of anticipated movement would be welcomed.

Accordingly, this walking and cycling study has considered these elements of the Masterplan further.

## 3.2 Design Guidance

### 3.2.1 The Kent Design Guide

The Kent Design Guide seeks to provide a starting point for good design. It aims to assist designers to achieve high standards of design and construction for new developments. The guide gives the following advice on designing for movement:

- Designing for Pedestrians and Cyclists Developments should be 'permeable' (easy to move through in all directions) and linked to the surrounding network, allowing safe, direct routes for pedestrians and cyclists;
- Routes that link key areas should be considered at the outset so that, over short distances, residents are encouraged to walk or cycle;
- Direct routes through developments should be provided for walkers and cyclists
- Cycle routes need to be planned strategically, rather than on a piecemeal basis. Where cyclists will share the use of a path with pedestrians and it is considered that conflicts will pose an unacceptable risk, it is desirable to segregate the two uses. Where it is intended to include provision for cyclists on a public right of way, the 'Cycle Tracks Act 1984' should be referred to;
- Adequate secure storage for cycles must be provided at dwellings and at destinations such as workplaces, shops, community facilities and transport nodes. It should be integrated with the design of buildings and streets, be weather protected and either within a lockable curtilage or have good natural surveillance;
- A comprehensive movement framework will not be effective unless people are aware of it and are willing to support the more sustainable forms of transport. With the more major forms of development, schools, businesses and developers should submit 'travel plans' which encourage staff and, where appropriate visitors, to think about their travel choice and consider alternatives to the car.

**Photo 17: Existing Conditions Hythe**

### 3.2.2 Manual for Streets and Manual for Streets 2

The Manual for Streets (MfS) provides guidance on the design, construction, adoption and maintenance of streets. It encourages those involved in the design process to think creatively about their various roles in the delivery of streets, breaking away from standardised, prescriptive, risk-averse methods to create high quality places. The emphasis of design should be on prioritising the needs of pedestrians, cyclists and public transport.

The Manual for Streets 2 (MfS2) is a companion document to Manual for Streets that explains how the principles of the Manual for Streets can be applied more widely. It demonstrates through guidance and case studies how these principles can be extended beyond residential streets to consider both urban and rural situations.

MfS advises for pedestrians that:

- The propensity to walk is influenced by the quality of the walking experience in addition to the distance;
- Good sightlines and visibility towards destinations and intermediate points are important for wayfinding and personal security;
- Routes should match desire lines, including across junctions;
- Networks should be connected, with surface level crossings provided where practicable;
- Pedestrians should be catered for on multifunctional streets rather on routes segregated from motor traffic;
- Obstructions should be minimised; and
- There is no maximum footway width – dimensions should consider pedestrian volumes and composition.

Using the advice in MfS it is concluded that:

- Cyclists prefer direct, barrier free routes;
- Off-carriageway cycle tracks must be designed so that side road crossings do not bring users into conflict with side road traffic;
- Cyclists are sensitive to traffic conditions – high speeds or volumes of traffic discourage cycling;
- Junctions should accommodate cyclists' needs. Corner radii should be minimised to lower motorised traffic speeds.

### 3.2.3 Planning and Designing for Cycling

Cycle infrastructure planning should adhere to the five principles[18], originally expounded by the Dutch (CROW, 2007) and repeated in many design guides worldwide since:

- Coherence: Infrastructure for cycle traffic needs to form a coherent whole and provide connections that link origins and destinations; key elements include wayfinding and consistency of quality of route;
- Directness: users need to be offered the most direct route possible and particularly routes which are shorter and quicker than by car;
- Attractiveness: Cycling infrastructure should be well designed to fit in with the surroundings and engender feelings of personal security;

[18] CIHT – Planning for Cycling (http://www.ciht.org.uk/en/document-summary/index.cfm/docid/A462E2ED-886F-491E-BDCAD6B7B4DB7E6E)

- Safety: Infrastructure should be designed to offer space to cycle users to reduce their feelings of vulnerability from all potential threats;
- Comfort: Infrastructure should reduce delay at particular locations and the consequential additional effort required to recover normal cycle speed; similarly, infrastructure should provide smooth surfaces with no discrete discontinuities such as kerb access.

Planning for Cycling[19] states that the following network planning stages should be undertaken:

1. Define objectives;
2. Map land use and assess cycling demand;
3. Map existing routes, facilities, cycle volumes and cycling-related collisions;
4. Identify priority locations and constraints, which need to be treated;
5. Identify improvements to the network (option development);
6. Predict potential demand;
7. Prioritise and select schemes;
8. Implement schemes; and
9. Monitor and assess operation against business case.

## 3.3 Framework Masterplan Review

### 3.3.1 General Commentary

We have identified the following key areas of the Masterplan for review:

- Connectivity between residential areas and the high street/ local centres within the Masterplan area;
- Internal permeability across the site; and
- Links to the railway station.

External connectivity to surrounding settlements is considered in the next Chapter.

Our review of the documents supplied considers:

- Quality of the public realm;
- Ease of Movement;
- Legibility;
- Character; and
- Adaptability particularly to changing economic, social and technological considerations.

A copy of the Masterplan documents reviewed is provided as Appendix A.

### 3.3.2 Internal Connectivity and Issues

In this section, we have compiled a short summary of the key issues which should be considered further enhancing the internal connectivity within the Study Area. Our points are supplemented in Section 3.3.3 which contains a more detailed commentary on the cross-sections and indicative layouts.

- **East - West Severance:** the A20/261 and HS1 railway line are the two key severance features within the Study Area and it is not clear from the network plans how these will

[19] CIHT – Planning for Cycling (http://www.ciht.org.uk/en/document-summary/index.cfm/docid/A462E2ED-886F-491E-BDCAD6B7B4DB7E6E)

be overcome or treated. Improved connections and links over the railway line are essential especially given the constrained nature of existing accesses e.g. Stone Street. The A20 also dissects the Study Area which could have a severe impact on wider permeability – it is not clear from the network plans or street hierarchy how the A20 will be integrated within the street hierarchy.

- **Junctions**: A key aspect of improved permeability and overcoming severance is to ensure that all junctions incorporate pedestrian and cycle facilities. The current proposals do not provide details of proposed junction locations or design arrangements. These should be included alongside the street sections.
- **North - South Permeability:** unlocking north-south permeability hinges on the junctions and overcoming the key severance points. It will also be important to address wider connections to Sellindge, Stanford, Newingreen, and Lympne.
- **Street Hierarchy:** It is unclear from the current masterplan how the street sections will be applied across the Study Area. For example, which cross-sections will be applied on the Proposed Primary Road Network. The network plans and proposed street sections should be combined to create a clear street hierarchy covering the full Garden Town.
- **Public Transport Access Strategy:** The interaction between the bus network and other road users should be considered in the Street Sections especially on sections where multiple bus routes are planned. The proposals for the bus network should concentrate on interaction with cyclists and kerbside facilities within the street sections. The proposals also include locations for interchanges but it is not clear how these will be arranged.
- **Public Right of Way/ Primary Paths/ Saxon Shore Way:** The non-vehicle links have potential to create a comprehensive network of dedicated routes for pedestrians and cyclists. The network plan should be integrated with the street sections to confirm the status of these routes and their integration within the wider network. The interface between the existing PRoW and proposed internal network should be clarified to ensure that the networks are complimentary.

### 3.3.3 Cross Sections

Having reviewed the Masterplan's 'Street Types, Plans and Sections', we have developed the below key actions which should be addressed in the development of the masterplan. These actions complement the points raised in Section 3.3.2 on Internal Connectivity.

- **Prioritise pedestrian and cycle facilities**: It is unclear from the sections how/if pedestrians and cycles will be separated from each other and how much space will be allocated between the groups. The sections suggest a levels difference between the footpath and cycleway, however dimensions are only provided for the combined width of the facility. It is essential that the level of service and minimum dimensions for both pedestrians and cyclists is clear as the designs develop.
- **Sections + Dimensions**: Given the ambition of promoting walking and cycling within the development, there should be a stronger focus on widening all facilities where feasible. Several of the proposed sections use minimum recommended dimensions with little scope for accommodation future increases in flows of pedestrians and cyclists. There should also be a social consideration within the sections for developing a network which is comfortable for families and less confident cyclists who are expected to cycle in the area.
- **Permeability of Streetscapes**: the proposed arrangement of footpaths and swale/verges will create significant crossing distances and therefore reduce the permeability of these streetscapes. The swale features in particular lengthen the crossing distances across the street sections. Permeability should be a key feature to enable informal pedestrian crossing

activity, and in doing so, creating more human-scale streets. The permeability of the streetscapes is further limited by generous highway dimensions such as 3.5m for on-street parking bays and lane widths of 3.65m.

- **Kerbside Demand + Active Frontage**: the proposed hierarchy and sections should clarify how pedestrian and cycle facilities will interact with larger vehicles specifically buses and delivery vehicles. The 'Strategic Street' section suggests commercial activities at ground floor, these premises will need to provide access for larger delivery vehicles however it is not clear from the sections how this will be accommodated and interface with pedestrian and cycle infrastructure. Similarly, sections should be provided for the bus network to illustrate how buses and cycles operate together.
- **Consolidate number of sections**; we have made recommendations to consolidate the existing streetscape options and to provide minimum dimensions as follows:
  - **Strategic and Primary Streets (20m Total) =** Our design recommendations for Strategic and Primary Streets are very similar in that both proposals need to distinguish the pedestrian and cycle spaces to ensure that both groups have appropriate levels of service. This could be achieved by narrowing the carriageway and verge spaces to create additional space for pedestrians and cycles. The existing '187 Primary Street Plan' should be revised to incorporate these changes.
  - **Secondary Street (15m Total) =** we have assumed that this is a more residential street type with lower volumes of vehicular traffic than Primary Street. We would recommend taking the existing '192 – secondary street section' forward as this has significantly reduced pedestrian crossing distances compared to the alternative layouts. We would recommend separating and widening the proposed 'footpath/cycleway' to ensure minimum levels of service for pedestrians and cyclists. We would anticipate reasonably high pedestrian flows in a residential street and the 3m provision therefore would not be adequate.
  - **Tertiary Street/Mews (12m or 8.5m) =** this design should minimise the impact of vehicular traffic and promote the 'Liveability' of these spaces to the residents. We have adapted this cross-section to emulate the design principles of the existing 'Mews/Shared Surface' option which we feel is more appropriate for the residential setting. The design should ensure passive provision of footways on both sides of the street to ensure that there are dedicated areas for pedestrians in case of vehicles. However, the overall design principle will still feel like a shared surface and an environment akin to the Dutch 'Fietsstraat' principle where vehicles are considered 'guests' in the street and pedestrians and cycle have priority.
  - **Cycleways + Footpaths =** We would recommend that the existing range of sections for 'cycleways and footpaths' is reduced to provide a consistent level of service for both pedestrians and cyclists in all sections. The current proposals, specifically for the 'Commuter Cycle Routes', are not wide enough to comfortably accommodate both pedestrians and cyclists.

**Photo 18: Example of a Secondary Street, Cambridge**

Source: Mott MacDonald

### 3.3.4 Summary of Findings and Suggested Actions

Our main recommendation is to review the existing design proposals to ensure that pedestrians and cycles are prioritised throughout each cross-section. Particular focus should be given to how pedestrians and cycles will use the streetscapes and interact with vehicular traffic. We also recommend consolidating the number of cross-sections to create a clearer hierarchy of options with each cross-section designed for different user needs and street typologies.

# 4 Connectivity to Surrounding Areas

In this section we seek to understand the opportunities for providing enhanced access to and from Otterpool Park by foot and cycle. To inform the exercise a desktop and site based review of existing highway and public rights of way networks has been undertaken. A site visit took place in March 2018.

## 4.1 Existing Conditions

### 4.1.1 Key desire lines and catchment area

A catchment plan is provided as Appendix B1, which shows 1km, 2km, 5km from Otterpool Park proposed local centre.

The CIHT document 'Guidelines for Providing for Journeys on Foot' states that "walking accounts for over a quarter of all journeys and four fifths of journeys less than one mile". The document also shows that people are willing to walk up to 2km for commuting trips. The 1km/ 2km walking catchment shows that Westenhanger is within this walking distance of the Otterpool Park local centre.

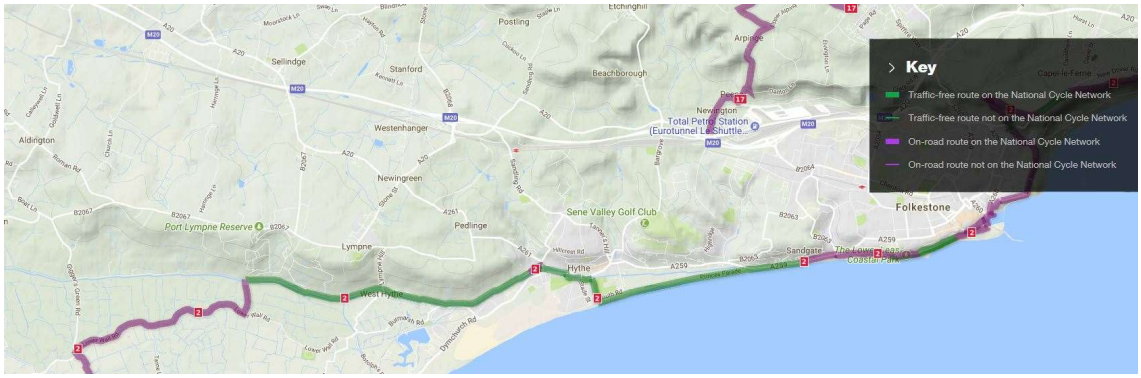
In the 2016 National Traffic Survey, DfT states that the average length of a cycle journey is 3.5 miles (5.6km). The DfT's LTN 2/08 (Cycle Infrastructure Design) states that *"in common with other modes, many utility cycle journeys are under three miles (ECF, 1998), although, for commuter journeys, a trip distance of over five miles is not uncommon. Novice and occasional leisure cyclists will cycle longer distances where the cycle ride is the primary purpose of their journey".*

A 5km cycling catchment area has been produced to represent a reasonable average cycling distance. This demonstrates that Hythe, Lympne and Sellindge are all within this distance.

Key cycle desire lines are likely to be to Hythe, Sandgate and Folkestone for both leisure and utility trips; Westenhanger/ Sandling Stations and Lympne Industrial Park for utility trips.

### 4.1.2 Designated Cycle Routes

**Figure 5: Cycle Routes**




Source: Sustrans

At present there are no dedicated cycle routes in the immediate vicinity of the site. However, the coastal National Cycle Network Route 2 lies less than 3 miles to the south and is a popular long distance recreational route following the English Channel coastline. The section closest to Otterpool Park is traffic free and runs between West Hythe and Folkestone to the east and towards Romney Marsh in the west. The Royal Military Canal also runs parallel to the coast in Hythe and Sandgate and is a shared use path for cyclists, pedestrians and in places horse riders. These routes are shown in Figure 5, with NCN route 2 shown in Photo 19 below.

**Photo 19: National Cycle Network Route 2**

Source: Mott MacDonald

These east to west coastal routes, although exposed in places to the prevailing on shore winds, are relatively flat being located on or close to the coastal promenade. In some places it is necessary to share the space with pedestrians but generally the width of the cycleway is sufficient to allow two cyclists to cycle side by side.

Surfacing on these routes is predominantly asphalt and are direct and free of obstructions and are therefore capable of being ridden by riders of all ages and experience as shown in the photo below of the Royal Military Canal.

**Photo 20: Royal Military Canal**

Source: Mott MacDonald

Recent investment has been made on these routes in terms of signage, planting and the use of street furniture with community involvement in evidence. Given the flat topography, scenic views and food and drink opportunities lining the route, these are likely to be highly attractive to residents of the new development including families and occasional leisure cyclists. Providing suitable routes from the site to these recreational routes will therefore be key in determining whether Otterpool Park residents will use these cycle and pedestrian facilities.

On road regional route 17 also runs close to the site, linking the Eurotunnel terminus, east of Otterpool Park with Canterbury and Dover. Although these destinations are over 15 miles away, they could be reached with relative ease for fit cyclists on a return day trip.

Other than the designated cycle routes, there is little in the way of cycling infrastructure other than the presence of painted west and eastbound cycle lanes on the carriageway between the A20/ M20 roundabout junction and Sandling Road.

### 4.1.3 Public Rights of Way

There are a number of Public Rights of Way (PROW) within and close to the site as shown in Appendix B2. Externally to the site, the key routes are HE281/291 which runs diagonally south east from the site connecting with Pedlinge and Hythe through the Kent Downs AONB; HE371/HE274 which skirts along the northern edge of the site and runs parallel and north of HS1 between Sellindge and Sandling Rail Station; HE357/359 which bridges the M20 to provide a connection to the village of Stanford and HE313 which runs south from the Newington crossroads to Lympne and routes down the escarpment to the east to west coastal routes. A selection of photos are shown below:

**Photo 21: HE359 Footpath over the M20 north of Westenhanger Station**

Source: Mott MacDonald

**Photo 22: HE281 Footpath at Pedlinge**

Source: Mott MacDonald

In general, the network of footpaths to the north of HS1 and the M20 are more extensive allowing the opportunity for circular walks. The internal network within Otterpool Park should therefore encourage and facilitate walking routes to the south of HS1 that connect with the existing walking network and offer the opportunity to provide circular walks.

Observations indicate that these paths are well used by the existing community as they are in areas of high landscape value and provide the opportunity to link small rural communities and settlements.

### 4.1.4 Highways

This section explores the environment for cyclists and pedestrians on existing highway routes surrounding the site and has been informed by traffic flow data (refer to Table 4.1 below).

