

Ebbsfleet Garden City

Cycle Hubs Feasibility & Business Case



Ebbsfleet International is a focal point of the wider Ebbsfleet Garden City regeneration zone, which will provide up to 15,000 homes by 2035. Ebbsfleet falls within the wider 'Kent Thameside' area, which aims to bring 50,000 new jobs and 25,000 new homes over the next 15 to 25 years.

Maximising the use of sustainable and active transport forms part of the Garden City Implementation Framework, which promotes improving cycling infrastructure including implementing cycle hubs at major transport interchanges.

The Challenge

PJA was commissioned by Ebbsfleet Development Corporation (EDC) to undertake a Cycle Hubs Feasibility and Economic Case (to feed into a five-stage business case) at Ebbsfleet International and Northfleet Stations.

There are three objectives for the implementation of upgraded cycle facilities at these stations:

- To maximise the use of active travel within Ebbsfleet Garden City
- To increase the attractiveness of rail travel relative to the private car, reducing car usage on the highway network and car ownership within the Garden City
- To provide a scheme that delivers a satisfactory level of value for money, to make the business case so that funding can be secured

The commission comprised a site and desk based audit of the Garden City and its vision; a review of best industry practice; an optioneering and scheme design of potential facilities; travel demand modelling; and an economic appraisal, in line with DfT Transport Analysis Guidance (TAG), to demonstrate the scheme provides value for money.

Context

Ebbsfleet International provides high speed rail services into London, and south to Ashford and into continental Europe, as well as serving the North Kent line to the south. Northfleet Station, much smaller than Ebbsfleet International, is located 350m to the east and sits on the North Kent Line, providing services in both directions.

The patronage at these stations will increase as the Garden City develops. It is therefore an aspiration of EDC that the use of active travel is maximised in accessing the station, minimising the negative externalities brought about from excessive car use. EDC is implementing a “Green Corridors” network of walking and cycle routes across the entire Garden City; better cycle parking facilities at railway stations would complement this in maximising the use of cycling as an access mode to rail.

Cycle Parking at Stations

The recommended service level of cycle parking in terms of security and facilities offered increases with length of stay and distance between parking and the destination. Cycle parking at stations is mostly used for long-stay parking events that reflect how the station is used, and this can either be as an origin or a destination of a rail journey.

Generally, station cycle parking facilities fit into three categories:

- Basic cycle shelters (figure 1) typically contain a single rack of cycle stands, able to accommodate 10-12 cycles but are open access
- Secure compounds (figure 2) are often higher capacity, lockable cage-like structures which must consider aisle widths, turning requirements, means of access and robustness of locking mechanisms
- Full cycle parking hubs (figure 3) can offer a wide variety of services to compliment the cycle parking such as cycle hire, repair, showers, changing facilities and public transport real time information

When combined with the Green Corridors network, improved cycle parking facilities at Ebbsfleet International and Northfleet stations will provide an end-to-end solution for rail passengers that live (or start/finish their journeys) within a cyclable distance of the station.



Figure 1 Basic Cycle Shelter at Hampstead Heath Station



Figure 2 Secure Compound at Greenhithe Station



Figure 3 Full Cycling Parking Hub at Gravesend Station

Site Audit

A site audit of Ebbsfleet, Northfleet and the surrounding area was undertaken in November 2018 and a number of observations have informed the study:

1. Whilst the car is the main access mode of choice at Ebbsfleet International (and is likely to always continue to be), walking and cycling is already quite popular for shorter journeys. There is real potential for access by active modes to continue to increase as the Garden City is developed.
2. Northfleet Station has very few passengers compared to other local stations and is majorly disadvantaged by not having a connection to Ebbsfleet Central and Eastern Quarry from the western platform.
3. Although unavoidably disadvantaged by gradients, cycle path provision around the EDC development area is generally very good and will continue to improve as the Garden City is built out and the Green Corridors programme is implemented.
4. Cycle hub facilities are more likely to be used when they are located as close to the railway station as possible, are aesthetically appealing and clearly visible to users and passers-by. The facilities are also more likely to be used when there are good routes to them and are free to use (at least for the 'parking' aspect of the cycle hub facility), evidenced very clearly by the user preference at Dartford Station for free to use unsheltered cycle stands over the modestly chargeable cycle compound.

