

Chapter 3: Alternatives and Design Evolution

INTRODUCTION

3.1 This chapter of the ES summarises the design evolution process undertaken by the Applicant and project team and details the environmental considerations (including opportunities and constraints) that have influenced the design. This includes a narrative on the evolution of the selected design option for the site, focusing on key design modifications that were made during the design process. Environmental considerations that have influenced the design evolution process are also discussed.

SITE AND LOCAL ENVIRONEMTAL CONTEXT

Site Description

- 3.2 The site is bounded by:
- Seacon Terminals (which provides handling and storage of construction project material and forest material) to the north, Swanscombe Peninsula Site of Special Scientific Interest (SSSI) to the north-west, and the River Thames to the north-east;
 - Robin’s Creek (also known as ‘Northfleet Harbour’), a small creek to the east;
 - Northfleet Train Station and Ebbsfleet International Train Station, along with railway infrastructure, to the south-east; and
 - Residential dwellings associated with Taunton Road, Robinson Way and Black Eagle Drive to the west, beyond which lies railway infrastructure, green space and the village of Swanscombe.
- 3.3 The site is currently occupied by Ebbsfleet United Football Stadium (the capacity of the stadium is 4,769 (of which 2,179 are seated), industrial land uses including active aggregates/concrete handling and processing sites operated by Aggregate Industries and Brett Aggregates, and smaller industrial units as well as a (Shell) petrol station. The A226 (Stonebridge Road) runs through the site, as do existing powerlines. **Figure 3.1** and **Figure 3.4** illustrates the existing surrounding land use and form, and **Figure 3.2** illustrates the existing site boundaries and frontages.

Figure 3.1 Existing Surroundings Built Form (Land Use and Height)



3.4 The built form surrounding the site is largely industrial in nature with residential development to the south around Northfleet High Street. The largest industrial buildings lie to the north along the River Thames where Seacon Terminals Ltd and smelting works are located. Taller industrial structures (chimneys and electrical pylons) are located on and around the periphery of the site. Smaller scale industrial buildings are concentrated in the east and west with residential to the south. Residential dwellings and industrial buildings are largely low scale with some instances of taller apartment blocks to the south-west of the site.

Figure 3.2 Existing Site Boundaries and Frontage



Local Environmental Context

- 3.5 The following environmental considerations were reviewed as part of the design evolution of the Proposed Development and the consideration of layout, scale, design, landscaping and design alternatives. The site's environmental context is summarised in **Figure 3.4**.

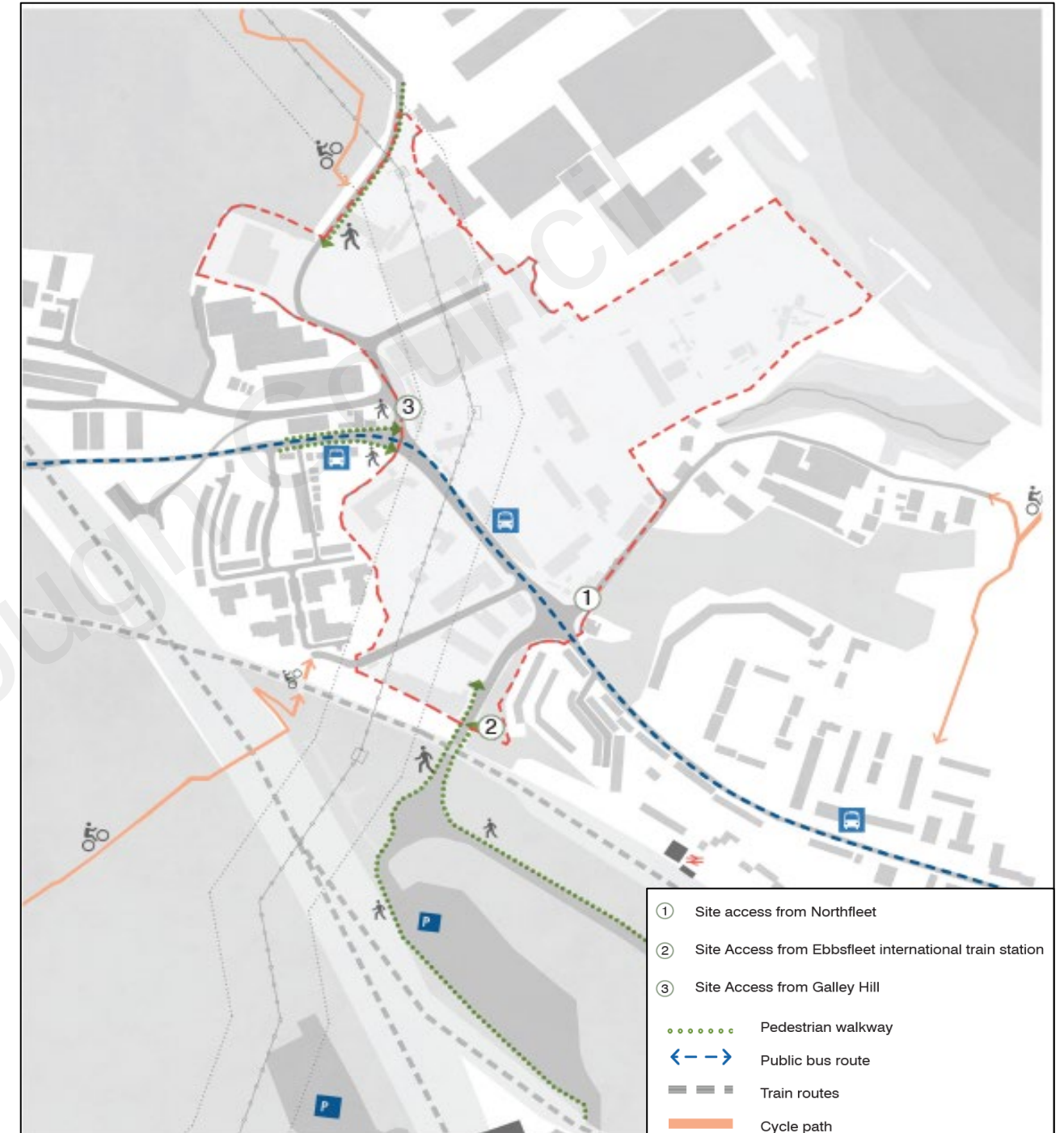
Ecology and Biodiversity

- 3.6 There are no ecological statutorily designated sites within the site. However, the site is located in close proximity to Swanscombe Peninsula SSSI¹ (located approximately 40m north-west of the site). The SSSI has been recently designated (2021) in recognition of its national importance for plants, geology, birds and invertebrates. Visitors are able to access the northern boundary of the SSSI via the England Coast Path as well as via existing public rights of way to areas within the rest of the SSSI. There are no other statutory designated sites within 1km of the site.
- 3.7 Robin's Creek borders the eastern boundary of the site, which was established in the Preliminary Ecological Appraisal undertaken for the site as having potential to support Schedule 1 bird species², as were the mudflats of the River Thames to the north of the site. A little ringed plover pair were confirmed to be breeding on the shingle beach on the mudflats to the north of the site and on the south bank of the River Thames. Cetti's Warbler were confirmed to be breeding in Robin's Creek to the east of the site. Black redstart were confirmed as present and breeding due to behaviour in the area. It is considered that black redstart is breeding near the north-east of the site. More information can be found in **ES Volume 1, Appendix Ecology and Biodiversity – Annex 1 and 3**. For clarity, Robin's Creek does not form any part of the Northfleet Harbourside site.
- 3.8 There are three non-statutory ecological designated sites adjacent to the site; Botany Marshes Local Wildlife Site (LWS) located adjacent to the north-west of the site (forms part of the Swanscombe Peninsula SSSI), Ebbsfleet Marshes LWS which is 50m to the south of the site, and the River Thames Site of Importance to Nature Conservation (SINC) which borders the site to the north-east and comprises valuable habitats not found elsewhere in London.
- 3.9 Mudflats are a UK BAP Priority Habitat and they adjoin the site to the north and east within the River Thames and Robin's Creek respectively. UK Priority Habitats are considered to be of principal importance for the conservation of biodiversity and are considered to be the most threatened habitats. UK Priority Habitats should be safeguarded during construction and operational phases of developments.

Traffic and Transport

- 3.10 The site is accessible via rail, bus, bike, car and foot. Access by rail is facilitated by both Northfleet Train Station and Ebbsfleet International providing access to Gravesend, Dartford, London and Sandwich respectively. **Figure 3.3** illustrates the existing site access.
- 3.11 Vehicular access to the site can be achieved to the north from Lower Road and to the south from Grove Road. Pedestrian access can be gained from various points along the A226 (Stonebridge Road), Grove Road and Lower Road. The site is in close proximity to existing transport infrastructure, with Northfleet Railway Station located approximately 300m (less than 3 minutes walk) to the south of the site, providing Thameslink and Southeastern services to London Charing Cross, Luton, Rainham and Gravesend. Ebbsfleet International Train Station is located approximately 500m (less than 5 minutes walk) to the south-west of the site and provides Southeastern services to St Pancras International, Dover Priory, Margate and Faversham. From 2023, Ebbsfleet International will resume Eurostar services to Paris and Brussels.
- 3.12 The A226 (Stonebridge Road) runs through the site and serves Seacon Terminals, located outside and to the north of the site. There are two bus stops along the A226 (Stonebridge Road) providing services including routes 3 and 34 to Gravesend, and future Fast Track bus routes are being considered.
- 3.13 Footways are present along the A226 and B175, with further pedestrian routes available in the form of Public Right of Way's that provide access to the site from the south-east via a footway over the railway line. Further pedestrian routes also provide access to the SSSI to the north-west of the site. This route travels north-west from Gravesend passing through the site and into the SSSI. A local cycle route runs along the A226 to the south of the site, which continues southbound where it connects to National Cycle Network (NCN) Route 1, located approximately 1.2km from the site.