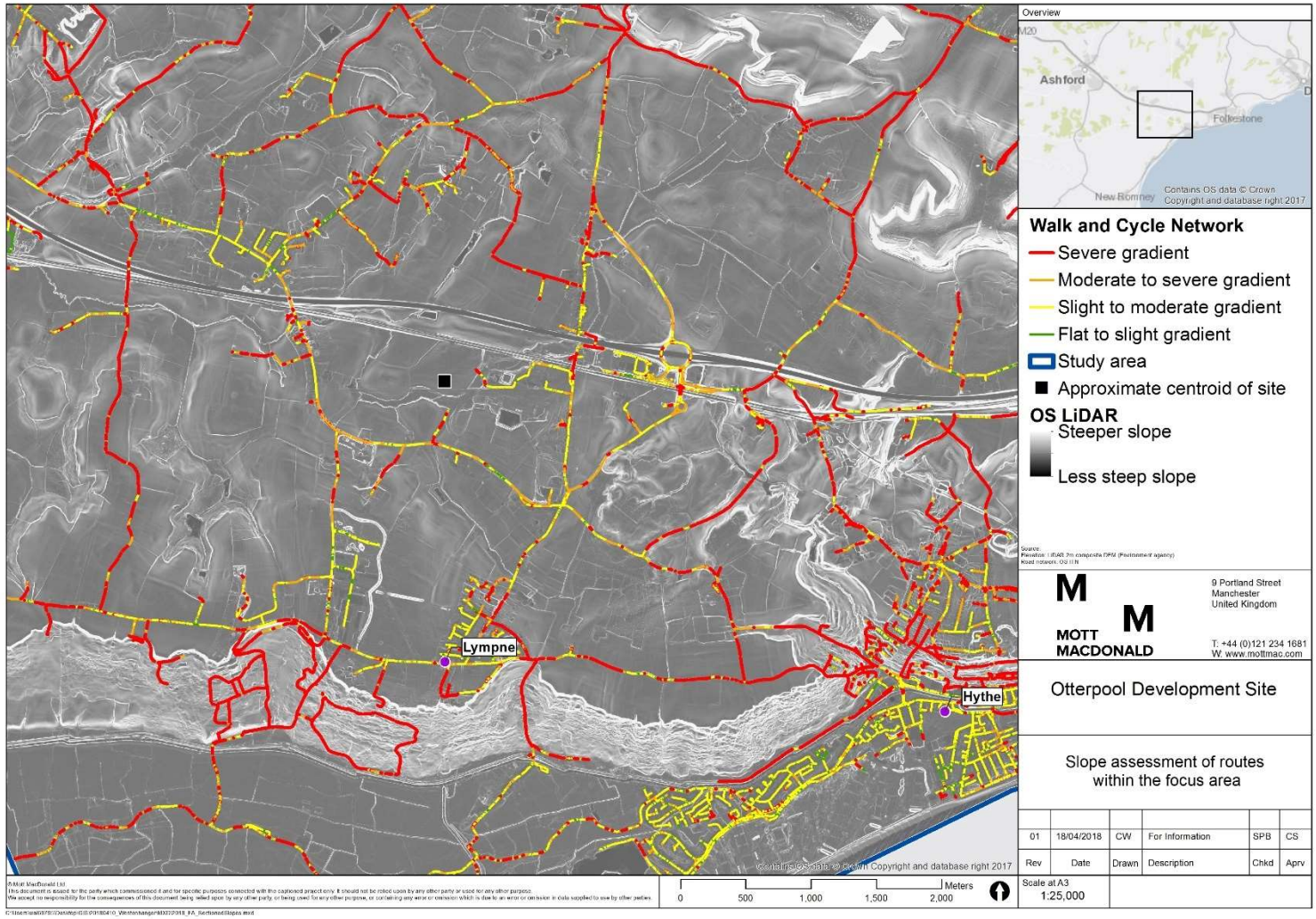
**Table 6: Two Way Traffic Volumes on key highway links in the vicinity of Otterpool Park**

| | Two Way Traffic Volumes | |
|---|---|---|
| **Location** | **AM Peak Hour** | **PM Peak Hour** |
| A20 Barrow Hill | 546 | 556 |
| A20 – west of Newingreen | 754 | 774 |
| A20 – east of Newingreen | 1414 | 1448 |
| A20 – east of M20 J11 | 539 | 507 |
| A20 Frogholt | 216 | 149 |
| Otterpool Lane | 364 | 341 |
| Stone Street – south of Newingreen | 380 | 379 |
| A261 – south of Newingreen | 662 | 813 |
| Stone Street – Westenhanger | 74 | 128 |
| Sandling Road – south of A20 | 384 | 415 |

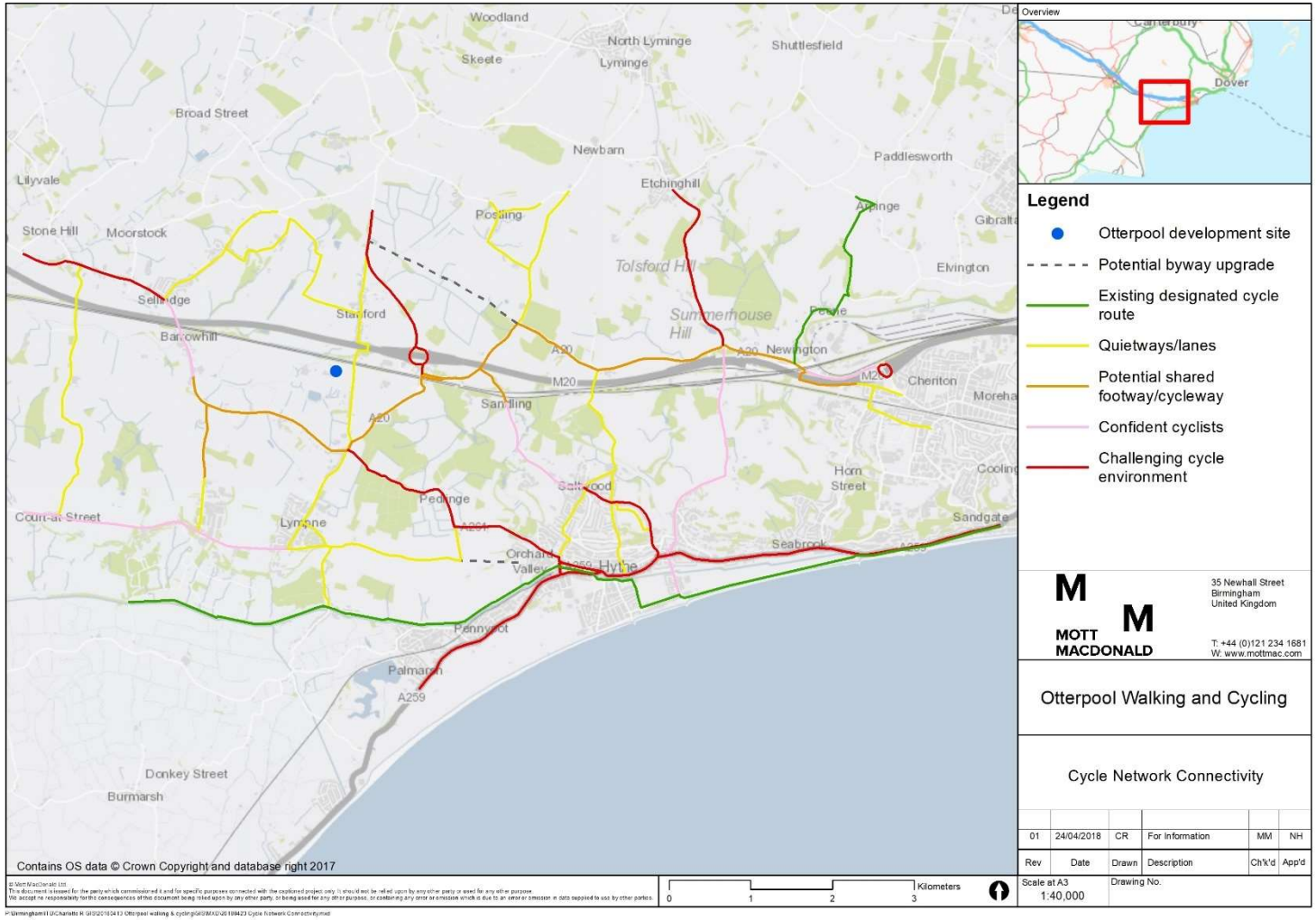
Source: Arcadis

Topographical data (Figure 6) has also been mapped to identify the hilliness of the routes surrounding the development and this has been supplemented by on site observations on cycle connectivity (Figure 7) to determine the type of infrastructure provision and its ease of use for cyclists and pedestrians.

## Figure 6: Slope Assessment



## Figure 7: Cycle Connectivity



#### 4.1.4.1 A20

Prior to the M20 motorway being constructed, the A20 used to be the primary route between London and Folkestone. Traffic flows and carriageway widths vary considerably along its length and there are three distinct cycling and pedestrian environments:

- The A20 between the M20 and Newington Crossroads (A261);
- Newington Crossroads (A261) to M20 Junction 11; and
- The A20 from J11 to the outskirts of the Folkestone built up area.

At the western end, the A20 is subject to a 40mph limit through the hamlet of Barrowhill before reverting to 50mph and then the national speed limit. Footway provision is in evidence in both Barrowhill and Newingreen, the width is generally between 1.5m and 2.2m. These do not provide sufficient width or separation from high speed traffic to enable pedestrians and cyclists to comfortably travel side by side and to pass without conflict. Effective widths are reduced in some locations by lighting columns and overhanging vegetation. Outside village limits, footway provision is negligible being limited around access to farmsteads or other fronting activity. There is also an absence of formal pedestrian crossing facilities with none in evidence along the length of the route. However, there is some evidence of the verges being used as informal pedestrian routes particularly where public rights of way cross the A20.

Key opportunities for this section are:

- To determine the feasibility of introducing a shared footway and cycleway on the southern side of the A20 to connect with a possible cycle route to Folkestone along the A20 (discussed below)
- To determine the feasibility of introducing cycle and pedestrian crossing phases at the Otterpool Lane signals in order to facilitate walking and cycling movements to the Industrial Park.

The most heavily trafficked section is the 1-mile section of the A20 between the A261 Newington Crossroads and M20 Junction 11 which forms the eastern boundary to Otterpool Park. Traffic between the coastal towns of Hythe, Sandgate and Dymchurch are funnelled onto this section from the A261 and the B2067. With an absence of parallel footways, this section of the A20 poses a particularly challenging environment for all but the most experienced cyclists as shown below.

**Photo 23: A20 approaching J11**

Key challenges opportunities for this section are:

- To provide a safe crossing point over to the HE281 footpath;
- To determine the feasibility of introducing a shared footway and cycleway on the development side of the A20 to connect with a possible cycle route to Folkestone along the A20 (discussed below); and
- To provide a satisfactory junction with the realigned A20 through the development.

The section of the A20, east of M20 Junction 11, provides access to Folkestone and is very lightly trafficked given that it runs parallel with the motorway. Surprisingly it carries less traffic than the narrower Stone Street, Sandling Road and Otterpool Lane routes which provide north – south routes between Otterpool Park and settlements to the south. This makes the route a candidate for a potential shared footway/cycleway. There appears to be sufficient verge width to accommodate a footway/cycleway on the northern side and potentially on the southern side. This would need to be the subject of more detailed investigations but would provide a relatively flat route to Folkestone and Cheriton with few intervening side roads to negotiate. As the A20 passes under the HS1 line there is an opportunity to continue the cycle track over the M20 via bridleway HE255 and then an upgraded footpath HE351 to Cheriton High Street. This avoids the need for cyclists to travel through M20 Junction 12 to access Folkestone.

Key opportunities for this section are:

- To determine the feasibility of introducing a bi-directional shared footway and cycleway on the northern side of the A20 or uni-directional shared footway / cycleway on both sides of the A20
- Potential for a new crossing point across the A20 to access HE255 bridleway
- Potential to upgrade footpath HE351 to accommodate cyclists and pedestrians.

#### 4.1.4.2 A261

Footway provision is limited to the built-up areas of Hythe and to a narrow footpath on the southern side of the A261 between the western edge of Hythe and the crossroads at Court Farm. In general, the narrow footways and high hedgerows and presence of fronting mature trees create an enclosed environment which is exacerbated by relative high traffic volumes and speeds as shown below.

**Photo 24: A261**


Steep gradients also make this route particularly uninviting for pedestrians. There is not sufficient width to provide a shared footway/cycleway on this route as the highway boundary runs very close to the edge of the carriageway.

#### 4.1.4.3 Secondary north – south linkages between the A20 and Coastal Settlements

There are a number of routes linking Otterpool Park to the coastal settlements. From a west – east direction these are:

- Harringe Lane,
- Otterpool Lane,
- Stone Street;
- Sandling Road (via the A20); and
- Castle Road (via the A20).

Two-way volumes in the peak period on Otterpool Lane, Stone Street and Sandling Road are similar with around 500 – 600 vehicles per hour in both directions. Traffic volumes on Otterpool Lane vary considerably between the lightly trafficked southern end and the northern end which has higher flows as a result of traffic generation from Lympne Industrial Park. Flows on the A261 are roughly double that of these three routes.

On all three routes there are no footways on either side of the carriageway and the roads are subject to either 50mph or national speed limits outside built up areas and 30mph within built up areas. The straight alignment of Otterpool Lane in particular encourages high vehicle speeds effectively limiting the opportunities to access the industrial estate on foot or by bicycle safely as shown below.

**Photo 25: Otterpool Lane**

The masterplan for the site indicates that a cycle route is proposed to connect to the northern side of the industrial park. This will provide an alternative access point for cyclists and pedestrians which would reduce the need to use the more heavily trafficked end of Otterpool Lane.

Sandling Road and Stone Streets are narrow in places with no centre line and even though posted speed limits are similar to Otterpool Lane, traffic speeds are lower. Sandling Road is the more challenging route for cyclists because of the steeper gradient and poor forward visibility in places with potential for oncoming traffic to be in the middle of the road. Stone Street has a straighter alignment but is more built up and is therefore the easiest route to negotiate as a cyclist.

Harringe Lane at the western end of the site is a rural lane which connects the A20 in the north with the B2067 in the south. The lane is characterised by hedgerows but as the road becomes more elevated in south, there are far reaching views to the south and east. Traffic volumes are low but the narrow alignment and poor forward visibility make this a route which would be suited to experienced cyclists rather than occasional leisure cyclists.

Castle Road is the final north – south route and is a minor route running from Saltwood to the M20 motorway. The final section which crosses the M20 via a footbridge is bridleway and connects with the A20 to the east of M20 Junction 11. As the route is not a through route it is very lightly trafficked. However, it is a more cycle friendly route when compared with the parallel Sandling Road and A261 routes and provides a direct link with Hythe.

### 4.1.5 Propensity to Cycle

The Propensity to Cycle Tool (PCT)[20] is an online assessment tool to enable visualisation of the question ‘where does cycling have the potential to grow?’. This has been used to provide an initial examination of which offsite connections have the most potential for additional cycling trips following interventions.

Caution is required when using PCT for new developments as the baseline figures have no/ very low levels of cycling.

The PCT uses the following scenarios to establish which origin and destination pairs could be most receptive to increases in cycling and thus assist decision makers to consider where investment in infrastructure could be prioritised:

- **Base:** 2011 Census data.
- **Government Target:** Central Government set a target to double the number of trips taken by bicycle between 2013 and 2025.
- **Go Dutch:** This scenario demonstrates the increase in cycling if individuals were as likely to cycle as individuals in the Netherlands. This is predicted through assuming the area has the same infrastructure as the Netherlands, whilst also taking into consideration the trip distance patterns and topography.
- **E-Bike:** This scenario demonstrates the additional increase in cycling achieved through widespread uptake of electric bikes (e-bikes). Building on the ‘Go Dutch’ scenario, e-bikes increase the willingness to go further distances, take more hilly routes and the combination of further distances and hilly routes.

PCT also has a gender equality scenario, however this hasn’t been explored for this study. This scenario considers the fact that *“in the 2011 Census, women accounted for 48% of all English*

[20] The Propensity to Cycle Tool: An open source online system for sustainable transport planning, Robin Lovelace et al.2017

*and Welsh commuters but only 27% of all cycle commuters. This gender disparity is seen across the country, with no local authority having a proportion of female cyclists greater than 50%. However, in places such as the Netherlands where cycling accounts for a high proportion of personal travel, women cycle at least as much as men. Places in England and Wales with higher overall levels of commuter cycling also tend to have smaller gender inequalities in commuter cycling. The 'Gender Equality' scenario seeks to capture a situation in which these gender disparities are eliminated. In this respect, it differs somewhat from the preceding three scenarios, as it does not use distance and hilliness data to model propensity to cycle. Instead it assumes that male propensity to cycle remains unchanged – i.e. there is no change in the number of male cycle commuters – and that female propensity to cycle rises to match male propensity. This scenario has the greatest relative impact in areas where the rate of cycling is highly gender-unequal.."*[21]

Within Shepway 009 Middle Super Output Area (MSOA), the area in which Otterpool Park sits, the tool provides the following outputs:

- Census 2011 shows a modal split of 1% cycling. Car journeys to work make up 79% of trips;
- The Government target remains similar for MSOA 009 at 3%;
- If a 'Go Dutch' approach to cycle infrastructure was adopted there would be a 9% modal split of cyclists; and
- If E-bikes were adopted the percentage of cyclists would increase to 17%.

The neighbouring MSOA, Shepway 008, which is outside but immediately adjacent to the development site, has the following propensity to cycle:

- Census 2011 shows a modal split of 2% cycling. Car journeys to work make up 76% of trips;
- The Government target for this area is to increase cycling to 3% of commuter journeys;
- If a 'Go Dutch' approach to cycle infrastructure was adopted there would be a 11% modal split of cyclists; and
- If E-bikes were adopted the percentage of cyclists would increase to 19%.

Otterpool Park sits within the following Lower Super Output Areas (LSOAs). The western area is in Shepway 009C and the eastern partially within Shepway 008D. Shepway 008D is a very large SOA with low population density and as such would not be representative of the Otterpool Park development. LSOA 009C has therefore been used in the PCT to establish potential routes from Otterpool Park. MSOAs and LSOAs are shown in Appendix B6.

From the PCT outputs it is possible to understand where people are most likely to make cycle journeys to or from the LSOAs based on the three future scenarios. All figures are based on Census 2011 Travel to Work data and do not take into consideration new developments within the LSOA areas.

The following four tables provide the top five LSOA pairs (i.e. those with the greatest potential to cycle).