Optioneering and Scheme Design

A sifting process for the specification of cycle parking facilities and their locations, has been undertaken taking into account:

- **Proximity to the station** – being situated closer is more convenient for the user
- **Desire lines** – the hub should be prominent, easy to find, accessible from existing or planned cycle route infrastructure and be most convenient for the greatest demand of potential users
- **Size and availability of land** – installation of the hub will disrupt the existing use of that land, therefore minimising the extent of re-provision of facilities/infrastructure will keep costs down, particularly when there are significant engineering constraints

At Ebbsfleet International, it is appropriate to install an aspirational cycle hub facility. The proposed location is the existing (rarely used) coach parking area, adjacent to the station, which scores highly against all criteria particularly in the context

of the planned development in the Garden City. The hub is capable of parking up to 500 cycles, as well as a range of other services and facilities which could include:

- Storage lockers
- Changing facilities
- Maintenance facilities (self-service and workshop)
- Integration with public transport
- Integration with Mobility as a Service (MaaS)
- Shop
- Refreshments
- Cycling information
- e-Bike charging
- Occupancy sensors

The hub will be a secure compound with key card/smart phone access, and fully covered by CCTV. A modular implementation approach is recommended, with essential services (parking / lockers / showers) operational from opening and further services introduced as demand increases.

A safeguarded area around the hub is proposed to future proof the facility for associated future uses, which may include:

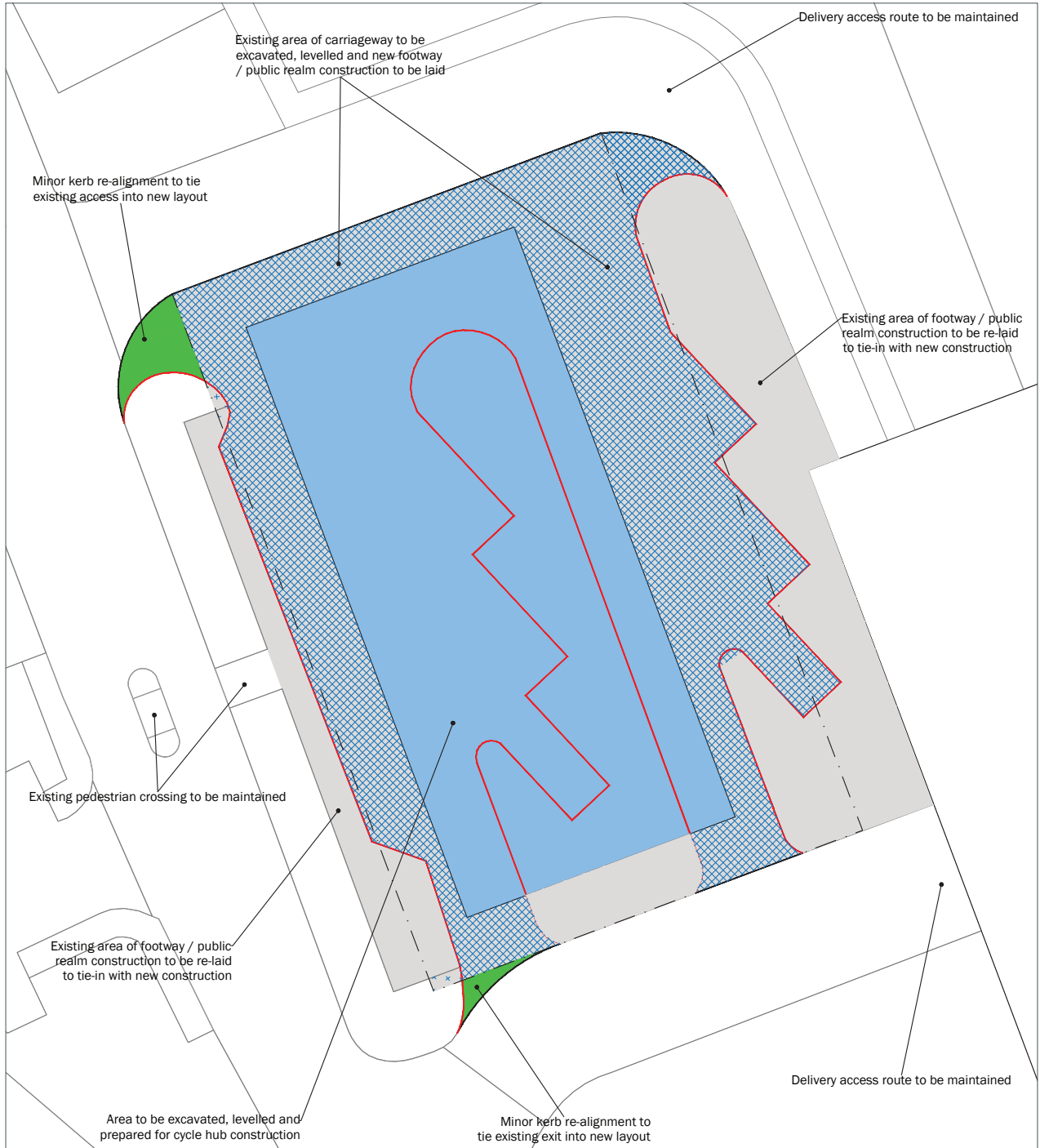
- Extension of the facility to provide additional parking should it reach capacity
- Storage of cycle hire bikes should a scheme come forward
- Cycle freight loading area
- An urban realm improvement scheme