Figure 3.3 Existing Site Access



Ground Conditions

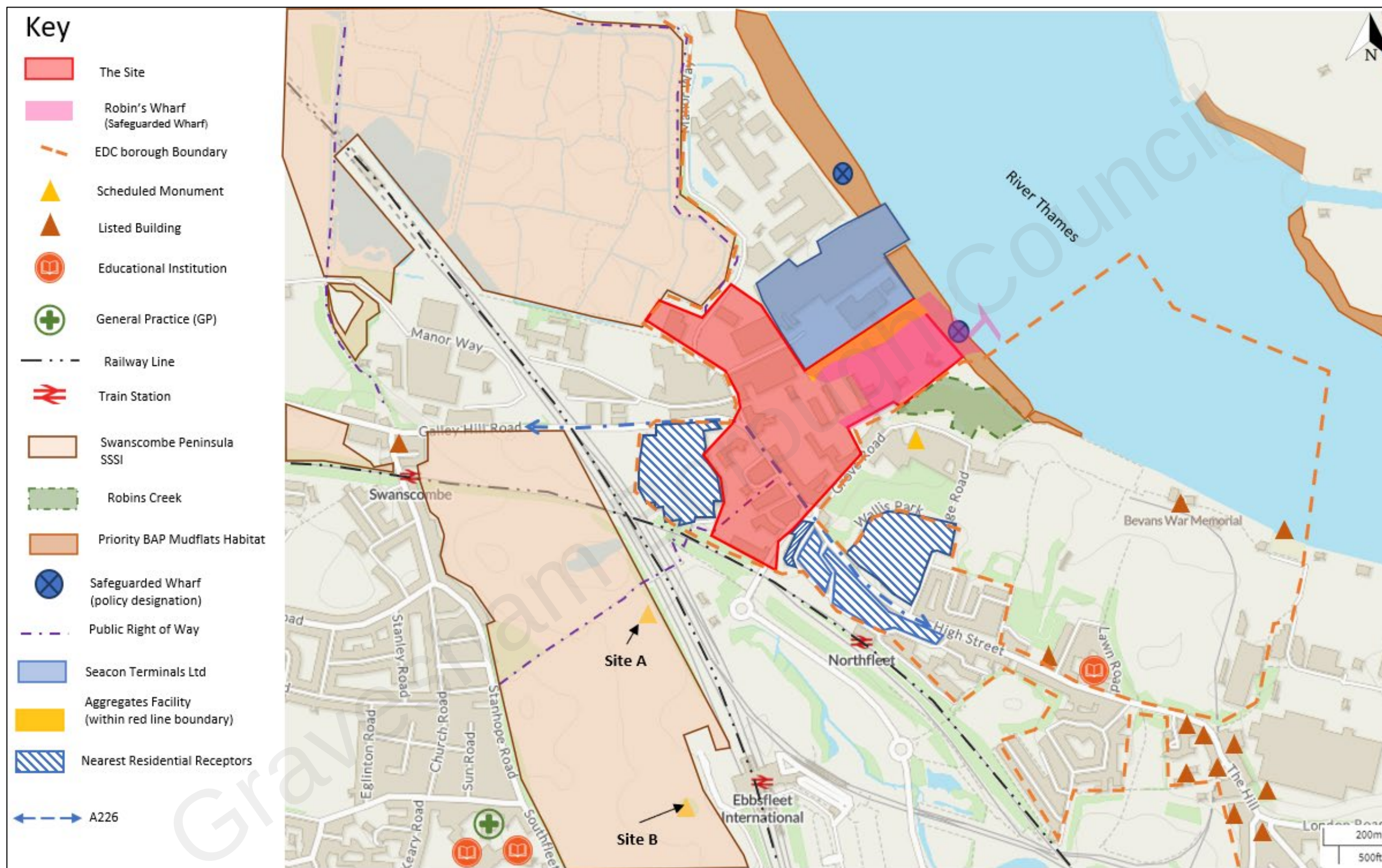
- 3.14 According to the British Geological Survey (BGS) online viewer³, the majority of the site is underlain by the superficial deposits of Alluvium comprising clay, silt, sand and gravel. The north-western boundary of the site is underlain by the superficial deposits of Head comprising clay, silt, sand and gravel. The site is entirely underlain by the bedrock geology of the Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation comprising chalk.
- 3.15 There is one Control of Major Accident Hazards (COMAH) record associated with Britannia Refined Metals Ltd which is located just outside the north-western boundary of the site. The COMAH record is currently in operation

¹ <https://www.gov.uk/government/news/swanscombe-peninsula-confirmed-as-site-of-special-scientific-interest>

² Birds listed under Schedule 1 protection are protected against any disturbance whilst nesting and/or rearing young, at or near the nest.

³ <https://www.bgs.ac.uk/map-viewers/geology-of-britain-viewer/>

Figure 3.4 Site and Surrounding Context⁴



⁴ The site boundary shown is indicative.

- 3.16** and is classified as an upper tier site which reflects an increasing potential for major accidents to occur in the absence of robust risk control systems.
- 3.17** The Proposed Development is also located within the safeguarding zone of a HSE licensed explosives site at Port of Tilbury London Ltd, Essex. The north-eastern portion of the site fronts the River Thames and lies opposite the Port of Tilbury within the Thurrock Borough Council area. Directly opposite, around 930 metres distant, is the main lock entrance to the dock complex, through which ships enter the impounded docks at times dependent on the tide.

Social Infrastructure

- 3.18** There are several primary and secondary schools within the surrounding area. The closest primary schools are Lawn Community Primary School which lies approximately 800m south-east of the site, and Manor Community Primary School which lies approximately 1km south-west of the site. The nearest secondary school is Ebbsfleet Academy (approximately 800m south-west of the site). The closest medical infrastructure in the area include Swanscombe Health Centre, approximately 850m south-west of the site. Grove House Orthodontics is located within the site.
- 3.19** Broomfield Park, an area of open space, is located approximately 830m to the west of the site.

Built Heritage and Townscape

- 3.20** The site does not contain any designated heritage receptors such as listed buildings, Scheduled Monuments or Registered Parks and Gardens. The site does not fall within a Conservation Area. The nearest built heritage assets comprise the Factory Club Grade II listed building, approximately 790m to the east of the site, Palaeolithic sites (near Baker's Hole) Scheduled Monument, approximately 800m south of the site, and Aspdin's kiln Scheduled Monument, located approximately 300m to the east of the site (see **ES Volume 2**). A cluster of Grade II listed buildings can be found in the Hill Conservation Area, located approximately 1.3km to the east of the site.

Archaeology (Buried Heritage)

- 3.21** There are no designated archaeological assets within the site. However, there are a small number of designated archaeological assets within 1km of the site.
- 3.22** Approximately 270m and 580m to the south-west of the site are Sites A and B of the Palaeolithic Sites near Bakers Hole (Scheduled Monuments, as shown on Figure 3.4 to the southwest of the site). The scheduled areas are known to contain a suite of lower and middle palaeolithic deposits which infilled the Ebbsfleet Valley and comprise a mixture of fluvial, colluvial and solifluction deposits. Site A survives as below ground archaeological deposits however Site B exists as a small island of deposits in an area that has been quarried. Whilst this does exist above ground in the context of the surrounding quarried area, this is still considered as below ground archaeological remains. The Scheduled Monuments are also located within the Swanscombe Peninsula SSSI, and whilst this is not strictly a heritage designation, the reason for the designation of this part of the SSSI is due to the quaternary geological deposits. The Palaeolithic deposits at Bakers Hole are considered to be of at least national significance.

Water Resources and Flood Risk

- 3.23** The River Thames lies directly to the north of the site. The site is predominantly located in Flood Zone 3 which means there is a high probability of flooding with less than 1 in 100 (1%) annual probability of river or sea flooding. However, the site benefits from flood defences which protect the site against river flooding.
- 3.24** The majority of the site is located in a very low surface water flood zone risk, which means that each year this area has a chance of flooding of less than 0.1%. A small portion of the site (where the current Ebbsfleet United Football Stadium is located) has a low risk of surface water flooding, meaning that each year this area has a chance of flooding of between 0.1% and 1%. Small pockets within the site have a high risk of flooding from surface water. High Risk means that these particular areas have a greater than 3.3% chance of flooding each year.

Noise and Vibration

- 3.25** The area surrounding the site is predominantly industrial and residential. The dominant sources of noise and vibration for the site are from traffic from the A226 (Stonebridge Road) which runs through the site boundary.

Existing transport infrastructure is located to the south of the site and will be a source of noise and vibration. The site is also located adjacent to Seacon Terminals which is responsible for the moving and handling of imported construction materials and woodpulp via ferry to the north of the site. The railway infrastructure to the south-west of the site and the industrial uses to the north are also considered to be a source of noise and vibration when operational. The industrial use sites are predominantly business hour operations sites, and vibration and noise generally is not generated out of business hours.

Air Quality

- 3.26** Gravesham Borough Council (GBC) has declared multiple Air Quality Management Areas (AQMAs), including the Northfleet Industrial Area AQMA for exceedances of the 24-hour particulate matter (PM₁₀) objective; which the site is located within. The neighbouring Dartford Borough Council (DBC) has also declared multiple AQMAs, including the Dartford AQMA No.2 along the A226 corridor for exceedances of the annual mean nitrogen dioxide (NO₂) objective; the site is also partially within this area.

ALTERNATIVES

- 3.27** The following sections review the alternatives to the Proposed Development that have been considered by the Applicant including:

- The Do-Nothing / No Development Alternative;
- Alternative Sites; and
- Alternative Designs.

Do Nothing / No Development Alternative

- 3.28** The Nothing / No Development Alternative refers to the option of leaving the site in its current state.
- 3.29** The site is currently occupied by Ebbsfleet United Football Stadium, industrial land uses including active aggregates/concrete handling and processing sites operated by Aggregate Industries and Brett Aggregates, smaller industrial units, a petrol station and four residential houses (64-67 Stonebridge Road). Open spaces on-site are largely covered by concrete surfacing and areas of hardstanding. There is little to no amenity landscaping on site.

Ebbsfleet Football Stadium

- 3.30** Ebbsfleet United is an intrinsic and important part of both the community and identity of the local area. The club has ambitions to be promoted to higher leagues. The development of a new southern stand on the Stonebridge Road elevation in 2012 provided new facilities for the club as well as partially covered seating, bringing the current capacity of the stadium to 4,769 (of which 2,179 are seated).
- 3.31** The club is currently supported by private finance from its owners which helps to maintain the current position, however this model has risks around sustainability and long-term financial security common among football clubs in the UK pyramid. The size of the stadium also limits other sporting and non-sporting events that can take place as a result of the capacity and/or supporting facilities on site or within the vicinity (e.g. hotel). Consequently, for the club to be viable in the long-term there is the need to improve the available facilities to enable growth by providing a 365 day per year community event site and providing important diversified revenue to the community football club.
- 3.32** The Proposed Development includes a new stadium with a capacity of approximately 8,000 supporters (both seated and standing options) with associated ancillary retailing outlets, function space, and training / changing facilities. This size of stadium will allow for the growth needed to become financially stable through an increased supporter base and lettings of the stadium for other uses such as concerts and tournaments. The increased capacity will also ensure governing body ground grading compliance for promotion to EFL Champion level as a minimum should it be required in future years. This investment will provide the club with a sustainable and self-sufficient future whilst also allowing for a reinvestment of funds and much needed facilities and space into the wider community of Northfleet.
- 3.33** This level of investment to deliver a step-change in the quality of the stadium cannot be achieved through the introduction of supporting town centre uses (e.g. hotel, retail and food & beverage) alongside residential development of scale commensurate with that proposed. Not only does this level of development allow for the

funding of the new stadium, but it also introduces a critical mass that will support the non-football functions of the stadium.