[21] PCT Manual Part C. PCT methodology: commuting layer (https://cdn.rawgit.com/npct/pct-shiny/master/regions_www/www/static/03a_manual/pct-bike-eng-user-manual-c1.pdf)

**Table 7: Journey to Work Percentage of Cycling Trips Between LSOAs (2011 Base)**

| LSOA | % of Cyclists |
|---|---|
| **009C** | |
| To Shepway 008D | 2% |
| To Shepway 014C | 3% |
| From Shepway 005F | 15% |
| From Shepway 010C | 7% |
| From Shepway 009B | 6% |

**Table 8: Journey to Work Percentage and Number of Cycling Trips Between LSOAs (Government Targets)**

| LSOA | % of Cyclists (Number) | Baseline % (Number) |
|---|---|---|
| **009C** | | |
| To Shepway 009D | 9% (2) | 3% (1) |
| To Shepway 008D | 5% (2) | 2% (1) |
| From Shepway 005F | 18% (2) | 15% (2) |
| From Shepway 010C | 10% (5) | 7% (5) |
| From Shepway 009B | 10% (3) | 6% (2) |

**Table 9: Journey to Work Percentage and Number of Cycling Trips Between LSOAs (Go Dutch Scenario)**

| LSOA | % of Cyclists (Number) | Baseline % (Number) |
|---|---|---|
| **009C** | | |
| To Shepway 009D | 32% (9) | 3% (1) |
| To Shepway 008D | 19% (9) | 2% (1) |
| From Shepway 010C | 24% (11) | 7% (3) |
| From Shepway 010D | 25% (7) | 0% (0) |
| From Shepway 009B | 28% (10) | 6% (2) |

**Table 10: Journey to Work Percentage and Number of Cycling Trips Between LSOAs (E-Bike Scenario)**

| LSOA | % of Cyclists (Number) | Baseline % (Number) |
|---|---|---|
| **009C** | | |
| To Shepway 009D | 43% (12) | 3% (1) |
| To Shepway 008D | 33% (16) | 2% (1) |
| From Shepway 010C | 38% (17) | 7% (3) |
| From Shepway 010D | 40% (11) | 0% (0) |
| From Shepway 009B | 41% (14) | 6% (2) |

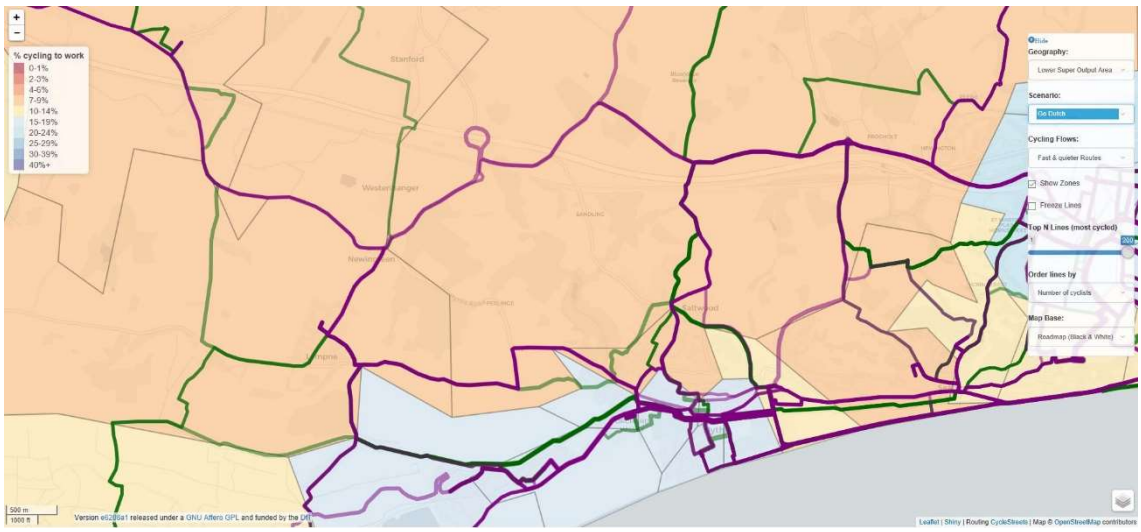
Whilst in the Government Target scenario the percentage of trips to work by cycle is highest from Shepway 005F, the number of cyclists (two) is unchanged from the baseline scenario. Because of the low levels of cycling between origin and destination pairs in the Census data, there are no routes which could result in a significant increase in total numbers of cyclists using the Government Target scenario. Figure 8 shows the most cycled routes under this scenario.

**Figure 8: Most Cycled Routes (Fast & Quieter Routes) - PCT Government Target Scenario**


Source: http://pct.bike/

In the Go Dutch scenario, although the actual number of cyclists increase by similar amounts (7 to 8 cyclists) between all origin / destination pairs, the percentage changes are more distinct. For example, movements to 009D (towards Sellindge) have an increase of 29%. Figure 9 shows the most cycled routes under this scenario.

**Figure 9: Most Cycled Routes (Fast & Quieter Routes) - PCT Go Dutch Scenario**




Source: http://pct.bike/

When analysing the E-Bikes scenario, the most popular predicted routes mirror those in the Go Dutch scenario, with the most popular movements from Shepway 009C to Shepway 009D at 43% of journeys to work (towards Sellindge), an increase of 40% from the baseline percentage. The percentage increase between all identified routes for the E-Bike scenario is between 30% and 40% with an increase in actual number of cyclists being between 11 and 15 cyclists. Figure 10 shows the most cycled routes under this scenario.

**Figure 10: Most Cycled Routes (Fast & Quieter Routes) - PCT Ebikes Scenario**


Source: http://pct.bike/

Although the percentage mode share is high in the three scenarios the numbers of cyclists would remain low. However, given the vast increase in population expected in the area as a result of Otterpool Park, should the cycling to work mode share be in the order of magnitude identified by the PCT tool (and external employment destinations remain as desirable as they were at the time of the 2011 Census), there would be a high number of cyclists between the origin/ destination pairs described above, potentially justifying the business case for new or improved cycling (and walking) infrastructure on routes which serve the pairs.

### 4.1.6 Comparison of Observations to Propensity to Cycle Results

The outputs for the areas surrounding Otterpool Park have been compared against the site observations for potential off-site connectivity improvements described earlier in this section and shown in Figure 7.

LCWIP walking tools have not been used to assess off-site links as the development is too remote from existing trip generators to make walking a realistic option for everyday journeys, other than leisure trips.

### 4.1.7 Development Priorities for Walking and Cycling

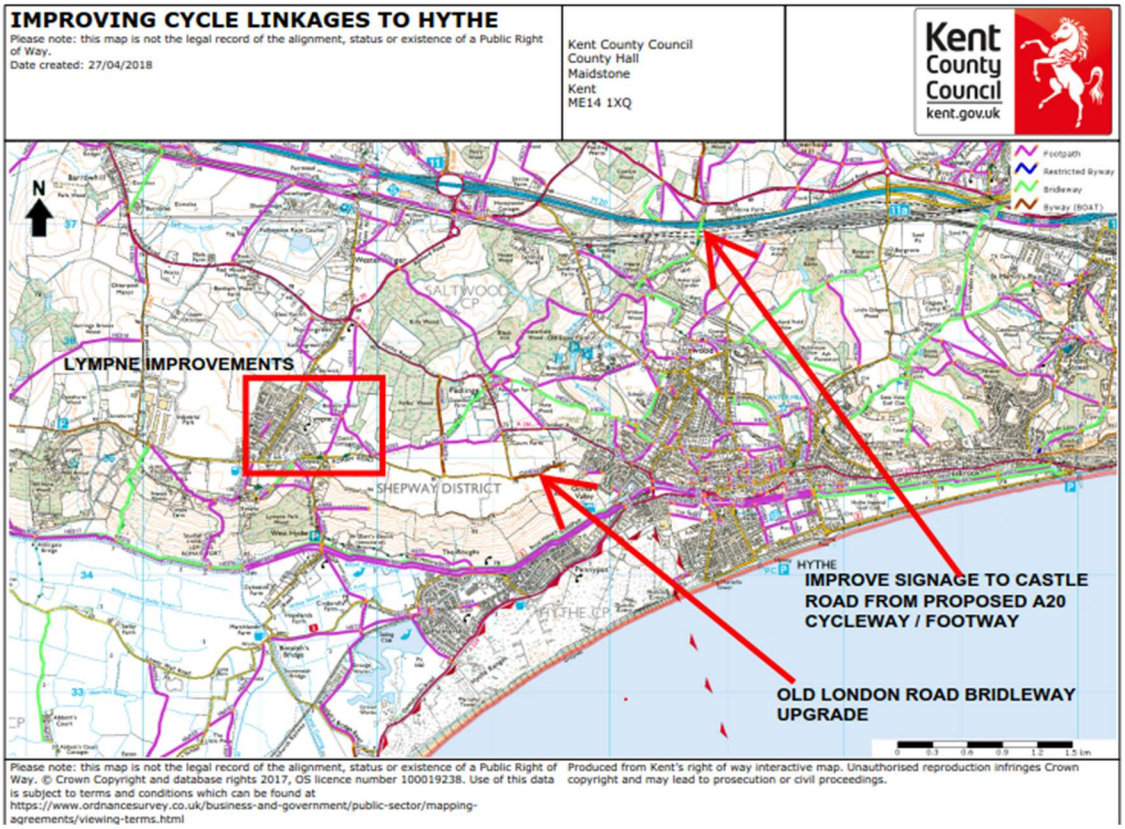
Having regard to key pedestrian and cycle desire lines, topography and traffic volumes a number of potential improvements have been identified to improve connectivity from the site to the local area. These can be broken down as follows:

- Improvements in cycle linkages to the Hythe area
- Improvements in cycle linkages to the Folkestone area
- Improvements to Westenhanger station and destinations to the north of the HS1 and M20 motorway
- Connections between the internal road network and surrounding public rights of way.

#### 4.1.7.1 Improvements in cycle linkages to the Hythe area

Figure 11 shows the suggested improvements to encourage cycling to Hythe and coastal recreational routes.

**Figure 11: Suggested Improvements to Hythe and coastal recreational routes**



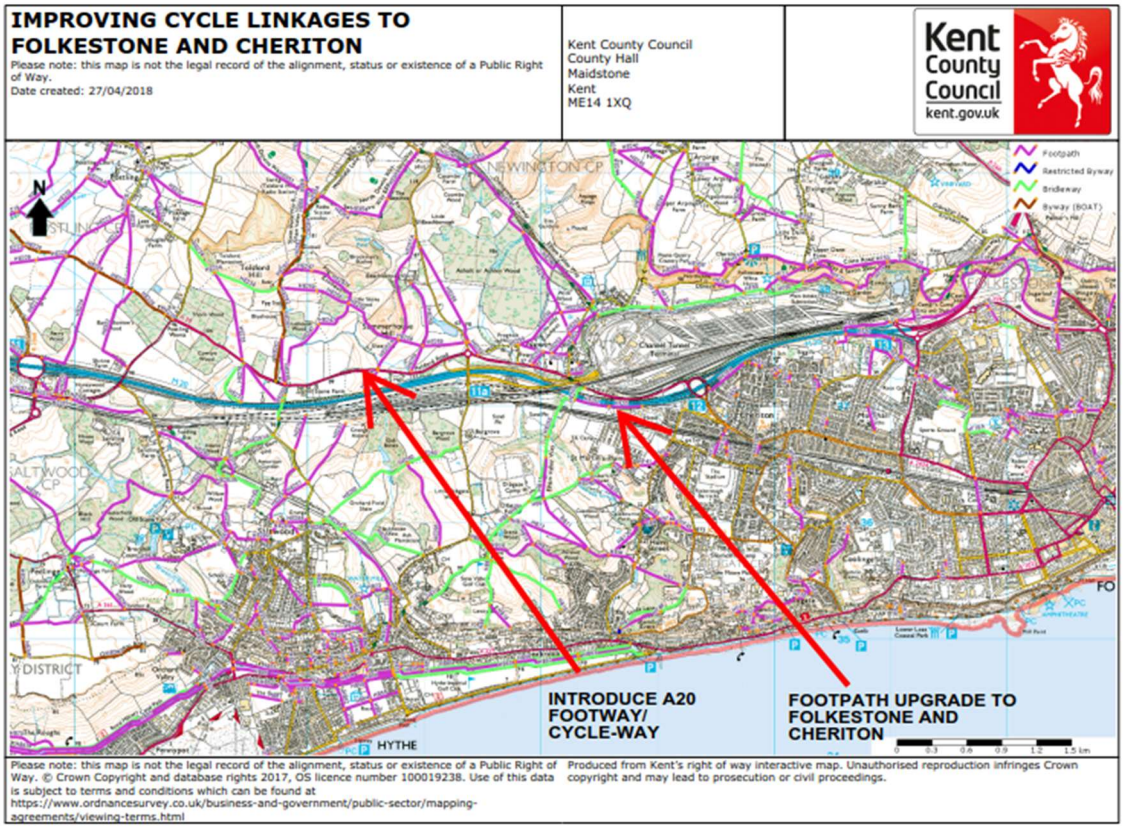

The improvements comprise of three elements:

- Improving the surfacing of the Old London Road byway to provide a direct link to Hythe via local lightly trafficked lanes and avoiding the use of the Newington Crossroads and the A261. Accompanying this would be an option to improve the footpath in the Orchard Valley residential estate to provide a connection with the Royal Military Canal
- Connecting the proposed cycle route, north of Lympne village with an upgraded footpath that connects to Old London Road or improvements to signage to guide cyclists to quiet residential roads in Lympne
- In conjunction with improvements to the A20 (see below), strengthen the connection to Castle Road via improved signage and undertaking an assessment of the condition of the connecting bridleway over the M20.

#### 4.1.7.2 Improvements in cycle linkages to the Folkestone area

Figure 12 shows the suggested improvements to encourage cycling to Folkestone and Cheriton.

**Figure 12: Suggested Improvements to Folkestone and Cheriton**




The improvements comprise of three elements:

- Assessment of the feasibility of introducing a parallel shared footway / cycleway along the A20 either as two uni-directional cycle lanes or a bi-directional cycle lane.
- Improvements to signage to encourage cyclists to use the parallel footpath to the south of the M20 to access Folkestone
- Assess the feasibility of upgrading the parallel footpath to the south of the M20 to a shared footway / cycleway.

#### 4.1.7.3 Improvements to Westenhanger station and destinations to the north of the HS1 and M20 motorway

This would involve improving the surface treatment of the existing footbridge over the HS1 line and M20 to encourage walking and cycling to settlements to the north of the M20 most notably Stanford and Sellindge.

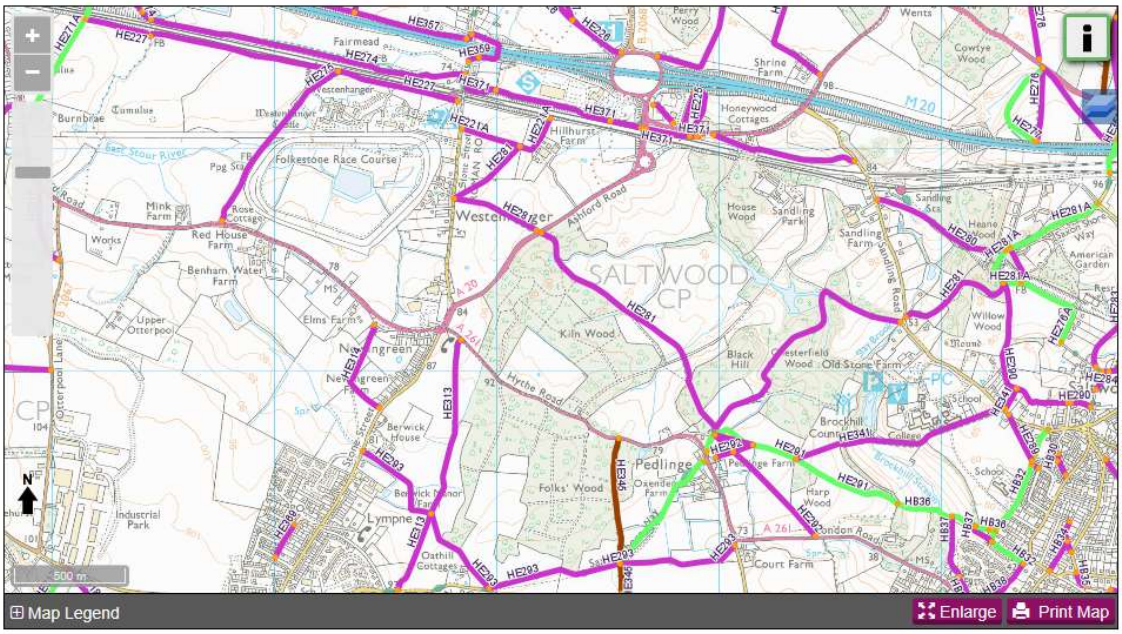
#### 4.1.7.4 Connections between the internal road network and surrounding public rights of way

In order to maximise the opportunities for walking and cycling the interface between the internal and external PROW and cycle networkwas reviewed. Key locations identified include:

- The public rights of way which run directly south of the HS1 line
- Connections across Stone Street
- Connections to the HE281 PROW which runs south east from Westenhanger village and through the proposed local centre
- Connections to Harringe Lane and the western end of Otterpool Park.

On 23/08/18 Mott MacDonald presented the draft study to the Otterpool Park design and promoter team at Arcadis' offices. At this meeting it was suggested that links from the site to PROW HE293 should be considered (in addition to HE281) to provide a further option for connectivity from the internal road network towards Hythe. At this session options for the delivery of the suggested off-site improvements was briefly considered also. Some of the recommendations for PROW connectivity, which will not necessarily cater for everyday trips to and from Otterpool Park, may form part of aspirations for leisure route improvements in the wider area.

**Figure 13: Existing Public Rights of Way**




Source: Kent County Council (https://webapps.kent.gov.uk/countrysideaccesscams/standardmap.aspx)

# 5 Mode Share Targets

This chapter seeks to establish a realistic target for mode share for Otterpool Park under a number of different growth scenarios. A first principles approach to different mode share target scenarios is described below.

## 5.1 Emerging Transport Strategy Targets

In March 2018 Arcadis provided data from the emerging transport strategy for Otterpool Park. The peak hour trip generation assumes a development of 8,000 dwellings and is shown in Table 11.