A design has been provided that demonstrates the hub and safeguarded area will not affect the station servicing area. Notwithstanding this, the cycle hub will be integrated into the upcoming station upgrade planned by HS1.

At Northfleet Station, it is not currently viable to build a full cycle hub or even large compound facility. This is predominantly down to a lack of available land, but also due to there not being a direct link to the centre of the Garden City, from the station. When the station revamp and Ebbsfleet link is installed, it may be possible and viable to upgrade this, possibly with a cycle-hub facility.

It is therefore recommended to provide a small (CCTV-covered) shelter, with five Sheffield stands and capacity for ten cycles, on the station platform. Should demand increase before the new station and Ebbsfleet link is implemented, there is potentially space to add further cycle parking (another shelter and five Sheffield stands) within the highway immediately outside the station.

Cycle Hub Design - integration and safeguarded area

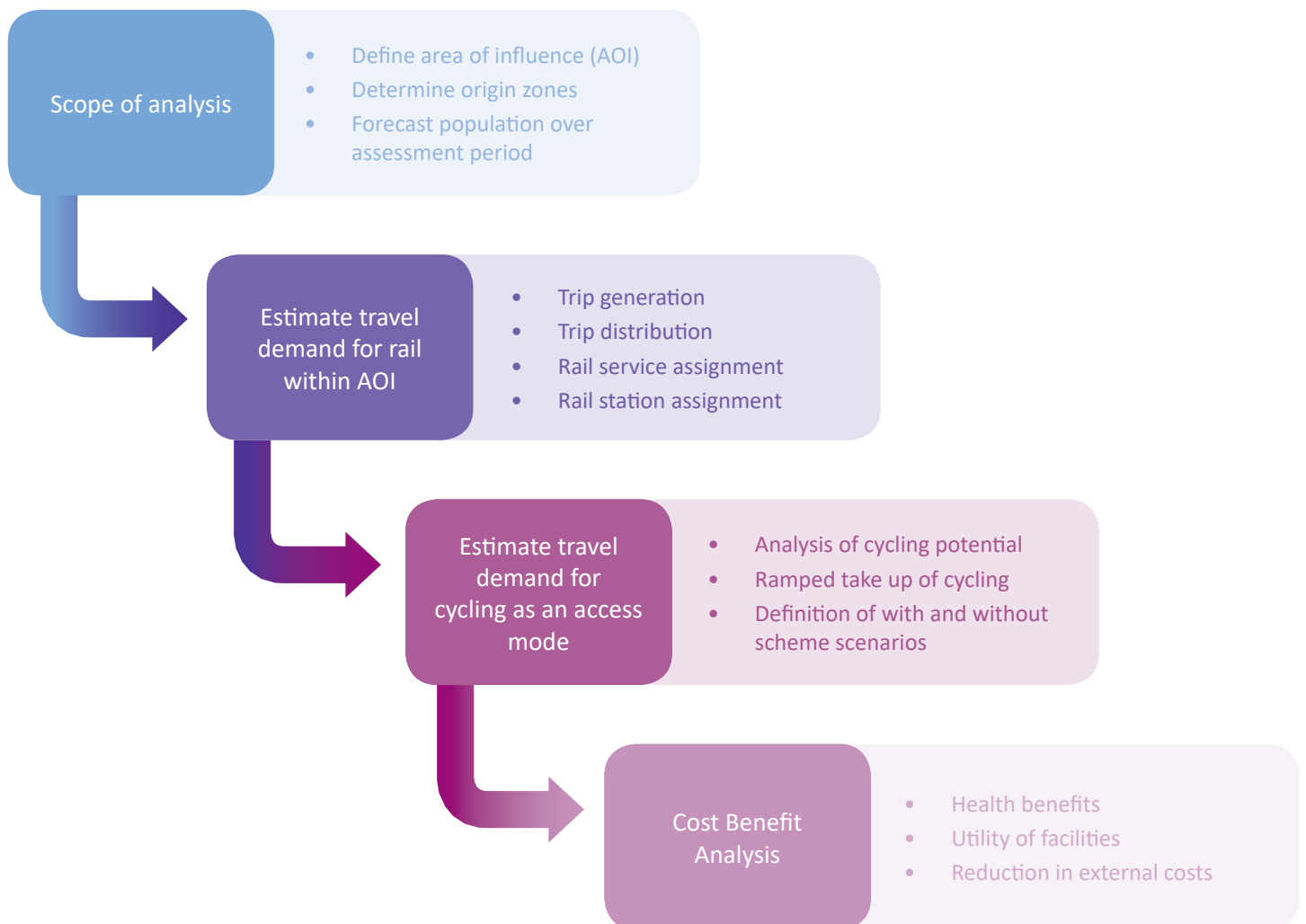


Travel Demand and Economic Appraisal Methodology

A welfare cost-benefit analysis (CBA) was undertaken, in line with DfT TAG, based on the active mode appraisal guidance. The benefit estimation is based on local residents cycling to the station and using the facilities for parking; it is therefore largely driven by latent demand for cycle parking where current provision ceases to be adequate. It does not consider the impacts of the ancillary uses, that the Ebbsfleet cycle hub has the flexibility to accommodate. The CBA also does not include wider or local economic impacts. Consequently, the analysis presents a conservative estimate of the likely value for money that the scheme offers.