- 3.34 The 'No Development' option would therefore result in the loss of the above mentioned opportunities to improve the existing community function that the club facilitates, to improve the clubs financial viability and to develop the non football function of the stadium.

Loss of the Industrial Use

- 3.35 The area is located within a Minerals Safeguarding area and also encompasses Safeguarded Minerals Infrastructure in the form of a protected wharf, known as Robin's Wharf.
- 3.36 Robin's Wharf is occupied by Brett Aggregates and Aggregate Industries. The wharf is a shared facility jointly used by for the importation of aggregates for direct sale or supply into added value products. CPI Mortars and North Kent Roadstone, produce ready mix concrete and asphalt for sale into local markets.
- 3.37 The Proposed Development results in the loss of all mineral facilities at Robin's Wharf. An Infrastructure Plan and Planning Statement has been submitted in support of the planning application. The Infrastructure Plan provides a minerals infrastructure assessment and a full exposition of the need for the Proposed Development and the benefits arising from it is contained within the Planning Statement. The Proposed Development would accord with both criteria 6 and 7 within Policy DM8 albeit the policy wording is clear that the proposal need only satisfy any one criterion.
- 3.38 With regards to the minerals infrastructure assessment, the report notes the importance of safeguarding wharves is highlighted in Kent's Local Aggregate Assessment 2021, given the decreasing reliance on land-won sharp sands and gravels.
- 3.39 The Infrastructure Plan, however states that the total capacity for aggregate importation per annum according to figures reported in the Kent Local Aggregate Assessment 2021 was 5.6 million tonnes, albeit the theoretical capacity is recorded at 7.3 million tonnes. At present, Kent's Local Aggregates Assessment reports wharves to be operating at 54% capacity.
- 3.40 In terms of length and depth of water, mean high water springs (MHWS), Robin's Wharf is at a slight disadvantage over neighbouring wharves with one of the shorter lengths and shallowest MHWS. This will limit the size of vessel and the volume of aggregate capable of being discharged via the wharf. To confirm this assumption, further clarification would be required from the Operator, but this is a logical conclusion to draw given the factual circumstances of the site. This would suggest that the Northfleet Wharf has a higher capacity for unloading aggregates than Robin's Wharf. If imports of aggregates were at a 60:40 split from the total between Northfleet and Robin's Wharves, imports at Robins Wharf are estimated to be 284,848 tonnes.
- 3.41 Between Kent's nine active/semi active (and eleven safeguarded wharves under Policy CSM 6) there is sufficient capacity within the County to absorb aggregate imports of approximately. 284,848 tonnes resulting from the loss of Robin's Wharf.
- 3.42 Given the above, and that the site represents a large portion of the Northfleet Embankment and Swanscombe Peninsula East Opportunity Area with the potential to provide significant socio-economic opportunities for the area associated with the new floorspace provision, the 'No Development' alternative would result in a missed opportunity to provide much needed housing, employment and social infrastructure.
- 3.43 Currently, there is a lack of open, green and connected spaces within the site. The existing site consists mostly of industrial uses with limited pedestrian links and permeability. The Proposed development would substantially improve connectivity and significantly improve biodiversity across the site.

Consideration of London Resort

- 3.44 Whilst the London Resort scheme is recognised as part of the wider local planning history, given that it has been withdrawn from the Nationally Significant Infrastructure Project (NSIP) process, it is not a material consideration that has to be addressed by this planning application and has therefore not been considered in the no development option. It has however been considered qualitatively within the cumulative impact assessments of the ES, where relevant, in order to provide an understanding of the potential in-combination effects should an application be made in the future.

Conclusions

- 3.45 The socio-economic assessment carried out (**ES Volume 1, Chapter 6: Socio-Economics and Health**) reports that that the Proposed Development is expected to employ at least an additional 1,052 (net) local jobs

through direct, indirect and induced employment, taking into account leakage, displacement and multiplier effects resulting in a Permanent, Major Beneficial (Significant).effect at the Borough level on the Gravesham Economy / Workforce.

- 3.46 The net increase in total commercial floorspace on-site, as well as the transition to more productive use classes (on a per square metre basis), is also expected to lead to a net increase in business rates receipts achievable from the site. Current business rates receipts (before relief) are estimated at £1.6m per annum, and the Proposed Development is estimated to generate receipts of £2.8m per annum – a net increase of £1.2m per annum which will result in a beneficial effect at the Borough level on GBC Council Tax and Non-Domestic Rates Income and is assessed as Moderate Beneficial (Significant).
- 3.47 Ultimately, the site represents an opportunity to be redeveloped in line with the Local Plan, providing significant housing, employment opportunities, public and commercial use attractors, and public realm benefits to the area, including space for play, social interaction, creativity, economic activities and entertainment. Regeneration of the site will lead to both new residential floorspace and employment opportunities which will in turn result in other direct and indirect socio-economic benefits that would otherwise not be realised should the site be left in its current state. The 'Do Nothing' option on the site has therefore not been considered in further detail.

Alternative Sites

- 3.48 No alternative sites or locations have been considered for the Proposed Development. The site is located in the Northfleet Embankment and Swanscombe Peninsula East Opportunity Area which sets out how public access to the River Thames can be achieved along with opportunities for residential and commercial development within the site. The Proposed Development would therefore form part of the wider regeneration and growth strategy for the area, providing much needed green space and green corridors.
- 3.49 The Ebbsfleet United Football Club stadium is a core component of the site and its historical association with this location is part of the club and supporter's identity which limits the ability to move elsewhere. Furthermore, the club provides the key link to the existing community and an anchor point from which the Proposed Development and its functions can create the urban connection between the public transport links to the south (Northfleet and Ebbsfleet International train stations) and the River Thames to the north. Therefore, no other sites have been considered by the Applicant and considered as part of this ES. Recent planning applications from EDC relevant to the Grove Road residential scheme, indicate a clear 'expansionary' view of Northfleet into this existing industrial area, and Northfleet Harbourside is seen as a further extension of this ambition to the North West.

Alternative Designs

- 3.50 The '*Design Evolution*' section of this ES chapter sets out the key design considerations, the design brief, and the framework principles which have guided the evolution of the Proposed Development. The design has evolved from these starting principles in response to feedback received during the pre-application consultation process (both in terms of the public consultation process and the pre-application discussions with the GBC and other relevant stakeholders) and through technical and environmental design development of the scheme.
- 3.51 Where design options have been influenced by environmental considerations and assessment work, this has been discussed within the '*Design Evolution*' section of this ES chapter as relevant.

DESIGN EVOLUTION

- 3.52 The following sections of this ES chapter describe the design evolution processes undertaken by the Applicant's design team and are structured around the initial Proposed Development vision and design objectives, a site environmental constraints and opportunities analysis exercise, and the key changes throughout the design evolution process, for example in response to pre-application consultation meetings and public consultation as discussed in the '*Consultation*' section of this ES chapter. This design evolution process has led to the final design of the Proposed Development, as described in **ES Volume 1, Chapter 4: The Proposed Development**.
- 3.53 The design process looked at a series of different design iterations and options based on initial design concepts for the site. The evolution of the design, both with regards to the Illustrative Masterplan and the maximum parameters sought for approval by the planning application, emerged in response to input from comments made during the consultation process (as detailed above) as well as design development and the technical aspects of the scheme from environmental analysis.

3.54 The EIA team has worked alongside the design team to ensure that ‘*mitigation by design*’ principles have been incorporated into the evolving scheme, and so the evolution of the design has included, where relevant, consideration of environmental effects and issues. The evolution of the Proposed Development for the site has been informed by detailed analysis of the site and its surroundings. A summary of the key results of this exercise, as shown on **Figure 3.5** and **Figure 3.6**, include:

- The existing industrial zone to the north-west of the site which utilises the existing transport network within the site; and
- Flood risk associated with the adjoining River Thames to the north of the site;
- The existing townscape/heritage of the local residential neighbourhood;
- The existing powerlines which dissect the site and the requirement for necessary easement in design;
- Swanscombe Peninsula SSSI, located to the northwest of the site;
- The railway line to the south of the site presents a public realm boundary.
- The EDC residential scheme planning application for Groves Rd
- The existing Robins Creek retaining walls and site owned by EA.

3.55 This resulted in the following design opportunities:

- Provision of a (future) connection to the Robin’s Creek harbour and River Thames to the north of the site;
- Connecting the existing green links found to the south and west of the site with the Proposed Development;
- Utilising and improving access to the site, based on existing strong public transport links such as Ebbsfleet International Station to the south of the site, and the existing local and regional bus links (incl Fast Track) and cycle links;
- Alignment of the Proposed Development with the existing adjacent industrial zone and residential neighbourhoods, specifically establishing a route connecting the Galley Hill Road to the A226 logistically allows for local industry (Seacon) to function as normal; and
- Re-imagining Ebbsfleet United Football Stadium, as a pivotal element of the community, which plays a key role in the connection to both the existing local community and a link to the future users of the site.