**Table 11: Trip Generation (8,000 Dwellings)**

| | Internal | | | | | | External | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AM | | | PM | | | AM | | | PM | | |
| | Arrivals | Departures | Total | Arrivals | Departures | Total | Arrivals | Departures | Total | Arrivals | Departures | Total |
| Driver | 2,265 | 1,724 | 3,988 | 1,641 | 1,996 | 3,637 | 285 | 52 | 336 | 132 | 285 | 416 |
| Passenger | 272 | 317 | 589 | 464 | 386 | 850 | 93 | 24 | 116 | 81 | 118 | 199 |
| Taxi | 11 | 8 | 19 | 7 | 9 | 16 | 1 | 0 | 1 | 0 | 1 | 1 |
| Motorcycle | 42 | 32 | 74 | 27 | 34 | 62 | 10 | 2 | 11 | 2 | 6 | 8 |
| Train | 68 | 45 | 112 | 35 | 53 | 88 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bus | 172 | 145 | 318 | 115 | 130 | 244 | 88 | 19 | 106 | 28 | 58 | 86 |
| Light Rail | 2 | 1 | 3 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bicycle | 62 | 48 | 110 | 37 | 46 | 83 | 139 | 24 | 163 | 29 | 92 | 120 |
| On foot | 183 | 179 | 363 | 122 | 117 | 239 | 2,409 | 599 | 3,007 | 716 | 1,181 | 1,897 |
| **Total** | **3,076** | **2,500** | **5,576** | **2,450** | **2,772** | **5,221** | **3,023** | **719** | **3,742** | **987** | **1,741** | **2,728** |

Source: Arcadis

The trip generation shown in Table 11 equates to the walking and cycling mode shares shown in Table 12.

**Table 12: Walking and Cycling Mode Shares**

| | External | | | | | | Internal | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AM | | | PM | | | AM | | | PM | | |
| | Arrivals | Departures | Total | Arrivals | Departures | Total | Arrivals | Departures | Total | Arrivals | Departures | Total |
| Bicycle | 2.0% | 1.9% | 2.0% | 1.5% | 1.7% | 1.6% | 4.6% | 3.4% | 4.4% | 2.9% | 5.3% | 4.4% |
| On foot | 6.0% | 7.2% | 6.5% | 5.0% | 4.2% | 4.6% | 79.7% | 83.3% | 80.4% | 72.5% | 67.9% | 69.5% |

Source: Mott MacDonald (derived from Arcadis data)

## 5.2 Existing Walking and Cycling Mode Share

### 5.2.1 2011 Census Method of Travel to Work

To understand how the proposed walking and cycling mode shares compare to existing modal shares, dataset QS701EW from the 2011 Census was reviewed. To calculate the walking and cycling mode share, the following selection criteria have been excluded from the Census data:

- Work Mainly at or From Home;
- Not in Employment; and
- Other method of Travel to Work.

"Underground, metro, light rail, tram" option has been included within "Train". The dataset was used for the following areas:

- Shepway 008 (MSOA located to the east of proposed Otterpool Park site);
- Shepway 009 (MSOA where Otterpool Park will be located);
- Shepway 010 (MSOA to the south of Otterpool Park and where Hythe, the closest town, is situated);
- Shepway (whole local authority area); and
- Kent (county area).

Table 13 provides a summary of the 2011 mode share for each of these areas.

**Table 13: Method of Travel to Work (Origins)**

| Geographical Area | Shepway 008 | | Shepway 009 | | Shepway 010 | | Shepway (Authority Area) | | Kent (County) | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Method of Travel to Work (n = persons)** | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** |
| Train | 179 | 7.1% | 136 | 4.7% | 98 | 3.7% | 1,999 | 4.4% | 65,131 | 10.1% |
| Bus, minibus or coach | 66 | 2.6% | 115 | 3.9% | 154 | 5.6% | 2,358 | 5.2% | 25,917 | 4.0% |
| Taxi | 3 | 0.1% | 2 | 0.1% | 8 | 0.3% | 250 | 0.6% | 2,756 | 0.4% |
| Motorcycle, scooter or moped | 12 | 0.5% | 33 | 1.1% | 23 | 0.8% | 362 | 0.8% | 5,991 | 0.9% |
| Driving a car or van | 1,906 | 76.1% | 2,350 | 79.3% | 1,804 | 65.9% | 30,422 | 67.3% | 419,206 | 65.2% |
| Passenger in a car or van | 99 | 4.0% | 131 | 4.4% | 143 | 5.2% | 2654 | 5.9% | 35,285 | 5.5% |
| Bicycle | 43 | 1.7% | 37 | 1.2% | 77 | 2.8% | 893 | 2.0% | 11,948 | 1.9% |
| On foot | 197 | 7.9% | 159 | 5.4% | 426 | 15.6% | 6,261 | 13.9% | 77,057 | 12.0% |
| **Totals** | **2,505** | | **2,965** | | **2,737** | | **45,199** | | **643,291** | |

Source: Nomis. Note: Percentages have been rounded to the nearest whole number

Shepway MSOA 009 currently has low levels of walking and cycling, as has the adjacent Shepway MSOA 008. However, in Shepway MSOA 010 which covers Hythe, where there are more people, facilities and infrastructure for pedestrians and cyclists the mode shares are higher than the local and County averages.

## 5.3 Target Mode Share for Otterpool Park

Using the data and assumptions collected through the case study review, the emerging transport study mode share and Census/ NTS data for comparable locations, a picture of feasible levels of walking and cycling has been derived.

Table 14 below provides suggested 'low', 'medium' and 'high' targets for external walking and cycling journey to work mode share within the emerging Otterpool Park transport strategy.

**Table 14: Suggested Mode Share Targets**

| | | | Suggested Targets | | |
|---|---|---|---|---|---|
| **Mode** | **Baseline** | **Otterpool Park Transport Strategy** | **Low** | **Medium** | **High** |
| Cycling | 1% | 2% | 2% | 3% | 9% |
| Walking | 5% | 6.5% | 5% | 6.5% | 7% |

Notes: On Full Occupation of Otterpool Park Development. For external trips. Baseline is 2011 Census data for Shepway MSOA 009. Transport Strategy is the derived external AM mode shares shown in Table 12

The targets are suggested modal splits for walking and cycling at Otterpool Park once it is fully occupied. They have been based on the research presented in this document.

- The low target for cycling is the existing Otterpool Park Transport Strategy (2%)
- The medium target is informed by the PCT scenario for the Government Target (3%);
- The high target for cycling is informed by the PCT Go Dutch scenario (9%).

The cycling targets have been informed by the PCT scenarios, however given the limitation of this tool for new developments due to non-existent/ low levels of existing population the targets have been benchmarked against the targets proposed at other developments discussed in Table 1, which range from 4% to 10% cycling and 10% to 30% for walking. It is acknowledged that the topography and severance issues at Otterpool Park provide challenging conditions for these modes, however in light of this benchmarking it is suggested that more ambitious targets could be considered if this is matched by a commitment to provide exemplar facilities for cyclists. e-bikes (either through a hire scheme, trial scheme, MaaS offer or assisted purchase scheme) could be a key tool for encouraging cycling trips, given the high levels of mode transfer demonstrated in Brighton and Norway, as well as those anticipated in the ITDP study described in Chapter 2.

Given the site's location, good internal connectivity from the residential areas to the local centre and Westenhanger railway station are critical in encouraging pedestrian trips. The emerging transport strategy shows high levels of internal walking trips (80% of journeys in the morning peak and almost 70% in the evening peak). The external trips on foot anticipated within the transport strategy appear commensurate to the site location and development proposals and therefore we suggest is a 'medium' level of ambition for external cycling trips. The high target is a 10% uplift on this target to the nearest whole percentage point (i.e. 6.5% * 1.1). The 'low' target is to achieve the 2011 Census journey to work mode share for the MSOA the site is predominantly situated within.

Any targets should be set out and monitored through the Travel Plan process. This should consider interim/ short term actions and targets to match development phasing, to ensure that the proposals to encourage walking and cycling are on track. However, of more importance than rigid adherence to a set of targets, is that the Masterplan and transport strategy deliberates the shared and differing needs of pedestrians and cyclists, also considering the different types of journeys these users are expected to make internally and externally, whether it be for commuting, essential services or leisure.

# 6 Conclusions

Mott MacDonald has been commissioned by Folkestone & Hythe District Council (FHDC) to provide consultancy advice relating to walking and cycling to support the emerging Masterplan for the proposed Otterpool Park Garden Town, near Folkestone in Kent.

This study has reviewed similar recent and emerging developments, best practice and cases studies to show a range of conditions which enable the integration of walking and cycling into new developments.

Features which have either been shown to encourage non-motorised travel or are being implemented as part of developments like Otterpool Park are:

- Segregated cycling provision adjacent to primary and secondary routes, with conditions suitable for on-carriageway cycling on tertiary streets. Footways of at least 2.0m in width for pedestrians;
- Direct, safe crossing points for pedestrians and cyclists at junctions, noting these groups may have differing needs. Pedestrian and cycle priority at crossings should be safe guarded through features such as raised tables and Copenhagen crossings;
- Streets should have low speeds, enforced by suitable geometry such as narrow carriageway widths and small junction radii;
- Supplementary provision for cycling such as cycle parking at transport interchanges and where commercially viable, a cycle hire or loan scheme; and
- Revenue/ promotional activities to promote a walking and cycling culture from the outset of new development.

The Otterpool Park Masterplan and associated cross sections have been inspected to provide a feedback on what will enable positive outcomes for cycling and walking. Key internal trips for walking and cycling are expected to be to the local centre, employment and Westenhanger station. As such infrastructure for these user groups to these locations should have sufficient level of service/ capacity and be designed in line with best practice.

Our main recommendation is to review the existing design proposals to ensure that pedestrians and cycles are prioritised throughout each cross-section. Particular focus should be given to how pedestrians and cycles will use the streetscapes and interact with vehicular traffic. We also recommend consolidating the number of cross-sections to create a clearer hierarchy of options with each cross-section designed for different user needs and street typologies.

Opportunities for cycling and walking connections to surrounding areas have also been examined. The geography of the site provides challenges, however there are a number of opportunities for improving connectivity for external walking and cycling journeys. These comprise:

- Improvements in cycle linkages to the Hythe area;
  - Improving the surfacing of the Old London Road byway to provide a direct link to Hythe via local lightly trafficked lanes and avoiding the use of the Newington Crossroads and the A261. Accompanying this would be an option to improve the footpath in the Orchard Valley residential estate to provide a connection with the Royal Military Canal

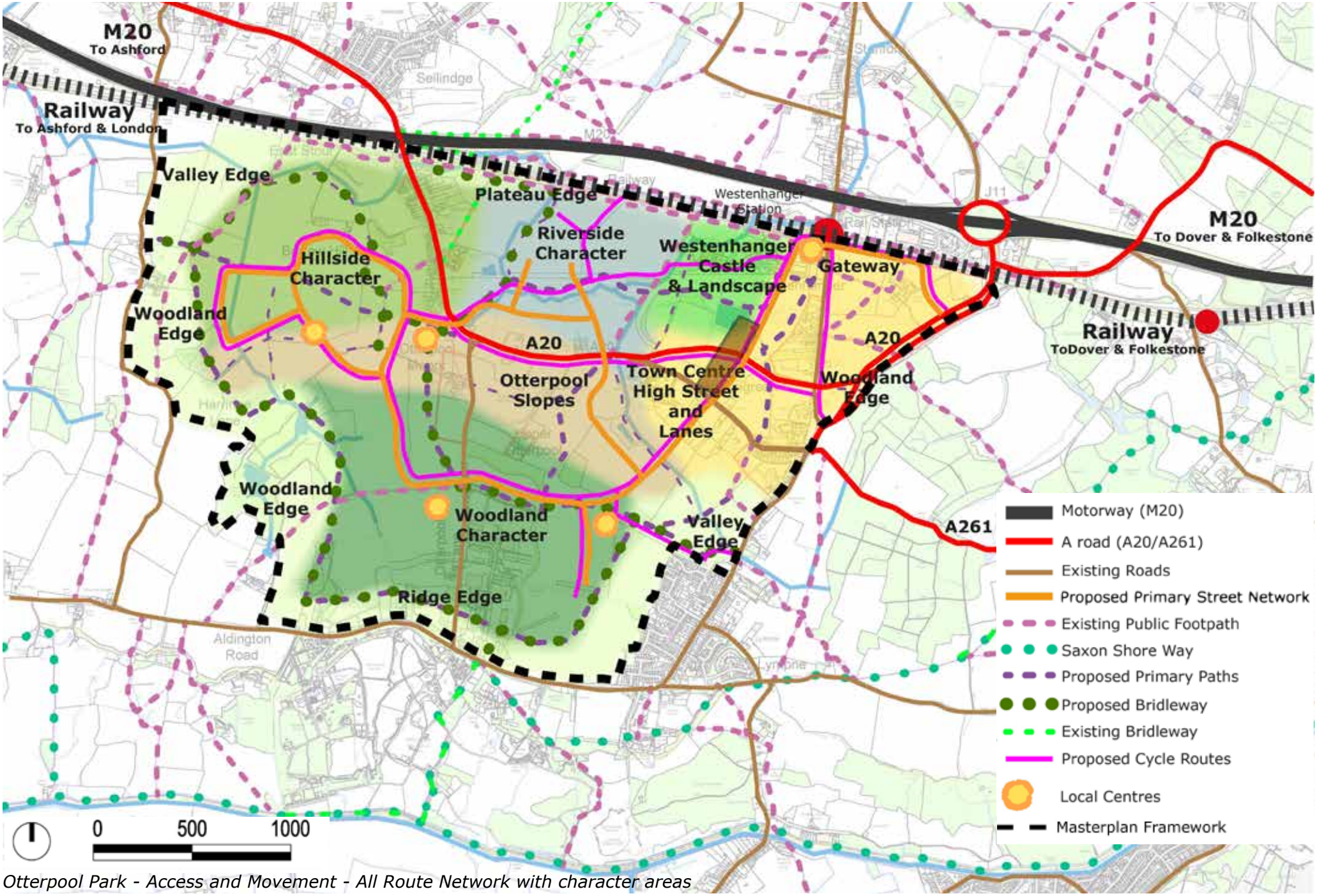
  - Connecting the proposed cycle route, north of Lympne village with an upgraded footpath that connects to Old London Road or improvements to signage to guide cyclists to quiet residential roads in Lympne
  - In conjunction with improvements to the A20 (see below), strengthen the connection to Castle Road via improved signage and undertaking an assessment of the condition of the connecting bridleway over the M20.
- Improvements in cycle linkages to the Folkestone area;
  - Assessment of the feasibility of introducing a parallel shared footway / cycleway along the A20 either as two uni-directional cycle lanes or a bi-directional cycle lane
  - Improvements to signage to encourage cyclists to use the parallel footpath to the south of the M20 to access Folkestone
  - Assess the feasibility of upgrading the parallel footpath to the south of the M20 to a shared footway / cycleway.
- Improvements to Westenhanger station and destinations to the north of the HS1 and M20 motorway;
  - This would involve improving the surface treatment of the existing footbridge over the HS1 line and M20 to encourage walking and cycling to settlements to the north of the M20 most notably Stanford and Sellindge.
- Connections between the internal road network and surrounding public rights of way. Key locations include:
  - The public rights of way which run directly south of the HS1 line
  - Connections across Stone Street
  - Connections to the HE281 PROW which runs south east from Westenhanger village and through the proposed local centre (with an additional option to be considered in the form of HE293 PROW)
  - Connections to Harringe Lane and the western end of Otterpool Park.

# Appendices

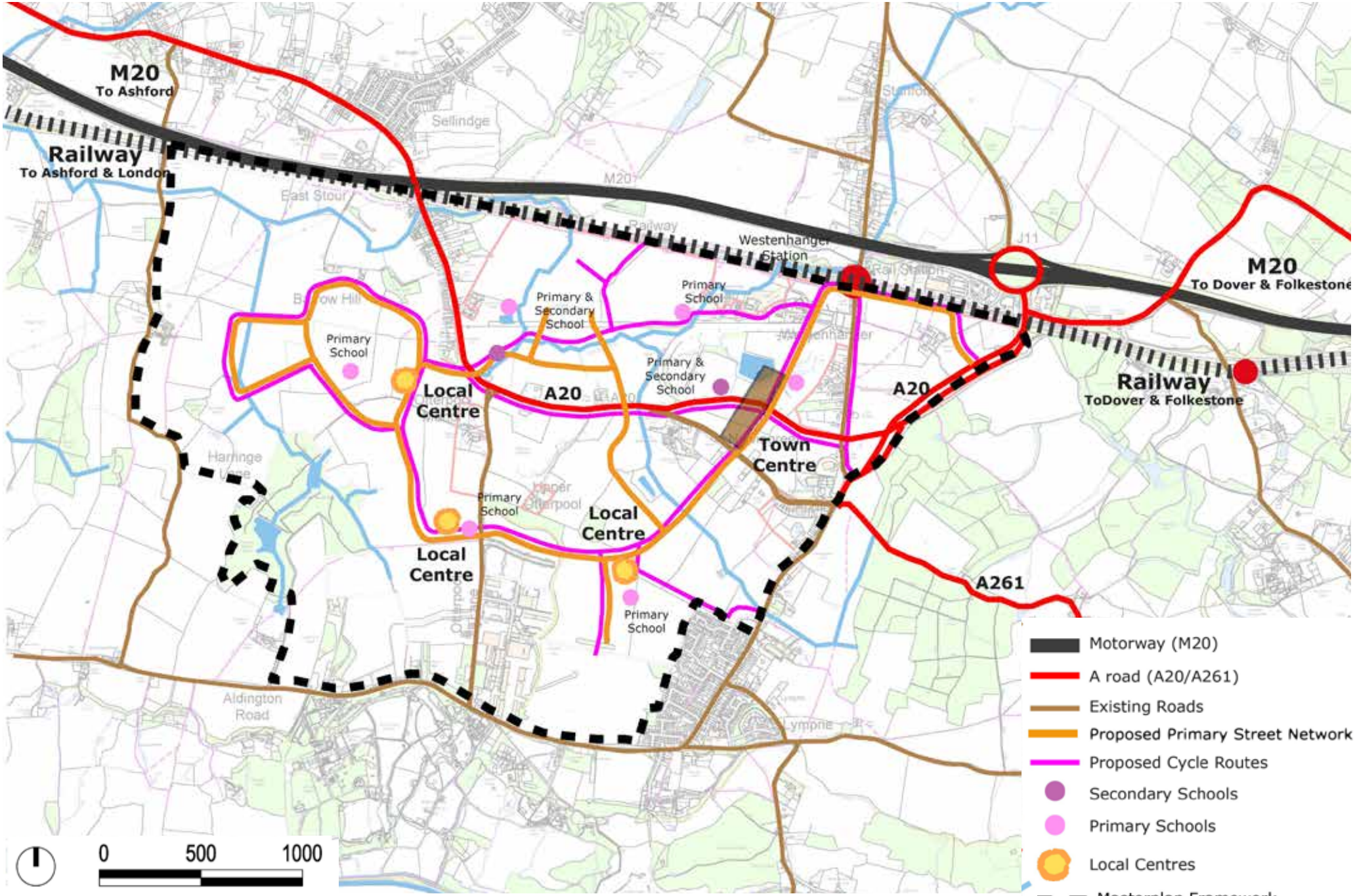
# A. Masterplan and Cross Sections

## A.1 Masterplan Extracts

## A.2 Cross Sections




*Otterpool Park - Access and Movement - All Route Network with character areas*




*Otterpool Park - Access and Movement - Primary  Cycle Route Network*

P:\16\16034 Farrells Otterpool Park\dwg\16034(sk)260_R.dwg

DRAWING REFERENCES:

## Existing Uses

- PS — Existing Primary School
- Existing Communities & Buildings
- Existing Rivers, Streams and Ponds
- Existing Woods
- Existing Ancient Woodlands
- Existing Registered Parklands
- Existing Footpaths close to and in area of study
- Existing Bridleway
- Existing Saxon Shore Way
- Existing Special Landscape Area
- Existing Conservation Area
- Existing Flood Zone 2 + 3
- Area of Outstanding Natural Beauty (AONB
- Existing Scattered Trees
- Existing Hedgerows and Tree Groups

## Indicative Uses

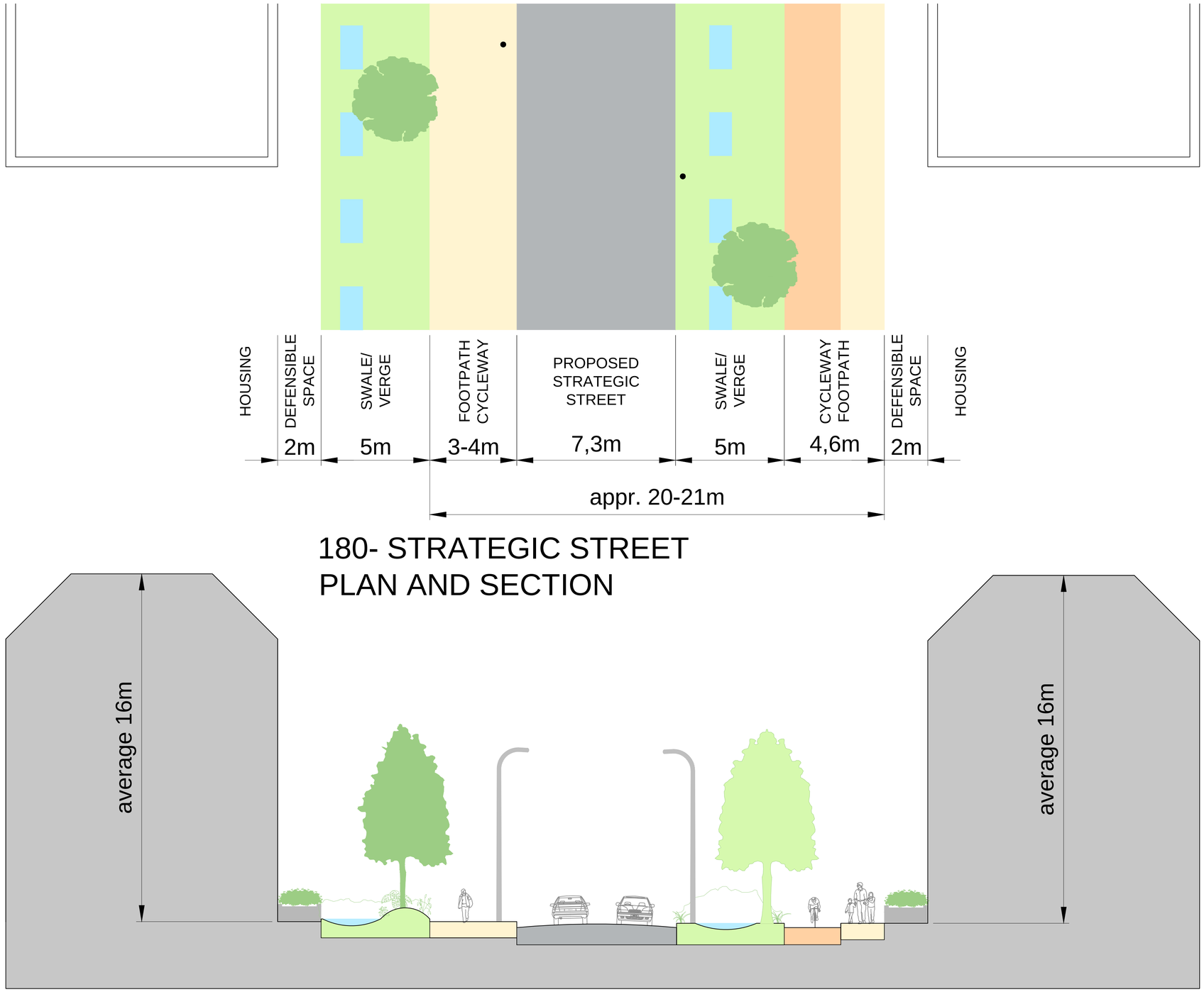
- Indicative Development Areas
- Indicative Green Infrastructure
- Indicative Pathways
- Indicative Road Access
- Indicative Bridge Crossing over Stream
- BG — Indicative Burial Ground area
- A — Indicative Allotment areas
- P — Indicative Play areas
- SP — Indicative Sports Pitch areas
- S — Indicative SUDS Water Management Are
- I — Indicative SUDS Infiltration Areas
- Indicative Conveyance Swales
- CO — Indicative Retained Farmland & Community Orchards
- BP — Business Park
- SS SS — Secondary School & Sports
- PS — Primary School
- Mixed use local Centres

- Proposed Site Area

0 500 1000

| CLIENT | REVISIONS | DATE | STATUS | SCALE | PROJECT | DRAWING NAME | DRAWING NUMBER |
|---|---|---|---|---|---|---|---|
| ... | rev A: 11-08-17<br>rev B: 22-08-17<br>rev E: 04-09-17<br>rev F: 12-09-17<br>rev G: 18-09-17<br>rev H: 22-09-17<br>rev J: 13-10-17<br>rev K: 26-10-17<br>rev L: 07-11-17<br>rev M: 16-11-17<br>rev N: 08-12-17<br>rev P: 02-01-18<br>rev Q: 29-01-18<br>rev R: 01-03-18 | 07-08-17 | PRELIMINARY | 1:10,000 @ A1 | OTTERPOOL PARK | INDICATIVE MASTERPLAN GREEN INFRASTRUCTURE | 16034(sk)260_R |

FARRELLS

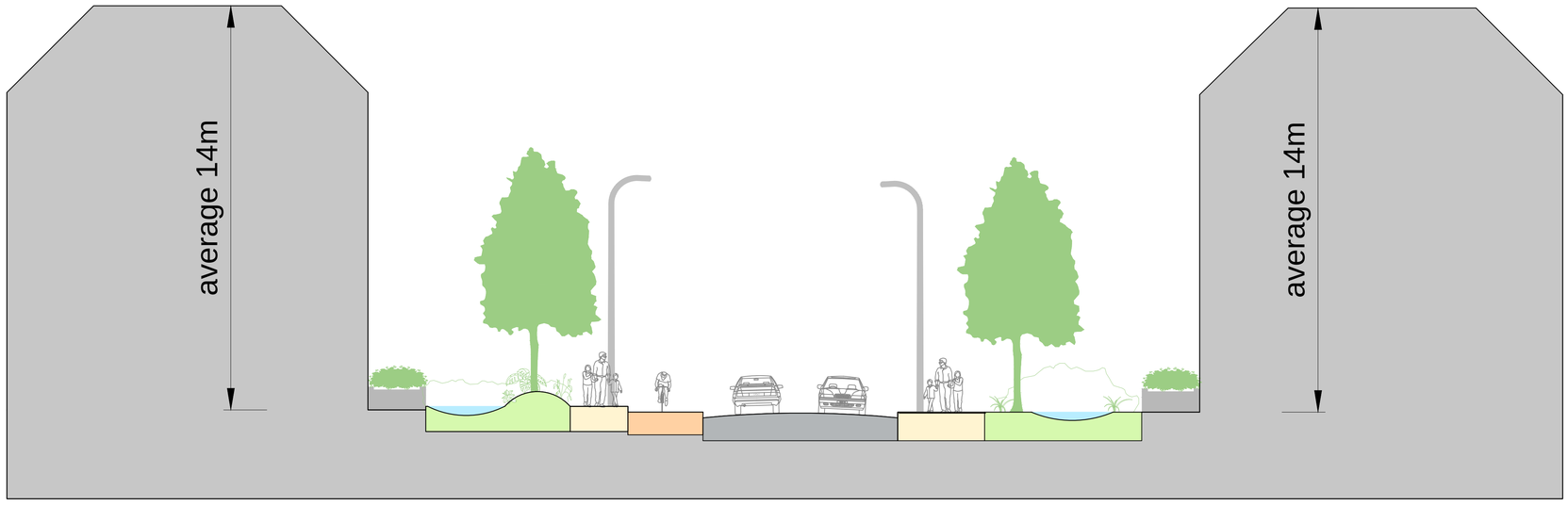



# 180- STRATEGIC STREET
# PLAN AND SECTION

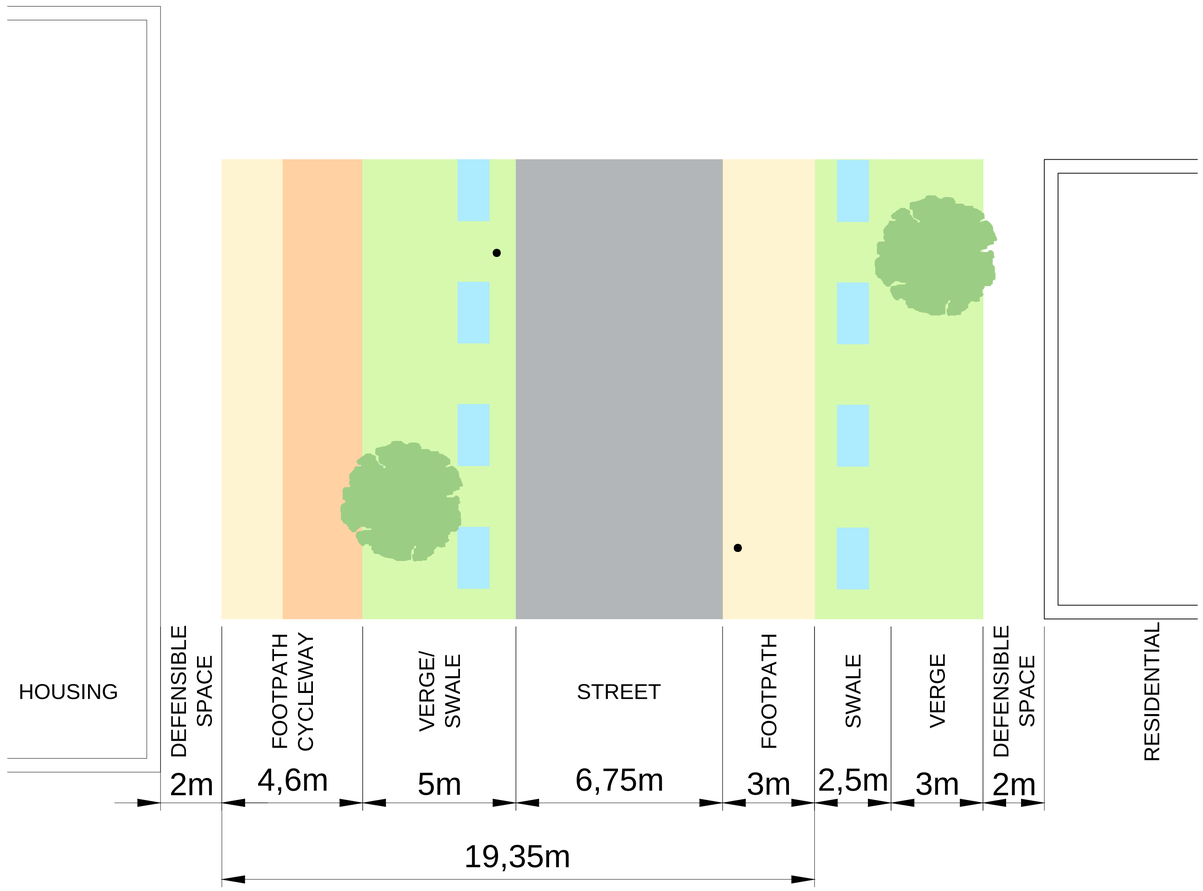
| CLIENT | REVISIONS | DATE | STATUS | SCALE | PROJECT | DRAWING NAME | DRAWING NUMBER |
|---|---|---|---|---|---|---|---|
| ... | | 31-01-18 | PRELIMINARY | 1:100 @ A1 | OTTERPOOL PARK | STREET TYPES PLANS AND SECTIONS | 16034(sk)180 |

FARRELLS

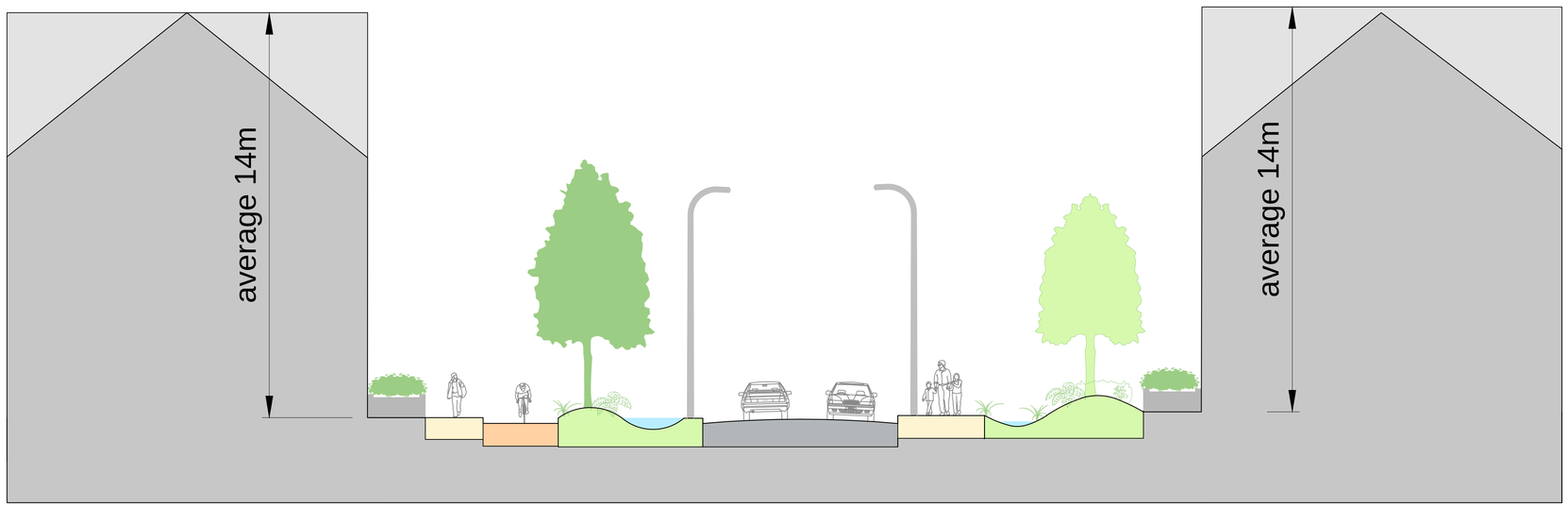
# 187- PRIMARY STREET
# PLAN AND SECTION




| | CLIENT | REVISIONS | DATE | STATUS | SCALE | PROJECT | DRAWING NAME | DRAWING NUMBER | |
|---|---|---|---|---|---|---|---|---|---|
| | ... | | 31-01-18 | PRELIMINARY | 1:100 @ A1 | OTTERPOOL PARK | STREET TYPES PLANS AND SECTIONS | 16034(sk)187 | FARRELLS |



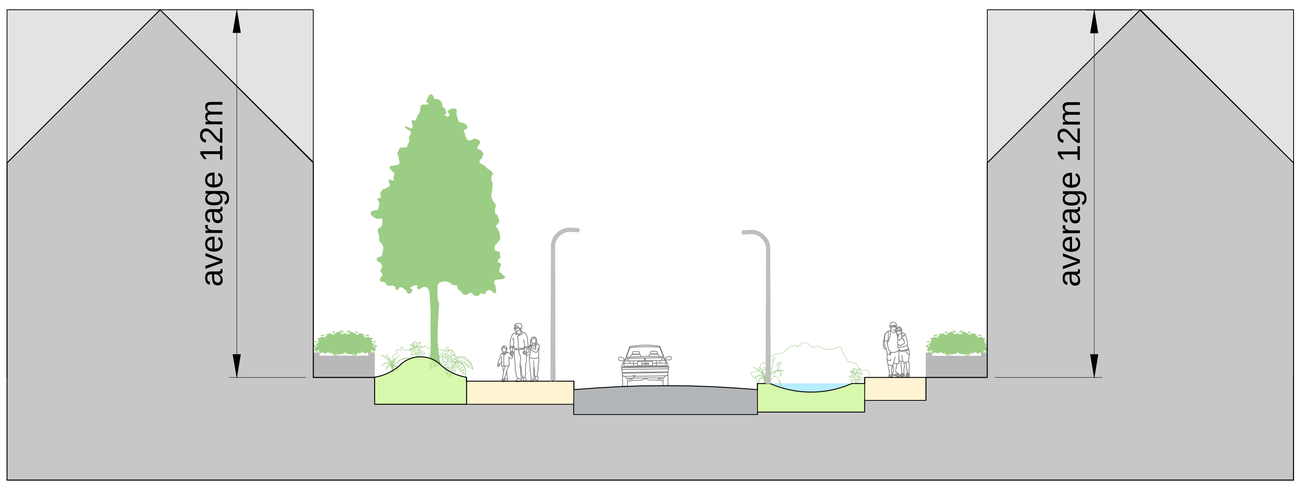

# 188 - PRIMARY STREET
# PLAN AND SECTION




| CLIENT | REVISIONS | DATE | STATUS | SCALE | PROJECT | DRAWING NAME | DRAWING NUMBER |
|---|---|---|---|---|---|---|---|
| ... | | 31-01-18 | PRELIMINARY | 1:100 @ A1 | OTTERPOOL PARK | STREET TYPES PLANS AND SECTIONS | 16034(sk)188 |