The cost estimates include the facilities (based on an analysis of completed scheme costs), highway / car park alteration works and anticipated annual running costs. The cost estimate includes a contingency, as well as a 15% optimism bias adjustment uplift.

The benefit estimation is informed by a thorough travel demand modelling exercise based on national and regional census and forecasting estimates, GIS analysis, gravity modelling as well as a body of academic and industry research.



Value for Money

The results of the CBA for the Ebbsfleet Cycle Hub are summarised in the analysis of monetised costs and benefits table below.

The CBA reveals high value for money, with a benefit-cost ratio (BCR) of 2.27. Sensitivity testing of reasonable changes in travel demand assumptions demonstrates this value for money estimate is robust.

The BCR for the basic (and inexpensive) cycle parking facilities at Northfleet is 9.39, demonstrating very high value for money.

Ebbsfleet International Cycle Hub – Analysis of Monetised Costs and Benefits

Category	Component	Value (2018 Prices)
Health	Absenteeism	£314,470
	Reduced risk of premature death	£2,104,979
Utility of facilities	Secure cycle parking facilities	£753,497
	Changing and shower facilities	£319,703
Reduction in marginal external costs	Congestion benefit	£228,148
	Infrastructure	£1,531
	Accident	£45,920
	Local Air Quality	£159
	Noise	£3,061
	Greenhouse Gases	£7,613
	Indirect Taxation	-£24,019
Present Value of Benefits (PVB)		£3,755,062
Capital cost	Planning/preparation	£202,819
	Construction	£769,904
Revenue cost	All	£683,887
Present Value of Costs (PVC)		£1,656,609
Net Present Value (NPV)		£2,098,452
Benefit to Cost Ratio (BCR)		2.27
Value for Money Category		High

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