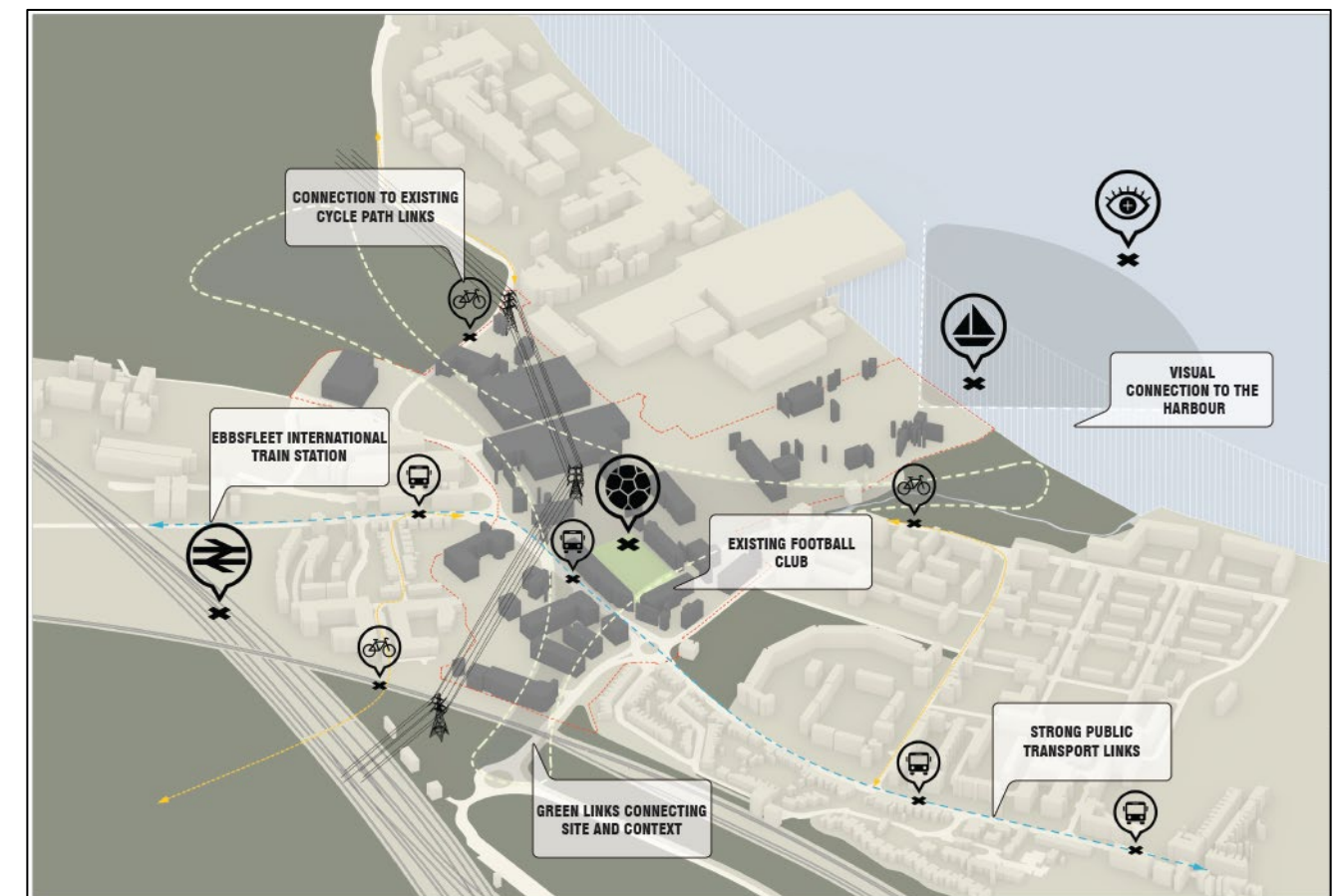
3.56 The vision for the Proposed Development is based upon achieving the ‘design objectives’, which are founded on the three key themes of ‘Accessibility and Connectivity’, ‘New Community’ and ‘Football Club’.

3.57 The design objectives of the Proposed Development have carefully considered the site and its surroundings in conjunction with an extensive consultation process with stakeholders and the public, as set out below and in the following section of this ES chapter. The design objectives are also further discussed within the Design and Access Statement (DAS) which supports the planning application. The evolution of the design in response to some of the above features are discussed in the following sections.

Figure 3.5 Site Analysis



Figure 3.6 Site Opportunities Plan



Early Design Team Workshops

3.58 A series of 4 internal principal workshops took place from May to June 2022 between the design team, where initial design sketches were discussed and appraised. The design workshops included:

- 11th May 2022 – Initial Design Ideas (Workshop 1);
- 19th May 2022 – Initial Design ideas (Workshop 2);
- 30th May 2022 – Initial Design ideas (Workshop 3); and
- 9th June 2022 – Initial Design ideas (Workshop 4).

3.59 Furthermore, weekly design team meetings also took place from 16 May to 22 August.

Initial Design Sketches

3.60 The layout of neighbourhoods and buildings, as well as the layout of the road network within the site were key points of focus during the development of early design sketches.

3.61 A number of different permutations for the land use and building layouts were explored. Key considerations were:

- Diverting heavy traffic away from the heart of the Proposed Development;
- Responding to the overhead power cables, providing improved access and offset where this could be achieved;
- Dividing the Proposed Development into key neighbourhood areas that each have their own identity;
- Establishing a programme of how the stages Proposed Development will come forward for development;
- Creating strong green/public realm connections from adjacent green areas and linking them through the site;
- Placing the stadium at the heart of the Proposed Development, as a pivot point; and
- Creating a distinct entrance square for the entire Proposed Development to the south of the site.
- Considering future connections with adjacent lands (if and when they become available or seek development) in creating a more inclusive and open access community.

3.62 These key considerations were experimented with through workshops from 11th May to 9th June. The initial design proposal from Workshops 1 and 2 are shown in **Figure 3.7** and **Figure 3.8**.

3.63 Discussions with GBC officers, lead to agreement in principle of the following:

- Development on the site, including general scale and quantum of development, subject to appropriate design and detailing;
- The promotion of efficient use of the site for up to 3500 new homes and commercial uses to optimise potential on an underutilised brownfield site (including replacement of existing industrial uses and retention of a football stadium?);
- The demolition of existing buildings on the site which do not make a positive contribution to the character and appearance of the area;
- The regeneration of the site through the creation of attractive buildings with well-defined active frontages, permeable routes and open spaces;
- A variety of forms and heights of buildings, including the use of a “landmark” taller building at the western gateway to the site;
- Safeguarding the route of the former Thames and Medway Canal through the creation of a linear space and waterbody; and
- Protection of existing access routes and primary thoroughfares for established businesses and operations
- The principles of the emerging access and movement.

3.64 Through these discussions, the adopted option, Option 2B, was taken forward as the preferred Proposed Development design strategy as it allowed for the retail village to be at the heart of the development, adjacent to the stadium, and for the transport network to be diverted underneath the retail village (thus improving the public realm experience). During Workshops 3 and 4, the layout of the Proposed Development was examined, with the proposed locations of the following key design features discussed:

- The western stadium side;
- The eastern stadium side;
- The retail experience;
- The landscape and public realm; and
- Residential neighbourhoods (see **Figure 3.9**).

3.65 Illustrative section diagrams of the stadium provided an understanding of the proposed podium level and the relationship between the stadium and its surrounding context. Initial massing views were presented at Workshop 4 which presented the maximum parameter envelope of the Proposed Development, with a focus on the southern entrance as a central arrival point for the local context (see **Figure 3.10**).

Figure 3.7 Initial Design Proposals (Workshop 1)



Neighbourhoods

Initial sketch of an urban strategy, dividing the Proposed Development into a series of distinct neighbourhoods.

Neighbourhood programme sketch

Initial sketches on the placement of key construction programmatic elements of the design.



Neighbourhoods

Initial sketch of a strategy to place the stadium at the heart of the Proposed Development

Crossing Trajectories

Initial sketch of an urban strategy to allow neighbourhoods to cross over and flow into one another defining spaces in a less strict definition

Figure 3.8 Initial Design Proposals (Workshop 2)



Option 2A
This option explores the placement of the South-East/ South-West connecting route along the furthest southern position in the masterplan.



Option 2B.
This option explores the placement of the South-East/ South-West connecting route centrally underneath the retail village adjacent to the stadium.

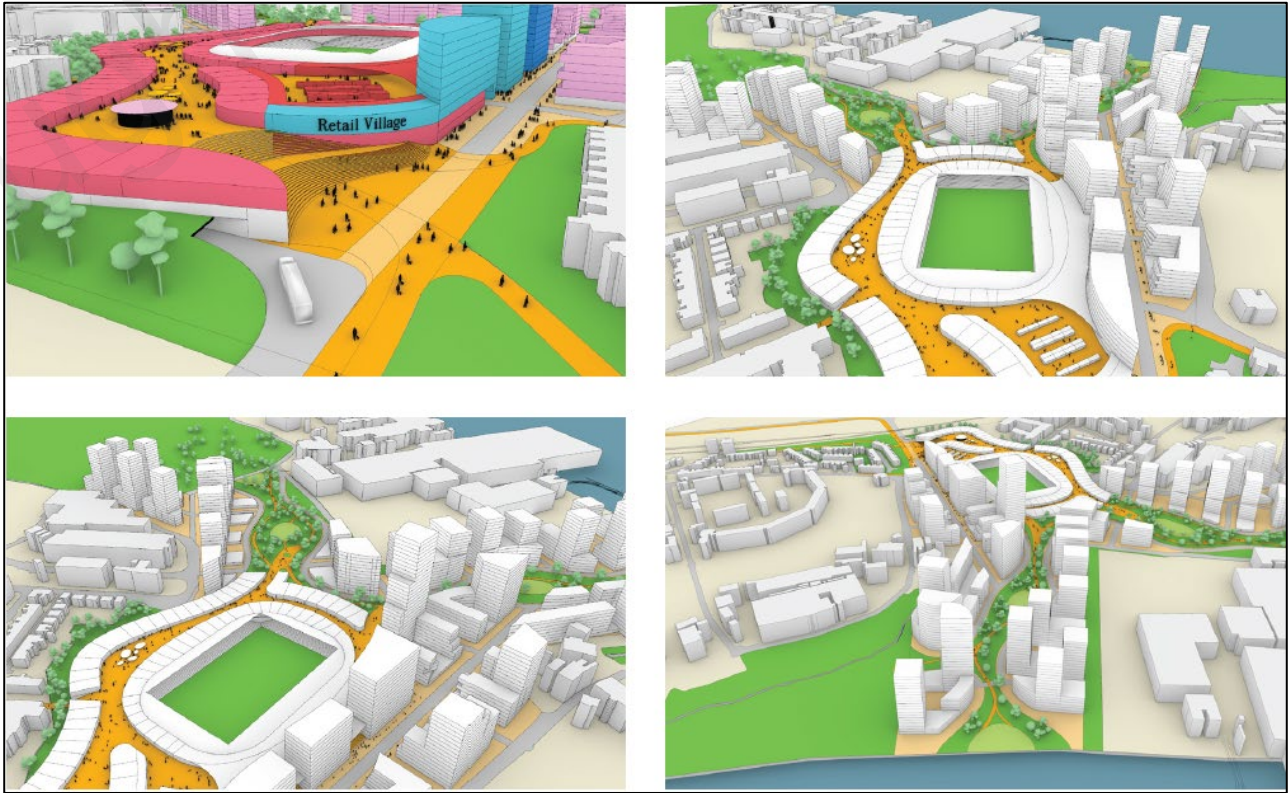


Option 2C.
This option explores the placement of the South-East/ South-West connecting route as a dividing element between the retail village and stadium massing whilst still remaining under the terrain.