FARRELLS

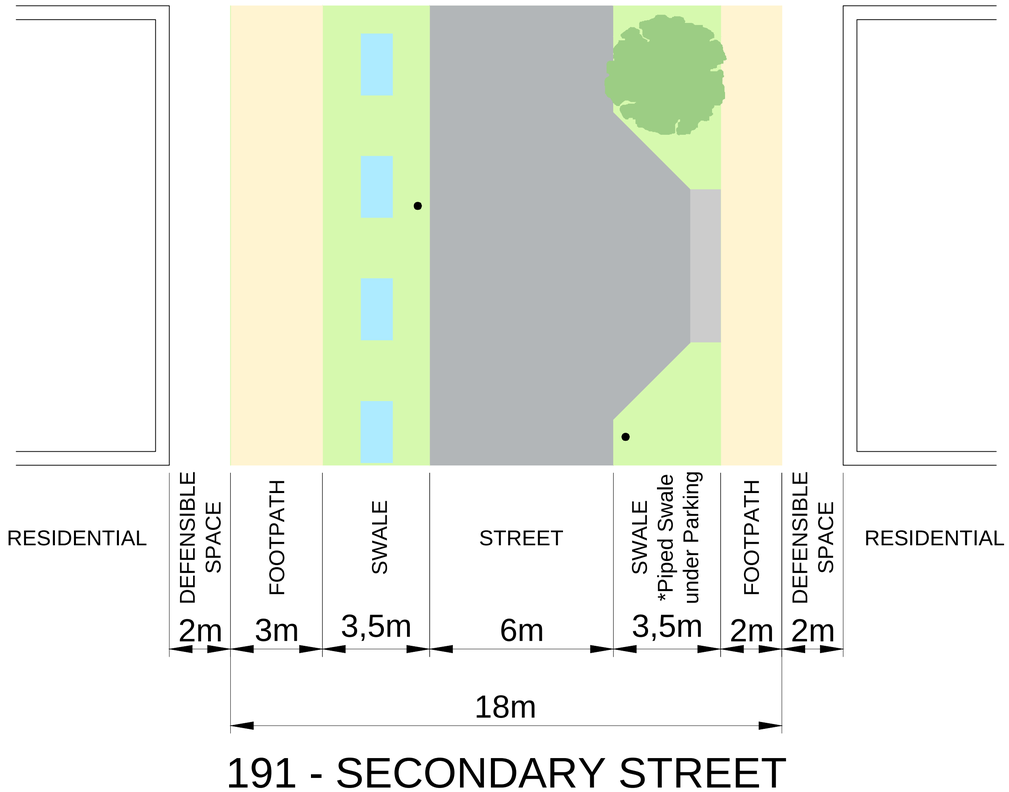

# 190 - SECONDARY STREET
# PLAN AND SECTION



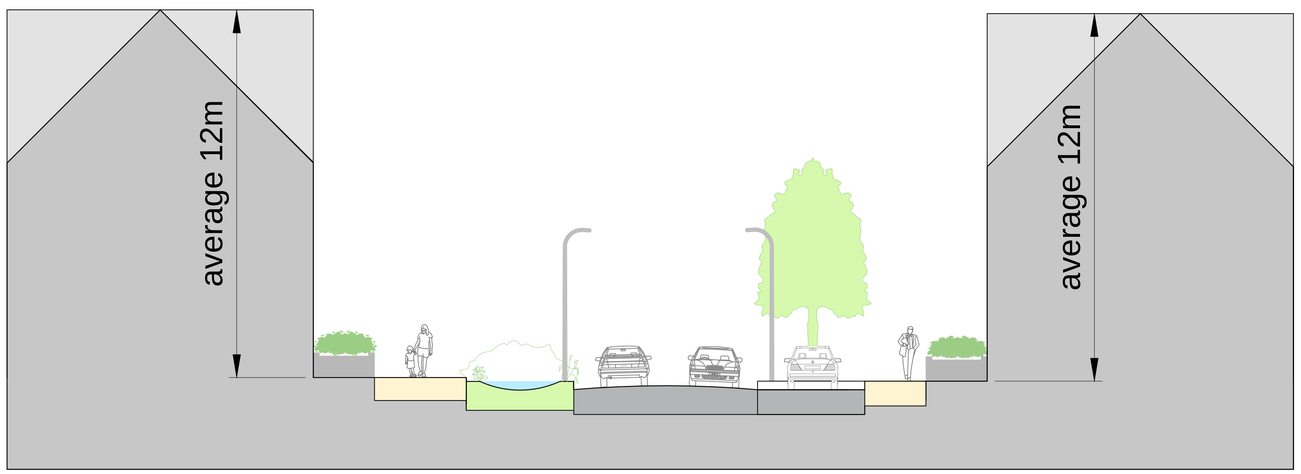

RESIDENTIAL RESIDENTIAL

| CLIENT | REVISIONS | DATE | STATUS | SCALE | PROJECT | DRAWING NAME | DRAWING NUMBER |
|---|---|---|---|---|---|---|---|
| ... | | 31-01-18 | PRELIMINARY | 1:100 @ A1 | OTTERPOOL PARK | STREET TYPES PLANS AND SECTIONS | 16034(sk)190 |

FARRELLS

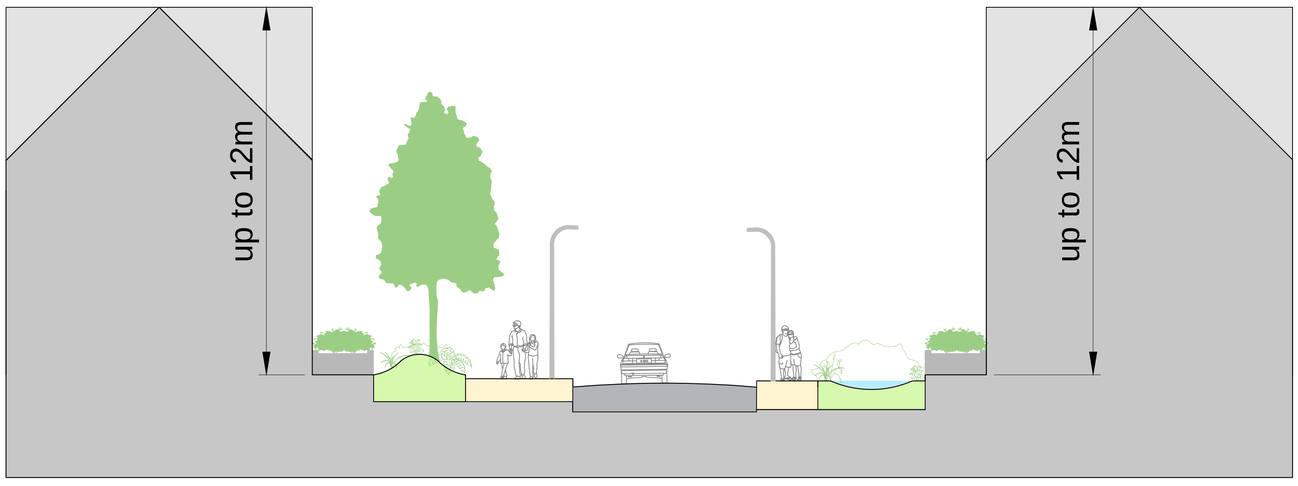



# 191 - SECONDARY STREET WITH PARKING PLAN AND SECTION



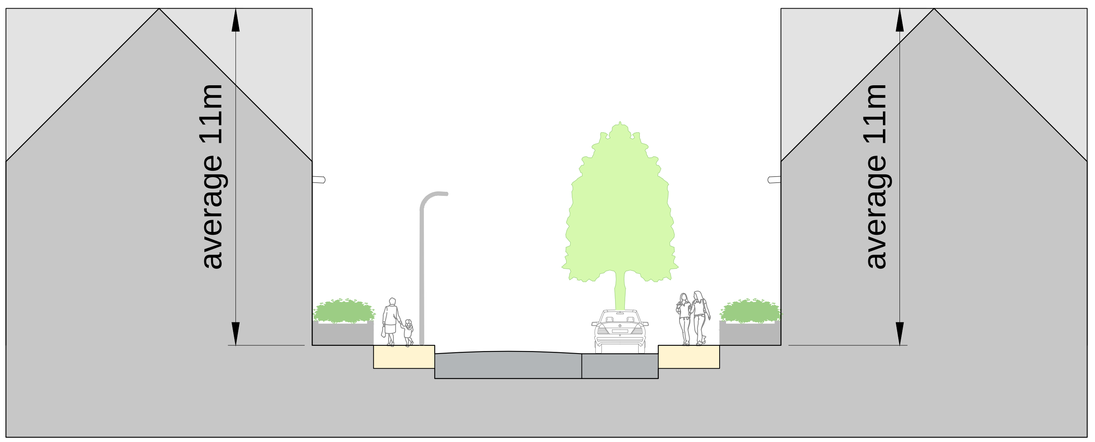

| | CLIENT | REVISIONS | DATE | STATUS | SCALE | PROJECT | DRAWING NAME | DRAWING NUMBER | |
|---|---|---|---|---|---|---|---|---|---|
| | ... | | 31-01-18 | PRELIMINARY | 1:100 @ A1 | OTTERPOOL PARK | STREET TYPES PLANS AND SECTIONS | 16034(sk)191 | FARRELLS |


# 192 - SECONDARY STREET
# PLAN AND SECTION

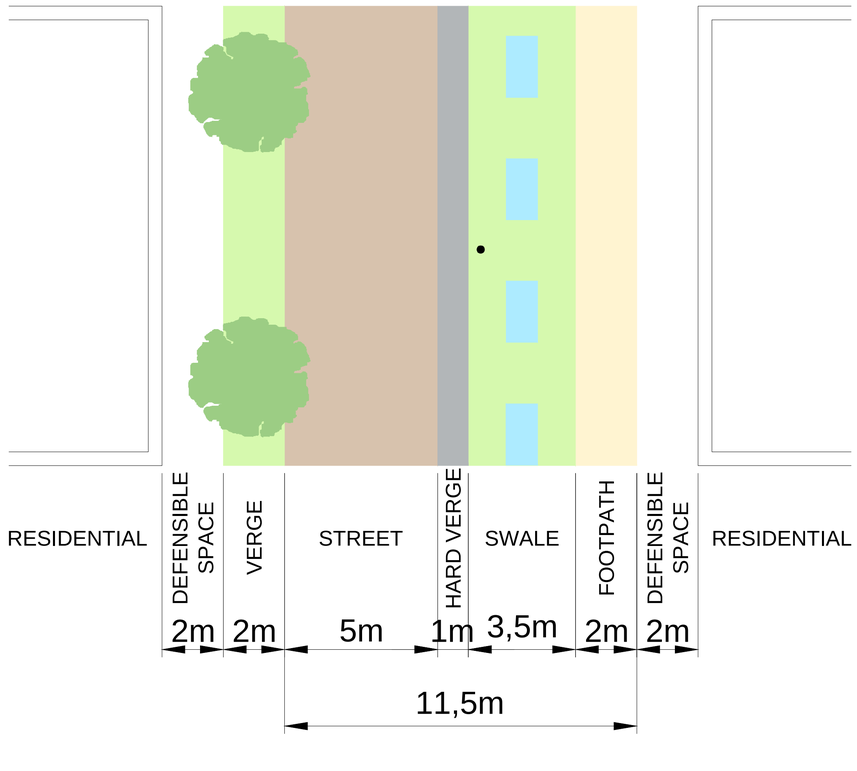



| | CLIENT | REVISIONS | DATE | STATUS | SCALE | PROJECT | DRAWING NAME | DRAWING NUMBER | |
|---|---|---|---|---|---|---|---|---|---|
| | ... | | 31-01-18 | PRELIMINARY | 1:100 @ A1 | OTTERPOOL PARK | STREET TYPES PLANS AND SECTIONS | 16034(sk)192 | FARRELLS |

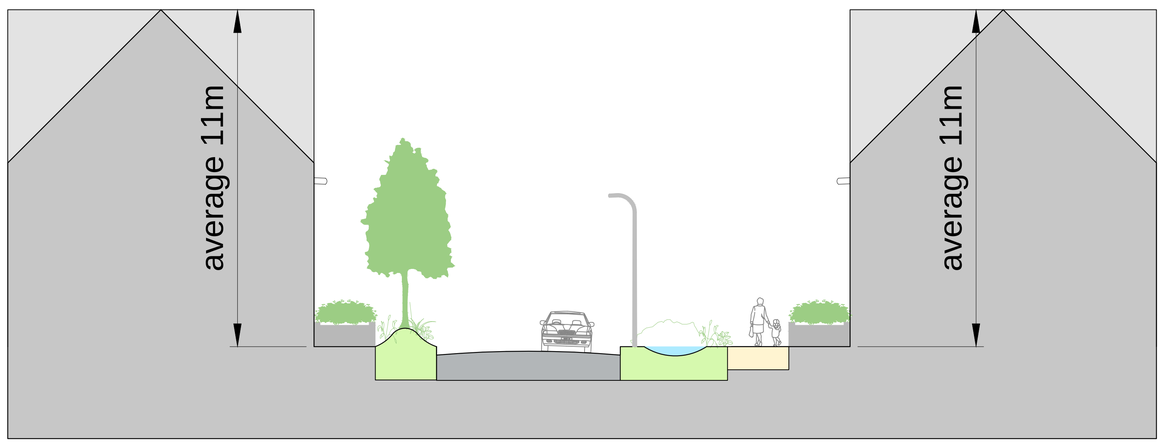

# 196 - TERTIARY STREET
# PLAN AND SECTION



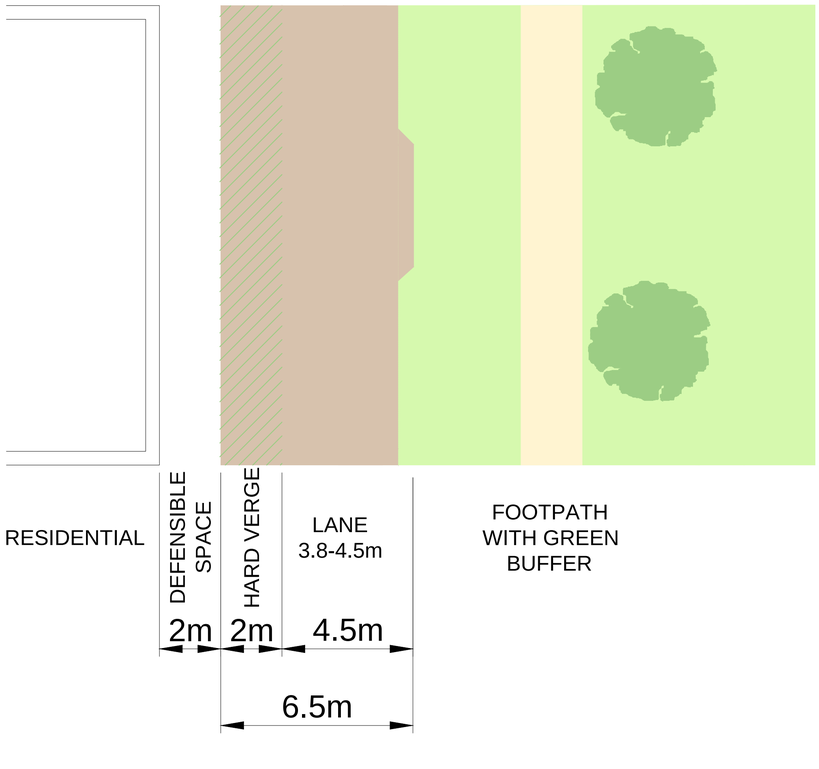

| | CLIENT | REVISIONS | DATE | STATUS | SCALE | PROJECT | DRAWING NAME | DRAWING NUMBER | |
|---|---|---|---|---|---|---|---|---|---|
| | ... | | 31-01-18 | PRELIMINARY | 1:100 @ A1 | OTTERPOOL PARK | STREET TYPES PLANS AND SECTIONS | 16034(sk)196 | FARRELLS |



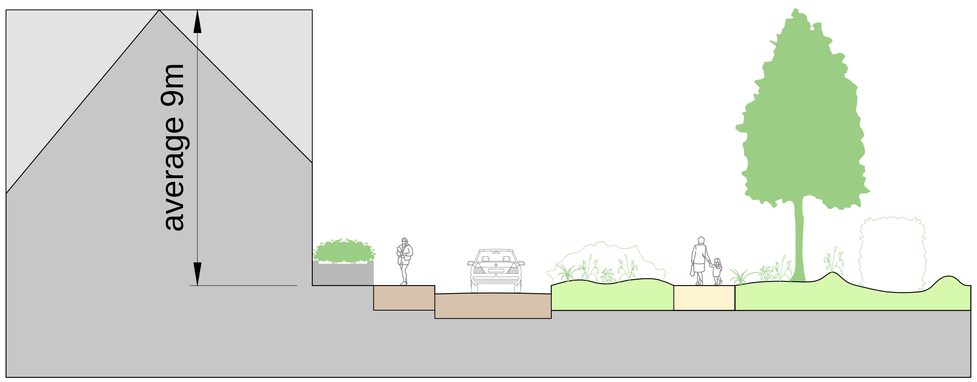

# 197 - TERTIARY STREET
# PLAN AND SECTION



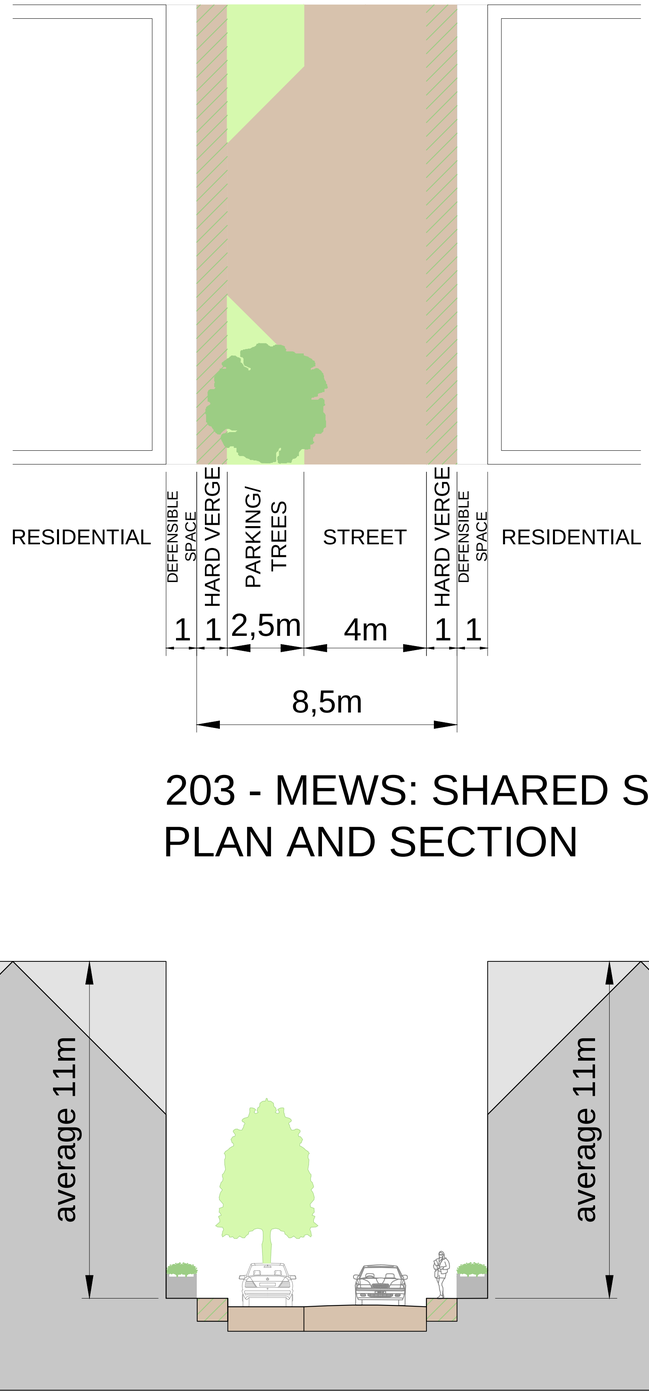

| | CLIENT | REVISIONS | DATE | STATUS | SCALE | PROJECT | DRAWING NAME | DRAWING NUMBER | |
|---|---|---|---|---|---|---|---|---|---|
| | ... | . | 31-01-18 | PRELIMINARY | 1:100 @ A1 | OTTERPOOL PARK | STREET TYPES<br>PLANS AND SECTIONS | 16034(sk)197 | FARRELLS |