Figure 3.9 Key Neighborhood Areas (Workshop 4)



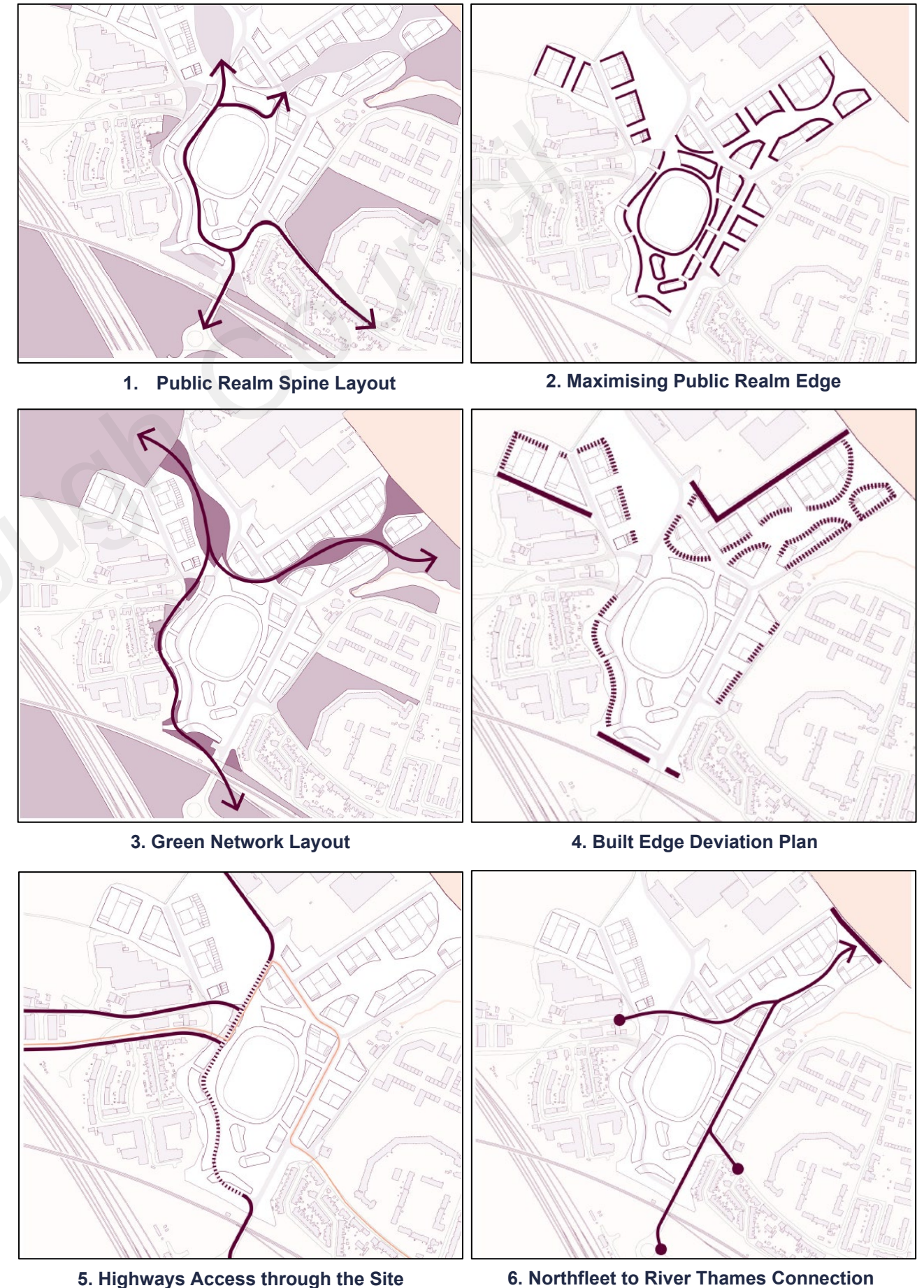
Figure 3.10 Initial Massing Views (Workshop 4)



- 3.66** The layout of the Proposed Development was considered to be a key factor in realising its potential and achieving the design objectives set out earlier in this ES chapter. Although details are reserved, the planning application seeks outline approval of parameters associated with the layout of the Proposed Development with regards to plot locations and land uses, including (but not limited to) defined ‘built edges’, site access and circulation, and public realm and park zones, as set out in the Parameter Plans submitted in support of the planning application
- 3.67** Following the initial sketches, consultation discussions and feedback as discussed above, the iterative design process has allowed for an evolved design which incorporates a central spine, connecting the existing High Street, A226 and the Proposed Development along the primary pedestrian retail and stadium public realm route. This ensures that the stadium and associated activities are routed within the existing context and are physically and visually connected to the local community and local transport routes. Integration of the Proposed Development into the existing context has been one of the main considerations in the creation of new routes and public realm elements.

- 3.68** The design has evolved with regards to building and public realm placement to connect the site to the surrounding green network, with a green links between the site and the adjacent green spaces (image 3 of **Figure 3.11**).
- 3.69** Highways access and circulation routes through the site have also informed the evolution of the site layout, enabling routes which are strategically located to ensure local industrial truck routes, existing bus routes and the Proposed Development work together in combination with each other.
- 3.70** The Proposed Development incorporates a tunnel through the podium level in order to connect the A226 and the Thames Way to the Northfleet Industrial Estate and the wider context of the north. This allows for a network of green routes to be established at podium level in order to ensure a combined approach was established for pedestrians and vehicles within the site (image 5 of **Figure 3.11**).
- 3.71** The connection between the existing network of roads and the site has been a key factor in the site layout and in establishing the Proposed Development's place within the local and wider context. The key evolution to the design in this aspect are:
- The establishment of a tunnel route connecting the Galley Hill Road (located to the west of the site) to the A226, which logistically allows for local industry to function as normal;
 - The connection of the B2175 into the Boulevard neighbourhood in the south-east of the site, which allows for the Manor way to the North and A226 to the southwest to be connected; and
 - The establishment of a route from Galley Hill under the Marketplace podium, through the Parkland (located in the east of the site), Riverside (located in the north of the site) and Boulevard (located in the southeast of the site) neighbourhoods and connecting back to the B2175, allowing for the existing bus route to service the Proposed Development while retaining its local connection.
- 3.72** The design has also evolved to be arranged into a series of Neighbourhoods: Stadium, Marketplace, Parkland, Boulevard and Riverside. Each neighbourhood has evolved to establish its own identity by taking into account the surrounding uses adjacent to the site, but each neighbourhood also retains a connection to the Proposed Development as a whole. The green public realm has also been developed to tie these neighbourhoods into one cohesive development, providing a 'green spine' of connectivity within Northfleet Harbourside, that is capable of extension and integration with the broader established Northfleet community
- 3.73** The public realm and park frontages of the blocks have evolved to be maximised, to allow for the blocks to take advantage of their direct connection to green public realm space, increased walkability of the site and passive security. The visual connectivity into, within and out of the Proposed Development has been designed to be maximised through the strategy of maximising park frontages (image 2 of **Figure 3.11**).
- 3.74** Buffer zones have been integrated into the design between the existing industrial uses and the proposed residential zones across the site, to ensure that all the site edges are in-keeping with the immediate historical context of the area.
- 3.75** A strategy has also evolved to encourage connection between established residential zones and the proposed retail frontage (which can be seen around the Marketplace neighbourhood). This has led to a series of deviations being built into the parameters of the Proposed Development to further establish the flexibility of the detailed design, as shown in image 4 of **Figure 3.11**.
- 3.76** Furthermore, the site layout has implemented a connecting link between the wider context of Northfleet and the Thames River harbour, given there has always been a strong industrial presence along the Thames and Robin's Creek. This has developed to ensure a visual connection between the residential neighbourhoods and the harbour, as shown in image 6 of **Figure 3.11**.

Figure 3.11 Site Layout Evolution



CONSULTATION

Statutory Stakeholder Consultation

3.77 The design of the Proposed Development has also through a series of workshops undertaken with GBC and other key stakeholders. As part of this consultation process, the Proposed Development has evolved to respond to clarifications or requests by key stakeholders. This consultation has included:

- GBC Pre-Application Meetings:
 - 5th May 2022
 - 15th June 2022
 - 24th August 2022
- Other Stakeholder Meetings:
 - 5th July 2022 – Councillor Briefing Meeting;
 - 6th July 2022 – Press night and Ebbsfleet United Football Club Supporters Briefing;
 - 7th July 2022 – Presentation to GBC Management Team;
 - 12th July – National Grid;
 - 15th and 26 August – KCC Minerals;
 - 22nd August – Update to councilors issued invitations for briefing;
 - 5th September 2022 – Councillor Update Briefing Meeting; and
 - September 2022 – Briefing to Ebbsfleet United Football Club Executives.

3.78 With regards to consultation regarding the Transport Assessment (TA) (as provided in **ES Volume 3, Appendix: Traffic and Transport – Annex 1**), pre-application advice was sought from Kent County Council (KCC), with a pre-application request issued to KCC on 22nd June 2022. A subsequent Transport Scoping Note (TSN) was issued to KCC for review on 29th June 2022. The TSN set out several the transport issues, including looking to agree the approach of the TA. A scoping meeting with KCC was held on the 8th July 2022 and a formal response was received from KCC.

3.79 The key feedback from the statutory stakeholder consultation focused on the following main points:

- **Uses** – There was concern over which activities could be placed along the wharf. It was noted that there should be a strategy in place to overcome the perception of the podium being a wall to the other parts of the Proposed Development;
- **Community Spaces and Facilities** – It was noted that maintaining local community is a key component to the Proposed Development and the provision of an arts or cultural space should be considered in the scheme. It was also noted that public routes could be used to benefit the existing community;
- **Design** – Whilst the principle of accent buildings was supported, the proposals were noted as consisting of limited architectural detail, single colour render and a plain window treatment and a concern that the scheme was lacking interest with the risk of appearing dated shortly after completion;
- **Safeguarded Wharf** – The safeguarding of part of the site for mineral and aggregate handling was identified as a key land use constraint that requires a robust justification against the relevant exception criteria for the scheme to be supported; and
- **Highways and Delivery** – It was noted that there is a need to ensure that the local highway network remains operational at all times during the delivery of the scheme.

3.80 Detailed information about this process and the evolution of the design is included within the DAS and the Statement of Community Involvement submitted with the planning application, and briefly outlined below.

3.81 The design team made a number of key changes to the design following the 15th June pre-application meeting, including:

- Created a series of activity spaces to help activate the River Thames edge (and acknowledge GBC's own 'future cycle and pedestrian friendly promenade' ambition, connecting Swanscombe Peninsula with Gravesend along the Thames);
- Designed the podium to have a gentle connection to the ground plane at the arrival point of the Proposed Development;
- Focused and explored the public ground floor uses to ensure the local community benefit from access to community, health, local services, creche/nursery, fitness and public realm activity spaces;
- Designed the ground floor of the neighbourhoods to allow for direct access to public services from the public realm;
- Designed neighbourhoods to maximise connectivity with the local green spaces, harbour views and designing them to not interfere or obstruct the local industrial neighbourhoods; and
- Implemented a wider 22m spacing to break down the density of the scheme and to give a broad public realm spacing between the neighbourhood blocks where possible

Public Consultation

3.82 In addition to consultation with GBC and statutory consultees, a series of public exhibition events have been undertaken as part of the design evolution process to obtain feedback on the design of the Proposed Development from the public. Public comments received as part of this process have been acknowledged and contributed to design iterations of the Proposed Development.

3.83 Two newsletters were issued to 20,000 residential and businesses to share the emerging proposals and to invite local residents, businesses and key stakeholders to the consultation events where they would be able to share their views. The newsletters contained details of the dedicated consultation website, as well as an email address and telephone number to answer queries.

3.84 The public consultation process began in July 2022 and an outline of the events and exhibitions are described below:

- Three days of public exhibition (drop-in events) on the 18th, 20th and 21st of July 2022;
- Further drop-in events on 7th and 8th September 2022;
- 20,000 postal newsletter issue, with a total of two newsletters issued (one in July and one in August);
- Public webinar sessions (made available online) on 22nd July, and 9th and 12th September 2022;
- Dedicated website for the Proposed Development;
- Tours of the site with leaders of the council and councillors;
- Numerous stakeholder meeting with Councillors, EUFC supporters, GBC Executives, local MP and Gravesham Access group;
- Social media presence with a reach of 7,445 and 427 clicks;
- A total of 69 email subscribers to the website;
- A total of 50 forms with questions/ suggestions received; and
- A series of 4 workshops held to gain feedback on the design process.

3.85 A project webpage⁵ was set up in support of the consultation process and provides further information and details on consultation events which were held. The website included a link to the online feedback form and recordings of the online webinars and was regularly updated to reflect key milestones of the project. [Cross-ref to Statement of Community Engagement]

⁵ www.northfleetharbourside.co.uk

Summary of Design Evolution from Public Consultation

- 3.86** The following design considerations have been addressed as a result of consultation activities undertaken during the design process:
- The need for the provision of local services was a key theme in the feedback received. Investment in local services will include facilitating the provision of on-site healthcare alongside childcare, play spaces. Ensuring a balance of much needed community based medical services between Northfleet Harbourside and neighbouring developments is a key priority of the Proposed Development. With the football club at the heart of the scheme there is to be the provision of sports facilities and community spaces;
 - Concerns about the impact of the proposals on roads and parking were raised, and the fact that the local infrastructure may not cope with the increase in traffic. The vision is to make sustainable travel far more convenient for site users, with opportunities for car ownership limited within the Proposed Development. The site has been designed to minimise the need for site users to travel by car.
 - The need to create a space for natural migration of wildlife on the river was raised and the effect the proposals would have on the river was another key concern, as well as the provision of green spaces. The Proposed Development will include publicly accessible green spaces (including parklands, seating areas and children play space);
 - Ensuring that public spaces are maintained and kept safe was another key concern. High levels of accessibility are envisioned to promote activity throughout the day and evening, encouraging natural surveillance. The residential neighbourhoods, alongside football club staff will create natural safety and passive surveillance for a 24/7 community environment; and
 - The importance of sustainability measures across the site was highlighted. The Proposed Development includes cycle and pedestrian prioritised streets that promote sustainable modes of transport, measures to reduce flood risk a 20% biodiversity net gain commitment and measures to reduce operational waste. The Proposed Development energy strategy will be fossil fuel-free, i.e. all electric (for heating and cooling in the first instance). There may be a need for diesel generators to support life safety systems for instance, however this will be determined during the detailed design. The Proposed Development will also include measures to reduce on-site CO2 emissions.

Illustrative Masterplan

- 3.87** The Illustrative Masterplan is not being sought for approval within the planning application. It has been used to provided context and illustrate how a scheme could be delivered within the parameters sought for approval, as defined by the Control Documents, comprising the Parameter Plans, Parameters Report and Design Code (as discussed in **ES Volume 1, Chapter 2: EIA Methodology**).
- 3.88** The Illustrative Masterplan (as discussed in **ES Volume 1, Chapter 2: EIA Methodology**) therefore provides further detail on how the Proposed Development responds to environmental and site opportunities and constraints. The final Illustrative Masterplan is shown within **ES Volume 1, Chapter 4: The Proposed Development** with further detail provided within the Design Code and DAS.
- 3.89** The Illustrative Masterplan was designed in tandem with the maximum parameters. The initial design concept of the Illustrative Masterplan focused on creating a development which reflected the historic maritime culture of the site and the wider town of Gravesend while also allowing residents to lead a healthy and sustainable lifestyle. Key components of this vision for the site are echoed in how the outline parameters with regards to layout, use, massing and scale have evolved, and included:
- Opening up the riverfront and making it accessible through the provision of a new Harbourside walkway;
 - Creating a green corridor along the route of the former Thames and Medway Canal;
 - Establishing a public square at the gateway to the site and linking it to an east-west route following the alignment of the public rights of way (PROW);
 - Locating a marker building at the western end of the site to act as a beacon at the entrance to the canal basin and in views along the Harbourside promenade; and
 - Responding to the form and character of existing maritime/industrial buildings on the site with a range of buildings of varying heights, reducing in scale to the south, away from the river.

3.90 The first iteration of the Illustrative Masterplan was presented in early June 2022, based upon initial technical environmental and transport studies, stakeholder engagement and internal team workshops (see **Figure 3.12**).

3.91 The design team then took on board the comments made at the pre-application meeting and reacted with a series of design decisions, including the measures discussed earlier in paragraph 3.63.

Figure 3.12 Illustrative Masterplan (Early Iteration)



Landscape and Public Realm

- 3.92** The design of the Proposed Development has been developed in a landscape-led approach, in order to reconnect and enhance the existing natural landscape features through a green network. This is reflected in significant areas of new green infrastructure across the site.
- 3.93** As described above, public consultation revealed a strong preference for maintaining the heritage of the site. The landscaping has therefore been developed with heritage opportunities in mind; for example, industrial inspired play spaces could reflect the industrial heritage of the site and paving and planting could reflect the historical water uses on site.
- 3.94** Play space has evolved to be maximised within the Proposed Development based on public consultation but also to align with the evidence base in the emerging Local Plan. The play network has evolved to connect people, linking key active spaces to leisure and work destinations along a network of safe and clearly defined routes.
- 3.95** In response to GBC comments within pre-application meeting 1, riverside activities were introduced to the design including a multi-functional amphitheatre space located in the Riverside Neighbourhood Character Area, providing opportunity for events and community interactions.
- 3.96** Buffering and screening spaces have emerged from early environmental input with regards to drainage, townscape and views, noise and ecology. These studies led to the development of a green curtain in the north of the site (inclusive of mounding and evergreen trees), street trees to the east, and green buffers to the west and north-east of the site to reflect local natural vegetation.

ENVIRONMENTAL CONSIDERATIONS AND DESIGN INFLUENCE

3.97 The key environmental factors and considerations that have influenced the design of the Proposed Development are discussed in this section. The EIA team has worked alongside the design team to ensure that 'mitigation by design' principles have been incorporated into the evolving scheme, and so the evolution of the design has included, where relevant, consideration of environmental effects and issues.

Acoustic Design and Air Quality

- 3.98** Landscape buffering in the form of a 'green curtain', as set out within **ES Volume 1, Chapter 4: The Proposed Development**, will be implemented along the northern boundary of the site close to proposed residential dwellings and the industrial uses to the north of the site. This will utilise mounding topography with deciduous and evergreen tree species. Through the incorporation of such measures, the impact from both transport, noise and air quality emission sources as well as surrounding existing industrial activities affecting future occupants is lessened and the internal ambient noise criteria and suitable air quality standards can be achieved.
- 3.99** The Design Code also sets out design measures including acoustic balconies or winter gardens for specific plots to ensure external amenity spaces and appropriately designed.
- 3.100** In order for there to be no increase in ambient noise levels from the baseline measured, the acoustic system in the stadium will be designed appropriately, along with maintaining the current design intent of the stadium, i.e., enclosed except above the pitch.
- 3.101** In addition to this the design team have paid particular attention to:
- The reduction of car use and the promotion of more 'electric vehicle use'
 - The separation of heavy vehicles from the public realm through the design;
 - Incorporation of high quality green space and a commitment to achieving a 20% increase in biodiversity net gain thereby helping to improve air quality; and
 - Net Zero Emission building ambitions.
- 3.102** Furthermore, the removal of industrial uses and the associated 'open dirt' yards, replaced by 'sealed infrastructure, a 'capped site, and green spaces would help to improve overall air quality within the area.

Daylight, Sunlight and Overshadowing

- 3.103** The impacts of potential daylight and sunlight loss to the surrounding residential properties to the south-east and south-west of the site were a key consideration during the iterative design process.
- 3.104** In order to reduce the potential adverse effects on neighbouring daylight and sunlight amenity, the massing has been arranged so as to minimise the impacts on neighbouring properties as well as to allow for good levels of amenity within the proposed accommodation, courtyard and park spaces. The tallest buildings have been located towards the industrial, harbour and parkland (north-east and north-west of the site) to maximise the potential for views, visual connection towards the natural context of the site and in order to keep massing lower towards the residential edges of the site. The proposed massing was reviewed in the east of the site close to 47-50 Railway Street, to ensure these properties are not impacted beyond an acceptable level.
- 3.105** In order to appropriately relate the Proposed Development to the direct context (in particular the existing residential neighbourhoods) the massing is generally lower towards the edges of the site. This is particularly evident in the Proposed Development's Marketplace, Boulevard and Parkland Neighbourhoods (located in the south-west, south-east and west of the site respectively) as set out within **ES Volume 1, Chapter 4: The Proposed Development**.