# 202 - GREEN LANE / PRIVATE DRIVE
# PLAN AND SECTION



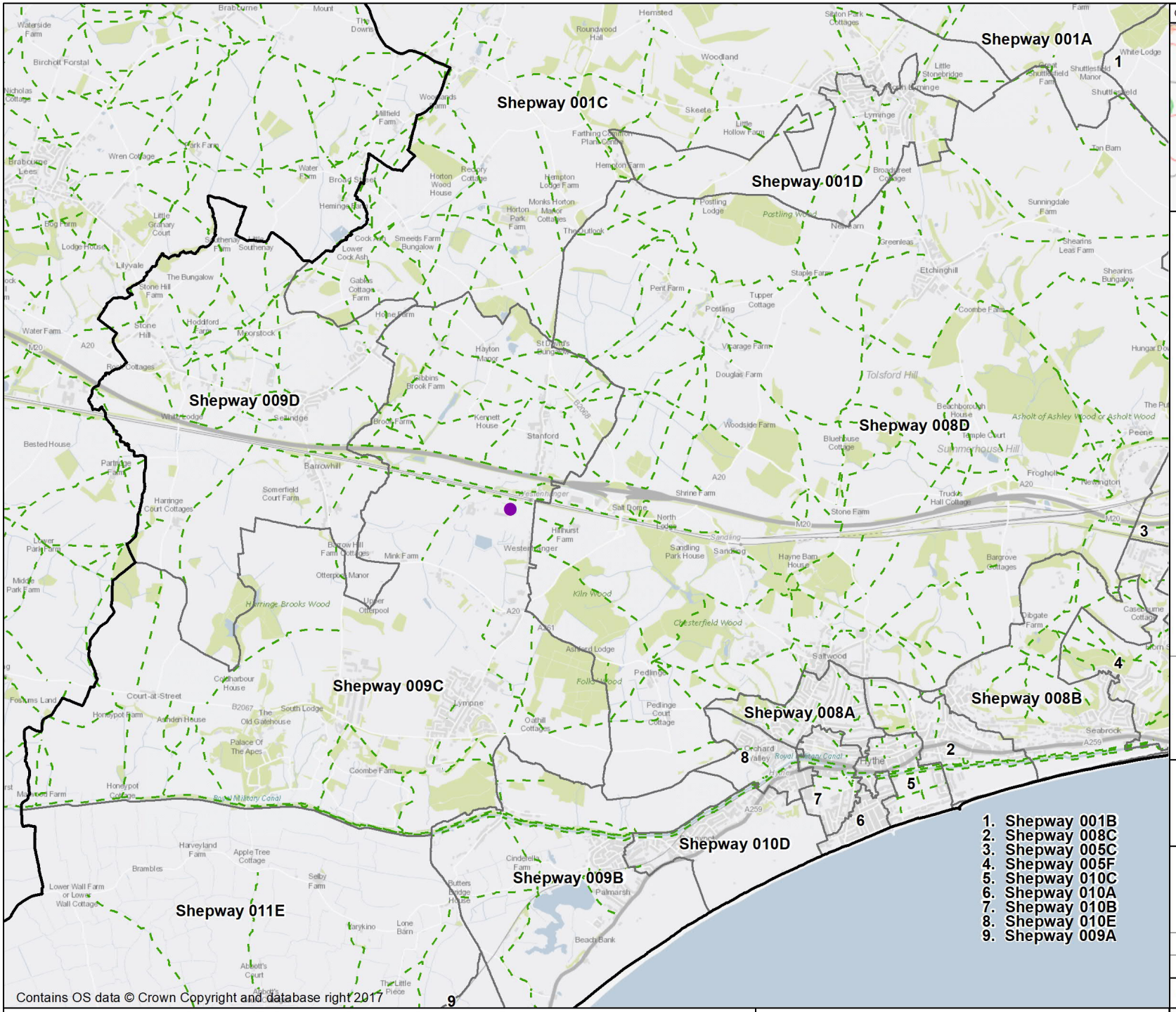

| | CLIENT | REVISIONS | DATE | STATUS | SCALE | PROJECT | DRAWING NAME | DRAWING NUMBER | |
|---|---|---|---|---|---|---|---|---|---|
| | ... | | 31-01-18 | PRELIMINARY | 1:100 @ A1 | OTTERPOOL PARK | STREET TYPES<br>PLANS AND SECTIONS | 16034(sk)202 | FARRELLS |




# 203 - MEWS: SHARED SURFACE PLAN AND SECTION

| CLIENT | REVISIONS | DATE | STATUS | SCALE | PROJECT | DRAWING NAME | DRAWING NUMBER | |
|---|---|---|---|---|---|---|---|---|
| ... | | 31-01-18 | PRELIMINARY | 1:100 @ A1 | OTTERPOOL PARK | STREET TYPES PLANS AND SECTIONS | 16034(sk)203 | FARRELLS |

# B. Plans




Overview


## Legend

- Otterpool development site
- Public Rights of Way
- LSOA boundary
- Shepway Local Authority District boundary

1. Shepway 001B
2. Shepway 008C
3. Shepway 005C
4. Shepway 005F
5. Shepway 010C
6. Shepway 010A
7. Shepway 010B
8. Shepway 010E
9. Shepway 009A

MOTT MACDONALD

35 Newhall Street
Birmingham
United Kingdom

T: +44 (0)121 234 1681
W: www.mottmac.com

# Otterpool Walking and Cycling

## Shepway Lower Layer Super Output Areas

| Rev | Date | Drawn | Description | Ch'k'd | App'd |
|---|---|---|---|---|---|
| 01 | 16/04/2018 | CR | For Information | MM | NH |

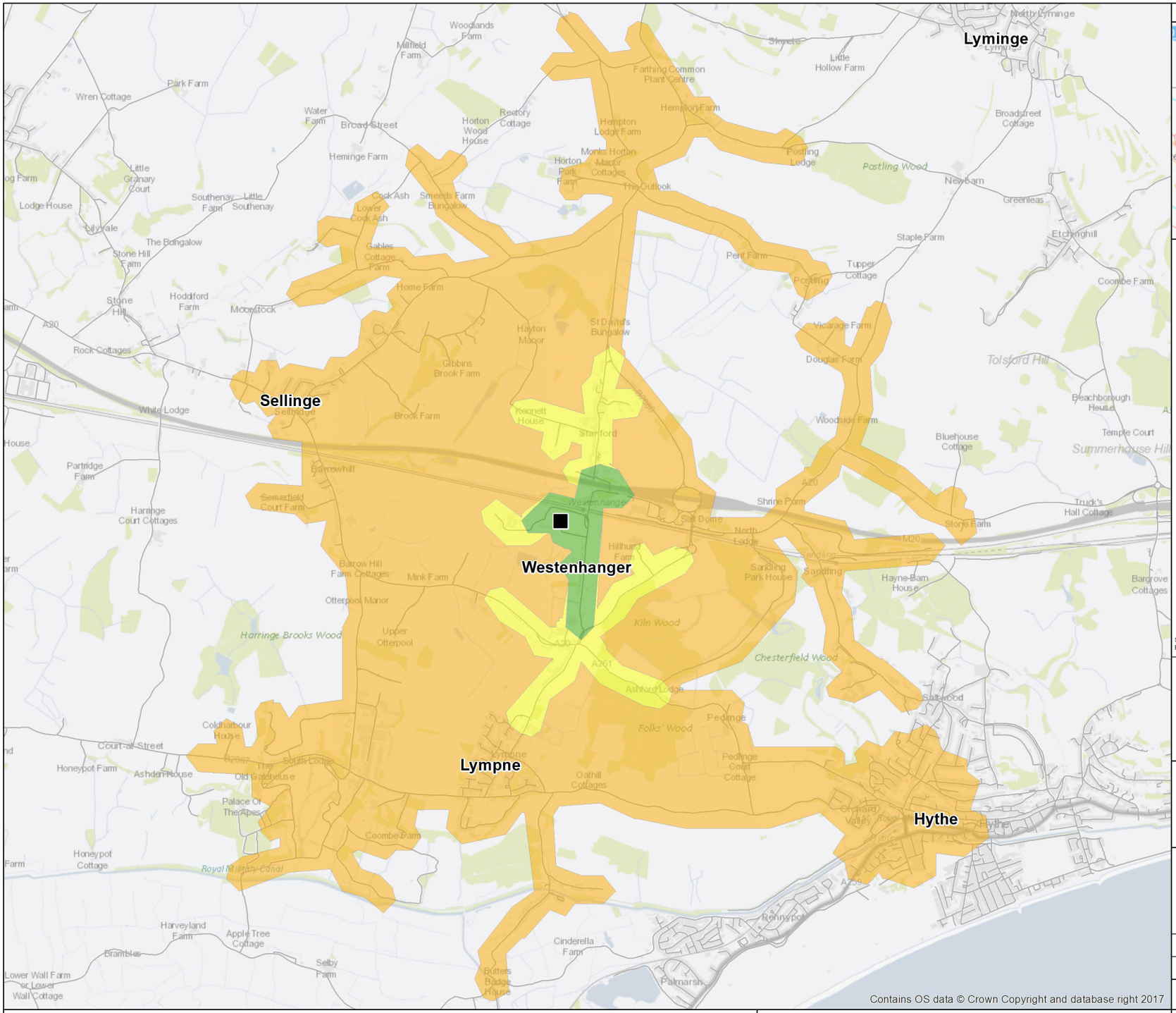


Kilometers
0 0.5 1 1.5 2

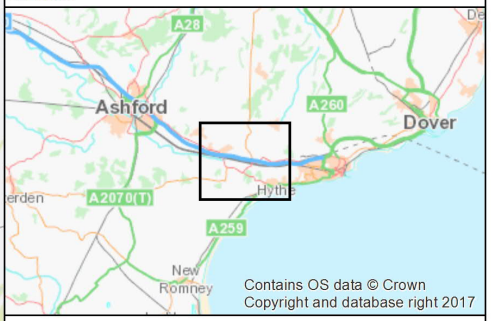
Scale at A3
1:36,000

Drawing No.

P:\Birmingham\TB\Charlotte R GIS\20180413 Otterpool walking & cycling\GIS\MXD\20180413 LSOAs.mxd




Overview




## Walk / cycle catchments

- < 1000 metres
- 1000 to 2000 metres
- 2000 to 5000 metres
- Site location

Source:
Basemap: OS OpenData

MOTT MACDONALD

9 Portland Street
Manchester
United Kingdom

T: +44 (0)121 234 1681
W: www.mottmac.com

# Otterpool Walking and Cycling

## Walking and Cycling Distance Catchments

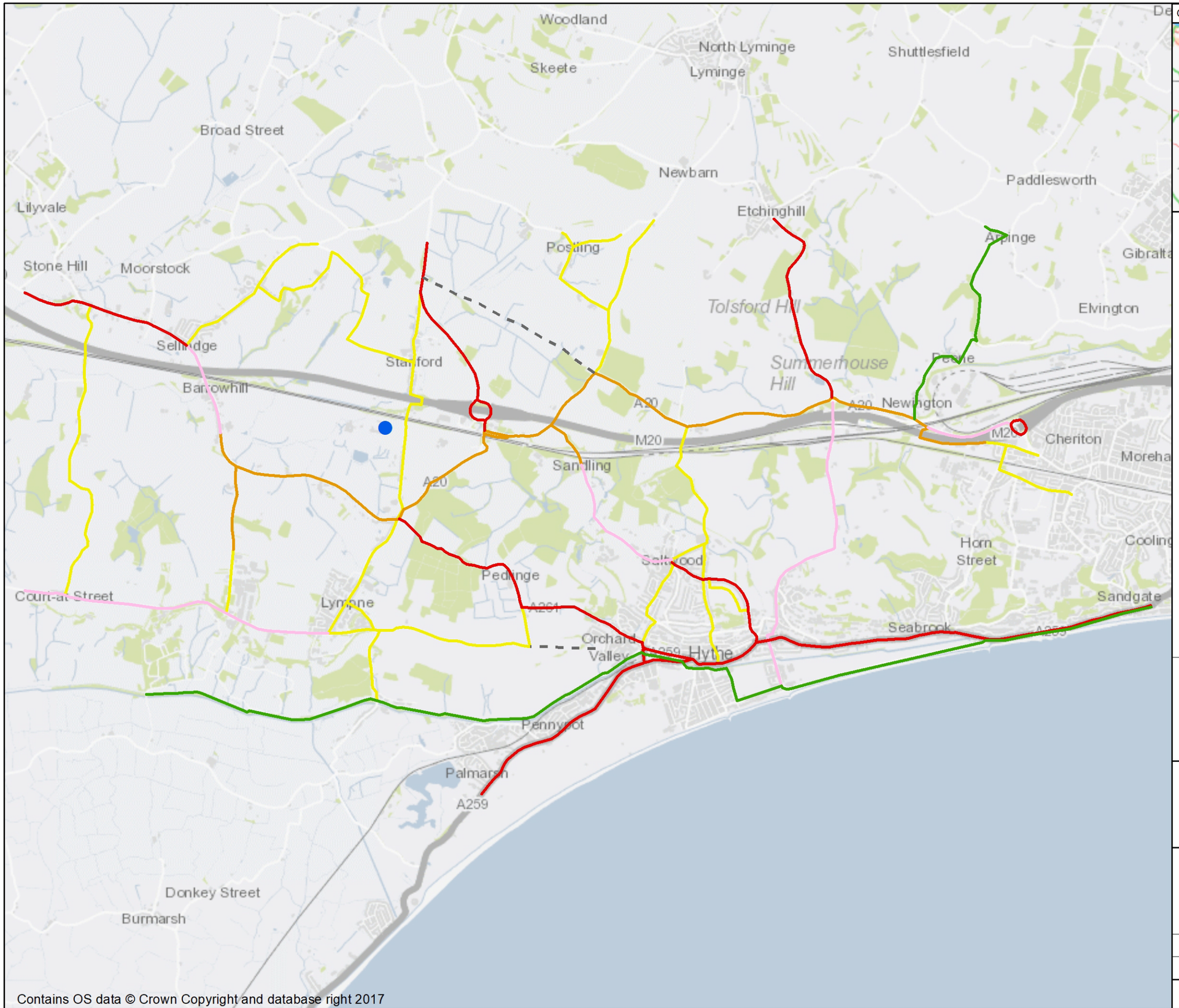
| Rev | Date | Drawn | Description | Chkd | Aprv |
|---|---|---|---|---|---|
| 01 | 12/04/2018 | CW | For Information | AN | CS |

Scale at A3
1:30,000



0 500 1,000 1,500 2,000 2,500 Meters

C:\Users\wal69795\Desktop\GIS\20180410_Westenhanger\20180412_WalkCycleIsochrones.mxd




Overview


## Legend

- Otterpool development site
- Potential byway upgrade
- Existing designated cycle route
- Quietways/lanes
- Potential shared footway/cycleway
- Confident cyclists
- Challenging cycle environment

MOTT MACDONALD

35 Newhall Street
Birmingham
United Kingdom

T: +44 (0)121 234 1681
W: www.mottmac.com

# Otterpool Walking and Cycling

## Cycle Network Connectivity

| Rev | Date | Drawn | Description | Ch'k'd | App'd |
|---|---|---|---|---|---|
| 01 | 24/04/2018 | CR | For Information | MM | NH |

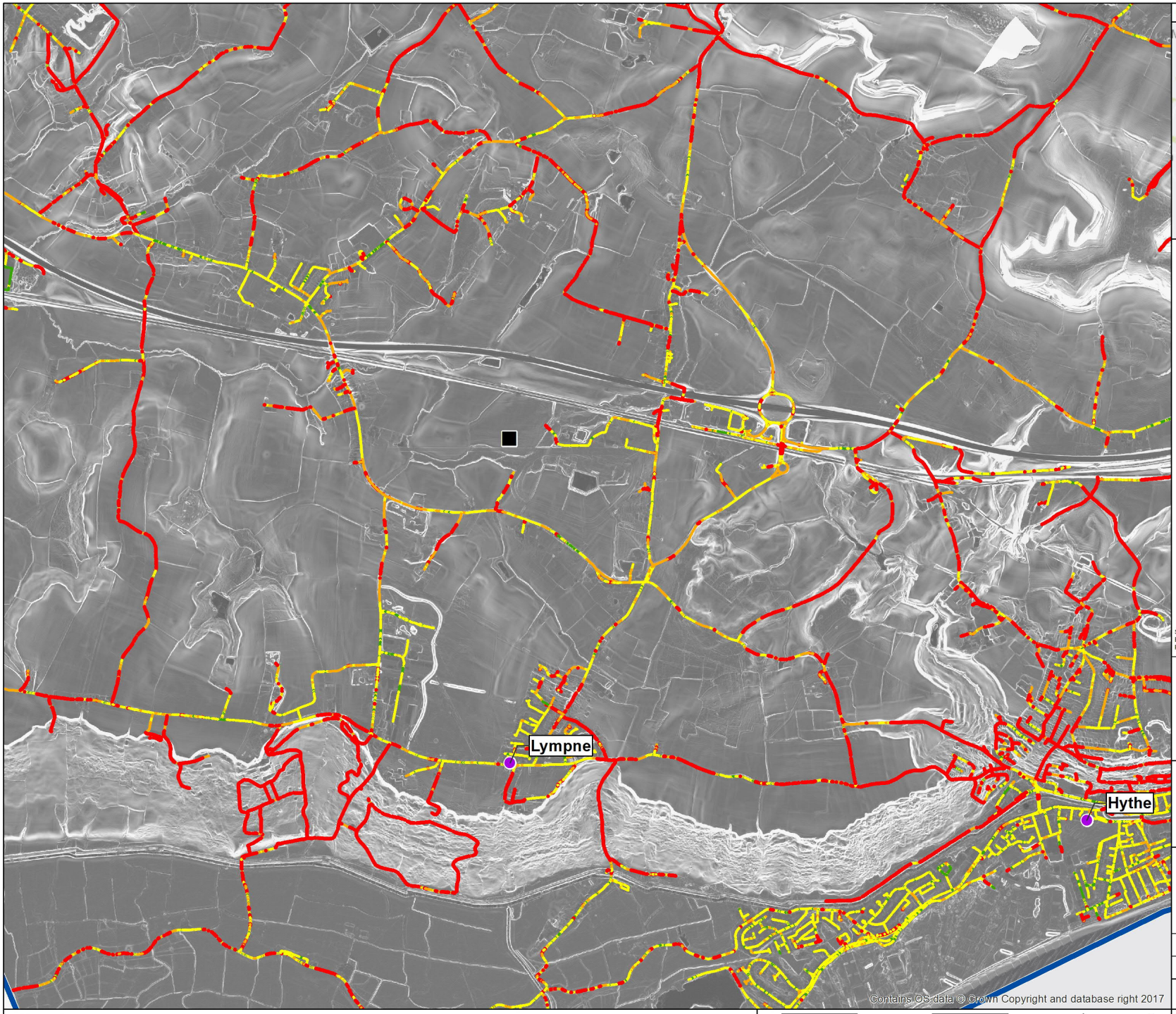


0 1 2 3 Kilometers

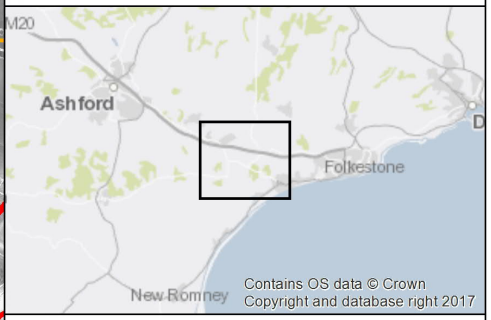
Scale at A3
1:40,000

Drawing No.

P:\Birmingham\TB\Charlotte R GIS\20180413 Otterpool walking & cycling\GIS\MXD\20180423 Cycle Network Connectivity.mxd




Overview




## Walk and Cycle Network

- Severe gradient
- Moderate to severe gradient
- Slight to moderate gradient
- Flat to slight gradient
- Study area
- Approximate centroid of site

## OS LiDAR

Steeper slope

Less steep slope

Source:
Elevation: LiDAR 2m composite DEM (Environment agency)
Road network: OS ITN

MOTT MACDONALD

9 Portland Street
Manchester
United Kingdom

T: +44 (0)121 234 1681
W: www.mottmac.com

# Otterpool Development Site

## Slope assessment of routes within the focus area

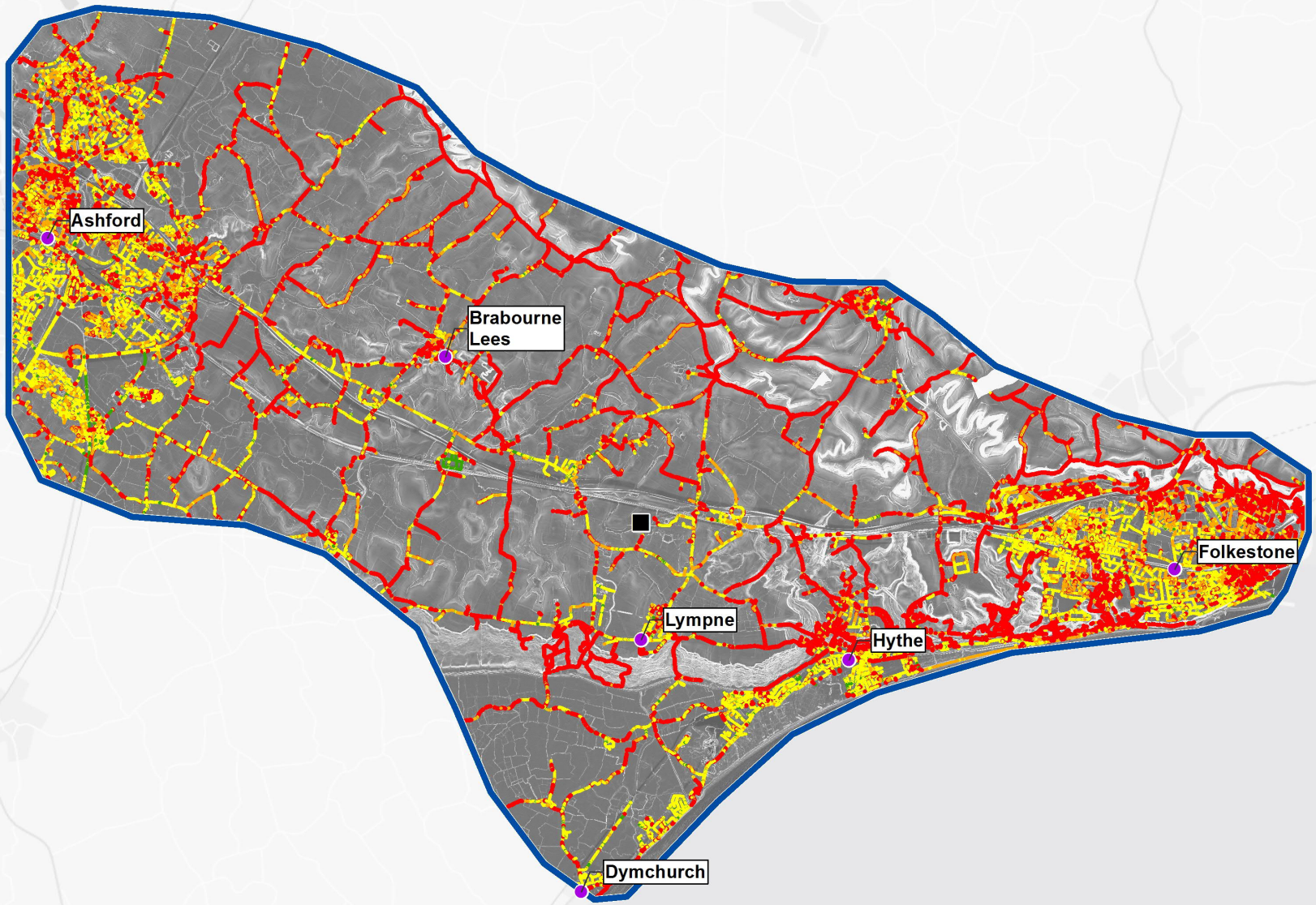
| Rev | Date | Drawn | Description | Chkd | Aprv |
|---|---|---|---|---|---|
| 01 | 18/04/2018 | CW | For Information | SPB | CS |



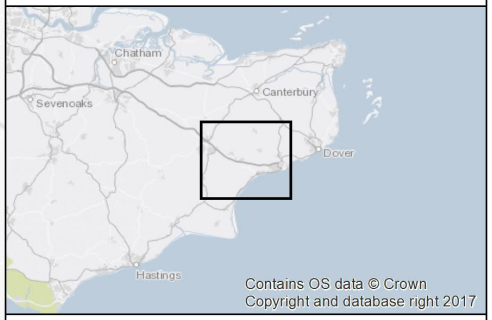
0 500 1,000 1,500 2,000 Meters

Scale at A3
1:25,000

C:\Users\wal69795\Desktop\GIS\20180410_Westenhanger\MXD\2018_FA_SectionedSlopes.mxd




Overview




## Walk and Cycle Network

- Severe gradient
- Moderate to severe gradient
- Slight to moderate gradient
- Flat to slight gradient
- Study area
- Site location

## OS LiDAR

Steeper slope

Less steep slope

Source:
Elevation: LiDAR 2m composite DEM (Environment agency)
Road network: OS ITN

MOTT MACDONALD

9 Portland Street
Manchester
United Kingdom

T: +44 (0)121 234 1681
W: www.mottmac.com

# Otterpool Development Site

## Slope assessment of routes within the study area

| Rev | Date | Drawn | Description | Chkd | Aprv |
|---|---|---|---|---|---|
| 01 | 18/04/2018 | CW | For Information | SPB | CS |

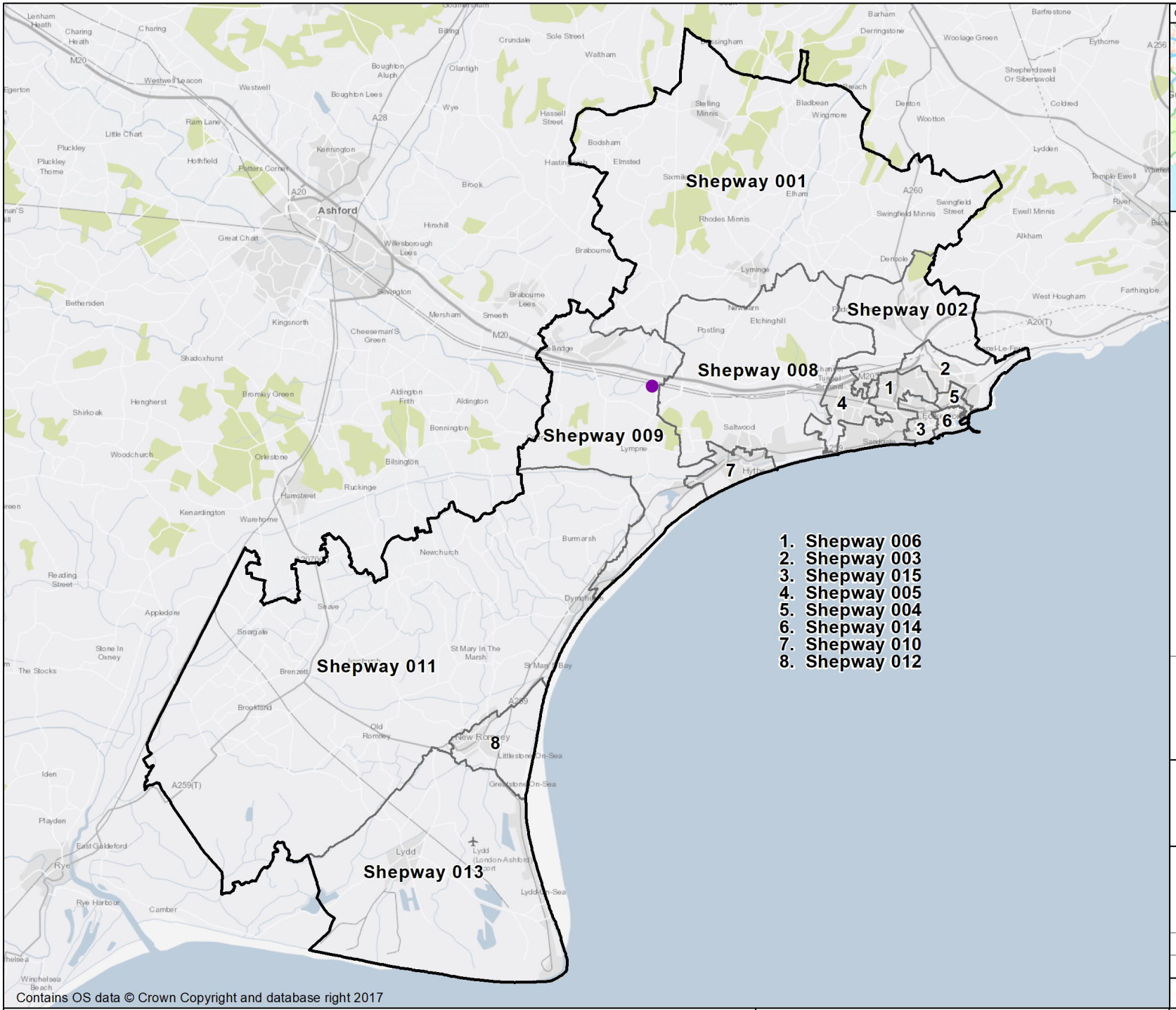
Contains OS data © Crown Copyright and database right 2017



Kilometers
0 1 2 3 4 5

Scale at A3
1:80,000

C:\Users\wal69795\Desktop\GIS\20180410_Westenhanger\MXD\2018_SA_SectionedSlopes.mxd




Overview


## Legend

- Otterpool development site
- MSOA boundary
- Shepway Local Authority District boundary

1. Shepway 006
2. Shepway 003
3. Shepway 015
4. Shepway 005
5. Shepway 004
6. Shepway 014
7. Shepway 010
8. Shepway 012


MOTT MACDONALD

35 Newhall Street
Birmingham
United Kingdom

T: +44 (0)121 234 1681
W: www.mottmac.com


# Otterpool Walking and Cycling

## Shepway Middle Layer Super Output Areas

| Rev | Date | Drawn | Description | Ch'k'd | App'd |
|---|---|---|---|---|---|
| 01 | 16/04/2018 | CR | For Information | MM | NH |

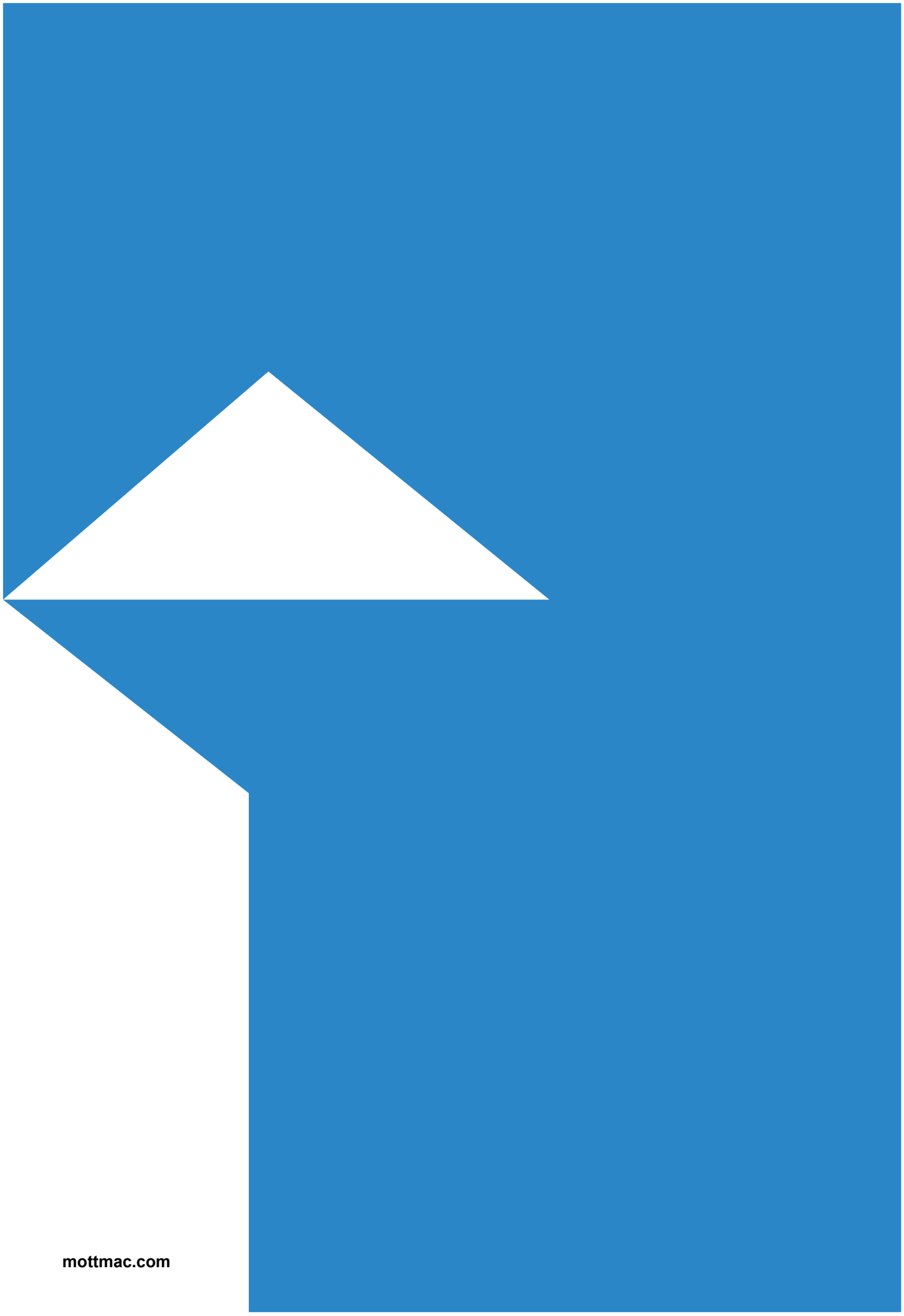


Kilometers
0 2 4 6 8

Scale at A3
1:130,000

Drawing No.

P:\Birmingham\TB\Charlotte R GIS\20180413 Otterpool walking & cycling\GIS\MXD\20180413 MSOAs.mxd



mottmac.com