Ecology, Landscaping and Biodiversity

- 3.106** The Proposed Development has made a commitment to achieve a 20% Biodiversity Net Gain (BNG), as set out in **ES Volume 3, Appendix: Ecology and Biodiversity – Annex 2**. As such, the detailed design of the Proposed Development (via the Design Code) commits to the creation of important and valuable ecological habitats and ecological features within design, as set out within **ES Volume 1, Chapter 4: The Proposed Development**.

3.107 The landscaping and public realm design has been coordinated alongside the socio-economic consultant in order to ensure that the Proposed Development achieves (within the parameters sought for approval) the minimum open space requirements as per the anticipated population yield, as discussed in **ES Volume 1, Chapter 4: The Proposed Development**. The Illustrative Landscaping Masterplan has been designed to demonstrate how this could be realised.

3.108 Following discussions between the landscape architects and the project ecologists, it was recognised that recreational pressure arising from the completed Proposed Development could have adverse effects upon Swanscombe Peninsula SSSI located to the north-west of the site. The Proposed Development public realm has been designed to ensure it provides enough amenity green space based upon the population yield calculations to accommodate the occupants of the Proposed Development in order to mitigate excessive footfall within the SSSI. The Proposed Development amenity space is also of high quality given the various assessments and workshops that have embedded mitigation within the design, such as with regards to wind microclimate as discussed later in this ES chapter, that have ensured it has been designed to an appropriate comfort level. Once detailed design is available for the Proposed Development, Kent Wildlife Trust and NE will be consulted to discuss any potential further mitigation measures (as required and relevant) to be incorporated into the detailed design of the Proposed Development to further mitigate adverse impacts upon the SSSI arising from recreational pressures. This may form specific on-site detailed landscaping measures or off-site financial contributions to aid management/maintenance of the SSSI, however this will be discussed and agreed.

3.109 Extensive brown roofs will be integrated into the design of the Proposed Development at the north-eastern extent of the site, situated close to Robin's Creek, in order to provide valuable habitats for Schedule 1 bird species identified through the ecological surveys (see **ES Volume 1, Chapter 14: Ecology and Biodiversity**).

3.110 Both the intertidal mudflats and the gravel beach area could be affected by drainage from the Proposed Development and visual and noise disturbance from the construction works. Sustainable Drainage Systems (SuDs) to both avoid or mitigate any potential effects on water quality and flow within sensitive habitats, and to provide suitable hydrological conditions for new wetland habitats of ecological value to become established, will be implemented.

Energy and Sustainability

3.111 To assist with the sustainability and energy performance, as described in the Energy and Sustainability Statement which supports the planning application, a number of measures have been considered throughout the design evolution process with the aim of maximising energy efficiency throughout the Proposed Development. These are discussed in **ES Volume 1, Chapter 4: The Proposed Development**.

Townscape, Visual Impact and Built Heritage

3.112 Consideration has been given to the presence of established industrial/residential areas that will continue as existing following implementation of any forthcoming consent for the Proposed Development through the layout and massing of the Proposed Development. This includes settled residential areas near the site edge, including those near Robinson Way and Railway Street, as well as to the south-west at Swanscombe within the administrative boundary of Dartford Borough Council (**Figure 3.13**). Further detail is set out in **ES Volume 2, Townscape, Visual Impact Assessment, ES Volume 2, Appendix Heritage Statement and ES Volume 1, Chapter 4: The Proposed Development**. The character and appearance of Botany Marshes (which forms part of the Swanscombe Peninsula SSSI) has been a consideration, as well as the River Thames and the long views that are afforded from areas to the north.

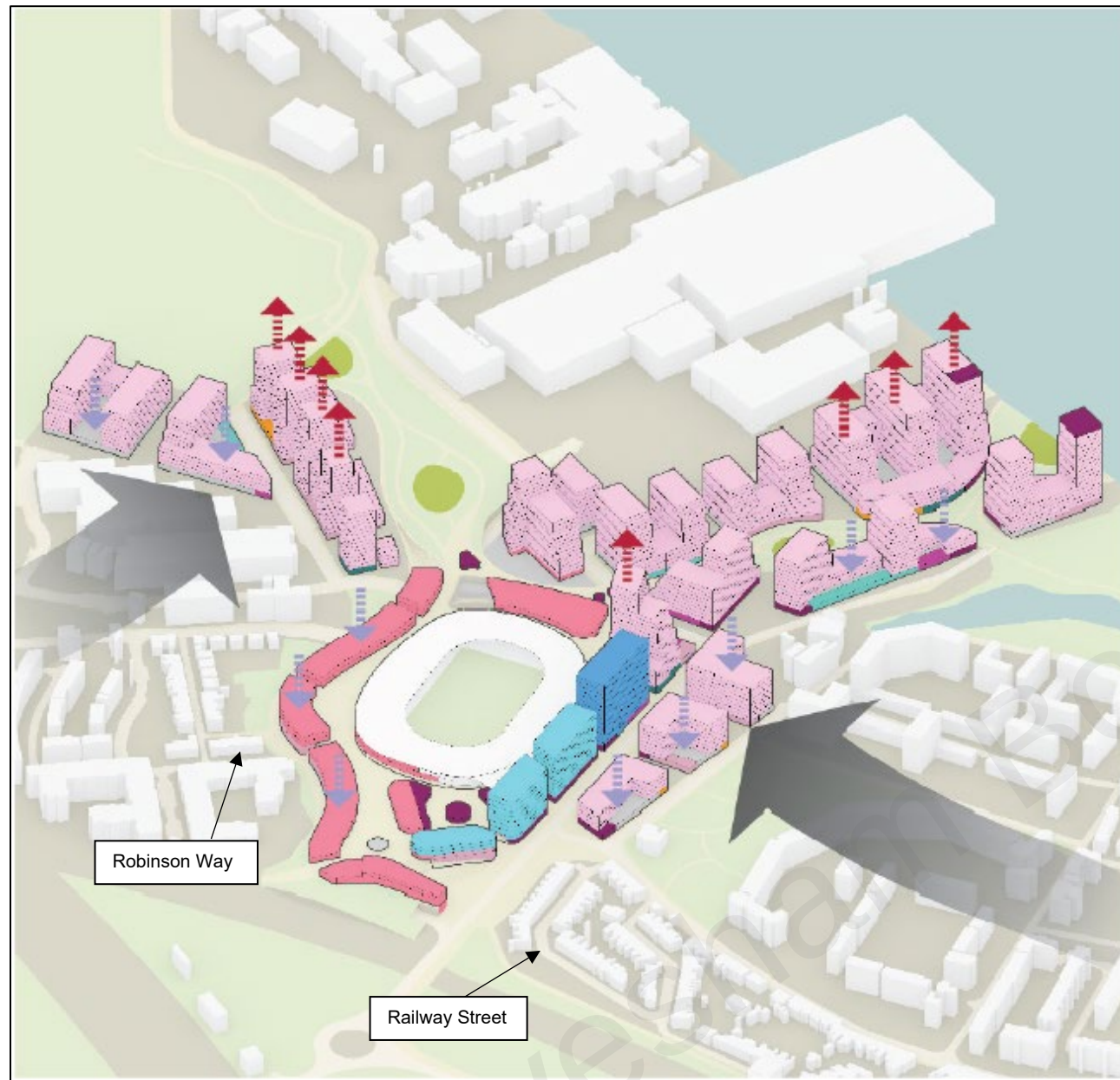
3.113 The potential impact of the Proposed Development upon views has been a key consideration throughout the design evolution process, and a repeated topic of discussion within the pre-application consultation. The use of high-quality design and materials (committed to via the Design Code) and the replacement of an area of low townscape quality with new architecture of high quality will enhance the existing townscape and quality of public realm and mitigate the effect of the taller buildings within the Proposed Development.

3.114 Given the scale of the development, there will be an impact upon local views through the degree of change between the existing low-lying nature of the development and the Proposed Development. The proposed townscape arrangement has been considered and is reflective of a high-density mixed use development of this nature.

3.115 The centrally located tall building is strategically positioned to reduce its visual impact to surrounding areas whilst not overshadowing the primary public spaces or park areas. A green curtain will be provided in the north of the site to screen the existing industrial uses from the Proposed Development. This will utilise mounding topography with deciduous and evergreen tree species.

3.116 The Design Code and **ES Volume 1, Chapter 4: The Proposed Development** set out the key principles that will be applied to the design of the plots at the reserved matters stage. **ES Volume 2** assesses the townscape implications of the Proposed Development.

Figure 3.13 Initial Site Townscape Considerations



Flood Risk and Drainage

3.117 The Applicant consulted with the Environmental Agency who raised some concerns with regards to the scheme design including the requirement to raise the River Thames tidal flood defences, the proximity of the main river and tidal flood defence assets to the proposed scheme and a concern regarding insufficient freeboard to the modelled climate change level all of which have been addressed by the Applicant and design team.

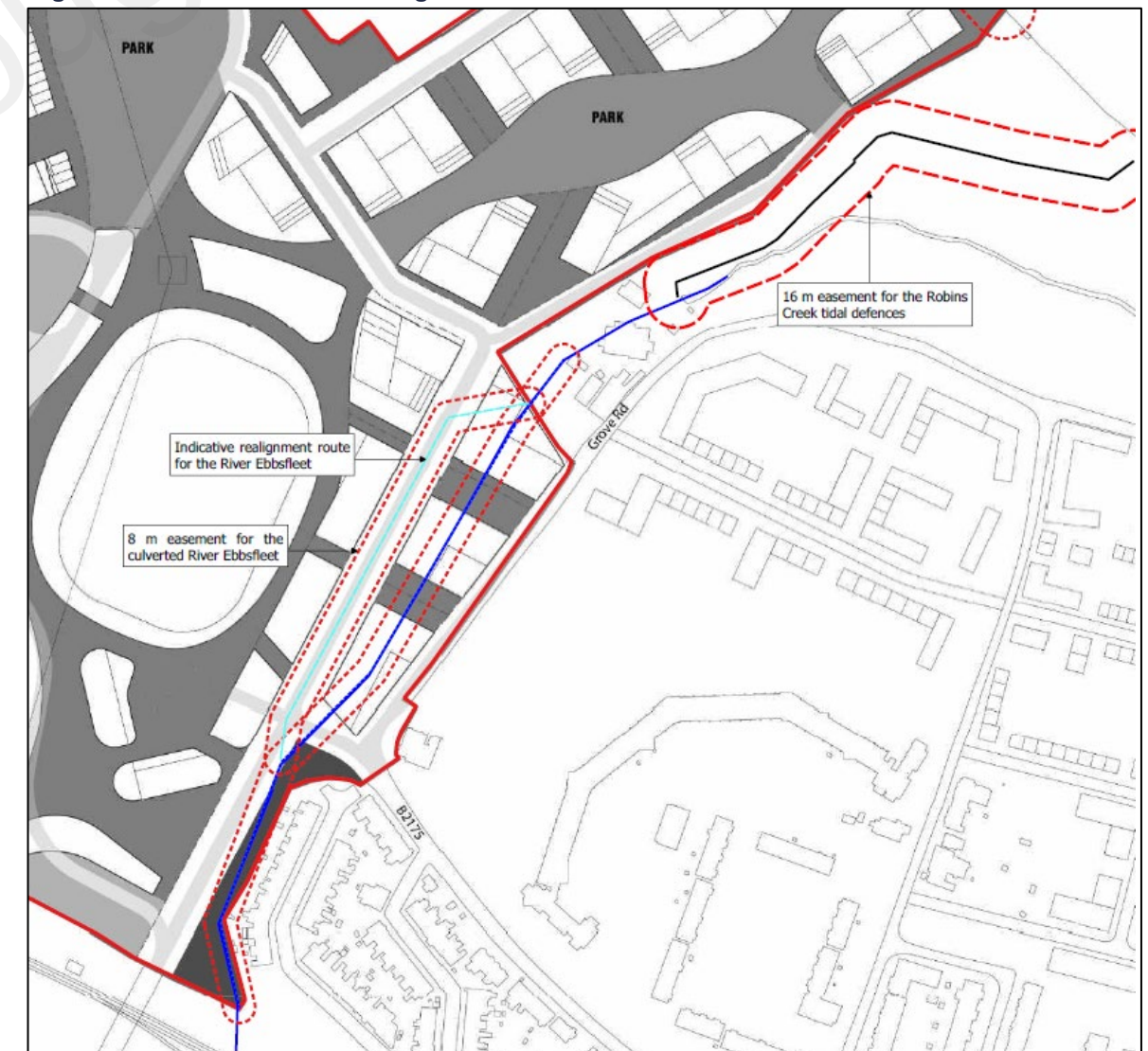
3.118 With regards to the raising of the River Thames tidal flood defences, the EA stated that the Proposed Development must demonstrate that the site's flood defences will provide the required degree of protection for the design life of the development. The Thames Estuary 2100 Plan (TE2100) sets out the required flood defence crest level to maintain a sufficient standard of protection whilst accounting for the impacts of climate change. For this site, the EA requested that tidal defences must be raised to a crest level of 8.00m AOD by 2070. Due to the requirement for the Proposed Development to apply a 100-year design life, the EA stated that the raising of the tidal defences to 8.00m AOD must be included as part of the Proposed Development. The River Thames tidal flood wall is located outside of the red line boundary and therefore these defences are not

located within the Applicants control and therefore any future upgrades to the defences are not included within the Proposed Development outline application. However, futureproofing of the site and the flood defences has been duly considered in the development design, with the inclusion of a 19m set back (standard being 16m) that is free from any built development in the northern extent of the site up to the northern boundary. The Applicant has also committed within this application to provide new flood defences within the 19 m set back to meet the Thames Estuary 2100 (TE2100) standards that is required. Given the outline nature of the proposal, details with regards to the design, existing condition of the current defences and structure will be provided at reserved matters stage.

3.119 The Environment Agency commented that the Proposed Development would encroach within the required easement distances and would include building over the culverted Main River Ebbsfleet creating "an unacceptable degree of risk to the culvert during construction in addition to likely reducing the residual design life of the main river asset".

3.120 Whilst the exact alignment of the culvert is currently unknown due to the lack of information and documentation, coupled with the inaccessibility of the area in question, the Applicant has committed to a detailed culvert survey being undertaken at reserved matters stage (controlled by a suitably worded planning condition). An indicative resolution has also been proposed which includes the diversion of the culvert along the road to the west of the site, as shown within **Figure 3.14**. The realignment details would be confirmed following a detailed survey of the culvert to understand its depth, width and conditions and this would stipulate any realignment route. This approach would provide a betterment when compared to the existing scenario as there will be opportunities to widen the culvert, increasing its capacity thereby reducing flood risk. This approach would also ensure that there is a suitable 8m easement predominantly free of built development to allow for access and maintenance. Opportunities for de-culverting and partial deculverting will also be considered following the culvert survey that will be undertaken at reserved matters stage.

Figure 3.14 Indicative Realignment of the Culvert

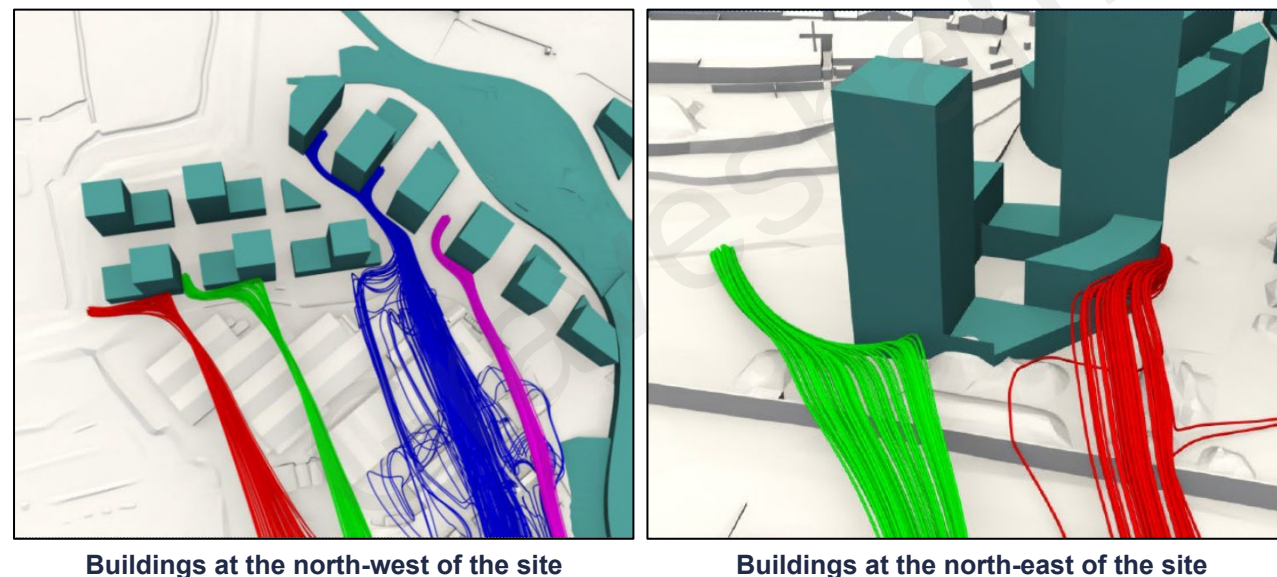


3.121 In response to the Environment Agency's concern that the site would feature more vulnerable development with finished floor levels (FFL) set below the design flood level. The Applicant has committed to all finished floor levels of 'more vulnerable' development will be raised 600 mm above the tidal breach 2100 flood level for each building. There will be some areas where reception areas and entrances will be required to be located at ground level, below the flood level, however the sensitive areas of these land uses will be raised above the flood levels where appropriate.

Wind Microclimate

- 3.122** The wind microclimate within and surrounding the site has been closely considered throughout the design evolution process with regards to meeting appropriate comfort and safety criteria for wind conditions.
- 3.123** An initial CFD analysis was carried out on the early design maximum massing parameters in July 2022, which highlighted potential areas of comfort and safety concerns within the site, which were primarily located between the residential towers to the north-west of the site, and around the building closest to the waterfront (see **Figure 3.15**).
- 3.124** As a result, the building parameters at these locations were amended by the design team with the aim of improving comfort conditions and reducing the potential for safety concerns. This included creating measures at the north-west of the site in order to remove the thoroughfares where the wind was channelling between buildings and amending the massing of the building at the north-east extent of the site next to the River Thames.
- 3.125** Furthermore, as set out in **ES Volume 1, Chapter 11: Wind Microclimate**, the illustrative landscaping was developed in coordination between the wind microclimate technical team and the project landscape architects in order to ensure that suitable mitigation measures (such as strategic planting locations) were captured within the Illustrative Landscaping Masterplan. This was an iterative process and involved two testing rounds to develop effective measures.
- 3.126** Mitigation measures have been applied and incorporated into the Design Code, after the final CFD analysis, to maximise comfort across the site for future users, including denser tree planting and the use of evergreen trees instead of deciduous trees, hedge planting and ground level screening. Buildings were assessed for their suitability for balconies with many areas being suitable; with those not suitable controlled through the Design Code and some requiring measures such as side panels.
- 3.127** **Figure 3.15** shows the initial wind microclimate constraint areas which helped influence the design of the Proposed Development. For further information, see **ES Volume 1, Chapter 4 The Proposed Development** and **ES Volume 1, Chapter 11: Wind Microclimate** which set out the various mitigation measures required.

Figure 3.15 Initial Wind Testing Constraints⁶



⁶ Note, the red streams shown on the figure illustrate uncomfortable wind conditions.

CONCLUSION

- 3.128** This ES chapter sets out the alternatives to the Proposed Development that have been considered by the Applicant and, in particular, alternative designs. In addition, it details how the design has evolved to address consultation responses, technical design development and so as to ensure that 'mitigation by design' principles have been incorporated to address environmental considerations.
- 3.129** The design team's approach has been iterative, whereby various design options, input from public and statutory stakeholders, and results of technical studies have been interpreted and have informed design solutions and refinements. The Proposed Development design has been developed through consultation with the public, GBC and other stakeholders, and concerns have been addressed through design development as appropriate.
- 3.130** A variety of factors have, therefore, contributed to the chosen design with the opportunity for a high-quality scheme in which regenerates the Opportunity Area being paramount.
- 3.131** The key principles developed to create a vision for the Proposed Development of this 19ha site are based upon achieving the 'design objectives', which are founded on the three key themes of 'Accessibility and Connectivity', 'New Community' and 'Football Club'. In review of these design 'principles', the Design Evolution has realised these objectives for the site and its surroundings. The extensive consultation process with stakeholders and the wider public (including local residents, football club members and supporters, local representative groups and council), have realised a number of design iterations, and subsequent improvements and benefits across social, commercially, living and public realm - to the betterment of the entire.